Benign HPB Diseases
APHPB-0003

SELECTIVE DOUBLE PORTAZYGOUS DISCONNECTION WITH PRESERVING VAGUS FOR VARICEAL HEMORRHAGE OF CIRRHOTIC PORTAL HYPERTENSION

Z. Guang and F. Yang
General Surgery, 81st Hospital of P.L.A., Nanjing, China

Objectives: How to reduce the episodes of postoperative complications in patients with cirrhotic portal hypertension has been discussed extensively among surgeons around the world. In China, pericardial devascularization with splenectomy (PDS) has been widely used in patients, but they were suffered from rebleeding and gastric stasis ostoperatively. The aim of this study is to evaluate the effect of selective double portazygous disconnection with preserving vagus (SDPDPV) for patients with portal hypertension in the authors’ hospital.

Methods: 453 patients with cirrhotic portal hypertension who underwent either SDPDPV or PDS for variceal bleeding from Feb 2007 to January 2013 were retrospectively reviewed. The operation-relevant information, change of lavatory examination data, postoperative complications and clinical outcomes were analyzed.

Results: There were no significant difference between the SDPDPV group and the PDS group of mean operative time and intraoperative blood loss (p > 0.05). The free portal hypertension pressure in the SDPDPV group was much lower than PDS group significantly after operation (p < 0.05). The test of biochemical profile of hepatocyte functions and Child-Pugh’s score were significantly more altered in the SDPDPV group than in the PDS group postoperatively (p < 0.05). Except encephalopathy, occurrences or development of postoperative complications including rebleeding, ascites and gastric stasis showed great difference between the two groups (p < 0.05). The operative mortality rate and the 3-year survival rates were great difference between the two groups too (p < 0.05).

Conclusions: The SDPDPV not only controls recurrent bleeding from varices with portal hypertension effectively but also maintains normal dynamics of stomach and physiological function of intestine and hepatobiliary.

Malignant HPB Diseases
APHPB-0004

NOVEL FLUORESCENCE-NAVIGATION LIVER SURGERY USING ICG-PDE SYSTEM: TUMOR DIAGNOSIS AND ANATOMICAL MARKING

N. Atsushi, T. Abo and T. Nagayasu
Department of Surgical Oncology, Nagasaki University Hospital, Nagasaki, Japan

Objectives: To improve of diagnosis for occult tumor localization and define the accurate anatomical area for hepatectomy, we applied the novel fluorescent diagnosis using the indocyanine green dye-photodynamic eye (ICG-PDE) system in 125 patients with hepatic tumors.

Methods: For tumor detection, 0.5 mg/kg-weight of ICG was intravenously administrated 2–7 days prior to hepatectomy for the conventional liver functional test. To define the accurate liver segmentation for anatomical hepatectomy, 0.075 mg/10 mL of ICG was administrated into the targeted portal vein, which was often administrated into the bile duct to detect the biliary fistula at the transected planes. Fluorescence of ICG was precisely detected by the photodynamic eye infrared-camera.

Results: Detectable liver lesions were 135 nodules. Sensitivity of diagnosis for malignancy was high as 96% and, however, diagnostic accuracy was lower in the benign tumor. The newly detected liver lesions were observed in 3 lesions in hepatocellular carcinomas (HCC) histologically. In advanced stage HCC with portal vein thrombosis, extension of tumor thrombi was remarkably detected via portal trunk, which was quite useful to remove tumor thrombi. In case of the anatomical hepatectomy, marking of ICG-PDE was more significantly visible in comparison with the conventional dye injection method (Video). This diagnostic tool was also useful to detect the burden of the caudate lobe. Tiny biliary fistula was sensitively detected by ICG-PDE system in 5 cases.

Conclusions: The novel fluorescence-navigation surgery using ICG-PDE system is a powerful diagnostic tool during hepatectomy to improve surgical results and curavility of resections in patients with liver malignancies.

Benign HPB Diseases
APHPB-0006

ACUTE CHOLECYSTITIS CAUSED BY HELMINTHIC INFECTION IN THE GALLBLADDER AND THE BILIARY TRACT

M. Vejdani
Parasitology and Mycology, University of Medical Sciences, Kermanshah, Iran

Objectives: Helminthic infections were reported from tropical and subtropical locations in the world. The
parasitic helminths develop and migrate to different organs. Unusual cases may involve the gallbladder and the biliary tract. The parasites invade the bile ducts or migrate to choledactus and cause inflammation, fibrotic lesions, acute and chronic cholecystitis.

Methods: The patient is undergone cholecystectomy. In this research, there were three unusual cases of parasitic infestation in the hospitals of Kermanshah, which is located in the west of Iran. The worms were isolated from gallbladder and biliary tract. The patient is undergone cholecystectomy. In this research, there were three unusual cases of parasitic infestation in the hospitals of Kermanshah, which is located in the west of Iran. The worms were isolated from gallbladder and biliary tract.

Results: There was a female _A. lumbricoides_ in the fundus of gallbladder of a 77-year-old woman. In addition, there were proglottid of _T. saginata_ in the bile duct of a 29-year-old woman, and an adult form of _F. hepatica_ in the bile duct of a 47-year-old woman. Two of the cases had obstructive jaundice and invasion of helminthic parasites caused progressive pathologic lesions, so that patients were undergone cholecystectomy operation.

Conclusion: Helminthic infections of gallbladder and biliary tracts are rarely in human, but they can be occurred chronic complications in patients, therefore, in this study is recommended to carry out the ERCP method before cholecystectomy for recognizing and extracting worms from gallbladder and biliary tracts.

Transplantation

APHPB-0007

PANCREAS TRANSPLANT AT TAIPEI VETERANS GENERAL HOSPITAL

Y. Shyr and S. E. Wang

_Surgery, Taipei Veterans General Hospital, Taipei, Taiwan_

Objectives: Type 1 diabetes eventually leads to nephropathy, neuropathy, retinopathy and angiopathy after 10–30 years. Currently, pancreas transplant is the treatment of choice in tight control of blood sugar for IDDM patients, and further to stabilize, prevent or even to reverse the diabetic complications. We will present our experience in pancreas transplant which was initiated on September 19, 2003.

Methods: From September 2003 to May 2014, there were 97 pancreas transplants performed for 91 patients at Taipei Veterans General Hospital, with 35 SPK, 9 PAK, 40 PTA and 13 PBK. Most (82.3%) of our pancreas transplants were for IDDM patients.

Results: The blood sugar usually returned to normal level within 5 h (median) after revascularization of the pancreas grafts. The fasting blood sugar maintained within normal range thereafter throughout the whole clinical course in most cases. There were 2 surgical mortality. The technical success rate was 94.9%. Excluding the 4 cases with technique failure, overall 1-year pancreas graft survival is 98.5% and 5-year is 94.1%, with 100% 1-year for SPK, 97.1% 1-year for PTA, 100% 1-year for PAK and 100% 1-year for PBK.

Conclusion: In conclusion, pancreas transplant provided an ideal insulin-free solution for DM, especially IDDM. Pancreas transplant could be performed with similar successful rate irrespective of the type of pancreas transplant at our hospital.

Malignant HPB Diseases

APHPB-0008

LONG-TERM SURVIVAL AFTER PANCREATEICODUODENECTOMY FOR Pancreatic and periampullary adenocarcinomas

Y. Shyr and S. E. Wang

_Surgery, Taipei Veterans General Hospital, Taipei, Taiwan_

Objectives: This study was to identify predictors for long-term survival and to compare survivals for periampullary adenocarcinomas after a pancreaticoduodenectomy.

Methods: Clinicopathological factors were compared between short-term (<5 years) and long-term (≥5 years) survival groups. Both actuarial and actual 5-year survival, as well as actuarial 10-year survival for those that survived over 5 years, were determined.

Results: There were 109 (21.8%) long-term survivors. Most (76%) of the long-term survivors were those with ampullary adenocarcinoma. Long-term survival was highest for ampullary adenocarcinoma (32.8%) and lowest for pancreatic adenocarcinoma (6.5%). Jaundice, tumor size, and lymph node involvement were found to be independent predictors for long-term survival. Prognosis was significantly worse for pancreatic adenocarcinoma, which had an actuarial 5-year survival of only 6.7%. There was no difference in subsequent actuarial 5-year survival (actuarial 10-year survival) between pancreatic adenocarcinoma and other periampullary adenocarcinomas for patients surviving over 5 years after resection. However, there was a difference in actuarial and actual 5-year survivals.

Conclusion: Jaundice, tumor size, and lymph node involvement are independent predictors for long-term survival after pancreaticoduodenectomy. The biological factors of pancreatic adenocarcinoma no longer play a role in determining the prognosis for those who survive to the 5 year landmark.

APHPB-0009

PANCREATEICODUODENECTOMY FOR Pancreatic and periampullary lesions in the young

Y. Shyr and S. E. Wang

_Surgery, Taipei Veterans General Hospital, Taipei, Taiwan_

Objectives: The purpose of this study was to clarify surgical outcomes and to assess the biological behavior of periampullary malignancy after pancreaticoduodenectomy (PD) in the young. PD remains a formidable challenge to many pancreatic surgeons. There is no literature report regarding PD in the young.
Methods: Data on patients undergoing PD were retrieved for study between January, 1997, and December, 2010. Demographics, disease patterns, clinical presentations, operative findings, surgical risks, tumor pathologic characteristics, and survival outcomes were evaluated in the young patients <60 years old and compared with those in the older population.

Results: There were 585 patients in our study. Of there, 172 were patients 60 years or younger. Higher proportions of female patients were found in the young age group compared to old in regards to sex distribution. Young group had more benign tumor compared to the old, ex. neuroendocrine tumor. The surgical mortality rates are significant less in the Young group. However, there was no significant difference in surgical morbidity and pancreatic leakage. As for the initial presentations, young group patients are often asymptomatic (4.7%) when compared to the old (1.5%, \( p = 0.026 \) but less jaundice and GI upset \( p = 0.004, \ p = 0.012 \).

Conclusion: PD in the young did not carry more surgical morbidity or pancreatic leakage, but had less surgical mortality, as compared to the old. Young group patients after PD had better 5 year survival in periaurillary malignancy and pancreatic head adenocarcinoma.

Transplantation

APHPB-0010

EN BLOC SIMULTANEOUS PANCREAS AND KIDNEY COMPOSITE GRAFT TRANSPLANT WITH LIMITED VASCULAR ACCESS

S. Wang and Y. M. Shyr

Surgery, Taipei Veterans General Hospital, Taipei, Taiwan

Objectives: Limited vascular access could be encountered in an obese or re-transplant patient. We described modifications that facilitated an en bloc simultaneous pancreas and kidney (SPK) composite graft transplant.

Methods: At the back-table, the superior mesenteric artery and splenic artery of the pancreas graft were reconstructed with a long ‘Y’ iliac artery graft. The smaller left renal artery is anastomosed end-to-side to the larger and longer common limb of the arterial Y graft and the shorter portal vein is anastomosed end-to-side to the longer graft left renal vein. The en bloc pancreas and kidney composite graft was implanted by suturing the graft left renal vein to IVC and graft common iliac artery the recipient distal aorta. Exocrine drainage was provided by anastomosis of the graft duodenum to a roux-en-y jejunum limb in an side-to-side fashion.

Results: The operative time was 7 h with cold ischemic time of 6 h and 25 min. and warm ischemic time of 47 min. The patient was discharged on postoperative day 20, with a serum creatinine level of 1.4 mg/dL and a blood glucose level of 121 mg/dL. He has not had any rejection episodes or postoperative complications in the following 12 months after the en bloc SPK transplant.

Conclusion: En bloc pancreas and kidney composite graft might be an option for patients with limited vascular access. This technique (1) facilitates ‘real’ simultaneous pancreas and kidney (SPK) transplant with only single common artery and vein for implanting the composite graft; (2) minimizes dissection of vessels and conserves recipient vessels.

APHPB-0011

HEPATIC VENO-OCCLUSIVE DISEASE RELATED TO TACROLIMUS AFTER PANCREAS TRANSPLANTATION

S. Wang and Y. M. Shyr

Surgery, Taipei Veterans General Hospital, Taipei, Taiwan

Objectives: Hepatic veno-occlusive disease (HVOD) describes the nonthrombotic, fibrous obliteration of the small centrilobular hepatic veins by connective tissue and centrilobular necrosis in zone 3 of the acini.

Methods: We describe a case of HVOD occurring after pancreas transplantation, in which tacrolimus might have played a causative role since complete recovery was observed after discontinuation of tacrolimus.

Results: A 25-year-old female with NIDDM and uremia. She underwent SPK transplantation. Nine months after transplantation, she reported development of fever, mild right abdominal pain and an increase in abdominal girth. The CT scan showed pictures of HVOD with hepatomegaly, massive ascites, periportal edema, diffuse mottled hepatic enhancement and patent hepatic veins. The periportal edema and diffuse mottled hepatic enhancement, in addition to the signs ofportal hypertension, might suggest sinusoidal stasis. Tacrolimus was discontinued and replaced by cyclosporine. Three months after discontinuing tacrolimus, there was resolution of the patient HVOD demonstrated by CT scan.

Conclusion: This is the first case of HVOD after pancreas transplantation in the literature. HVOD should be suspected when a recipient presents with hepatomegaly, ascites or jaundice after pancreas transplantation under tacrolimus.

Benign HPB Diseases

APHPB-0012

PERCUTANEOUS CHOLECYSTOSTOMY FOR ACUTE CHOLECYSTITIS: IS DEFINITIVE CHOLECYSTECTOMY NECESSARY?


1 Yong Loo Lin School of Medicine, National University of Singapore, Singapore, Singapore; 2 Division of Hepatobiliary and Pancreatic Surgery, Department of Surgery, National University Health System Singapore, Singapore, Singapore; 3 Department of Diagnostic Imaging, National University Health System Singapore, Singapore, Singapore

Objectives: Acute cholecystitis (AC) is a common cause of emergency hospitalisation for the elderly. The use of percutaneous cholecystostomy (PC) as definitive treat-
ment for high-risk patients with moderate and severe AC is controversial. Objectives: To determine the characteristics, clinical outcomes, predictors of recurrence of AC and definitive cholecystectomy among patients who underwent PCs.

Methods: Seventy-one patients who underwent PC for AC at National University Hospital, Singapore between January 2007 and September 2013 were reviewed retrospectively (IRB approved study).

Results: The median age was 73 (38–96) years. All patients were ASA III (47.9%, n = 34) or IV (52.1%, n = 37). Sixty-four patients (90.1%) had other comorbidities. Twenty patients (28.2%) had procedural-related complications after transhepatic PC. Six patients (8.5%) demised despite successful PC due to worsening sepsis. All deaths were non-procedural related. Recurrence rates for AC was 11.9% (n = 7) over a follow up period of 66 (2–1681) days. The predictors of recurrence of AC following PC were higher serum alkaline phosphatase (ALP) at diagnosis (OR = 1.01, 95% CI 1.00–1.02, p = 0.021) and acute myocardial infarction (AMI) during index admission (OR = 8.00, 95% CI 1.19–54.0, p = 0.033).

Conclusion: PC is safe and effective in high-risk patients with AC who are not candidates for surgery. Further studies with longer follow up periods would be necessary to confirm the low recurrence rate of symptoms. However, patients with higher ALP at diagnosis and AMI during index admission are at potentially higher risk for recurrence. The main predictor of definitive cholecystectomy is surgical fitness.

Malignant HPB Diseases

APHPB-0013

KRÜPPEL-LIKE FACTOR 4 REGULATES HEPATOCYTE NUCLEAR FACTOR-6 AND DRIVES HEPATOCELLULAR CARCINOMA DIFFERENTIATION AND PROGRESSION


1Department of General Surgery, Shanghai First People’s Hospital, School of Medicine Shanghai Jiao Tong University, Shanghai, China; 2Department of Pathology, Shanghai First People’s Hospital, School of Medicine Shanghai Jiao Tong University, Shanghai, China; 3Department of Gastroenterology Hepatology and Nutrition, The University of Texas MD Anderson Cancer Center, Houston, TX, USA; 4Liver Transplantation Section Center for Organ Transplantation, Fudan University, Shanghai, China; 5Department of Gastroenterology Hepatology and Nutrition, The University of Texas M.D. Anderson Cancer Center, Houston, TX, USA; 6Department of Pathology, Hainan Medical College Affiliated Hospital, Haikou, China; 7Department of General Surgery, Shanghai First People’s Hospital, School of Medicine Shanghai Jiao Tong University, Shanghai, China

Objectives: Tumor differentiation is a behavioral index for hepatocellular carcinoma (HCC) and a prognostic factor for HCC in patients who undergo orthotopic liver transplantation (OLT). However, the molecular basis for HCC differentiation and prognostic value of the underlying molecules that regulate this differentiation in such patients are unclear. In this study, we defined a potential driver pathway for HCC differentiation and prognostication.

Methods: The regulation and function of Krüppel-like factor 4 (KLF4) and hepatocyte nuclear factor-6 (HNF-6) in HCC differentiation was evaluated using human tissues, molecular and cell biology, and animal models, and its prognostic significance was determined according to its impact on patient survival.

Results: Reduced KLF4 expression correlated with high HCC grade. Poorly differentiated HCC cells had lower expression of KLF4 and differentiation-associated markers than did well-differentiated cells. Elevated KLF4 expression induced differentiation of poorly differentiated hepatoma cells. KLF4 bound directly to the promoter of HNF-6 and activated its expression. HNF-6 expression correlated positively with KLF4 expression and negatively with HCC grade. Restored HNF-6 expression upregulated expression of differentiation-associated markers and inhibited HCC cell migration and invasion, while HNF-6 Knockdown did the opposite. Loss of KLF4 expression in primary HCC correlated with reduced overall survival and shortened relapse-free survival durations after OLT. Combination of KLF4 expression and the Milan criteria improved prognostication for HCC after OLT.

Conclusion: Dysregulated KLF4/HNF-6 pathway drives dedifferentiation and progression of HCC and KLF4 is a biomarker for accurate prognostication of HCC patients treated by OLT when integrated with the Milan Criteria.

Benign HPB Diseases

APHPB-0014

LARGE BALLOON DILATATION VERSUS MECHANICAL LITHOTRIPSY IN MANAGING DIFFICULT COMMON BILE DUCT STONES

S. Elkholy1, M. Naga1, A. El-Badri1 and S. Nabil2

1Internal Medicine Department, Faculty of Medicine, Cairo University, Cairo, Egypt; 2Internal Medicine Department, Helwan University Hospital, Cairo, Egypt

Objectives: Evaluation of the effectiveness and the possible complications of large balloon dilatation (LBD) in comparison to mechanical lithotripsy (ML) in managing large CBD stones.

Methods: This study was designed to analyze data from 100 patients presenting with calcular obstructive jaundice with difficult stone extraction, they were classified into 3 groups the 1st group included patients in which ML was used 2nd group included patients with LBD 3rd group included patients in which both techniques were used. Then success rate was determined with a final cholangiogram, whereas type and rate of complications were assessed in all groups.

Results: Failure of stone extraction was encountered in 6.3% of the patients, while the cases with partial stone extraction was 5.06%. Success rate in the 2nd group was 93.8% followed by the 3rd group (90%) then 1st group (87%) (p-value < 0.005). 22% of the patients in
the 1st group needed repeated sessions while in the 2nd and 3rd groups only 6.2% and 10% of the patients needed so respectively. The rate of bleeding was higher in the 2nd and 3rd groups. No perforation was done, only 2 cases showed minor tear during dilatation. Conclusion: LBD could be superior to ML in patients with difficult stone extraction regarding the success rate, number and time of sessions. In cases as Mirrizzi syndrome (especially type 3) & liver cirrhosis lithotripsy is preferred. Also in cases of associated tight strictures combined techniques are preferred. Bleeding was higher in LBD.

APHPB-0015
SIGNIFICANCE OF NUTRITIONAL ASSESSMENT AND NUTRITIONAL SCREENING TOOLS IN PREDICTING COMPLICATIONS IN PATIENTS WITH LIVER CIRRHOSIS
S. Elkholly, S. Mogawer, M. Mansour, E. Mogawer and H. Sherif
Internal Medicine Department, Faculty of MedicineCairo University, Cairo, Egypt
Objectives: Correlate protein energy malnutrition (PEM) to the incidence of complications in patients with liver cirrhosis. Also correlate PEM assessment tools with the incidence of complications of liver cirrhosis.
Methods: This study was conducted on 45 cirrhotic patients child C with or without complications. The patients were divided into two groups: group I included 30 patients with moderate to severe degree of malnutrition and group II which included 15 patients with mild degree of malnutrition.
Results: The rate of various complications is higher in patients with severe malnutrition, TSFT (Triceps skin Fold Thickness) and MAC (Mid Arm Circumference) has the highest sensitivity 85.71%, 100% & specificity 90%, 60% respectively to rate of complications (p-value < 0.0001 & area under the ROC curve = 0.879).
Conclusion: PEM is highly prevalent among patients with liver cirrhosis & is directly correlated to the degree of cirrhosis and to the severity of the disease. Complications of liver cirrhosis are highly correlated to degree of malnutrition. Anthropometric measures as TSFT & MAC in comparison to other assessment tools showed higher sensitivity & specificity to the rate of complications. Also TSFT showed high sensitivity and specificity with the body fat %.

APHPB-0016
FAST-TRACK SURGERY PROTOCOLS IN DEVASCULARIZATION FOR CIRRHOTIC PORTAL HYPERTENSION
Z. Guang, F. Yang, C. Jian and L. Ren
General Surgery, 81st Hospital of P.L.A., Nanjing, China
Objectives: Fast-tract surgery (FTS) has been rapidly embraced by surgeons as a mechanism for improving patient care and driving down complications and costs. The aim of this study was to determine if any improvement in outcomes occurred of a FTS protocol for selective double portazygous disconnection (SDPDPV) when compared with non-FTS postoperative care.
Methods: Patients for SDPDPV in the period January 2012-April 2014 were randomly selected for the FTS group and non-FTS group. A designed protocol was used in the FTS group with the emphasis on an interdisciplinary approach. The non-FTS group was treated by standard established procedures. The number of postoperative complications, time of functional recovery and duration of hospital stay were recorded.
Results: Patients in the FTS group (n = 59) and non-FTS group (n = 57) did not differ in preoperative data and operative details (p > 0.05). The FTS procedure led to significantly better control of faster restoration of gastrointestinal functions, food tolerance, rehabilitation and hospital stay (p < 0.05). Postoperative complications including nausea/vomiting, severe ascites, wound infection, urinary tract infection, pulmonary infection were all significantly lower in the FTS group (p < 0.05). According to the postoperative morbidity classification used by Clavien, the overall complications and grade I complications were both significantly lower in the FTS group compared with the non-FTS group (p < 0.05).
Conclusion: Following the FTS protocol helped to recover gastrointestinal functions, reduce frequency of postoperative complications and reduced hospital stay. The FTS strategy is safe and effective in improving postoperative outcomes.

Malignant HPB Diseases
APHPB-0017
PROGNOSIS ROLE OF LEUCINE ZIPPER PROTEIN IN HEPATOCELLULAR CARCINOMA
G. Li, L. I. Yuan and L. I. U. Jun
Liver surgery, Provincial Hospital Affiliated to Shandong University, Jinan, China
Objectives: Leucine zipper protein (LUZP) play key roles in development. Overexpression of LUZP in solid tumors were documented in many literatures. The current study examined the expression of LUZP in human hepatocellular carcinoma (HCC) and to investigate the correlation of LUZP with HCC.
Methods: Total RNA was extracted from HCC cancer and the paired adjacent non-cancerous tissues. Real-time quantitative reverse transcriptase-polymerase chain reaction (qPCR) were used to detect the LUZP mRNA expression. Patients were grouped into LUZP mRNA high expression group and LUZP mRNA low expression group using average LUZP mRNA level in adjacent non-cancerous tissues as cut off. Correlation of LUZP mRNA and clinical parameters were analyzed. Survival of the patients were analyzed by Kaplan-Meier method.
Results: LUZP mRNA was significantly higher in HCC sample than in the adjacent non-cancerous tissue (p < 0.01). Higer level of alpha-fetoprotein and larger tumor size were found in the patients with higher level

© 2015 The Authors
HPB © 2015 Americas Hepato-Pancreato-Biliary Association
of LUZP mRNA. There were significant differences between the high expression group and low expression group in term of alpha-fetoprotein (α-FP) (p < 0.001), portal vein invasion (p < 0.005), TNM stage (p < 0.0001) and recurrence incidence (p = 0.001). The current study failed to find significant difference between the two groups in the following clinical characteristics: age, gender, portal vein invasion, lymphnode metastasis, hepatitis B virus (HBV) infection and alcohol intake. Overall survival in high expression group and low expression group was 14 vs. 34 months (p = 0.01).

Conclusion: Up-regulation of LUZP was associated with progressive pathological feature and poor prognosis in HCC patients.

Benign HPB Diseases

APHPB-0024

A PROSPECTIVE ANALYSIS OF THE DIAGNOSTIC ACCURACY OF MAGNETIC RESONANCE CHOLANGIOPANCREATOGRAPHY AND PERCUTANEOUS TRANSHEPATIC CHOLANGIOPANCREATOGRAPHY IN BENIGN BILIARY STRICTURES AND COMPARISON WITH INTRAOPERATIVE FINDINGS

B. Chigurupati1, T. Yadav1, A. Lal2, V. Gupta1 and S. Talukder1
1General Surgery, PGIMER, Chandigarh, India; 2Radiodiagnosis, PGIMER, Chandigarh, India

Objectives: To assess the diagnostic accuracy of MRCP and PTC/TUBOGRAM in benign biliary stricture by comparing with intraoperative findings.

Methods: Thirty patients with benign biliary stricture who were to undergo definitive surgery were enrolled in this study. Patients underwent both MRCP and PTC/TUBOGRAM before surgery, and the results were compared with intraoperative findings. Data was analyzed using SPSS Version 17.

Results: Diagnostic accuracy in detecting correct type of stricture for MRCP was 89.3% and PTC was 96.4%. There was no statistically significant difference in determination of type of stricture between PTC and intraoperative findings (p = 0.317). There was statistical difference in determination of type of stricture between MRCP and PTC (p < 0.05) and between MRCP and intraoperative findings (p < 0.05). The sensitivity (and specificity) for detecting stones, fistula, variant anatomy and abdominal collection/cholangitic abscess for MRCP in our study was 75% (90%), 61.5% (109%), 100% (95.6%) and 100% (100%) respectively. In detecting stones, fistula, variant anatomy and abdominal collection PTC had sensitivity (and specificity) of 75% (100%), 85.7% (100%), 100% (100%) and 45.4% (100%) respectively. With regards to fistula and intra-abdominal collection, there was statistical difference in determination between MRCP and PTC with p = 0.04 and p = 0.014 respectively.

Conclusion: PTC is better in determining type of stricture and presence of fistula. Though MRCP was less sensitive in diagnosing fistula, it provides cross sectional imaging and better in determining liver status, presence of collections and cholangitic abscess.

Malignant HPB Diseases

APHPB-0025

THE ROLE OF SALINE-COUPLING BIPOLAR ELECTROCAUTERY IN LIVER TRANSECTION

Department of Hepatobiliary Surgery, The First Affiliated Hospital Chongqing Medical University, Chongqing, China

Objectives: Clamp Crushing (CLAMP) is the most common surgical method during liver transection. Nevertheless,
the incidence of postoperative complications remains high after liver transection in many medical centers. As a device for hemostasis, bipolar coagulation (BIP) has aroused increased interest because of its excellent hemostatic effect and low thermal damage to surrounding tissues. We changed a modified method of the bipolar coagulation from unilateral water-dripping to bilateral water-dripping and applied it in hepatectomy as a preferred method. This study was designed to investigate the application and value of BIP during hepatectomy comparing with CLAMP.

Methods: From April 2012 to April 2014, a total of 332 consecutive patients following liver transection in our hospital were enrolled in this retrospective study. Of all patients, 150 patients received BIP (Group A) and 182 patients received CLAMP (Group B). The pre-, postoperative clinical manifestations, the effects of those maneuvers were evaluated and the cost of hospitalization was analyzed.

Results: There was no significant difference in the preoperative indexes in two groups. Compared to Group A, more bleeding and higher rates of transfusion during operation were found in Group B (p < 0.05). Also, the incidence of postoperative complications and the cost of operations in Group B were higher than those in Group A (p < 0.05). However, postoperative liver function was not significantly different between two groups (p > 0.05).

Conclusion: Therefore, a simple saline-coupled BIP shows promise for decreasing intraoperative hemorrhage, postoperative complications and the cost of operations, which would be desirable to consider for a safe and reliable means of liver transection.

Benign HPB Diseases

APHPB-0026

ROUTINE HISTOPATHOLOGY OF GALLBLADDER AFTER ELECTIVE CHOLECYSTECTOMY FOR GALLSTONES: WASTE OF RESOURCES OR A JUSTIFIED ACT?

A. A. Memon
Surgery, Liaquat University of Medical & Health Sciences, Jamshoro, Hyderabad, Pakistan

Objectives: Selective approach for sending cholecystectomy specimens for histopathology results in missing discrete pathologies such as premalignant benign lesions such as porcelain gallbladder, carcinoma-in-situ and early carcinomas. To avoid such blunders therefore, every cholecystectomy specimen should be routinely examined histologically. Unfortunately, the practice of discarding gallbladder specimen is standard in most tertiary care hospitals of Pakistan including the primary investigators’ own institution. This study was conducted to assess the feasibility or otherwise of performing histopathology in every specimen of gallbladder.

Methods: 220 patients were included with gallstones for cholecystectomy. All cases with known secondaries from gallbladder, local invasion from other viscera, traumatic rupture of gallbladder, gross malignancy of gallbladder found during surgery was excluded from the study.

Laparoscopic cholecystectomy was performed in majority of cases. All gallbladder specimens were sent for histopathology, irrespective of their gross appearance.

Results: 220 patients with symptomatic gallstones were admitted for cholecystectomy. Most of the patients were females (88%). 92% of the patients presented with upper abdominal pain of varying duration. All specimens were sent for histopathology. 203 specimens showed evidence chronic cholecystitis, 7 acute cholecystitis with mucocele, 3 acute cholecystitis with empyema and one chronic cholecystitis associated with polyp. 6 gallbladders (2.8%) showed adenocarcinoma of varying differentiation along with cholelithiasis.

Conclusion: The histopathological spectrum of gallbladder is extremely variable. Incidental diagnosis of carcinoma gall bladder is not rare; if the protocol of routine histopathology of all gallbladder specimens is not followed, subclinical malignancies would fail to be identified with disastrous results. We strongly recommend routine histopathology of all cholecystectomy specimens.

APHPB-0027

XANTHOGRANULOMATOUS CHOLECYSTITIS (XGC) – A DIAGNOSTIC DILEMMA

A. A. Memon
Surgery, Liaquat University of Medical & Health Sciences, Hyderabad, Pakistan

Objectives: Xanthogranulomatous cholecystitis (XGC) is an unusual form of chronic cholecystitis characterized by marked thickening of the gallbladder wall and accumulation of lipid laden macrophages. It is frequently misdiagnosed preoperatively with gallbladder carcinoma. The aim of this study was to assess the preoperative clinical and radiological characteristics, operative findings and histological features of patients with XGC based on the experience of a single institution. In addition a literature search was performed to identify previously reported cases.

Methods: This prospective study was conducted from January 2007 to September 2011. 1989 consecutive patients who underwent elective cholecystectomy at the Surgical Unit-I, Liaquat University Hospital, Jamshoro, Pakistan were included in this study. Seventeen patients were identified to have XGC on histology.

Results: Seventeen (0.8%) cases of XGC were identified in 1989 cholecystectomy specimens performed. The female to male ratio was 7.5:1. The average age in our series was 51.6 (range from 18 to 77 years). Two (11.7%) cases, shown suspicion of malignancy on preoperative investigations were reported as XGC on histology.

Conclusion: Preoperative differentiation between XGC and carcinoma of the gallbladder remains challenging due to similarities in clinical presentation, radiological and operative findings. In view of this there should be a low threshold for conversion from a laparoscopic to an open procedure.
APHPB-0028
MANAGEMENT OF POST-PANCREATECTOMY HEMORRHAGE USING AN ARTERIAL STENT-GRAFT
Surgery, Toho University Ohashi Medical Center, Tokyo, Japan
Objectives: Perioperative morbidity rates after pancreaticoduodenectomy (PD) remain high, reaching 20–50% even in high-volume centers. Post-pancreatectomy hemorrhage (PPH) is one of the most serious complications. Delayed PPH usually originates from a pseudoaneurysm resulting from a postoperative pancreatic fistula (POPF). Placement of an endovascular stent has recently been used to treat arterial pseudoanoeursms. In this study, intra-arterial stent-graft placement for pseudoaneurysm after PD was examined.
Methods: Four cases in which intra-arterial stent-grafts were inserted for pseudoaneurysm secondary to POPF after PD were evaluated.
Results: The intra-arterial stent-graft was placed at the common hepatic artery in 3 cases, the splenic artery in 1 case, the right hepatic artery in 1 case, and the superior mesenteric artery in 1 case (including 2 repeat cases). A Jostent Graft master (Abbott Vascular, Redwood City, CA, USA) was used for all cases. Two cases required additional stents, and two cases also needed metallic coil embolization. No vascular adverse events, including stent-graft obstruction, were encountered during this procedure. All cases survived and were discharged after the procedure.
Conclusion: While only selected cases have been treated with this strategy, the present results suggest that intra-arterial stent-graft placement is safe and effective for cases with PPH.

APHPB-0032
EMERGENCY PANCREATICODUODENECTOMY: THE MANAGEMENT OF PANCREATICODUODENAL INJURY AND TRAUMATIC RETROPERITONEAL HEMATOMA
H. Wong, S. Huang, Y. Lee, D. Chou, Y. I. J. U. Wu and H. Wu
Department of Surgery, Changhua Show Chwan Memorial Hospital, Changhua, Taiwan
Objectives: Injuries of the pancreas and duodenum occur in about 3–5% of all abdominal trauma, while retroperitoneal hematomas (RH) are commonly associated, it is debatable whether a pancreaticoduodenectomy (PD) should be carried out on an emergency basis or not.
Methods: A 54-year-old male was brought to the emergency department following an automobile accident in which his head and upper abdomen got hit against the windscreen and steering wheel. The blood pressure was 156/103 and pulse, 67. The abdomen was not distended. CT showed subarachnoid hemorrhage and right anterior pararenal hematoma with duodenal and pancreatic uncinate process contusions. Placement of an external ventricular drain was initially done because of the decreased level of consciousness (GCS of 6). He had profound hypotension refractory to resuscitation over the next 8.5 h. Through a Makuuchi incision, approximately 4000 mL of blood and clot was found in the retromesenteric plane (zone I inframesocolic area and zone II) around the duodenal loop that caused the duodenum significantly migrating medially. The bleeding point was identified originating from the posterior aspect of the marcerated uncinate process. Pyloric preserving PD and Witzel feeding jejunostomy were performed.
Results: Jejunostomy feeding was started on second postoperative day. He was complicated by delirium and ascending cholangitis which responded to conservative treatment. Because of these complications, he was not discharged from the hospital until the 33th postoperative day.
Conclusion: We propose a more aggressive approach may prove to be worthwhile to lower mortality and morbidity, as leaving behind devitalized tissue would have resulted in postoperative infective complications.

APHPB-0034
ROLE OF INTRAPERITONEAL BUPIVACAINE IN LAPAROSCOPIC CHOLECYSTECTOMY
M. Wasim1 and S. Shafqatullah2
1General Surgery, Patel Hospital Karachi, Karachi, Pakistan; 2General Surgery, JPMC Karachi, Karachi, Pakistan
Objectives: My objective of the study was to compare the mean pain score through VISUAL ANALOGUE SCALE in patients undergoing laparoscopic cholecystectomy with and without intraperitoneal bupivacaine.
Methods: My study design was a randomized controlled trial done in General surgery ward 3 JPMC Karachi. My study was conducted in ward 3 from 17/3/11 and the last patient taken on 20/6/11 for a period of about 3 months. Total 98 patients were selected for the study. Patients were admitted through OPD. Two were exempted from the study. Both groups have 49 patients. Group A patients received 20 mL of 0.5% of intraperitoneal bupivacaine while Group B patients did not receive intraperitoneal bupivacaine. The anesthetic technique was standardized for the two groups. The degree of postoperative pain was assessed using VISUAL ANALOGUE SCALE at 4, 8, 12 and 24 h after the surgery.
Results: The mean pain scores were lower in group A than in group B at rest. Consumption of analgesics was also lower in patients of group A (28%) while it was 71% in patients of group B. The incidence of abdominal pain was significantly lower in patients receiving intraperitoneal bupivacaine. Mean VAS pain scores from 4 to 24 h postoperatively of group A was 0.90 ± 0.51 with 95% confidence interval while in group B it was 0.96 ± 0.90 with 95% confidence interval.
Conclusion: Instillation of 20 mL of 0.5% of intraperitoneal bupivacaine after removal of gall bladder in laparoscopic cholecystectomy offers good analgesia.

APHPB-0035
MIDDLE PANCREATECTOMY: CLINICAL ANALYSIS OF 15 CASES
X. Zhi, T. Li and X. Ma
Department of General Surgery, Qilu Hospital of Shandong University, Jinan, China
Objectives: To explore the value of middle pancreatectomy for treating pancreatic tumors which located at the neck and body of the pancreas.
Methods: From February 2010 to February 2014, 15 patients, who had benign or low-potential malignant tumors located at the neck and body of the pancreas, were performed by middle pancreatectomy, and the data were analyzed retrospectively.
Results: Among the 15 cases, 6 were male and 9 female. The middle pancreatectomy were performed successfully, and no death occurred. The major complication was pancreatic leakage and fistula, and happened in 6 cases, but most with mild leakage or fistula, however, one case was severe fistula, who finally be cured by non-surgical therapies. During the period of follow-up from 4 months to 4 years, all the patients were healthy, and no diabetes mellitus occurred.
Conclusion:
1. Middle pancreatectomy has important clinical value in the treatment of benign or low-potential malignant tumors located at the neck and body of the pancreas.
2. This procedure not only removed the lesions but also preserved the functional pancreatic tissue.
3. The major complication was pancreatic leakage or fistula, but it can be cured by non-surgical therapies.

Transplantation
APHPB-0037
EARLY APPLICATION OF AUXILIARY PARTIAL ORTHOTOPIC LIVER TRANSPLANTATION IN WILSON'S DISEASE MURINE MODEL AND ITS CLINICAL STRATEGY
Q. Cheng1, S. Q. He2 and X. P. Chen1
1Hepatic Surgery Center, Tongji Hospital, Tongji Medical College, Hua Zhong University of Science and Tech, Wuhan, China; 2Department of Hepatopancreatobiliary Surgery, The Affiliated Hospital of Guang Medical University, Guang, China
Objectives: Liver transplantation (LT) is an effective treatment for Wilson’s disease (WD). However, LT is limited due to the shortage of donor. Auxiliary partial orthotopic liver transplantation (APOLT) has been performed successfully in end-stage WD patients, which expands the donor pool.
Methods: In the present study, we first performed APOLT in Atp7b−/− mice. Hepatic and serum copper levels in Atp7b−/− mice decreased after APOLT, and copper metabolism disorder of WD mice was relieved at both terminal and early stages.
Results: The progression of pathology in native livers was delayed only when transplantation was performed at early stage. The results suggest that APOLT can result in a significantly improved outcome in the Atp7b−/− mouse model of WD, and that early transplantation may prevent disease progression.
Conclusion: We put forward a clinical strategy that APOLT should performed at early stage of WD patients, because the earlier copper metabolism disorder corrected, the less organs injured, and the volume of donor liver may be less demanded.

Benign HPB Diseases
APHPB-0038
THE ROLE OF ABDOMINAL DRAINAGE TO PREVENT OF INTRA-ABDOMINAL COMPLICATIONS AFTER LAPAROSCOPIC CHOLECYSTECTOMY FOR ACUTE SEVERE CHOLECYSTITIS
J. Y. Kim1, J. H. Kim2, J. K. Kim1, D. S. Yoon1 and J. S. Park2
1Surgery, Gangnam Severance Hospital, Yonsei University Health System, Seoul, Korea; 2Radiology, Gangnam Severance Hospital, Yonsei University Health System, Seoul, Korea
Objectives: Routine drainage of the abdominal cavity after surgery has been a robust dogma for many decades. Nevertheless, the policy of routine abdominal drainage is increasingly questioned. Many surgeons believe that routine drainage after surgery may prevent postoperative intra-abdominal infection. The goal of this study was to assess the role of drains in laparoscopic cholecystectomy for acute cholecystitis.
Methods: From May 2008 to July 2012, 160 patients that underwent laparoscopic cholecystectomy due to acute cholecystitis at Gangnam Severance Hospital, Yonsei University Health System, Seoul, Korea, were enrolled in this study. After surgery, patients were randomly allocated to undergo drain placement in the subhepatic space (Group A) or no drainage (Group B).
Results: There was no significant difference in the intra-abdominal abscess rate, which was 0.0% with Group A and 1.3% with Group B (p = 0.319). The median subhepatic fluid collection was 4.1 mL (1.1–60 mL) in Group A and 4.5 mL (1.1–80.0 mL) in Group B (p = 0.298). However, the median hospital stay was 2 days (1–4 days) in Group B and 3 days (2–7 days) in group A (p = 0.001). The subgroup of empyema patients did not have any significant differences in intra-abdominal fluid collection or intra-abdominal abscess rate.
Conclusion: This study suggests that postoperative routine drainage of the abdominal cavity for acute cholecystitis does not prevent intra-abdominal infections.
APHPB-0039

CHOLECYSTECTOMY OR GALLBLADDER IN SITU AFTER ENDOSCOPIC CLEARANCE OF COMMON BILE DUCT STONES IN ELDERLY PATIENTS

J. Jang and Y. Cho
Internal Medicine, Eulji University Hospital, Daejeon, Korea

Objectives: The aim of this study is to evaluate whether cholecystectomy in very elderly patients is justified after endoscopic clearance of CBD stones.

Methods: From January 2011 to December 2012, among 854 patients who underwent ERCP, 120 patients older than 80 years old were initially selected. After excluding patients with previous hepatobiliary surgery including cholecystectomy, previous ERCP, IHD stone, ERBD, and/or patients with follow-up <6 months, 32 cholecystocholedocholithiasis patients older than 80 years with follow-up more than 6 months were enrolled.

Results: Enrolled patients included 18 men and 14 women, with a median age of 83 years (ranging from 80 to 92 years). The mean CBD diameter was 12.7 ± 4.1 mm. Single stone (66%) was more common than multiple, and the mean size of the largest stone was 8.1 ± 3.8 mm. The median follow-up period was 564 days (ranging from 182 to 1482 days). Patients’ backgrounds were not significantly different between cholecystectomy group (9/32, 28%) and gallbladder in situ group (23/32, 72%). There was no recurrence of cholecystitis in gallbladder in situ group as well as in cholecystectomy group. The cumulative incidence of CBD stone recurrence was not different between the two groups (3/9 (33%) in cholecystectomy group vs. 6/23 (26%) in gallbladder in situ group, p = 0.193).

Conclusion: In very elderly patients, preserving the gallbladder does not increase the risk of cholecystitis and CBD stone recurrence after endoscopic treatment of CBD stones. Therefore, cholecystectomy after endoscopic clearance of CBD stones is not recommended in very elderly patients.

Malignant HPB Diseases
APHPB-0041

CLINICOPATHOLOGICAL FEATURES AND SURGICAL OUTCOMES OF NEUROENDOCRINE TUMORS OF THE AMPULLA OF VATER

S. Yun and H. Seo
Department of Surgery, Pusan National University Hospital, Busan, Korea

Objectives: Neuroendocrine tumors of Ampulla of Vater are extremely rare and their clinical characteristics are unknown. This study investigated the clinicopathological features and outcomes for 5 neuroendocrine tumors of Ampulla of Vater patients who underwent pancreaticoduodenectomy.

Methods: The study included 5 patients who were diagnosed as neuroendocrine tumors of Ampulla of Vater after curative surgery. Clinical data including age, sex, symptoms, preoperative imaging, biopsy result, type of operation and pathologic data was analyzed and immunohistochemistry also was performed.

Results: The patient’s median age was 52.2 ± 10.8 years. Endoscopic ultrasound guided biopsy was performed in 4 patients and gastroduodenoscopic biopsy was performed in one patient. All showed neuroendocrine tumor without mitosis. Two patients underwent conventional pancreaticoduodenectomy and three underwent pylorus-preserving pancreaticoduodenectomy. Median tumor size was 1.9 ± 0.56 cm (range, 1.2–2.0 cm). Lymph node metastases were detected in two patients. All patients were synaptophysin-positive. Median periods of follow-up were 20.6 ± 9.9 months. All patients were alive at the last follow-up. Recurrence of neuroendocrine tumors of Ampulla of Vater occurred in two patients.

Conclusion: Due to the high incidence of lymph node metastases, radical resection seems to be an effective treatment of neuroendocrine tumors of Ampulla of Vater. Further investigations are required to determine and analyze the prognostic factors.

Benign HPB Diseases
APHPB-0042

NON-ALCOHOLIC FATTY LIVER DISEASE IN BREAST CANCER PATIENTS: PREVALENCE AND RISK FACTORS

H. Seo and S. Yun
Department of Surgery, Pusan National University Hospital, Busan, Korea

Objectives: Non-alcoholic fatty liver disease is gradually increasing and found in 20–30% of general population in developed countries. NAFLD is easily overlooked in patients with breast cancer and is not nearly evaluated in these patients. We evaluated the prevalence of the NAFLD using liver MRI in breast cancer patients and investigated the risk factors associated with NAFLD.

Methods: We evaluated a total of 104 breast cancer patients who scheduled for surgery, between September and November 2013. Characteristics of patients and the result of preoperative laboratory test were investigated. Measurement of hepatic fat accumulation was performed using liver MRI in all patients. The presence or absence of NAFLD was determined by a threshold value for hepatic fat signal percentage (FSP) of 5.5%; therefore, the cohort was divided into two groups, control (FSP ≤ 5.5%) and NAFLD group (FSP > 5.5%).

Results: By the FSP in liver MRI, 19 patients were diagnosed with NAFLD among total 104 patients. Therefore the prevalence of NAFLD was identified as 18.3%. In a univariate analysis, factors associated NAFLD were older age, presence of diabetes or hypertension, high BMI, abnormal serum AST, ALT or TG. In multivariate analysis, factors associated with NAFLD were presence of diabetes, high BMI and abnormal TG.

Conclusion: Breast cancer patients scheduled for endocrine (tamoxifen) or chemotherapy are needed to...
evaluate the NAFLD. Especially if the patients have risk factors for NAFLD such as DM, high BMI and elevated serum TG level. Early diagnosis and treatment for NAFLD can prevent development to more serious form of hepatic steatosis such as NASH, liver cirrhosis or HCC.

APHPB-0043
RETROCRURAL SPACE INVOLVEMENT ON COMPUTED TOMOGRAPHY AS A PREDICTOR OF MORTALITY AND DISEASE SEVERITY IN ACUTE PANCREATITIS
H. Xu1, X. Li2 and F. Tian3
1Radiology, Sichuan Provincial Peoples’ Hospital Supo, Chengdu, China; 219th institute, China Aerospace Science and Technology Corporation, Beijing, China; 3General Surgery, Chengdu Army General Hospital, Chengdu, China

Objectives: To develop more advanced and especially accurate prediction models for patients with severe acute pancreatitis (AP), we establish a new scoring system based on retrocrural space involvement (RCSI), and compared its effectiveness at evaluating the mortality and severity of AP with that of the CT severity index (CTSI).

Methods: We reviewed CT images of 257 patients with AP taken within 3–5 days of admission in 2012. The RCSI scoring system, which includes assessment of infectious conditions involving the retrocrural space and the adjacent pleural cavity, was established using the Delphi method. Two radiologists independently assessed the RCSI and CTSI scores. The predictive points of the RCSI and CTSI scoring systems in evaluating the mortality and severity of AP were estimated using receiver operating characteristic (ROC) curves.

Results: The RCSI score can accurately predict the mortality and disease severity. The area under the ROC curve for the RCSI versus CTSI score was 0.962 ± 0.011 vs. 0.900 ± 0.021 for predicting the mortality, and 0.888 ± 0.025 vs. 0.904 ± 0.020 for predicting the severity of AP. Applying ROC analysis to our data showed that a RCSI score of 4 was the best cutoff value, above which mortality could be identified.

Conclusion: The Delphi method was innovatively adopted to establish a scoring system to predict the clinical outcome of AP. The RCSI scoring system can predict the mortality of AP better than the CTSI system, and the severity of AP equally as well.

APHPB-0044
MODIFIED HEPATICO-JEJUNOSTOMY FOR SEVERED BILE DUCT: A HYBRID TECHNIQUE
A. Nabil1, H. Amer1, A. Nassef2 and S. Marei1
1General Surgery, Faculty of Medicine, Cairo University, Cairo, Egypt; 2Radiology, Faculty of Medicine, Cairo University, Cairo, Egypt

Objectives: To evaluate the efficacy of a safe time saving easy method that allows managing the collection, rerouting bile into the intestine and saving the length of the proximal stump for further manipulation if needed.

Methods: A prospective study including 10 cases with severed bile duct injuries (post cholecystectomy). The suggested hybrid technique involves preoperative insertion of percutaneous transhepatic draining catheter and intraoperative introduction of these catheters into a suitable jejunal conduit. A follow up MRCP was done at 6 and 12 months.

Results: the technique showed significant improvement in the outcome of biliary reconstruction. Eight patients showed rapid recovery post operatively. One patient needed a redo surgery after migration of the stent and leakage from the anastomosis. Another patient in the follow up MRCP revealed dilated IHBR however with no rise in bilirubin and cholestatic enzymes.

Conclusion: This technique provides a safe and sound bilo-enteric continuity with early rehabilitation of the patients, low incidence of complications & long term patency of the bilo-enteric anastomosis.

Malignant HPB Diseases
APHPB-0045
FAST-TRACK RECOVERY PROGRAMME AFTER PANCREATICO-DUODENECTOMY REDUCES OVER ALL MORBIDITY
R. A. Sastry1, N. Muralidhar2 and N. Bheerappa2
1Surgical Gastroenterology and HPB Surgery, Krishna Institute of Medical Sciences, Hyderabad, India; 2Surgical Gastroenterology, Nizam’s Institute of Medical Sciences, Hyderabad, India

Objectives: To assess if fast-track pathways reduce postoperative complications, enhance post operative convalescence and facilitate early discharge following pancreatico-duodenectomy (PD).

Methods: In a prospective non randomized study, patients undergoing elective PD over 2 years were compared with matched historic controls from the previous 2 years. Patients with preoperative cholangitis, those requiring organ system support for more than 24 h and those who underwent extended resections were excluded. Fast track parameters that were followed were a standardized anesethesia protocol, early Ryle’s tube and drain removal, early initiation of oral feeds and early ambulation.

Results: 44 patients underwent PD during the study period. 8 were excluded and the remaining 36 were compared with 36 matched historic controls. The demographic characteristics, type of disease, type of procedure, pancreatic texture and duct diameter, type of pancreatico jejunostomy, operating time, and preoperative cholangitis were similar between the groups. Day of Ryle’s tube removal (2.39 ± 1.32 vs. 5.87 ± 3.85; p < 0.001), initiation of oral feeds (4.39 ± 1.8 vs. 7.42 ± 4.03; p = 0.034), drain removal (4.3 ± 1.3 vs. 7.4 ± 5.4; p = 0.002) were significantly early in the study group. Overall morbidity (36.1% vs. 55.5%; p = 0.009) was lower in the study group. Rate of pancreatic fistula (4 vs. 13; p = 0.013) and delayed gastric emptying (5 vs. 12; p = 0.052) were lower in the study group. The 30 day mortality and
readmission rates were similar between the groups. The day of discharge was earlier in the study group (12.5 vs. 14.5; p = 0.129).

Conclusion: Fast track pathways in pancreaticoduodenectomy are feasible, safe and enhance postoperative recovery and reduce the morbidity.

APHPB-0046
RESECTION FOR BISMUTH TYPE IV PERIHILAR CHOLANGIOCARCINOMA: AN EVIDENCE TOWARD EXPANDING SURGICAL INDICATION
T. Ebata, Y. Yokoyama, G. Sugawara, T. Igami, T. Mizuno and M. Nagino
Department of Surgery, Nagoya University Graduate School of Medicine, Nagoya, Japan
Objectives: To support a resectional strategy for Bismuth type IV perihilar cholangiocarcinoma.
Methods: A total of 383 patients with this tumor was treated between 2001 and 2013. Of them, 245 (64%) patients underwent surgical resection. Surgical procedures were individually designed, based on the tumor extension and the liver functional reserve.
Results: Left trisectionectomy was the most common (n = 119), followed by left hepatectomy (n = 58), right trisectionectomy (n = 32), right hepatectomy (n = 30), and central bisectionectomy (n = 6). Combined resection of the portal vein and the hepatic artery was performed in 126 (51%) and 76 (31%) patients, respectively. Median operative time and blood loss was 10.8 hr and 1.8 L, respectively. Surgical complications (≥Clavien III) were found in 103 (42%) patients, 6 (2.4%) of whom died in hospital. Distant (M1) and nodal (N1) metastasis was observed in 42 (17%) and 144 (59%) patients, respectively; positive margin was found in 64 (26%) patients. Survival rate of the 138 unresected patients was 2% at 3-years, with a median survival time (MST) of only 10 months. In contrast, survival rate of the 245 resected patients was 44% at 3-years and 30% at 5-years, with a MST of 2.4 years. In the 76 patients with M0N0disease who received R0 resection, 5-year survival rate was 57%.
Conclusion: Although resection for Bismuth IV tumor remains a surgical challenge, it offers a prolonged survival, particularly in patients with M0N0 disease. These outcomes indicate that a subset of type IV tumor is a candidate for definitive resection.

APHPB-0047
THE COMPARISON OF ONCOLOGIC AND CLINICAL OUTCOMES OF LAPAROSCOPIC LIVER RESECTION FOR HEPATOCELLULAR CARCINOMA
S. Kim and H. J. Kim
HBP surgery, Yeungnam University Hospital, Daegu, Korea
Objectives: We evaluate the operative outcome and oncologic outcome of laparoscopic liver resection for hepatocellular carcinoma (HCC), and compare with open liver resection.
Methods: From January 2004 to December 2012, clinical data of 70 patients who underwent laparoscopic liver resection for HCC (Laparoscopic liver resection group, lapa-group) were collected and analyzed retrospectively. Control group (Open liver resection group, open-group) were retrospectively matched, and compared with lapa-group.
Results: Laparoscopic major liver resections were performed in 4 patients. Laparoscopic anatomical resections and non-anatomical resections were performed in 39 patients, and 31 patients, respectively. Mean operative time was shorter in lapa-group (215.5 ± 121.84 vs. 282.30 ± 80.34 min, p-value = 0.001), mean intraoperative transfusion rate and total amount were small in lapa-group. (24.28%, 148.57 ± 3354.98 cc vs. 40.78%, 311.71 ± 477.01 cc) Open conversion was occurred in 6 patients (8.57%) because of bleeding, inadequate resection, invisible mass on intraoperative ultrasonography, and tumor rupture. In lapa-group and open-group 3-year disease free survival rate (DFS) were 58.3 ± 0.08%, and 62.6 ± 0.06%, respectively (p-value = 0.773). In lapa-group and open-group 3-year overall survival rate (OS) were 65.3 ± 0.8%, and 65.7 ± 0.6%, respectively (p-value = 0.610).
Conclusion: Laparoscopic liver resection for HCC is feasible and safe in a large number of patients, with reasonable operative and oncologic results.

APHPB-0048
CORRELATION OF EARLY RECURRENT IN VITRO ADENOSINE TRIPHOSPHATE BASED CHEMOTHERAPY RESPONSE ASSAY IN PANCREATIC CANCER WITH POSTOPERATIVE GEMCITABINE CHEMOTHERAPY
J. S. Park, J. K. Kim and D. S. Yoon
Surgery, Gangnam Severance Hospital, Yonsei University Health System, Seoul, Korea
Objectives: Gemcitabine-based regimens represent the standard systemic first line treatment after pancreatic resection. However, the clinical impact of gemcitabine varies significantly in individuals because of chemoresistance. An in vitro adenosine triphosphate-based chemotherapy response assay (ATP-CRA) was designed to evaluate the sensitivity of cancer cells to various chemotherapeutic agents. This study investigated the correlation between in vitro gemcitabine chemosensitivity and early recurrence after curative resection.
Methods: From January 2007 to December 2010, the ATP-CRA for gemcitabine was tested in 64 patients at Gangnam Severance Hospital, Seoul, Korea. We analyzed the relationship between chemosensitivity and early systemic recurrence in patients with pancreatic cancer.
Results: The mean cell death rate (CDR) was 20.0 (±14.5) and divided into two groups according to the mean values of the CDR. Gemcitabine resistance group (CDR < 20) was associated with lymphovascular invasion. In univariate and multivariate analysis, advanced tumor stage and gemcitabine sensitive group
(CDR ≥ 20) were identified as independent prognostic factors for disease free survival.

**Conclusion:** Gemcitabine sensitivity measured by ATP-CRA was well correlated with in vivo drug responsibility to predict early recurrence following gemcitabine based adjuvant chemotherapy in patients with pancreatic cancer.

**APHPB-0050**

**LAPAROSCOPIC HEPATIC RESECTION VERSUS RADIOFREQUENCY ABLATION FOR LOCAL CONTROL OF SMALL HEPATOCELLULAR CARCINOMA LOCATED ON THE SURFACE OF THE LIVER**

S. Tanaka¹, S. Iwai², S. Takemura¹, A. Hagiwara², S. Uchida², T. Ito¹, M. Kinoshita¹, H. Shinkawa¹, N. Kawada² and S. Kubo¹

¹Department of Hepatobiliary-Pancreatic Surgery, Osaka City University Graduate School of Medicine, Osaka, Japan; ²Department of Hepatology, Osaka City University Graduate School of Medicine, Osaka, Japan

**Objectives:** The aim of this study was to compare the effectiveness of laparoscopic or laparoscopy-assisted hepatic resection (LH) versus percutaneous radiofrequency ablation (RFA) therapy for small hepatocellular carcinoma (HCC) located on the surface of the liver (surface HCC) with respect to local control.

**Methods:** Between January 2011 and December 2013, LH and RFA were performed to treat surface HCC (≤ 3 cm, 1–3 nodules) in 40 and 52 patients, respectively. We developed a propensity score and controlled for potential confounding and selection bias. The incidence of local recurrence was compared between the two matched groups.

**Results:** A total of 27 patients in each group were matched according to the propensity score matching protocol. One patient in the LH group was converted to open surgery because of hard adhesion. There were no significant differences in the clinicopathological characteristics between the two matched groups. Seven (26%) patients in the RFA group exhibited local recurrence after 37–787 days (median, 225 days) after the RFA procedure, whereas no patients displayed local recurrence in the LH group (p = 0.01). Four patients (15%) in the LH group had postoperative complications (Clavien-Dindo Grade I or II). The mean hospital stay after treatment was 12.6 days in the LH group and 7.6 days in the RFA group (p = 0.00003).

**Conclusion:** Laparoscopic hepatic resection for surface HCC is safe and may be preferable to RFA, with a low rate of local recurrence, although the duration of hospital stay is long.
stasis or reflux of intestinal contents. They are induced by anastomotic stenosis, intestinal adhesion, or intestinal hyperperistalsis. It is often difficult to treat for recurrent cholangitis not caused by anastomotic stenosis.

Methods: We report two cases in which surgery was effective for postoperative recurrent cholangitis due to the stasis or reflux of intestinal contents.

Results: Case 1: The patient was operated on for congenital biliary dilatation previously. She was hospitalized with cholangitis more than one time a year. Because the cause of recurrent cholangitis was the stasis of intestinal contents by adhesion of the jejunum, we performed adhesiolysis. She is well without having been hospitalized with cholangitis after the second surgery. Case 2: The patient was operated on for pancreatic head cancer, and he had local recurrences 11 months after the surgery. He developed cholangitis frequently and we performed stenting by percutaneous transhepatic biliary drainage 20 months after the surgery. However, he developed cholangitis again and he was hospitalized many times. Because the cause of recurrent cholangitis was the reflux of intestinal contents, we performed gastrointestinal tract reconstruction 26 months after the first surgery. He had not been hospitalized with cholangitis and died 5 months after the second surgery.

Conclusion: Surgical treatment for recurrent cholangitis due to the stasis or reflux of intestinal contents after biliary surgery is valid.

Malignant HPB Diseases

APHPB-0056

ENHANCED RECOVERY AFTER PANCREATODUODENECTOMY (ERAP) PROTOCOLS – ‘ONE SIZE MAY NOT FIT ALL’

S. Barreto1, S. Talole2, A. Perwaiz1, T. Singh1, A. Singh3 and A. Chaudhary1

1GI Surgery GI Oncology & Bariatric Surgery, Medanta the Medicity, Gurgaon, India; 2Biostatistics, Medanta the Medicity, Gurgaon, India; 3Microbiology, Medanta the Medicity, Gurgaon, India

Objectives: Although reported in literature for a decade, the general implementation of enhanced recovery after pancreatectoduodenectomy (ERAP) protocols have been less enthusiastic compared to subspecialties such as colorectal surgery. The aim of the present study was to determine factors influencing the successful implementation of ERAP protocols by analyzing their relation to duration of hospital stay.

Methods: A retrospective analysis of a prospectively maintained database of consecutive patients who underwent PD for pancreatic and peripapillary lesions at a tertiary referral care centre, between April 2010 and July 2013 was obtained. 8 patients who died during the hospital stay were excluded from analysis.

Results: 200 patients underwent a Classical PD with a median surgical duration of 285 min (range: 205–480) and a median blood loss of 200 mL (range: 50–500). The median duration of hospital stay was 8 days (range: 4–52) with an overall morbidity rate of 34.5% and mortality rate of 3.8%. 30-day readmission rate was 4% (8 patients). Elevated BMI (RR = 1.098, 95% CI 1.015–1.188; p = 0.02) and presence of respiratory co-morbidities (RR = 8.024, 95% CI 2.018–31.904; p = 0.003) independently influenced a longer (>8 days) hospital stay. Hypoalbuminaemia (RR = 2.44, 95% CI 1.26–4.75; p = 0.009) significantly influenced a longer hospital stay owing to its role in the development of complications.

Conclusion: Obesity and pre-existing respiratory co-morbidities are independent predictors of prolonged hospital stay despite ERAP protocols. Hypoalbuminaemia affects length of hospital stay by predisposing to the development of complications. Implementing new strategies that address these three factors may not only contribute to a greater success of ERAP but also widen its applicability.

APHPB-0057

3-DOSE PERIOPERATIVE ANTIBiotic PROPHYLAXIS WITH ERTAPENEM REDUCES POST-PANCREATODUODENECTOMY INFECTIOUS COMPLICATIONS IN HIGH-RISK PATIENTS

S. Barreto1, M. K. Singh2, S. Sharma3 and A. Chaudhary1

1GI Surgery GI Oncology & Bariatric Surgery, Medanta the Medicity, Gurgaon, India; 2Biostatistics, Medanta the Medicity, Gurgaon, India; 3Microbiology, Medanta the Medicity, Gurgaon, India

Objectives: Infectious complications occur in up to 45% of patients following pancreatectoduodenectomy (PD) and are higher in patients undergoing preoperative endoscopic invasive procedures. Surgical morbidity adversely affects long-term outcomes and thus possible role of perioperative antimicrobials needs evaluation. The aim of the study was to compare the impact of Ertapenem administered as 3-once daily perioperative doses on infectious complications in patients at high-risk for complications (underwent preoperative invasive endoscopic procedures) versus those at low-risk (up-front surgery).

Methods: A retrospective analysis of a prospectively maintained database of consecutive patients who underwent PD for pancreatic and peripapillary lesions at a tertiary referral centre, between June 2011 and May 2013 was performed. Based on an analysis of intraoperative bile cultures, all patients were administered 3-once daily doses of Ertapenem (1 gram) as follows: within 1 h prior to induction, on post-operative day 1 and day 2. Antibiotics were ceased following post-operative day 2 until discharge unless patients developed infectious complications.

Results: Patients were matched for factors known to affect outcomes following PD including demographic, nutritional (age, sex, BMI and serum albumin levels), surgical (pancreatic duct size and texture, intraoperative blood transfusions) and histopathological parameters. No significant difference between the two groups in terms of overall morbidity (p = 0.740), infectious complications (p = 0.334), mortality (p = 0.933) and post-operative hospital stay (p = 0.745) was noted.
**Conclusion:** Perioperative Ertapenem resulted in a non-significant difference in infectious and overall complications in high-risk patients undergoing PD as compared to low-risk group. This intervention is promising and needs evaluation in a larger cohort of patients.

**Benign HPB Diseases**

**APHPB-0058**

**ACTIVIN A-SMAD SIGNALING INDUCES THE EXPRESSION OF CONNECTIVE TISSUE GROWTH FACTOR IN HEPATIC PROGENITOR CELLS**

Z. Ding, G. Jin, W. E. I. Wang, Y. Sun, W. Chen, J. Zhao, H. Liang, P. R. A. N. Datta, M. Zhang, B. Zhang and X. Chen

1Hepatic Surgery Centre, Tongji Hospital, Tongji Medical College, Hua Zhong University of Science and Tec, Wuhan, China; 2Department of Nephrology, Union Hospital, Tongji Medical College, Hua Zhong University of Science and Tec, Wuhan, China; 3Department of Medicine, University of Alabama at Birmingham, Birmingham, AL, USA; 4Department of Cancer Biology, Vanderbilt-Ingram Cancer Center, Vanderbilt University School of Medicine, Nashville, TN, USA; 5Hepatic Surgery Centre, Tongji Hospital, Tongji Medical College, Hua Zhong University of Science and Technology, Wuhan, China

**Objectives:** Hepatic progenitor cells (HPCs) are activated in the cirrhotic liver and may participate in liver fibrosis. Our previous study reported that HPCs produced connective tissue growth factor (CTGF), a driver of liver fibrosis, whereas the regulatory mechanism of CTGF expression in HPCs remains elusive.

**Methods:** We measured the expression of Activin-A, a potential CTGF inducer, and CTGF in liver tissues by immunohistochemistry. We used HPC cell lines LE/6 and WB-F344 in vitro models. Cells were treated with Activin-A, and the expression of CTGF and the activation of Smads signaling was measured by western blot analyses and luciferase reporter assays. knockout of Activin-A by lentivirus in HPCs to evaluate the effects of endogenous Activin-A, and knock down Smad4 and overexpression of Smad7, both of which are crucial components of Smads signaling, by retrovirus to measure the activin-A inducible Smad signaling in the expression of CTGF in HPCs.

**Results:** Activin-A was up-regulated in cirrhotic liver, and Activin-A levels were positively correlated with CTGF expression in liver samples. Besides, we confirmed that HPCs were activated in the cirrhotic liver and secreted Activin-A. Moreover, we found that Activin-A induced secretion of CTGF through Smad signaling in HPCs. Furthermore, Activin-Smad signaling was intracellular activated and contributed to the expression of CTGF in HPCs.

**Conclusion:** Our results found that both exogenous and endogenous Activin-A induced the expression of CTGF in HPCs, and suggested that the production of CTGF by Activin-A activated Smad signaling in HPCs may be a therapeutic target of liver fibrosis.
Benign HPB Diseases
APHPB-0060
THE EFFECTIVENESS OF ANTIVIRAL THERAPY IN THE PATIENTS WITH CHRONIC HEPATITIS C IN CAUCASIANS AND ASIANS, CONSIDERING POLYMORPHISM OF INTERLEUKIN-28B GENE OF POPULATION
L. Orlova¹, S. I. Malov¹, P. Namdava², D. Badrah² and I. V. Malov¹
¹Infectious Diseases, Irkutsk State Medical University, Irkutsk, Russia; ²Infectious Diseases, National Centre Communicable Diseases, Ulaanbaatar, Mongolia

Objectives: To assess the effectiveness of antiviral therapy in the patients with chronic hepatitis C in Caucasians and Asians, considering polymorphism of interleukin-28b gene of population.

Methods: 947 healthy people were examined in the Irkutsk region, the Republic of Buryatia and Mongolia (typing the locus rs12979860 and rs8099917 of gene IL-28b). Also 97 people with 1 genotype of HCV-infection were observed. 33% of them were Asians and 67% – Caucasians. The patients with fibrosis >F3 on Metavir scale were not included in the research. The effectiveness of antiviral therapy (combination of pegylated z2-interferon with ribavirin) was assessed on frequency of SVR.

Results: The prevalence of CC-genotype rs12979860 and TT-genotype rs8099917 in the population of Irkutsk region, the Republic of Buryatia and Mongolia were 40.0% and 54.5%; 64.6% and 86.2%; 82.2% and 84.9% accordingly.

Evidently CC-genotype and TT-genotype are more characteristic for Asians. According census data (Russia 2010, Mongolia 2010) the portion of Asians was in the Irkutsk region – 3.75%; the Republic of Buryatia – 30.2%, Mongolia – 96%. The correlation ratio among Asians in population of each region and prevalence of CC-genotype was 0.9 (p < 0.05), indicating on strong straight connection.

The rate of SVR in Caucasians was 53.8 ± 6.2%, in Asians – 78.1 ± 7.3% (p < 0.05).

Conclusion: The prevalence of CC-genotype locus rs 12979860 and TT-genotype rs8099917 of gene IL-28b is increased with increasing of Asians in the population of region. The effectiveness of antiviral therapy in the patients with chronic hepatitis C was more in Asians than in Caucasians.

APHPB-0061
COMBINED-LAPAROSCOPIC VERSUS OPEN SPLENECTOMY AND ESOPHAGOGASTRIC DEVASCULARIZATION FOR PORTAL HYPERTENSION DUE TO LIVER CIRRHOSIS
L. Zhang, W. G. Zhang and X. P. Chen
Hepatic Surgery Center, Tongji Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China

Objectives: This study was conducted to compare the feasibility, safety and effectiveness of the combined-laparoscopic splenectomy and esophagogastric devascularization (C-LSED) with those of open surgery (OSED) in patients with portal hypertension due to liver cirrhosis.

Methods: From February 2011 to February 2014, 68 patients with portal hypertension were diagnosed with serious gastroesophageal varices and/or hypersplenism in our center. 30 patients underwent C-LSED and 38 patients received OSED. Results and outcomes were compared retrospectively.

Results: No patients of C-LSED group required an intraoperative conversion to open surgery. Compared with OSED group, significantly shorter operating time, less blood loss, lower transfusion rates, shorter postoperative hospital stay, lower rates of complications were found in C-LSED group (p < 0.05). No death and rebleeding were documented in both groups during the follow-up periods of 6 months. Postoperative endoscopy revealed that the patients with varices in both groups improved significantly from severe to mild, and in a part of cases, the varices disappeared.

Conclusion: The final results suggest that the C-LSED technique is superior to open procedure, which brings about slightly invasive, simplified operative procedure, significantly shorter operating time, less intraoperative bleeding and lower complication rates. And C-LSED offers comparable medium-term effects to OSED approaches.

APHPB-0062
PARTIAL ISCHEMIA-REPERFUSION INJURY TO THE LIVER DOES NOT INDUCE OVAL CELL PROLIFERATION IN A RODENT MODEL
E. K. Tan¹, M. Shuh¹, J. A. Sanders² and A. J. Cohen¹
¹Institute of Translational Research, Ochsner Clinic Foundation, New Orleans, LA, USA; ²Division of Endocrinology and Metabolism, Rhode Island Hospital and The Warren Alpert Medical School of Brown University, Providence, RI, USA

Objectives: Hepatic oval cells (hepatic progenitor cells) proliferate to restore the liver after injury when hepatocyte responses are inadequate. Models replicating this invariably required a toxic carcinogen to deliver a substantial injury to the liver. Ischemia-reperfusion injury (IRI) of the liver causes hepatocellular damage and cell death without chemical toxicity. Since trans-
planted oval cells can modulate the effects of IRI, we sought to investigate if oval cells are activated after IRI to the liver.

**Methods:** We induced 30 min of warm ischemia in 70% of the total rat liver followed by reperfusion of 1, 3, 5 or 7 days. Serum ALT, TNF-α, as well as cellular proliferation and changes in Thy-1 expression were measured.

**Results:** Peak levels of ALT were measured after 5 days of reperfusion (mean 21.5 ± 7.0 U/L) and this correlated with histological changes of the extent of hepatocyte necrosis. TNF-α levels were similar to baseline. Proliferating oval cells were not observed on light microscopy or EdU fluorescent labelling. Thy-1 positive staining was observed around the portal tracts in both affected and non-affected lobes but this was comparable to sham rats.

**Conclusion:** The partial-liver IRI model in rats involving 30 min of warm ischemia followed by various periods of reperfusion injury demonstrates the peak biochemical injury and histological injury (in the affected lobe) at day 5 of reperfusion. Oval cell responses to partial IRI of 30 min were not seen. Recovery of normal livers after being exposed to brief periods of IRI are therefore likely to be hepatocyte mediated.

**Malignant HPB Diseases**

**APHPB-0065**

**EARLY OUTCOME AFTER HEPATIC RESECTION – EXPERIENCE FROM A DEVELOPING COUNTRY WITH LIMITED RESOURCES**

S. Begum, M. R. Khan and M. S. Effandi

*General Surgery, Aga Khan University, Karachi, Pakistan*

**Objectives:** To review the initial experience and early outcome of hepatic resections performed at our hospital.

**Methods:** Formal hepatic resection at our hospital was started in 2008. All the patients who underwent hepatic resection for various malignant and benign lesions of liver between Jan 2008 and June 2013 were included in the study. The variables studied included indications of surgery, type of hepatic resection, blood loss, early morbidity and mortality. The frequencies were calculated using SPSS v 19.

**Results:** A total of 50 patients underwent hepatic resection during this period. Indications of surgery included primary hepatic malignancy (31), metastatic malignancy (9) and benign hepatic tumors (9). One third of the patients underwent a major hepatectomy. Mean duration of surgery was 300 min with mean estimated blood loss of 694 mL. Overall morbidity rate was 40%. 30 day hospital mortality rate was 2%, while mortality rate at 1 year was 12%. In a subgroup analysis of patients with HCC, 1 year mortality was 15% while recurrence rate during the follow up period was 19%.

**Conclusion:** Despite limitations of resources, hepatic resection can be performed in our setup with reasonable early postoperative outcome. Mean blood loss is on higher side and can be improved by modification of technique and introduction of new technology. The outcome of cirrhotic patients with HCC is comparatively modest.

**Benign HPB Diseases**

**APHPB-0066**

**ENDOSCOPIC TREATMENT FOR PATIENTS WITH PANCREATIC CYSTS CAUSED BY PANCREATOLITHIASIS**


*Gastroenterology, Fujita Health University Second Teaching Hospital, Nagoya, Japan*

**Objectives:** Since 1990 we have performed extracorporeal shock-wave lithotripsy (ESWL) and/or interventional endoscopy for patients with chronic pancreatitis. Here we report our treatment results for patients with pancreatic cysts (pseudocysts or retention cysts) caused by pancreatolithiasis, a combination of conditions that is difficult to manage.

**Methods:** Between 2007 and 2013, we treated 11 patients with pancreatic cysts caused by pancreatolithi-
asis using ESWL plus interventional endoscopy. Median follow-up interval was 26 months (range, 1–69). Median age was 60 years (42–83), and the male:female ratio was 10:1. Alcoholism was responsible for stones in 9 patients and hyperparathyroidism in 1; in another, stones were idiopathic. All patients were symptomatic; 3 had single stones and 2, multiple cysts.

**Results:** Cysts disappeared occurred completely with initial treatment in 10 of the 11 patients who underwent ESWL plus adjuvant endoscopic procedures, while 2 of the 10 experienced recurrence 21 and 40 months after treatment and underwent surgery. The patient with initial treatment failure had multiple cysts. Of the 2 patients requiring surgery, 1 had multiple pseudocysts; the other had a large pseudocyst exceeding 100 mm in diameter.

**Conclusion:** Endoscopic treatment following ESWL for pancreatolithiasis and retention cysts is effective, but early surgery should be considered for patients with pseudocysts complicating pancreatolithiasis, especially large or multiple cysts.

**APHPB-0067**

**SPATIAL AND TEMPORAL DIFFERENCES OF HMGB1 EXPRESSION IN THE PANCREAS OF RATS WITH ACUTE Pancreatitis**

X. Yu

Department of Gastrointestinal and Pancreatic Surgery, Central South University Third Xiangya Hospital, Changsha, China

**Objectives:** To investigate the spatial and temporal differences in expression between HMGB1 and early inflammatory cytokines (IL-1, IL-6 and TNF-α) in pancreas in rats with acute pancreatitis.

**Methods:** SD rats (BW 350 ± 30 g, n = 48) were randomly divided into the experimental group (n = 36) which were injected with 5% sodium taurocholate into the bili-pancreatic duct retrogradely to produce acute necrotic pancreatitis (ANP) rat models, and the sham-operated (SO) group (n = 12) injected with equal dose of saline. The rats were sacrificed at different time points at 0 h, 3 h, 6 h, 12 h, and 24 h post modeling, respectively. The peripheral blood amylase and different inflammatory factors in ANP rats at different time points were detected by ELISA, and the expression of HMGB1 in the pancreatic tissue was detected by immunohistochemistry, Western blot and Q-PCR methods.

**Results:** The serum amylase in the ANP model rats was higher than the sham-operated group (p < 0.05). The early inflammatory factors increased quickly at 3 h after the model induction, reached the peak level at 6 h (higher than SO group, p < 0.05), then decreased at 12 h, and at 24 h the levels were lower than those at 12 h (p < 0.05). The HMGB1 level in the pancreatitis tissue did not change significantly at 3 h and 6 h (p > 0.05), however, it increased remarkably at 12 h, and maintained up to 24 h (p > 0.05).

**Conclusion:** As a late inflammatory factor, the expression of HMGB1 in acute pancreatitis was obviously later than the early inflammatory factors IL-1, TNF-α and IL-6. HMGB1 may play a key role in maintaining the development of the acute pancreatitis.

**Malignant HPB Diseases**

**APHPB-0068**

**DOUBLE STENT PLACEMENT FOR BILIARY AND DUODENAL OBSTRUCTION CAUSED BY UNRESECTABLE PANCREATOBILIARY CANCER**


1Gastroenterology, Takamatsu Red Cross Hospital, Takamatsu, Japan; 2Gastroenterology, Kurashiki Central Hospital, Kurashiki, Japan

**Objectives:** We know biliary and duodenal metallic stent placement (DS) is effective and safe respectively for the palliation of unresectable pancreatobiliary cancer. Clinical outcomes of double metallic stent placement are still unclear. The aim of this study was to clarify its he efficacy and safety for malignant biliary and duodenal obstruction.

**Methods:** Reviewed retrospectively between January, 2001 and December 2013 inclusive, at our institution. In principle, biliary drainage (BD) was performed with endoscopic transpapillary stent placement (EPD). When EPD was difficult, percutaneous transhepatic biliary drainage (PTBD) was performed as an alternative.

**Results:** 44 consecutive patients of 579 received BD were included in this study (male 23, mean age 75.4 years). The functional success rate of BD was 100% and that of DS was 90.2% (40/44). Of successful patients, median time to dysfunction of BD was 156 days (95%CI 41–105) and that of DS was 53 days (95%CI 14–286). BD was performed with EPD in 34 and PTBD in 10. 33 patients diagnosed as biliary obstruction only were received BD before duodenal obstruction. 11 patients diagnosed as biliary and duodenal obstruction were received both BD and DS. Of successful patients, BD and DS success rates were 100% and 90.2% (11/12). Of successful patients, median survival after both interventions was 95 days (95%CI 33–328).

**Conclusion:** Double stent placement for biliary and duodenal obstruction caused by unresectable pancreatobiliary cancer was found to be safe and effective as palliative treatment for patients at the latest stage.
Benign HPB Diseases

APHPB-0070

BERBERINE WITH ALFA LIPOIC ACID (ALA) IN NON ALCOHOLIC STEATOHEPATITIS (NASH). A RANDOMIZED DOUBLE BLINDED PLACEBO CONTROL TRIAL. A CLINICAL PILOT – THE BANISH TRIAL

P. Basu¹, N. J. Shah⁲ and M. M. Aloysius³
¹Gastroenterology, Chief Division of Hepatology, Kings County Medical Center SUNY Downstate, New York City, USA; ²Internal Medicine, James J. Peters VA Medical Center, Icahn School of Medicine at Mount Sinai NY, New York City, NY, USA; ³Medicine, King’s County Hospital Medical Center NY, New York City, NY, USA

Objectives: Therapeutic modalities for NASH have not yet been fully established. Anti-oxidants and insulin sensitizers altering insulin resistance, inhibiting intra hepatic oxidative stress with inhibition of formation of free radicals and blocking inflammatory cytokines to prevent fibrosis. Berberine is a natural substance extracted from plants like Berberis which is found to up-regulate intra hepatic pathways as insulin sensitizer, via GLP-1 up regulation and Acyl palmotyl mechanism on fatty acid oxidation, induction of PPAR gamma; all of which blocks the terminal inflammatory Cytokine release TNF Alfa to prevent fibrosis that prevents End stage liver disease (ESLD) and liver cancer.

Methods: Hundred and twenty patients (n = 120) with NASH were recruited. Mean BMI 29.9% (29% to 32%) with 69 males and 51 females. Hispanic 46, Caucasians 34, Asian Pacific15, Black 11, Asian 14. Mean HbA1C 6.2 (5.9- 6.8), Mean HOMA 2.7 (2.1–3.6), ALT 54 (38–79), Triglyceride 287 (233–344), LDL c 163 (129–176), Leptin 63 (43–98), Adiponectin 0.9 (0.1–1.1), RBP 4 of 5.8 (4.0–6.8), TNF Alfa 3.8 (2.1–4.8), IL 12 of 5.3 (3.9–7.8), Serum Fibrotic and Steatotic scores were measured at 0 and then at 6 months.

Results:

<table>
<thead>
<tr>
<th>p-values</th>
<th>ALT</th>
<th>HOMA</th>
<th>TG</th>
<th>Adiponectin</th>
<th>TNF-α</th>
<th>Leptin</th>
<th>Steatotic score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>0.001</td>
<td>0.004</td>
<td>&lt;0.001</td>
<td>0.090</td>
<td>0.005</td>
<td>0.003</td>
<td>0.021</td>
</tr>
<tr>
<td>Group B</td>
<td>&lt;0.001</td>
<td>0.003</td>
<td>&lt;0.001</td>
<td>0.03</td>
<td>0.012</td>
<td>0.015</td>
<td>0.034</td>
</tr>
<tr>
<td>Group C</td>
<td>&lt;0.001</td>
<td>0.003</td>
<td>&lt;0.001</td>
<td>0.001</td>
<td>&lt;0.001</td>
<td>0.003</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Group D</td>
<td>0.006</td>
<td>0.001</td>
<td>&lt;0.001</td>
<td>0.001</td>
<td>&lt;0.001</td>
<td>0.016</td>
<td>0.002</td>
</tr>
</tbody>
</table>

Conclusion: All the study arms showed statistically significant (p < 0.05) post interventional change except for Adiponectin in group A (p = 0.09).

APHPB-0071

ROLE OF INTRAVENOUS N-ACETYLCYSTEINE (NAC) WITH STEROID IN ACUTE ALCOHOLIC HEPATITIS WITH HIGH MORBIDITY SCORE: A RANDOMIZED OPEN LABEL PROSPECTIVE CLINICAL RENAISSANCE TRIAL

P. Basu¹, N. J. Shah⁲ and M. M. Aloysius³
¹Gastroenterology, Chief Division of Hepatology, Kings County Medical Center SUNY Downstate, New York City, USA; ²Internal Medicine, James J. Peters VA Medical Center, Icahn School of Medicine at Mount Sinai NY, New York City, NY, USA; ³Medicine, King’s County Hospital Medical Center NY, New York City, NY, USA

Objectives: AAH is a severe clinical state with significant morbidity with impending mortality in 28 days of about 49%. Standard of care (SOC) is absolute abstinence and nutrition with restricted use of corticosteroids and pentoxifylline.

Methods: Forty five (n = 45) patients with AAH, Age 32–58 (mean 46), mean BMI 24%, Mean Alcohol consumption 80 g/day. DF > 32%, Lilies score > 0.67, ABCI (Albumin, Total Direct Bilirubin, creatinine and INR) >9, mean MELD 24 and mean HOMA 0.9

Group A (n = 15): I.V Methyl Prednisolone, i.v. Vitamin C 500 mg + Pentoxifylline for 4 days followed by Prednisone 60 g orally for 30 days

Group B (n = 15): I.V NAC + IV Vitamin C + Pentoxifylline for 4 days followed by Prednisone for 30 days

Group C (n = 15): IV Methyl Prednisolone + IV NAC + Pentoxifylline for 4 days followed by Prednisone for 30 days

Results:

<table>
<thead>
<tr>
<th>% &amp;</th>
<th>Group A</th>
<th>Group B</th>
<th>Group C</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB</td>
<td>66.7</td>
<td>78.6</td>
<td>60</td>
</tr>
<tr>
<td>Albumin</td>
<td>34.7</td>
<td>52.3</td>
<td>73.7</td>
</tr>
<tr>
<td>Creatinine</td>
<td>44.4</td>
<td>45.8</td>
<td>37.5</td>
</tr>
<tr>
<td>AST</td>
<td>82.9</td>
<td>86.8</td>
<td>90.4</td>
</tr>
<tr>
<td>ALT</td>
<td>76</td>
<td>83.6</td>
<td>81.3</td>
</tr>
<tr>
<td>TNF</td>
<td>87</td>
<td>42.9</td>
<td>65.4</td>
</tr>
<tr>
<td>IL6</td>
<td>64.7</td>
<td>67.6</td>
<td>72.7</td>
</tr>
<tr>
<td>IL8</td>
<td>62.1</td>
<td>62.1</td>
<td>50</td>
</tr>
<tr>
<td>MELD</td>
<td>51.5</td>
<td>50</td>
<td>42.1</td>
</tr>
</tbody>
</table>

Conclusion: This study postulates effects of IV NAC to the SOC in AAH is safe, efficacious with faster recovery time.
APHPB-0072

ROLE OF MYCOPHENOLATE MOFETIL (MMF) IN STEROID NON RESPONSIVE SEVERE ACUTE ALCOHOLIC HEPATITIS: A RANDOMIZED OPEN LABEL PLACEBO CONTROL PROSPECTIVE CLINICAL PILOT TRIAL

P. Basu, N. J. Shah and M. M. Aloysius

Objectives: Severe alcoholic hepatitis (SAH) still remains a clinical challenge with mortality of 47% with steroid non-responsiveness. Immunosuppressives remain SOC. Mycophenolate mofetil (MMF) is a immunosuppressive reduces B and T lymphocytic recruitment and immune injury. This study evaluates the role of MMF in steroid unresponsive SAH, reduction of necro-inflammatory, acute liver decompensation needs transplantation which remains controversial.

Methods: Thirty patients aged-25-60 diagnosed with steroid unresponsive SAH, with severity score criteria (DF > 32%, ABCI > 12, Lile > 0.45, MELD > 26. Exclusion: hepatits A, B, C, Gi bleed, hepatic Encephalopathy, sepsis, Group A: MMF 500 mg bid with Ptx 400 mg and Placebo orally for 30 days. Group B: Prednisolone 30 mg plus Placebo (Vit D) and Ptx 400 mg orally 30 days. Group C: Prednisolone plus NMF and PTX orally for 30 days.

Results:

<table>
<thead>
<tr>
<th></th>
<th>Group A</th>
<th>Group B</th>
<th>Group C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 0</td>
<td>Day 90</td>
<td>Day 0</td>
<td>Day 90</td>
</tr>
<tr>
<td>T. bilirubin</td>
<td>14</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>INR</td>
<td>2.1</td>
<td>0.9</td>
<td>2.1</td>
</tr>
<tr>
<td>Albumin</td>
<td>2.3</td>
<td>3.3</td>
<td>2.4</td>
</tr>
<tr>
<td>Creatinine</td>
<td>1.8</td>
<td>0.7</td>
<td>1.5</td>
</tr>
<tr>
<td>Platelets</td>
<td>138</td>
<td>303</td>
<td>121</td>
</tr>
<tr>
<td>AST/ALT</td>
<td>321/31/</td>
<td>341/39/</td>
<td>421/34/</td>
</tr>
<tr>
<td>TNF</td>
<td>9.7</td>
<td>0.4</td>
<td>8.9</td>
</tr>
<tr>
<td>IL-6</td>
<td>7.9</td>
<td>0.2</td>
<td>6.7</td>
</tr>
<tr>
<td>IL-8</td>
<td>5.3</td>
<td>0.03</td>
<td>4.9</td>
</tr>
</tbody>
</table>

Conclusion: This study postulates MMF is well tolerated, safe, and effective. MMF independently and precipitously reduced the necro-inflammatory score compared with the SOC. A larger trial needs to validate the singular role of MMF in AAH.

APHPB-0073

RESTLESS LEG SYNDROME, (RLS) IS ASSOCIATED WITH HEPATIC ENCEPHALOPATHY (HE) IN DECOMPENSATED CIRRHOSIS. A CLINICAL PILOT STUDY

P. Basu, N. J. Shah and M. M. Aloysius

Objectives: Decompensated cirrhosis with portal hypertension has multi-organ involvement causing minimal and overt encephalopathy, sleep disturbances (dysomnia, parasomnia) and stupor; all of which has a clear association with sub acute bacterial peritonitis (SBP) which has a precipitating clinical state along with SIBO.

Methods: n = 108 patients were subdivided into three sub-groups. Group A (n = 36) – decompensated cirrhotic (mean MELD of 16, OHE 20/36 (55%), MHE 16/36 (44%), esophageal varices grade II 24/36 (67%). Group B (n = 36) – chronic liver disease without cirrhosis with mean MELD 6: Alcohol related 9/36 (25%), NASH 12/36 (33%), HCV 12/36 (33%), HBV 1/36 (3%) and AIH 2/36 (6%). Group C (n = 36) healthy controls. Initially all received Xifaxan 550 mg twice daily for 10 days to eradicate co-existing SIBO. All underwent Methane breath test for SIBO. Baseline labs: CBC, CMP, iron studies, Celiac and IBD serology, stool lactoferrin & calprotectin and urine toxicology screening were collected. Groups A and B underwent neuro-psychometric and flicker testing for MHE and OHE and sleep testing for RLS (with Mayo RLS questionnaire).

Results: Group A 24/36 (67%) had RLS; OHE 16/20 (80%), MHE 8/16 (50%), esophageal varices 8/10 (80%), alcoholic cirrhotic 10/14 (71%), CHC 3/6 (50%), NASH 3/6 (50%) and SIBO 14/36 (39%). Group B 1/36 (3%) RLS and SIBO 7/36 (19%). Group C: 2/36 (6%) RLS and SIBO 3/36 (8%). All individuals were confirmed by sleep study and RLS questionnaire. Serum ammonia has no impact on RLS.

Conclusion: This clinical trial postulates that decompensated cirrhosis with Hepatic encephalopathy have high incidence of RLS with portal hypertension.
**APHPB-0074**

**NOVEL COLONOSCOPY PREPARATION OF COCONUT WATER WITH MIRALAX AND DULCOLAX IN SPLIT DOSES FOR DECOMPENSATED CIRRHOTICS. A RCT DOUBLE BLINDED CLINICAL PILOT STUDY. COSMIC STUDY**

P. Basu¹, N. J. Shah² and F. Gress³

¹Gastroenterology, Chief Division of Hepatology, Kings County Medical Center SUNY Downstate, New York City, NY, USA; ²Internal Medicine, James J. Peters VA Medical Center, Icahn School of Medicine at Mount Sinai NY, New York City, NY, USA; ³Gastroenterology, College of Physicians and Surgeons, Columbia University, New York City, NY, USA

**Objectives:** Screening colonoscopy is routine for patients been evaluated for OLT. Most aqueous colonoscopy preparations are poorly tolerated, cause gross dyselectrolytemia and even renal dysfunction. This ultimately leads to poor compliance affecting diagnosis.

**Methods:** Sixty (n = 60) patients aged 45–69 (MELD 16–20, with moderate ascites and MHE on Diuretics, Lactulose and Xifaxan) were recruited. Single center, one gastroenterologist, anesthesiologist, nurse and medical assistant.

All were on Lasix (mean dose of 60 mg daily), Aldactone 100 mg, Lactulose 30 mL and Xifaxan 550 mg BID.

**Results:**

<table>
<thead>
<tr>
<th></th>
<th>Group A Coconut water + Miralax (N = 30)</th>
<th>Group B (control) Gatorade + Miralax (N = 30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age</td>
<td>58</td>
<td>56</td>
</tr>
<tr>
<td>M:F</td>
<td>21:9</td>
<td>20:10</td>
</tr>
<tr>
<td>BMI</td>
<td>24.8</td>
<td>25.8</td>
</tr>
<tr>
<td>Demographics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasians</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Hispanic</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>African American</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Asian</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Mean MELD</td>
<td>18</td>
<td>22</td>
</tr>
<tr>
<td>Etiology of CLD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HCV</td>
<td>15</td>
<td>17</td>
</tr>
<tr>
<td>HBV</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>ALD</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>NASH</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Total sedation time, min</td>
<td>30</td>
<td>34</td>
</tr>
<tr>
<td>Boston BPS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-3</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>4-6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>7-9</td>
<td>23</td>
<td>21</td>
</tr>
<tr>
<td>Likert’s score</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 = severely distressing</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2 = distressing</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3 = bothersome</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>4 = mild</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>5 = none</td>
<td>24</td>
<td>21</td>
</tr>
<tr>
<td>Chicago BPS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;300 mL</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>151-300 mL</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>51-150 mL</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>&lt;50 mL</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Mean time to cecum</td>
<td>17</td>
<td>23</td>
</tr>
<tr>
<td>Dry macosa requiring irrigation</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>Complications</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Conclusion:** This study postulates a novel organic coconut water preparation with Miralax compared to traditional preparation to be safe (lesser dyselectrolytemia), well tolerated with wide satisfactory score and greater retention. It has greater efficacy with no side events in special population (decompensated cirrhotics awaiting OLT).

**Malignant HPB Diseases**

**APHPB-0075**

**SEVERITY OF LIVER CIRRHOSIS: A KEY ROLE IN THE SELECTION OF SURGICAL MODALITY FOR HEPATOCELLULAR CARCINOMA**

E. L. Zhang, B. Y. Liang, Z. Y. Huang and X. P. Chen

Hepatic Surgical Center, Tongji Hospital, Wuhan, China

**Objectives:** Hepatocellular carcinoma (HCC) is the third leading cause of cancer-related deaths worldwide and primarily arises from cirrhosis, and the selection of surgical modalities in those patients is still in debate. This review examines the current status of the selection of surgical modality for HCC treatment in cirrhotic patients and aims to emphasize the effects of the severity of cirrhosis on the selection of surgical modality for the treatment of HCC.

**Methods:** Systematic search of English-language literature published within the past recent years was performed using an electronic search of Pubmed/MEDLINE and Google Scholar database to identify the studies related to the investigation and surgical treatment choice of HCC in cirrhotic or non-cirrhotic patients.

**Results:** Liver cirrhosis adversely affect surgical outcomes, and is critically important in determining the treatment options. For HCC patients with moderate or severe cirrhosis, LT should be the first choice if the tumors fulfill LT criteria, local ablation can be used as a temporary treatment during the waiting period for LT. For those tumors that do not meet the LT criteria but are technically resectable, non-anatomic resection might be an alternative treatment modality. Anatomic resection should be recommended for HCC patients without cirrhosis or with mild cirrhosis.

**Conclusion:** Liver cirrhosis is an important factor that cannot be ignored in the surgical treatment of HCC.
INTERFERON INELIGIBLE NAIVE CHRONIC HEPATITIS C GENOTYPE I SUBJECTS TREATED WITH SIMEPREVIR AND SOFOSBUVIR IN SPECIAL POPULATION (PSYCHIATRIC). A CLINICAL PILOT STUDY; INSPIRE C STUDY; INTERIM RESULTS

P. Basu¹, N. J. Shah², M. M. Aloysius³ and R. S. Brown Jr⁴

¹Gastroenterology, Chief Division of Hepatology, Kings County Medical Center SUNY Downstate, New York City, NY, USA; ²Internal Medicine, James J. Peters VA Medical Center, Icahn School of Medicine at Mount Sinai NY, New York City, NY, USA; ³Internal Medicine, King’s County Hospital Medical Center NY, New York City, NY, USA; ⁴Gastroenterology, College of Physicians and Surgeons, Columbia University, New York City, NY, USA

Objectives: Chronic hepatitis C (CHC) is no longer a challenging clinical state with newer DAA’s achieving SVR within a shorter duration of therapy. Interferon based therapy entails a longer duration with an increased susceptibility of infections and marrow suppression warranting use of growth factors and even discontinuation of therapy/treatment failure.

Methods: Sixty CHC subjects [n = 60, schizophrenia 20/60 (33.3%), major depression 15/60 (25%), bipolar disorder 20/60 (33.3%) and prior suicidal attempts with depression 5/60 (8.3%)]. These population have a majority of comorbidities, substance abuse and advanced fibrosis along with a poor QOL score.

Results:

<table>
<thead>
<tr>
<th>Group A (n = 22)</th>
<th>Group B (n = 20)</th>
<th>Group C (n = 20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undetectable</td>
<td>15</td>
<td>13</td>
</tr>
<tr>
<td>48 h</td>
<td>15</td>
<td>13</td>
</tr>
<tr>
<td>1 week</td>
<td>23</td>
<td>21</td>
</tr>
<tr>
<td>2 weeks</td>
<td>28</td>
<td>24</td>
</tr>
<tr>
<td>4 weeks</td>
<td>29</td>
<td>25</td>
</tr>
<tr>
<td>8 weeks</td>
<td>29</td>
<td>26</td>
</tr>
<tr>
<td>12 weeks</td>
<td>29</td>
<td>26</td>
</tr>
<tr>
<td>Retention</td>
<td>29/30, 96.7% (One had acute gastroenteritis with dehydration)</td>
<td>29/30, 96.7% (one dropped due to severe headache, r/o meningitis)</td>
</tr>
<tr>
<td></td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

Conclusion: Oral combination therapy for Interferon ineligible group shows similar 12 weeks eradication rates with better tolerability and safety profile. This special population should be treated with this regimen to prevent cirrhosis and HCC.

SIMEPREVIR AND SOFOSBUVIR WITH MODIFIED DOSES OF RIBAVIRIN ON TELAPREVIR EXPERIENCED CO-INFECTED (WITH HIV) CIRRHOTICS WITH CHRONIC HEPATITIS C, STOP C TRIAL; INTERIM RESULTS

P. Basu¹, N. J. Shah², M. M. Aloysius³ and R. S. Brown Jr⁴

¹Gastroenterology, Chief Division of Hepatology, Kings County Medical Center SUNY Downstate, New York City, NY, USA; ²Internal Medicine, James J. Peters VA Medical Center, Icahn School of Medicine at Mount Sinai NY, New York City, NY, USA; ³Internal Medicine, King’s County Hospital Medical Center NY, New York City, NY, USA; ⁴Gastroenterology, College of Physicians and Surgeons, Columbia University, New York City, NY, USA

Objectives: Co-infected cirrhotics (HIV + CHC) are at a greater risk for rapid decompensation affecting QOL and have a higher transplant risk burden. Interferon based therapy entails a longer duration with an increased susceptibility of infections and marrow suppression warranting use of growth factors and even discontinuation of therapy/treatment failure.

Methods: Fifty (n = 50) co-infected (HIV + CHC, non AIDS) cirrhotics with mean MELD 16, HIV RNA undetectable, mean CD 4 count 439, Hb 10.7, HCV RNA 1.7 million copies, mean platelet count 104, albumin 2.9 and WBC 4600. 18 genotype 1a and 32 genotype 1b. 16 null responders, 12 relapers while 12 discontinued treatment.

Results:

<table>
<thead>
<tr>
<th>GROUP A (n = 22)</th>
<th>GROUP B (n = 28)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simeprevir 150 mg + Sofosbuvir 400 mg + RBV</td>
<td>Simeprevir 150 mg + Sofosbuvir 400 mg + RBV 1000 mg</td>
</tr>
<tr>
<td>Undetectable</td>
<td>4/28 (14%) 4 log 11/22(50%)</td>
</tr>
<tr>
<td>1 week</td>
<td>3/22 (14%) 3 log 8/22 (36%)</td>
</tr>
<tr>
<td>4 weeks</td>
<td>16/22 (73%)</td>
</tr>
<tr>
<td>8 weeks</td>
<td>17/22 (77%)</td>
</tr>
<tr>
<td>12 weeks</td>
<td>17/22 (77%)</td>
</tr>
<tr>
<td>16 weeks</td>
<td>17/22 (77%)</td>
</tr>
<tr>
<td>24 weeks</td>
<td>18/22 (83%)</td>
</tr>
</tbody>
</table>

Conclusion: The combination of Interferon free oral regimen in special population with prior experienced PI demonstrated no difference of eradication rates at 16th week over 24th weeks. This regimen was well tolerated and has a better safety profile than conventional trials.
**Malignant HPB Diseases**

**APHPB-0080**

**INFLUENCE OF RICTOR AND RAPTOR EXPRESSION OF mTOR SIGNALING ON LONG-TERM OUTCOMES OF PATIENTS WITH HEPATOCELLULAR CARCINOMA**

M. Kaibori, M. Ishizaki, H. Iida, K. Matsui, T. Sakaguchi, H. Matsushima, K. Inoue and M. Kon

*Department of Surgery, Kansai Medical University, Hirakata, Japan*

**Objectives:** Aberrant signaling mediated by the mammalian target of rapamycin (mTOR) occurs at high frequency in hepatocellular carcinoma (HCC), indicating that mTOR is a candidate for targeted therapy. mTOR forms two complexes called mTORC1 (mTOR complexed with raptor) and mTORC2 (mTOR complexed with rictor). There are no published studies of the kinetics of expression of mTORC1 and mTORC2 in HCC.

**Methods:** We studied 62 patients with HCC who underwent curative resection. We used univariate and multivariate analyses to identify factors that potentially influence disease- and overall-survival after hepatectomy. The levels of mTOR, rictor, and raptor mRNAs in cancer and noncancer tissues were analyzed using immunohistochemistry and quantitative RT-PCR.

**Results:** High ratio of the levels of rictor and raptor mRNAs in tumors were identified as independent prognostic indicators for disease-free survival. Low and high levels of preoperative serum albumin and mTOR mRNA in the tumor, respectively, were identified as independent indicators of overall survival. HCC is likely to recur early after hepatic resection in patients with high levels of mTOR and rictor mRNAs and high rictor/raptor ratios in cancer tissues.

**Conclusion:** We conclude that analysis of mTOR expression in cancer tissues represents an essential strategy to predict HCC recurrence after curative treatment.

**APHPB-0081**

**A PROSPECTIVE RANDOMIZED STUDY COMPARING RADIOFREQUENCY ABLATION AND HEPATIC RESECTION FOR HEPATOCELLULAR CARCINOMA**

H. Lee1, K. Suh2, H. Kim2, Y. Choi2, S. Suh2, J. Jeong3, N. Yi2 and K. Lee2

1*Department of Surgery, Seoul National University Boramae Medical Center, Seoul, Korea; 2Department of Surgery, Seoul National University College of Medicine, Seoul, Korea*

**Objectives:** Radiofrequency ablation (RFA) are known to be effective and safe to treat small hepatocellular carcinomas (HCCs). However, it is still unclear whether RFA is as effective as hepatic resection (HR) for small HCCs.

**Methods:** Patients who were newly diagnosed with a solitary HCC were randomized to the HR and RFA groups. Inclusion criteria were as follows: age ≥20, ≤70 years, Child-Pugh A, a maximal diameter of the tumor ≥2 m, ≤4 cm, no previous treatment history, and platelet count > 80,000/mm3.

**Results:** Twenty-nine and thirty-four patients were enrolled and prospectively followed in the HR and RFA groups, respectively, on intention-to-treat (ITT) basis. The 5-year overall survival rate was 96.6% and 88.8% in the HR and RFA group, not a statistically significant difference. HCC recurrence developed in 39 patients: 15 patients in the HR and 24 in the RFA group. The 3- and 5-year disease-free survival rates for the HR group were significantly superior to those for the RFA group (65.4%, 42.9% vs. 44.1%, 31.2%, p = 0.084 by Log Rank, 0.030 by Breslow). Intrahepatic local recurrence tended to develop more frequently in the RFA group (p = 0.0416), while the frequency of intrahepatic distant and extrahepatic recurrence was similar between two groups. There was no significant difference in the frequency and severity of complication between two groups.

**Conclusion:** HR was significantly superior to RFA in terms of disease-free survival. However, the overall survival was not different between the two treatment modalities.

**APHPB-0082**

**COMPARISON OF TWO DIFFERENT THERMAL TECHNIQUES FOR THE TREATMENT OF HEPATOCELLULAR CARCINOMA**

X. Jing1, J. Ding1, J. Liu2, Y. Wang1, F. Wang3, Y. Wang4 and Z. Du4

1*Ultrasound, Tianjin Third Central Hospital, Tianjin, China; 2Radiology, Thomas Jefferson University, Philadelphia, PA, USA; 3Gastroenterology and Hepatology, Tianjin Third Central Hospital, Tianjin, China; 4Hepatobiliary Surgery, Tianjin Third Central Hospital, Tianjin, China*

**Objectives:** To compare the safety and efficacy of radiofrequency ablation (RFA) and microwave ablation (MWA) in treating hepatocellular carcinoma (HCC) while conforming to the Milan Criteria.

**Methods:** The study was approved by the Institutional Review Board, and informed consent was waived due to the retrospective study design. One hundred ninety-eight patients met the inclusion criteria and were included in the study. Eighty-five patients with 98 lesions received RFA, and 113 patients with 131 lesions underwent MWA. Complete ablation rates, local recurrence rates, disease-free survival rates, cumulative survival rates, and major complications were compared between the two treatment groups.

**Results:** Complete ablation rates were 99.0% for RFA and 98.5% for MWA (p = 1.000). Local recurrence rates were 5.2% for RFA and 10.9% for MWA (p = 0.127). Disease-free survival rates at 1, 2, 3, and 4 years were 80.3%, 61.8%, 39.5%, and 19.0% in the RFA group and 75.0%, 59.4%, 32.1%, and 16.1% in the MWA group, respectively (p = 0.376). Cumulative survival rates at 1, 2, 3, and 4 years were 98.7%, 92.3%, 82.7%, and 77.8% in the RFA group and 98.0%, 90.7%, 77.6%, and 77.6% in the MWA group, respectively (p = 0.729). Major complication rates were...
2.4% and 2.7% in the RFA group and the MWA group, respectively (p = 1.000). There were no patient deaths due to treatment.

**Conclusion:** RFA and MWA have the same clinical value in treating HCC conforming to the Milan criteria. Importantly, treating HCC with MWA is safe and effective as a clinical application.

**APHPB-0084**

**CLINICAL UTILITY OF PDSS2 EXPRESSION TO STRATIFY PATIENTS AT RISK FOR RECURRENCE OF HEPATOCELLULAR CARCINOMA**

M. Kanda¹, H. Sugimoto¹, S. Nomoto¹, H. Oya¹, D. Shimizu¹, H. Takami¹, R. Hashimoto¹, Y. Okamura², S. Yamada¹, T. Fuji¹, G. Nakayama¹, M. Koike¹, M. Fujiwara¹ and Y. Kodera¹

¹Department of Gastroenterological Surgery (Surgery II), Nagoya University Graduate School of Medicine, Nagoya, Japan; ²Department of Hepato-biliary-pancreatic Surgery, Shizuoka Cancer Center, Shizuoka, Japan

**Objectives:** Identification of novel genetic and epigenetic alterations is required for optimal stratification of patients with hepatocellular carcinoma (HCC) at risk for recurrence and adverse prognosis. Coenzyme Q10 (CoQ10), which mediates apoptosis, is synthesized by prenyl diphosphate synthase subunit 2 (PDSS2). Here we evaluated the clinical significance and regulatory mechanisms of PDSS2 expression in HCC.

**Methods:** PDSS2 expression levels and those of genes encoding potentially interacting proteins as well as the methylation status of the PDSS2 promoter region were analyzed in HCC cell lines. PDSS2 mRNA levels in 151 pairs of resected specimens were determined to evaluate the association of PDSS2 expression and clinicopathological factors. The expression and distribution of PDSS2 were determined using immunohistochemistry.

**Results:** PDSS2 mRNA expression was decreased in six of nine HCC cell lines and significantly correlated with those of hepatocyte nuclear factor 4α. PDSS2 transcription in HCC cells with decreased PDSS2 expression accompanying hypermethylation was reactivated after treating these cells with a methylation inhibitor. Mean expression levels of PDSS2 mRNA relative to that of uninvolved liver diminished gradually in the order of chronic hepatitis to cirrhosis, and each was significantly higher than those of HCCs. PDSS2 and PDSS2 mRNA levels were consistent. Decreased PDSS2 mRNA levels were detected in HCC tissues of 56 patients, correlated with shorter disease-specific survival, and was identified as an independent prognostic factor.

**Conclusion:** PDSS2 is a putative tumor suppressor, and promoter hypermethylation is a key regulatory mechanism in HCC. Decreased levels of PDSS2 mRNA expression may represent a novel biomarker of HCC.

**APHPB-0085**

**ABERRANT EXPRESSION OF MELANOMA-ASSOCIATED ANTIGEN D-2 SERVES AS A PROGNOSTIC INDICATOR OF HEPATOCELLULAR CARCINOMA OUTCOME AFTER CURATIVE HEPATECTOMY**

R. Hashimoto¹, M. Kanda¹, H. Sugimoto¹, S. Nomoto¹, H. Oya¹, D. Shimizu¹, H. Takami¹, Y. Okamura², S. Yamada¹, T. Fuji¹, G. Nakayama¹, M. Koike¹, M. Fujiwara¹ and Y. Kodera¹

¹Department of Gastroenterological Surgery (Surgery II), Nagoya University Graduate School of Medicine, Nagoya, Japan; ²Department of Hepato-biliary-pancreatic Surgery, Shizuoka Cancer Center, Shizuoka, Japan

**Objectives:** Because the prognosis of patients with advanced hepatocellular carcinoma (HCC) is dismal, development of novel molecular targets for diagnosis and therapy are urgently required. Here we studied the expression of the gene (MAGE-D2) encoding melanoma-associated antigen-D2 (MAGE-D2) to determine whether it influences the malignant phenotype of HCC and serves as a marker of prognosis.

**Methods:** We analyzed the expression of MAGE-D2 mRNA and MAGE-D2 protein in nine HCC cell lines and 151 pairs of surgical tissues. Expression levels were evaluated using the quantitative real-time reverse transcription-polymerase chain reaction and immunohistochemistry and were compared with clinicopathological parameters of the tumors.

**Results:** A significant difference in the levels of MAGE-D2 expression was observed between normal liver and chronic hepatitis tissues but not among those of chronic hepatitis, cirrhosis, and HCC. The expression patterns of MAGE-D2 protein were consistent with those of its mRNA. The expression levels of MAGE-D2 mRNA in 66 of 151 (44%) patients were higher in HCC tissues compared with the corresponding noncancerous tissues. Moreover, disease-specific survival was significantly shorter for patients with higher levels of MAGE-D2 mRNA expression. Multivariate analysis identified increased expression of MAGE-D2 mRNA as an independent prognostic factor for disease-specific survival (hazard ratio 2.65, 95% confidence interval 1.43–4.98, p = 0.002). Increased expression of MAGE-D2 mRNA was not significantly associated with other clinicopathological parameters, including extrahepatic recurrence.

**Conclusion:** These results suggest that MAGE-D2 mRNA influences tumor progression and may serve as a prognostic indicator after curative resection. Moreover, MAGE-D2 may provide a target for the therapy of HCC.
APHPB-0086
OUTCOME OF SURGERY FOR AMPULLA OF VATER CANCER: PERIOPERATIVE PERSISTENT LYMPHOPENIA AS A PREDICTOR OF SURVIVAL AND RECURRENCE
S. Mori, M. Shimoda, T. Shiraki, Y. Iso, M. Kato and K. Kubota
Department of Gastroenterological Surgery, Dokkyo Medical University, Tochigi, Japan

Objectives: Recently, a perioperative low absolute lymphocyte count (ALC) has been considered a useful prognostic indicator in several malignancies. The aim of this study was to investigate the impact of perioperative ALC on outcome in patients after pancreaticoduodenectomy (PD) for ampulla of Vater cancer (AVC).

Methods: A total of 50 AVC patients treated between 2000 and 2013 were investigated. Data on perioperative ALC were obtained on the day before surgery and 2 weeks after surgery. Lymphopenia was defined as ALC < 1500/μL and perioperative persistent lymphopenia (PPL) was defined as the presence of lymphopenia both pre- and postoperatively.

Results: The 5-year overall survival rate (OSR) and recurrence rate (RR) were 79.8% and 36.1%, respectively. Recurrence was observed in 16 patients (32%) and the median period until recurrence was 11 months. The 5-year OSR and RR in patients with PPL (n = 15) were significantly worse (55% and 58%) than in the lymphopenia (+) group (n = 26; 87.5% and 32.6%) and the lymphopenia (−) group (n = 9; 100% and 12.5%) (p = 0.005 and p = 0.008, respectively). Multivariate analysis showed that PPL and the number of lymph nodes (LN) with metastasis were significantly associated with a poorer OSR and a higher RR after PD (p = 0.010, p = 0.008 and p = 0.004, p < 0.001, respectively).

Conclusion: Perioperative ALC is a useful prognostic marker in AVC patients. PPL and the number of LN with metastasis can be used to predict patient survival and cancer recurrence.

APHPB-0088
THE IMPACT OF TUMOR DISTANCE FROM THE LIVER SURFACE ON SURVIVAL AFTER ANATOMICAL-HEPATECTOMY FOR SOLITARY HCC LESS THAN 3 CM IN DIAMETER IN THE RIGHT LOBE
S. Mori, M. Shimoda, T. Shiraki, Y. Iso, M. Kato and K. Kubota
Department of Gastroenterological Surgery, Dokkyo Medical University, Tochigi, Japan

Objectives: Anatomical hepatectomy (AH) has been reported to control minute intrahepatic metastases of hepatocellular carcinoma (HCC), with consequent survival benefits. However, the impact of tumor distance from the liver surface (LS) on the survival benefit of AH has not well been investigated.

Methods: Ninety-nine patients who underwent curative resection for solitary HCCs less than 3 cm in diameter in the right lobe between September 2006 and December 2012 were assigned to two groups on the basis of tumor distance from the LS measured by computed tomography: a peripheral group (tumor within 3 cm from the LS, n = 47) and a central group (tumor beyond 3 cm from the LS, n = 52).

Results: Overall, AH (n = 59) yielded better 5-year overall survival (OS) and relapse-free survival (RFS) than non-AH (n = 40) (81.5% and 50.8% vs. 50.7% and 21.8%, p = 0.038 and p = 0.037, respectively). In the peripheral group, there were no significant differences in 5-year OS and RFS (88.4% and 26.2% vs. 67.6% and 30.2%, p = 0.270 and p = 0.426, respectively) between AH (n = 23) and non-AH (n = 24). However, in the central group, there were significant differences in 3-year OS and 2-year RFS (96.6% and 68.6% vs. 50.1% and 40%, p = 0.003 and p = 0.002, respectively) between AH (n = 36) and non-AH (n = 16).

Conclusion: Tumor distance from the LS has a significant impact on the survival benefit of AH, especially in patients with centrally located tumors.

APHPB-0089
EVALUATION OF THE SURVIVAL BENEFIT OF ADJUVANT CHEMOTHERAPY IN PATIENTS AFTER RESECTION OF AMPULLA OF VATER CANCER
S. Mori, M. Shimoda, T. Shiraki, Y. Iso, M. Kato and K. Kubota
Department of Gastroenterological Surgery, Dokkyo Medical University, Tochigi, Japan

Objectives: Although adjuvant chemotherapy (AC) has been shown to have a survival benefit in patients with pancreatic cancer, no form of AC has yet been established for patients with ampulla of Vater cancer (AVC). The aim of this study was to investigate whether AC improves survival after pancreaticoduodenectomy (PD) for AVC.

Methods: A total of 26 patients with AVC who underwent PD were enrolled between January 2008 and October 2013. Overall survival (OS), relapse-free survival (RFS), and recurrence rate (RR) were then compared between patients with AC [AC (+)] and without AC [AC (−)].

Results: Overall, the 3-year OS, RFS, and RR were 83.8%, 45.5%, and 51.3%, respectively. Eleven patients (42%) received gemcitabine, 6 (23%) received gemcitabine + cisplatin, 2 (8%) received S-1, and 7 (27%) were simply observed without further treatment. Ten patients completed ≥6 cycles of AC. There were no significant differences in OS, RFS, and RR between the AC (+) and AC (−) groups (p = 0.930, p = 0.740, and p = 0.864, respectively). In patients who received ≥6 cycles of AC, the 3-year RR tended to be lower than in the others, but the difference was not significant (40% vs. 59.1%, p = 0.149).

Conclusion: The use of AC does not affect the survival of patients after resection of AVC.
Benign HPB Diseases
APHPB-0091

EFFECT OF ROWACHOL ON PREVENTION OF POSTCHOLECYSTECTOMY PAIN AFTER LAPAROSCOPIC CHOLECYSTECTOMY – PROSPECTIVE MULTICENTER RANDOMIZED CONTROLLED TRIAL
I. Han1, O. Kwon1, M. Oh1, Y. Choi2 and S. Lee2
1Surgery, Dongguk University Ilsan Hospital, Goyang, Korea; 2Surgery, Chung-Ang University Hospital, Seoul, Korea

Objectives: Postcholecystectomy pain (PCP) is characterized by abdominal pain following gallbladder removal. The purpose of this trial is to determine whether Rowachol will be useful in the prevention of PCP after laparoscopic cholecystectomy (LC).

Methods: from 2012 to 2013, this prospective, randomized, single blind, placebo-controlled study had balanced random assignment Rowachol and placebo in Dongguk University Ilsan Hospital, and Chung-Ang University Hospital. A total of 138 patients were enrolled and randomized. Rowachol or placebo 100 mg three times daily was given to each group of patients for 3 months. Outcomes were assessed in visit over 3 months after surgery with right upper quadrant (RUQ) pain on European Organization for Research and Treatment of Cancer QLQ-C30.

Results: There are no differences in aspect of demographic, preoperative clinical findings, and surgical findings between each group. Incidence of PCP in placebo group (n = 9, 14.3%) was higher than that in Rowachol group (n = 3, 4.7%) with statistically marginal significance (p = 0.076). After risk factor analysis for PCP, the patients with PCS showed a higher difficulty score to perform LC, more frequent pathology of PCP, the patients with PCS showed a higher difficulty score to perform LC, more frequent pathology findings, and surgical findings between each group. Incidence of PCP in placebo group (n = 9, 14.3%) was higher than that in Rowachol group (n = 3, 4.7%) with statistically marginal significance (p = 0.076). After risk factor analysis for PCP, the patients with PCS showed a higher difficulty score to perform LC, more frequent pathology findings, and surgical findings between each group.

Conclusion: Rowachol can be beneficial for prevention of PCP after LC.

Malignant HPB Diseases
APHPB-0094

LONG-TERM RESULTS AND OUTCOME PREDICTING FACTORS IN PATIENTS UNDERGOING MAJOR HEPATIC RESECTION FOR KLATSKIN TUMOR
W. Otto1, B. Najnigier1, J. Smaga1, J. Sierdzinski2 and M. Krawczyk1
1General Transplant & Liver Surgery, Medical University of Warsaw, Warsaw, Poland; 2Medical Informatics & Telemedicine, Medical University of Warsaw, Warsaw, Poland

Objectives: Major hepatic resection is regarded as the potentially curative procedure for patients with Bismuth III type bile duct carcinoma. The study objective was to review the results of 10-year prospective evaluation of patients that were operated with curative intent for Bismuth III type lesion at 1- and 3-year follow-up.

Methods: A study was conducted in 134 patients with Bismuth III type of hilar carcinoma treated between 2000 and 2009; 94 (70.1%) were suitable for surgery and underwent major hepatic resection. The outcome was evaluated by assessment of patient-tumor clinicopathologic factors, completeness of resection and survival.

Results: Major hepatic resections comprised 62 right and 32 left hepatectomies. The R0, R1, and R2 resection was achieved in 40 (42%), 21 (22.3%) and 33 (35.2%), respectively. Operative mortality rate was 9.5%. The 1- and the 3-year survival were 69.1% and 24.5%, respectively. Univariate analysis showed that unfavorable tumor biology (Wald test) W2 = 22.7, p < 0.001) and the presence of post-operative complications (W2 = 61.0, p < 0.001) were associated with patient’s survival. Multivariate analysis (Wald test) indicated tumor UICC stage, incompleteness in tumor resection and the presence of serious post-operative complications as the outcome prognostic factors (W = 10.37, p < 0.006, W = 4.45, p < 0.003, W = 7.9, p < 0.001, respectively).

Conclusion: A tumor-free margin is of great concern in major hepatectomy for Bismuth III type of hilar carcinoma. The stage of tumor development and imperfectness of surgical procedure hinder from gaining the desired oncologic extension.

APHPB-0096

AMYLASE LEVEL OF PANCREATIC JUICE AFTER PANCREATICODUODENECTOMY PREDICTS POSTOPERATIVE PANCREATIC FISTULA
Surgery, Jikei University School of Medicine, Tokyo, Japan

Objectives: Postoperative pancreatic fistula (PF) after pancreaticoduodenectomy (PD) is one of the most frequent life-threatening complications. The aim of this
study is to evaluate the significance of pancreatic amylase level of pancreatic juice for PF after PD.

Methods: The subjects were 63 patients who underwent PD between January 2012 and August 2014 at Jikei University Hospital. We retrospectively investigated the relation between patient characteristics including pancreatic amylase level of pancreatic juice through the pancreatic drainage tube and the incidence of PF (grade B or C according to the International Study Group on the Pancreatic Fistula) using univariate and multivariate analyses. Ratio of pancreatic amylase level in pancreatic juice was represented as those at POD 1/3, 1/5, 3/5, or 3/7 ratio.

Results: In univariate analysis, non-ductal adenocarcinoma (p = 0.0294), soft pancreatic remnant (p = 0.0147), serum CRP < 5 mg/dL (p = 0.015) and ratio of pancreatic amylase level in pancreatic juice < 0.2 (p = 0.0085) were significant predictors of the incidence of PF. In multivariate analysis, ratio of pancreatic amylase level in pancreatic juice < 0.2 (p = 0.0428) was the only significant independent parameter.

Conclusion: Change in pancreatic amylase level of pancreatic juice can predict postoperative PF after PD.

APHPB-0097

THE INTERMITTENT PRINGLE MANEUVER IS UNLIKELY TO INDUCE BACTERIAL TRANSLOCATION TO THE PORTAL VEIN: A STUDY USING BACTERIUM-SPECIFIC RIBOSOMAL RNA-TARGETED RT-PCR

N. Yamaguchi, Y. Yokoyama, T. Ebata, T. Igami, G. Sugawara, T. Mizuno, J. Yamaguchi and M. Nagino

Division of Surgical Oncology, Department of Surgery, Nagoya University Graduate School of Medicine, Nagoya, Japan

Objectives: The Pringle maneuver is often used to minimize bleeding during liver surgery. However, this technique blocks the mesenteric venous drainage and increases the pressure in the microvascular network of the intestine, which may induce bacterial translocation (BT). The occurrence of BT to the mesenteric lymph nodes following the Pringle maneuver is well established; however, BT to the portal circulation remains unclear. The aim of this study was to evaluate using a very sensitive method whether the Pringle maneuver truly induces BT to the portal vein, and to review the safety of the Pringle maneuver.

Methods: Portal blood of patients with hilar malignancy who underwent hepatobiliary resection was sampled 3 times during surgery: immediately after laparotomy (PV-1); before liver transection (PV-2); and after liver transection (PV-3). The samples were analyzed for microbes with a bacterium-specific ribosomal RNA-targeted reverse transcription-PCR method.

Results: Fifty patients were enrolled in the study, with a mean total Pringle time of 86 min. Microbes were detected in 11 (22%) of the 50 patients. The occurrence of microbes was not different among the PV-1 (8% = 4/50), PV-2 (14% = 7/50), and PV-3 samples (14% = 7/50) (p = 0.567). The positivity of the PV-3 samples showed no correlation with the total Pringle time or with the occurrence of postoperative complications. The total Pringle time did not affect the surgical outcomes, including infectious complications, liver failure, or mortality.

Conclusion: The intermittent Pringle maneuver is unlikely to induce BT to the portal circulation and is safe, even in difficult hepatobiliary resections requiring long clamping times.

APHPB-0098

THE IMAGING FEATURES IN ULTRASONOGRAPHY OF CHOLANGIOLOCELLULAR CARCINOMA: CORRELATION WITH PATHOLOGICAL FINDINGS

A. Deguchi1, H. Nagamatsu2, J. Akiba3 and T. Masaki4

1Division of Gastroenterology, Kagawa Rosai Hospital, Kagawa, Japan; 2Division of Internal Medicine, Yame Republic Hospital, Fukuoka, Japan; 3Department of Pathology, Kurume University School of Medicine, Fukuoka, Japan; 4Department of Gastroenterology and Neurology, Kagawa University School of Medicine, Kagawa, Japan

Objectives: Cholangiolocellular carcinoma (CoCC) is rare primary liver cancer and currently considered to originate from hepatic progenitor cells. The purpose of this study was to evaluate the imaging features in ultrasonography of cholangiolocellular carcinoma of the liver.

Methods: Five cases of surgically resected cases of CoCC from 2 institutions were retrospectively evaluated. All of the five patients underwent contrast-enhanced ultrasonography (CEUS), dynamic CT, Gd-EOB-DTPA MRI and angio-CT including CT during arteriopography (CTAP) and CT during hepatic arteriography (CTHA). Histological evaluation was also performed and was correlated with imaging findings.

Results: In the early vascular phase of CEUS, the lesions presented diffuse and homogeneous enhancement in 2 cases with less than 2 cm in tumor diameter, but in 3 cases with larger than 2 cm, the lesions presented heterogeneous enhancement. In the late vascular phase, all the lesions became progressively hypoechoic relative to the adjacent liver parenchyma, but in 3 cases with larger than 2 cm, peripheral enhancement was observed simultaneously. In Kupffer phase, all the lesions showed contrast defects with unclear border. From the late vascular phase to Kupffer phase, the continued existence of portal veins or tiny spots of portal flow was identified in the tumors.

Conclusion: CoCC tumors have the dual imaging characteristics of hepatocellular carcinoma and cholangiocarcinoma. The absence of a fibrous capsule, the absence of tumor necrosis and the presence of portal venous penetration within the tumor also appear to be characteristic features in CEUS.
APHPB-0099

MOLECULAR MECHANISM OF ACTIVIN A SIGNALING PATHWAY IN EMT-MEDIATED HEPATIC CANCER STEM CELLS INVASION AND METASTASIS

D. Han-hua, X. Shuai, L. Hui-Fang, L. Chang-Hai and C. Xiao-Ping

Hepatic Surgery Center, Tongji Hospital, Wuhan, China

Objectives: The existence of cancer stem cells are considered to be the source of tumor invasion and metastasis. Recent studies suggest the existence of cancer stem cells in hepatocellular carcinoma (HCC). Our previous experiment found Activin A expression level increasing both in early and advanced HCC. So we want to prove whether Activin A mediate hepatic cancer stem cells (HCSCs) in HCC invasion and metastasis.

Methods: We use human HCC samples, CD90+ and EpCAM+ SP cell sorting method to sorting HCSCs, culture, identification and passaged HCSCs. By way of molecular and biology method of overexpress or knockdown Activin A receptors and Smad protein expression in HCSCs, we detect the changes of Activin A signaling pathway and EMT markers, and proliferation, invasion and metastasis of HCSCs.

Results: We have established CD90+ EpCAM+ HCSCs successfully, and we found Activin A can inhibit the proliferation of hepatocytes through Smad signaling pathway, but Activin A can promote HCSCs proliferation, invasion and metastasis through EMT, by down regulating the expression of E-cadherin, up regulation of the expression of N-cadherin in HCSCs.

Conclusion: Human HCC has CD90+ EpCAM+ HCSCs. Activin A may be one of the important negative regulatory factors in early HCC, but it promotes HCSCs occurrence of EMT resulting in tumor invasion and metastasis in advanced HCC.

Benign HPB Diseases
APHPB-0101

TAILORED APPROACH TO MINIMALLY INVASIVE NECROSECTOMY FOR NECROTISING PANCREATITIS BASED ON CT ABDOMEN

S. Wani, R. Patankar and S. K. Mathur

G.I. and HPB Surgery, Joy Hospital, Chembur, Mumbai, India

Objectives: Conventional open surgery for infected pancreatic necrosis is associated with significant surgical morbidity i.e. wound complications, fascial dehiscence and intestinal fistulae. In recent years there has been attempt to reduce this surgical morbidity by adopting a number of minimally invasive approaches. Pancreatic protocol CT scan abdomen plays an indispensible role in planning the approach to necrosectomy.

Methods: We demonstrate 40 patients with severe acute necrotizing pancreatitis – 25 male, 15 female between age group 25–64 years with mean age 46 years. They underwent pancreatic protocol CT abdomen followed by minimally invasive pancreatic necrosectomy. 25 patients underwent pancreatic necrosectomy by laparoscopic transperitoneal approach (transmesocolic – 11 patients, transgastrocolic – 12 patients and gastrohepatic omentum – 2 patients), 10 patients by Retropitoneal approach and 4 patients underwent a combination of methods – sinus tract endoscopy over preplaced pig-tail catheters and 1 patient underwent endoscopic transgastric drainage followed by Laparoscopic intracavity necrosectomy. Relook laparoscopy was done in 7 patients to assess for residual necrosis.

Results: All patients tolerated procedure well, there was no mortality. 4 had pancreatic fistula which responded to conservative treatment. 3 were converted to open necrosectomy because of bleeding or difficulty to access the area of necrosis. The mean operating time was 120 ± 30 min. There were no postoperative complications related to procedure itself, such as major wound infections, intestinal fistulae, or postoperative hemorrhage. Mean length of hospital stay after surgery was 14 days.

Conclusion: CT anatomy guided necrosectomy allows planning prior to necrosectomy, lesser failure rates and conversion and low morbidity.

APHPB-0102

SURGICAL TREATMENT OF HEPATIC ALVEOLAR ECHINOCCOSIS: OUTCOMES AND PROGNOSIS

N. Halkic, G. R. Joliat, E. Melloul, E. Uldry, D. Petermann and N. Demartines

Department of Visceral Surgery, University Hospital CHUV, Lausanne, Switzerland

Objectives: Alveolar echinococcosis is an uncommon parasitosis principally found in the Northern hemisphere. Incidence of alveolar echinococcosis is low, and studies focusing on surgical procedure outcomes are scarce. The aim of this study was thus to assess the postoperative short- and long-term outcomes of patients with alveolar echinococcosis treated by liver resection (LR) in a single tertiary referral center.

Methods: We retrospectively analyzed all consecutive patients suffering from liver alveolar echinococcosis and treated with surgery at our institution between January 1992 and December 2013. Demographic, intraoperative data, types of liver resection, postoperative outcomes, and negative histological margin (R0) resection rate were recorded. The surgical approach was based on the localization of lesions, and further treatments combined medical, endoscopic, or radiological interventions as necessary.

Results: Curative hepatectomies (56 cases) and palliative surgical procedures (3 cases) were performed in 59 patients with alveolar echinococcosis. Eight patients had metastasis and 39 were symptomatic at diagnosis. Postoperative morbidity was 34%, and two deaths occurred. Recurrences appeared in 8 cases (14%). Among them 7 had a positive histological margin (R1) resection. R0 resection rate was 71% (42 patients), and R1 resection rate was 29% (17 patients). In case of R1
Malignant HPB Diseases
APHPB-0103

USEFULNESS OF SERUM DUKE PANCREATIC MONOCLONAL ANTIGEN TYPE 2 (DUPAN-2) IN PANCREATIC CANCER WITH NORMAL LEVEL OF PRETREATMENT SERUM CARBOHYDRATE ANTIGEN 19-9 (CA19-9)

Surgery, Tohoku University, Sendai, Japan

Objectives: Serum Duke pancreatic monoclonal antigen type 2 (DUPAN-2) is one of several tumor markers for pancreatic cancer and independent of the Lewis antigen, while Carbohydrate antigen 19-9 (CA19-9), one of the most common markers for pancreatic cancer, is not expressed in patients without the Lewis antigen. The aim of this study is to elucidate clinical benefit of serum DUPAN-2 in pancreatic cancer with normal level of pretreatment serum CA19-9.

Methods: From 2002 to 2012, 263 consecutive cases of pancreatic cancer who underwent surgical resection at our institute were retrospectively investigated. In this cohort, 60 cases showed normal level of pretreatment serum CA19-9, who were divided into the two groups according to pretreatment serum DUPAN-2 level (DUPAN-2 high and DUPAN-2 normal). Clinicopathological features and prognosis were evaluated between the groups.

Results: DUPAN-2 high and DUPAN-2 normal consisted of 26 cases (43.3%) and 34 cases (56.7%), respectively. In histopathological grading, DUPAN-2 High included higher grade than DUPAN-2 normal, showing significant difference (p = 0.0108). Median survival time and 2-year overall survival rate in DUPAN-2 high and DUPAN-2 normal were 16.0 months and 36.6%, and 22.7 months and 68.9%, respectively. DUPAN-2 High showed significantly poorer prognosis than DUPAN-2 normal (p = 0.0029).

Conclusion: In pancreatic cancer patients with normal level of pretreatment serum CA19-9, high level of pretreatment serum DUPAN-2 is related to poor prognosis. DUPAN-2 should be measured in the clinical setting for pancreatic cancer, especially normal level of pretreatment serum CA19-9.

Benign HPB Diseases
APHPB-0105

REAPPRAISAL OF SHUNT SURGERY FOR EXTRAHEPATIC PORTAL VEIN OBSTRUCTION IN ADULTS: REPORT OF A SINGLE CENTER CASE SERIES

T. Kokudo1, E. Bonnard2, M. Gillet2, N. Kokudo3 and N. Halkic4
1Department of Surgery, Graduate School of Medicine, The University of Tokyo, Tokyo, Japan; 2Department of Visceral Surgery, Centre Hospitalier Universitaire Vaudois, Lausanne, Switzerland

Objectives: Extra-hepatic portal venous obstruction (EHPVO) is a disease relatively rare in adults. The clinical significance of shunt surgery for EHPVO in adult cases remains unclear.

Methods: We retrospectively analysed patient characteristics and the results of shunt surgery in 13 adult cases of EHPVO treated between March 1995 and March 2013 in a tertiary care Swiss hospital. The indication of shunt surgery was recurrent bleeding after endoscopic treatment. To update outcomes of shunt surgery in adult cases of EHPVO, we performed a literature review on this issue.

Results: The mean age of the 13 patients treated was 41.8 years old (range 20–68) and the mean follow-up duration after surgery was 4.4 years (range 1–16). The types of shunt surgery performed were mesocaval shunt (n = 7), portocaval shunt (n = 2), mesospermatic shunt (n = 1), splenorenal shunt (n = 1), and mesorenal shunt (n = 2). Two patients (15%) developed postoperative rebleeding. No patient developed postoperative hepatic encephalopathy. There was no case of death related to the operative procedures. Five studies, including our own, were identified in the literature. The overall mortality rate was 0%–3.7%, and no encephalopathy was observed among the total of 239 cases in these five case series. The rebleeding rate ranged from 2.5% to 15%.

Conclusion: Shunt surgery for EHPVO in adults after failure of endoscopic treatment is feasible, with acceptable outcomes in specialised centres. This surgical procedure should always be taken into consideration while managing adult cases of EHPVO.

Malignant HPB Diseases
APHPB-0107

NUCLEOT(S)IDE ANALOGUES FOR HEPATITIS B VIRUS-RELATED HEPATOCELLULAR CARCINOMA AFTER CURATIVE TREATMENT: A SYSTEMATIC REVIEW AND META-ANALYSIS

P. Sun, X. Dong, X. Cheng, Q. Hu and Q. Zheng
Hepatobiliary Surgery Centre, Union Hospital, Tongji Medical College, Huazhong University of Science and Techn, Wuhan, China

Objectives: The benefit of nucleot(s)ide analogues (NA) for hepatitis B virus (HBV)-related hepatocellular carcinoma (HCC) after curative treatment has been widely debated due to the relatively weak evidence.

Poster Abstracts 53
The objective of this systematic review was to evaluate the effect of NA on recurrence and survival after curative treatment of HBV-HCC.

**Methods:** A systematic electronic search was performed. All controlled trials comparing NA versus placebo or no treatment were considered for inclusion. Results were expressed as Hazard Ratio for recurrence and survival with 95% confidence intervals using RevMan 5.2.

**Results:** We included 13 trials with 6350 patients. There were significant improvements for recurrence-free survival (HR 0.66, 95% CI 0.54–0.80; p < 0.0001) and overall survival (HR 0.56, 95% CI 0.43–0.73; p < 0.0001) in the adjuvant NA group compared with the control group. Sensitivity analyses confirmed the robustness of the results. There were no serious adverse effects being reported. Lamivudine resistance was from 28.6% to 37.5% but could be rescued by other types of NA or combination therapy.

**Conclusion:** Our study suggested benefits of adjuvant NA therapy following curative treatment of HBV-HCC. Since the great proven efficacy of NA in improving clinical and viral parameters besides HCC, further studies should be focused on broadening the indications for NA therapy after curative treatment of HBV-HCC.

**APHPB-0108**

**CLINICOPATHOLOGICAL FEATURES OF HEPATIC RESECTION FOR HEPATOCELLULAR CARCINOMA IN ELDERLY PATIENTS**

H. Iida, M. Kaibori, M. Ishizaki, K. Matsui and M. Kwon

*Surgery, Kansai Medical University, Hirakata, Japan*

**Objectives:** The number of elderly patients undergoing hepatic resection for hepatocellular carcinoma (HCC) has significantly increased along with aging of the population. We aimed to clarify the clinicopathological features of hepatic resection for HCCs in elderly patients.

**Methods:** Between January 1992 and December 2013, we resected 794 cases of HCCs. We divided them into 3 groups, 652 cases of patients under 74 years old (Non-elderly group), 94 cases of patients 75–79 years old (Elderly group), and 48 cases of patients over 80 years old (Super elderly group). We compared the clinicopathological factors, among the groups.

**Results:** The numbers of HBV antigen and HCV antibody negative patients in the super elderly group were significantly larger than in the elderly and non-elderly group. The hepatic function reserve including platelet count, total bilirubin, PT activity and cholinesterase were better in the elderly and super elderly groups than in the non-elderly group. Postoperative complications and hospital stay were similar among the groups. However, postoperative delirium in the elderly and super elderly groups was significantly more frequent than in the non-elderly group. The recurrence free and over-all survival rates did not significantly differ among the groups. In multivariate analysis, postoperative morbidity was one of the independent factors of survival in the elderly and super elderly groups.

**Conclusion:** We conclude that hepatic resection for HCC is feasible in elderly patients. However, we have to perform the operation more carefully than with non-elderly patients because postoperative morbidity influences the prognosis of elderly patients.

**Benign HPB Diseases**

**APHPB-0109**

**THE MEAN PLATELET VOLUME/PLATELET COUNT RATIO IS A POTENTIAL BIOMARKER OF LIVER CIRRHOSIS PREDICTION**

H. Iida, M. Kaibori, M. Ishizaki, K. Matsui and M. Kwon

*Surgery, Kansai Medical University, Hirakata, Japan*

**Objectives:** The standard method of diagnosing liver cirrhosis is liver biopsy. There are several studies that have investigated biomarkers of cirrhosis prediction because liver biopsy is an invasive procedure. Our aim was to provide a simple biomarker of liver cirrhosis prediction.

**Methods:** Between January 2006 and December 2012, we investigated 294 cases of resected specimens for hepatocellular carcinoma. We divided them into 101 cases with liver cirrhosis (LC group) and 193 cases without liver cirrhosis (Non-LC group) based on pathological findings. Several parameters regarding hepatic function reserve were compared between the groups.

**Results:** There were significant differences between the LC group and Non-LC group in prothrombin activity (PT), AST, ALT, total bilirubin, albumin, cholinesterase, type 4 collagen, hyaluronic acid, indocianine green retention rate at 15 min (ICGR 15), maximal removal rate of Tc-GSA (GSA-Rmax) and platelet volume / platelet count ratio (MPV/PLT). In multivariate analysis, the independent factors of liver cirrhosis prediction were PT, AST, ALT, total bilirubin, hyaluronic acid and MPV/PLT. The AUC value of MPV/PLT was 0.78 by the most accurate test of them. The cut off value of MPV/PLT was 0.71 with a sensitivity of 72% and specificity of 70%.

**Conclusion:** The MPV/PLT ratio can only be measured by a complete blood count (CBC) test. We suggest that the MPV/PLT ratio becomes simple biomarker of predicting liver cirrhosis.

**APHPB-0111**

**PANCREATIC PSEUDOCYSTS LOCATED IN THE SPLEEN AND THE LIVER: DIAGNOSTICS AND MINIMALLY INVASIVE TREATMENT**

Y. Stepanova1, O. Melekhina1, O. Zhavoronkova1 and D. Ionkin2

1Radiology Diagnosis and Treatment, A.V. Vishnevsky Institute of Surgery, Moscow, Russia; 2Abdominal Surgery, A.V. Vishnevsky Institute of Surgery, Moscow, Russia

**Objectives:** To analyse the experience of diagnostics and treatment of pancreatic pseudocysts (PP) located in spleen and liver.
Methods: 37 patients with PP located in spleen – 33 (89.2%) and liver – 4 (10.8%) were estimated (ultrasound, CT or/and MRI) and treated (1985–2014). Men prevailed (83.8%), average age – 45 ± 7 years.

Results: Ultrasound, CT or/and MRI, besides characteristics of PP of spleen/liver, allowed to define manifestations of pancreatitis and its prevalence also, that was important criteria in definition of treatment tactics of these patients.

Pus-like contents was in 85.0% among pseudocysts of spleen location. External drainage under US-control, as the only medical manual, is executed to 10 (30.3%) patients, distal resection with splenectomy against calculous pancreatitis with primary damage of the pancreas tail executed to 23 (69.7%) cases. Pseudocysts of liver location were complicated by suppuration in 100% and underwent external drainage under US-control with evacuation and the subsequent fractional or flowing sanitation that was a final type of treatment.

High level of amylase was revealed in pseudocysts contents in all cases of minimally invasive treatment.

Conclusion: PP located in spleen/liver come to light not at once more often as their clinical manifestations mask manifestations of the main disease – pancreatitis. Ultrasound, CT or/and MRI, allows to estimate a condition of the patient and define treatment tactics.

Using of the external minimally invasive manuals under US-control allows to improve the results of treatment at this group of patients as preoperative sanitation, and also as a final type of treatment, in an optimum case.

Malignant HPB Diseases

APHPB-0112

DIFFERENTIAL RADIOLOGY DIAGNOSTICS OF METASTASES OF RENAL CELL CARCINOMA IN THE PANCREAS

Y. Stepanova1, N. Vetseva1, G. Karmazanovsky1, A. Krieger2 and A. Teplov3

1Radiology Diagnosis and Treatment, A.V. Vishnevsky Institute of Surgery, Moscow, Russia; 2Abdominal Surgery, A.V. Vishnevsky Institute of Surgery, Moscow, Russia; 3Urology, A.V. Vishnevsky Institute of Surgery, Moscow, Russia

Objectives: Metastatic lesion of the pancreas is an extremely rare disease, which occupies 2–5% of all pancreatic tumors, and these figures rise to 11% according to autopsies of patients with malignant tumors. Metastatic lesion of the pancreas from primary renal cancer occurs most often (65–74%). The objective of the study was to show the possibilities and difficulties of differential radiology diagnostics of metastases of renal cell carcinoma in the pancreas.

Methods: 7 patients with histologically confirmed diagnosis – metastatic renal cell cancer in the pancreas were treated in the period from 2009 to 2014 in A.V. Vishnevsky Institute of Surgery. Nephrectomy in history was performed in 4 (57.1%) patients in the period from 4 to 16 years. Tumor of the left kidney in conjunction with metastatic pancreatic cancer was detected in 3 (42.9%) patients.

Results: Solitary metastases were detected in 5 (71.4%) patients. Tumors were located in the head of the pancreas in 3 patients, in the body – in 2. Multiple multifocal lesion of the pancreas was in 2 (28.6%) patients. Dimensions secondary structures ranged from 10 mm to 56 mm.

The most informative diagnostic method in detecting of focal lesions of the pancreas is computed tomography with bolus contrast enhancement. Significant difficulties for interpretation are small tumors that are similar in structure to hormonally active neuroendocrine neoplasm.

Conclusion: Revealed solitary or multiple focal disease of the pancreas in patients after nephrectomy for renal cell carcinoma should be regarded primarily as secondary.

APHPB-0113

TRANSARTERIAL (CHEMO) EMBOLIZATION FOR CURATIVE RESECTION OF HEPATOCELLULAR CARCINOMA: A SYSTEMATIC REVIEW AND META-ANALYSES

X. Cheng and P. I. N. G. Sun

Hepatobiliary Surgery Center, Union Hospital, Tongji Medical College, Huazhong University of Science and Techn, Wuhan, China

Objectives: To assess the beneficial and harmful effects of transarterial embolization (TAE) or transarterial chemoembolization (TACE) for curative resection of hepatocellular carcinoma (HCC).

Methods: The authors conducted an extensive search of studies on this strategy. All randomized controlled trials comparing TACE or TAE plus operation versus operation only were considered for inclusion, regardless of blinding, language, or publication status. Results were performed with disease-free survival (DFS) and overall survival (OS) as the primary endpoint. Tumor response and adverse events were secondary endpoints.

Results: A total of 10 studies involving 909 HCC participants finally fulfilled the predefined inclusion criteria. Four trials assessed preoperative TACE versus control and six trials assessed postoperative TACE versus control. There were significant improvements for DFS [HR 0.62 (95%CI 0.49–0.79)] and OS [HR 0.60 (0.46–0.79)] in the postoperative TACE compared with the control when the mean tumor size was bigger than 5 cm. However, preoperative TACE did not improve DFS [HR 0.92 (0.71–1.20)] and OS [HR 1.07 (0.78–1.46)] for curative resection of HCC. Substantial differences in criteria for assessing tumor response did not allow quantitative analyses. Fever (26.7–85.9%), abdominal pain (19.3–71.2%), and nausea/vomiting (27.4–66.3%) were common adverse events. Relatively rare but more serious complications were also reported.

Conclusion: Postoperative TACE offers potential benefits for curative resection of HCC when the mean tumor size is bigger than 5 cm.
THE EFFICIENCY OF NEOADJUVANT THERAPY FOR BORDERLINE RESECTABLE PANCREATIC CANCER WITH ARTERY INVOLVEMENT

Second Department of Surgery, Wakayama Medical University, Wakayama, Japan

Objectives: It has been still controversial to perform surgical resection with borderline resectable pancreatic cancer with artery involvement (BR-A), because an aggressive surgery leads to high morbidity and mortality with low R0 rate for the BR-A patients. In this study, we evaluated whether or not neoadjuvant therapy followed by surgical resection improves survival benefits for BR-A patients.

Methods: There were 138 patients with BR-A among 330 pancreatic cancer patients underwent surgical resection at Wakayama Medical University Hospital. We compared clinicopathological factors between 38 BR-A patients with neoadjuvant therapy followed by surgical resection and 100 BR-A patients with upfront surgery to evaluate the clinical impacts of neoadjuvant therapy.

Results: The overall survival (OS) of BR-A patients was significantly shorter than that of the patients with borderline resectable pancreatic cancer with portal vein/superior mesenteric vein (PV/SMV) involvement (n = 76) and resectable pancreatic cancer (n = 105) who underwent surgical resection (median OS: 13.6 vs. 20.6 months, p < 0.001). The OS of BR-A patient with neoadjuvant therapy followed by surgical resection was significantly longer than those with upfront surgery (median OS: 20.2 vs. 12.9 months, p = 0.047). Multivariate analysis showed that older age (p = 0.027), pathological PV/SMV invasion (p = 0.031), moderated or poor differentiated tumor (p = 0.008), positive lymph node ratio >0.1 (p = 0.018), and no postoperative adjuvant chemotherapy (p < 0.001) were independent poor prognostic factors for BR-A patients.

Conclusion: Neoadjuvant treatment might bring the clinical benefits for BR-A patients, and it is important to develop the appropriate regimen of neoadjuvant therapy and postoperative adjuvant therapy for longer survival in BR-A patients.

APHPB-0115
TRANSUMBILICAL LAPAROSCOPIC CHOLECYSTECTOMY: A SINGLE SURGEON’S EXPERIENCE WITH 291 CASES

J. W. Hwang
Department of Surgery, Hallym University Medical Center, Chuncheon, Korea

Objectives: Single-port laparoscopic cholecystectomy may result in more postoperative complication in patients with cholecystitis compared with conventional laparoscopic cholecystectomy. Additional right subcostal port could reduce complication rates in these patients. We suggest the transumbilical laparoscopic cholecystectomy with an additional port which can be performed safely regardless of cholecystitis.

Methods: Consecutive 291 patients underwent transumbilical laparoscopic cholecystectomy in Department of Surgery by a single surgeon. Among them, 83 patients (28.5%) had a cholecystitis from acute cholecystitis to empyema. We usually have used the globe port in transumbilical area and additional right subcostal 5 mm port.

Results: The mean operation time was 44.0 ± 15.2 min (range: 20–140). The mean hospital stay after operation was 4.0 ± 2.3 days (range: 1–9). The postoperative...
complications were umbilical hernia (n = 7) and bile leakage (n = 3). There was no in-hospital mortality.

Conclusion: Transumbilical laparoscopic cholecystectomy can be performed in patients with most of benign gallbladder disease. And, an additional right subcostal port could make transumbilical laparoscopic cholecystec- tomy safe and feasible, even in patients with cholecytis.

APHPB-0117
SURGICAL RESECTION FOR HEPATIC ANGIOMYOLIPOMA ACCOMPANYING NECROSIS AND HEMORRHAGE
J. S. Lee, I. S. Choi, J. I. Moon, Y. M. Ra, W. J. Choi and S. E. Lee
General Surgery, Konyang University Hospital, Daejeon City, Korea

Objectives: Angiomyolipoma (AML) is a benign mesenchymal tumor that is frequently found in the kidney and, rarely, in the liver. The natural history of hepatic AML has not been clarified, and some of these tumors have been overdiagnosed as hepatocellular carcinoma, hepatic adenoma, or angiosarcoma. We report a case of hepatic angiomyolipoma accompanying with necrosis and hemorrhage that was successfully resected.

Methods: A 59-year-old female patient was accidentally detected a hepatic tumor in left lateral segment on 2005. The tumor revealed a well-defined mass of mixed echogenicity, 9.2 cm in diameter, in left lateral segment and the biopsy was revealed angiomyolipoma (AML). In 2014, she complained with epigastric pain, fever, and general myalgia, and on computed tomography, the tumor has grown to 15 cm in size and included tumoral cystic change, hemorrhage, and necrosis and extended to segment 4.

Results: We performed laparoscopic assisted left hemihepatectomy. The operation time was 4 h 30 min and blood loss was 250 mL. The patient started a diet POD 3 day and discharged POD 8 days. The histopathological diagnose of the resected specimen was angiomyolipoma which consisted of mature lipocytes with anigomatous and small lymphocytic components, but no mitotic figures. The tumor showed immunoreactivity to smooth muscle antigen (SMA) and homatropine methylbromide 45 (HMB-45) and no immnuoreactivity to S100 and AE/E3. The postoperative course was uneventful, and the patient was discharged without any complications

Conclusion: Even though hepatic AML shows no propensity for metastases or malignant potential, hepatic AML with necrosis and hemorrhage should be treated with complete surgical resection.
Methods: GBC patients admitted to the hospital between January 2009 and December 2013 were included in the study while patients managed in outdoor clinic were excluded. Retrospective analysis of 257 patients (males 69, females 188) was performed with respect to various clinicopathological parameters to assess gender based differences

Results: At presentation 79.7% patients had abdominal pain (mean duration 4.65 ± 9.32 months), 54.4% had jaundice (mean duration 2.07 ± 2.79 months), 27.3% had metastases and 28.4% had locally advanced unresectable (LAUR) disease. At surgical exploration (n = 114), 36 had metastatic and 21 had LAUR disease. Finally 57 (22.1%) underwent curative resection. With respect to gender (male versus female), no significant difference was found in age (mean 52.12 ± 12.55 vs. 49.93 ± 11.73 years, p = 0.19), presence of pain (77% vs. 81%, p = 0.58) or its duration (mean 5.0 ± 7.0 vs. 4.53 ± 10.05 months, p = 0.78), jaundice (55% vs. 55%, p = 0.97) or its duration (mean 2.50 ± 4.60 vs. 1.91 ± 1.76 months, p = 0.33), anorexia (33% vs. 29%, p = 0.63), weight loss (26% vs. 23%, p = 0.77), gallstones (58% vs. 68%, p = 0.15), advanced (N1/T4) disease (15% vs. 27%, p = 0.48), resectability (18% vs. 23%, p = 0.54) and tumor grade (well vs. moderate/poor, 80% vs. 43%, p = 0.07). Median survival was 38 months for both sexes with significant differences in survival curves (p = 0.03) favoring females.

Conclusion: GBC behaves similarly in male and female patients. However, females may have better survival.

APHPB-0120

IS GALLBLADDER CANCER MORE AGGRESSIVE IN YOUNG PATIENTS?: AN ANALYSIS OF 257 PATIENTS

V. Gupta, A. Chandra, S. Kumar, R. Rahul and H. Hatimi
Surgical Gastroenterology, King George Medical University, Lucknow, India

Objectives: Gallbladder cancer (GBC) is usually diagnosed after 60 years of age. Behavior of GBC in young patients is largely unknown. Objective of study was to identify age dependent differences in different clinicopathological characteristics of GBC.

Methods: This study included GBC patients managed from January 2009 to December 2013. Young (≤40 years) patients were compared with patients >40 years of age with respect to different clinicopathological parameters.

Results: 257 patients (mean age 50.5 years, 188 females) of GBC were analyzed. At presentation 79.7% had abdominal pain (mean duration 4.65 ± 9.32 months), 54.4% had jaundice (mean duration 2.07 ± 2.79 months), 27.3% had metastases and 28.4% had locally advanced unresectable (LAUR) disease. At exploration (n = 114) 36 patients had metastatic and 21 had LAUR disease. Finally 57 patients (22.1%) underwent curative resection. With respect to age (≤40 vs. >40), no significant difference was found in sex (females 73.8% vs. 73%, p = 0.9), presence of pain (81.9% vs. 79%, p = 0.71) or its duration (mean 4.5 ± 10.7 vs. 4.68 ± 9.04 months, p = 0.9), jaundice (59% vs. 54%, p = 0.59) or its duration (mean 2.18 ± 1.66 vs. 2.02 ± 3.04 months, p = 0.76), anorexia (26.2% vs. 31.6%, p = 0.52), weight loss (19.7% vs. 21.9%, p = 0.85), gallstones (60.7% vs. 67.3%, p = 0.42), advanced (N1/T4) disease (23.5% vs. 27.5%, p = 1.00) and tumor grade (well versus moderate/poor, 55% vs. 41.3%, p = 0.42).

No significant difference was found in metastatic disease (47.5% vs. 39.3%, p = 0.99) and resectability (27.9% vs. 20.4%, p = 0.22). Median survival was 38 months in each group with similar survival curves (p = 0.7).

Conclusion: GBC doesn’t behave more aggressively in young patients.

APHPB-0121

SMAD3 REVERSE DRUG RESISTANCE VIA P38MAPK PATHWAY IN SMMC-7721 AND BEL-7402 HEPATOCELLULAR CARCINOMA CELL LINES

L. Chen, H. Zhou, H. Liang, B. Zhang and X. Chen
Hepatic Surgery Centre, Tongji Hospital, Tongji Medical College, Huazhong University of Science and Tech, Wuhan, China

Objectives: Hepatocellular carcinoma (HCC) is highly resistant to chemotherapeutic drugs, which markedly reduces the effect of chemotherapy. TGF-β-smad signaling pathway has been shown to contribute to drug resistance in HCC. But the exact function of SMAD3 in drug resistance is controversial and the mechanism is still incompletely understood. In this study, we detected the function of SMAD3 in drug resistance of HCC cell lines

Methods: SMAD3 stable over-expressed cell line 7721-SMAD3 and 7402-SMAD3 were established and treated with various dose of mitomycin and cisplatin. The cell viability and apoptosis were detected by CCK-8 and annexin-V/PI assay. The caspase cleavage, activation of p-38 pathway, Bcl-2 expression was detected by western-blot. Then we block p-38 pathway by SB203580, to interrupt p-38 pathway, Bcl-2 expression was detected by western-blot. Then we block p-38 pathway by SB203580, in order to confirm the role of p38 pathway in the drug resistance.

Results: SMAD3 overexpressed HCC cell lines showed more sensitivity to mitomycin and cisplatin induced apoptosis, activation of P38 pathway and lower expression of Bcl2. Interrupting p38 pathway could reverse the expression of Bcl-2 and the impairment of drug-induced apoptosis.

Conclusion: SMAD3 reverses sensitivity and cisplatin induced apoptosis by down-regulate Bcl-2 via p38MAPK pathway in HCC cell lines.
Transplantation
APHPB-0122

ABO INCOMPATIBLE LIVING DONOR LIVER TRANSPLANTATION USING RITUXIMAB WITHOUT PLASMA EXCHANGE
S. Lee¹, K. I. M. Seong Hoon¹, P. A. R. K. Sang-Jae¹, H. A. N. Sung-Sik¹ and K. I. M. Young-Kyu²
¹Center for Liver Cancer, National Cancer Center, Goyang, Korea; ²Department of Surgery, Jeju University Hospital, Jeju, Korea

Objectives: The number of ABO incompatible (ABO-I) living donor liver transplantation (LDLT) has been increased with various strategies. However, the optimal and simple method to overcome antibody-mediated rejection (AMR) has not been well known.

Methods: From March 2014 to August 2014, 8 consecutive ABO-I LDLT were identified at National Cancer Center, Republic of Korea. Our protocol for ABO-I LDLT involved rituximab (300 mg/m²) at preoperative 1 week, basiliximab (20 mg on operation day and postoperative day 4), and routine surgical procedure without plasma exchange before transplantation.

Results: The 8 patients (4 males, 4 females) who underwent transplantation comprised liver cirrhosis (n = 2, 1 HBV, 1 Wilson’s disease) and hepatocellular carcinoma (n = 6, 6 HBV). Mean age, MELD score, and graft-to-recipient weight ratio of these patients were 53.1 years, 16.9, and 0.97, respectively. The median isoagglutinin antibody titer was 1:16 (range, 1:8–1:64). All patients are alive without graft failure. There was no hyperacute rejection and antibody-mediated rejection. Mean duration of hospital stay was 14.6 days. There was no recurrence of hepatitis B virus and 3 positive antigenemia (37.5%) after transplantation. No bacterial and fungal infections were observed. Complications included hepatic artery thrombosis in one patient, no extrahepatic biliary stricture, and no HCC recurrence.

Conclusion: Only rituximab ABO-I LDLT protocol without plasma exchange showed good graft outcomes without hyperacute, AMR, and serious infection. This protocol seems to be a simple and effective modality for ABO-I LDLT.

Malignant HPB Diseases
APHPB-0124

MALIGNANT LESIONS OF A SPLEEN: CRITERIA OF DIAGNOSTICS
Y. Stepanova¹, D. Ionkin², G. Karmazanovsky¹, A. Shurakova¹ and A. Shchegolev¹
¹Radiology Diagnosis and Treatment, A.V. Vishnevsky Institute of Surgery, Moscow, Russia; ²Abdominal Surgery, A.V. Vishnevsky Institute of Surgery, Moscow, Russia; ³Patomorphology, A.V. Vishnevsky Institute of Surgery, Moscow, Russia

Objectives: To define the spleen malignancies criteria’s of diagnosis on the basis of own experience.

Methods: 382 patients with spleen’s lesions were treated at Vishnevsky Institute of Surgery (1985–2014), there were 13 (3.4%) malignancies: metastases in a spleen – 12 (ovaries cancer – 4, colorectal cancer – 2, in one case of pancreas, duodenum, thyroid cancer, hepatocellular carcinoma, stomach carcinoid, retroperitoneal polymorphcellular sarcoma); malignant true spleen cyst – 1. All tumors were morphologically/histologically verified.

Results: Malignant true spleen cyst: Spleen’s cystic lesion (9 × 8 cm) with calcium in walls were revealed at US and CT at the patient with rather expressed clinical symptoms (pains in the left hypochondrium, spleen’s sizes increasing).
Spleen metastasis parameters:

1. clinical manifestations are only at considerable sizes of lesion(s);
2. multiple nature of lesion (quite often);
3. probability of defeat of several bodies (liver/ lungs/bone system);
4. mainly subcapsular localization;
5. low-resistant arterial blood-groove is registered in metastasis at duplex scanning;
6. low CT-/MR-density, uniformity of structure of lesions;
7. at CT: lesions are hypodenses zones without accurate contours (native); insignificant accumulation of contrast agent, thus lesion remains hypodense in relation to a parenchyma in all contrast phases; clearness of contours due to emergence of hypercontrast rim;
8. the increase in lymph nodes of an abdominal cavity is possible;
9. the increase in a spleen’s sizes can’t serve as diagnostic criterion;
10. ascites (quite often).

Conclusion: In case of any spleen lesion detection it’s necessary to carry out differential diagnostics with malignant tumor process, despite a relative rarity of similar lesions.

APHPB-0125

USAGE OF A SOFT-COAGULATION DEVICE FOR SAFE PERFORMANCE OF TOTAL LAPAROSCOPIC HEPATECTOMY: DETACHMENT AND TRANSECTION OF BLOOD VESSELS USING A MONOPOLAR SOFT-COAGULATION DEVICE
M. Miyazawa, M. Aikawa, K. Okada, K. Okamoto, Y. Watanabe, K. Okamoto, S. Yamaguchi and I. Koyama
Gastroenterological Surgery, Saitama Medical University International Medical Center, Saitama, Japan

Objectives: Among intraoperative complications of total laparoscopic hepatectomy (TLH), venous hemorrhage is the most frequent and difficult-to-treat complication. The aim of this prospective, nonrandomized study was to investigate the potential contribution of a monopolar soft-coagulation device to the limitation of intraoperative blood loss in patients undergoing TLH.

Methods: From January 2008 to May 2014 at our department, TEH was performed in 140 cases, including 132 cases of partial hepatectomy and 5 cases of lateral
sectionectomy of the left hepatic lobe. We keep the following points in mind for the procedure of partial hepatectomy using a monopolar soft-coagulation device for hepatocellular carcinoma. (1) Even in case of a small amount of bleeding, hemostasis is immediately performed before moving to the next site of transection. (2) For detachment of the vein, a monopolar soft-coagulation device is pressed on the resection surface of the liver to destroy hepatocytes. (3) Regarding the area around the hepatic vein, holes from which the branches of the hepatic vein fall out are identified with a monopolar soft-coagulation device (while dripping water) and closed.

**Results:** The blood loss was 62.4 (0–500) mL. The operative time was 207 (127–468) min. The duration of hospital stay after surgery was 7.6 (3–21) days. Postoperative complications occurred in 5 cases. Although there were cases showing high AST levels, no sign of hepatic failure was observed during the perioperative period in any case.

**Conclusion:** The use of a monopolar soft-coagulation device improves surgical results with minimal blood loss and low rate morbidity

**APHPB-0126**

**IMPACT OF ENERGY DEVICES DURING LIVER PARENCHYMAL TRANSECTION: A MULTICENTER RANDOMIZED CONTROLLED TRIAL**

N. Gotohda¹, T. Yamanaka², A. Sairu³, K. Uesaka⁴, M. Hashimoto⁵ and K. Shimada⁶

¹Hepatobiliary and Pancreatic Surgery, National Cancer Center Hospital East, Kashiwa, Japan; ²Biostatics, National Cancer Center, Tokyo, Japan; ³Gastrointestinal Surgery, Cancer Institute Hospital, Tokyo, Japan; ⁴Hepato-Biliary-Pancreatic Surgery, Sizuoka Cancer Center Hospital, Shizuoka, Japan; ⁵Digestive Surgery, Toranomon Hospital, Tokyo, Japan; ⁶Hepatobiliary and Pancreatic Surgery, National Cancer Center Hospital, Tokyo, Japan

**Objectives:** To clarify the benefit of energy devices such as ultrasonically activated device and bipolar vessel sealing device in liver surgeries.

**Methods:** Patients scheduled to undergo open liver resection were eligible for this multicenter non-blinded randomized study. They were randomized to receive an energy device (experimental group) or not (control group) during liver transection. The primary endpoint was the proportion of patients with intraoperative blood loss > 1000 mL. The primary aim was to show non-inferiority of hepatectomy with energy device to that without energy device.

**Results:** A total of 212 patients were randomized and 211 (105 and 106 in the respective groups) were analyzed. Intraoperative blood loss > 1000 mL occurred in 15.0% patients with energy device and 20.2% patients without energy device. The experimental minus control group difference was −5.2% (95% confidence interval, −13.8% to 3.3%; non-inferiority test, p = 0.0248). Hepatectomy with energy device resulted in a shorter median liver transection time (63 vs. 84 min; p < 0.001) and a lower rate of postoperative bile leakage (4 vs. 16%; p = 0.002).

**Conclusion:** The hypothesis that hepatectomy with energy device is not inferior to that without energy device in terms of blood loss has been demonstrated. The use of energy devices during liver surgery is clinically meaningful as it shortens the liver transection time and reduces the incidence of postoperative bile leakage.

**Benign HPB Diseases**

**APHPB-0127**

**IDENTIFICATION OF BILIARY EPITHELIAL STEM/PROGENITOR CELLS USING LGR5**

M. Miyazawa, M. Aikawa, K. Okada, K. Okamoto, Y. Watanabe, S. Yamaguchi and I. Koyama

Gastroenterological Surgery, Saitama Medical University International Medical Center, Saitama, Japan

**Objectives:** Little is known about how the bile duct regenerates. We established a model in which a bioabsorbable polymer tube was implanted (Am J Transplant 2005). Histological studies using this model demonstrated that the immature bile duct epithelium was villous in morphology and had crypts, suggesting the presence of epithelial stem cells. We sought to locate these stem cells using Lgr5 (leucine-rich-repeat-containing G-protein-coupled receptor 5), a marker for intestinal epithelial stem cells.

**Methods:** An artificial bile duct (ABD) in tubular form made of a bioabsorbable polymer was prepared for implantation. Pigs served as ABD recipients. The common bile duct was cut, its duodenal end was ligated and its hepatic stump was anastomosed to the ABD. The remaining end of the ABD was sutured to the duodenum. Neo-bile ducts were collected at various time points after implantation. Biliary stem cells stained with the marker Lgr5 were compared with c-kit positive cells in terms of location.

**Results:** Lgr5 positive cells were found in accessory glandular structures 7 weeks after ABD implantation and in the crypts of villous structures as well as in accessory glandular structures at 12 weeks. There were a number of accessory glandular structures at 7 weeks, while the neo-bile duct showed a nearly single layer of cuboidal columnar epithelium with accessory glands decreased in number, looking like the native duct at 6 months.

**Conclusion:** In this model of extrabiliary bile duct regeneration, biliary stem/progenitor cells appeared to be in accessory glands and in the crypts of villous structures of the epithelium.
ISHICHEMIC PRECONDITIONING PROTECTS AGAINST LIVER ISCHEMIA/REPERFUSION INJURY VIA HEME OXYGENASE-1-MEDIATED AUTOPHAGY

A. Liu1, H. Fang2, W. Wei3, U. Dahmen3 and O. Dirsch3
1Experimental Medicine Center, Tongji Hospital, Tongji Medical College, Huazhong University of Science and Tech, Wuhan, China; 2Department of Pathophysiology, Anhui Medical University, Hefei, China; 3Experimental Transplantation Surgery, Department of General Visceral and Vascular Surgery, Friedrich-Schiller-University Jena, Jena, Germany

Objectives: Ischemic preconditioning (IPC) exerts a protective effect in hepatic ischemia/reperfusion (I/R) injury. Recent studies suggest that autophagy plays an important role in protecting against I/R injury. However, the role of autophagy in IPC-afforded protection and its regulatory mechanisms in liver I/R injury remain poorly understood. This study was designed to determine whether IPC could protect against liver I/R injury via heme oxygenase-1 (HO-1)-mediated autophagy.

Methods: IPC was produced by 10 min of ischemia followed by 10 min reperfusion prior to 60 min of ischemia. In a rat model of hepatic I/R injury, rats were pretreated with wortmannin or rapamycin to evaluate the contribution of autophagy to the protective effects of IPC. HO-1 was inhibited with tin protoporphyrin IX (SnPP). In a mouse model of hepatic I/R injury, autophagy or HO-1 was inhibited with vacuolar protein sorting 34 (Vps34) small interfering RNA (siRNA) or HO-1 siRNA, respectively.

Results: IPC ameliorated liver I/R injury. IPC treatment induced autophagy activation, as indicated by an increase of LC3-II, degradation of p62 and accumulation of autophagic vacuoles in response to I/R injury. When IPC-induced autophagy was inhibited with wortmannin in rats or Vps34-specific siRNA in mice, liver I/R injury was worsened, while rapamycin treatment increased autophagy and mimicked the protective effects of IPC. Furthermore, IPC increased HO-1 expression. The inhibition of HO-1 with tin protoporphyrin IX (SnPP) in rats or HO-1-specific siRNA in mice decreased IPC-induced autophagy and diminished the protective effects of IPC against I/R injury.

Conclusion: IPC protects against liver I/R injury, at least in part, via HO-1-mediated autophagy.

MALIGNANT HPB DISEASES

THYMIDYLATE SYNTHASE EXPRESSION PREDICTS SURVIVAL OF ADVANCED EXTRA-HEPATIC BILE DUCT CANCER PATIENTS TREATED WITH S-1 ADJUVANT CHEMOTHERAPY AFTER SURGERY

Gastroenterological Surgery, Hiroshi University Graduate School of Medicine, Hiroshi, Japan

Objectives: Complete surgical resection is the only curative treatment option for extra-hepatic bile duct cancer (EHBDC), but the prognosis of this disease is still poor. The necessity for adjuvant therapy is considered after curative resection. However, there are very few reports of effective adjuvant therapy for resected EHBDC until now. And there were few reports about useful predictive biomarker in EHBDC patients treated with adjuvant chemotherapy using S-1. The aim of this retrospective study was to evaluate whether thymidylate synthase (TS) expression in tumor can predict the survival of advanced EHBDC patients treated with adjuvant chemotherapy using S-1 after surgery.

Methods: From January 2004 to December 2012, TS expression was investigated immunohistochemically in 109 patients who had curative resection for EHBDC. Patients’ characteristics, overall survival (OS), and disease-free survival (DFS) were analyzed.

Results: Forty-four patients received adjuvant S-1 chemotherapy, and 65 did not. High and low TS in tumor expression was found in 49 (44.9%) and 60 patients (55.1%), respectively. There were no differences in clinicopathological factors between patients with high TS expression and those with low expression. Survival of patients with low TS expression were significantly better than those with high TS expression among patients who received S-1 (p = 0.0088), but not among patients who did not (p = 0.7018).

Conclusion: TS expression in tumor may be a potent predictive marker for advanced EHBDC patients treated with S-1.

APHPB-0130

A RARE CASE OF METASTATIC LIVER TUMOUR. CASE REPORT AND REVIEW OF LITERATURE

A. R. Yusoff1, S. Mokhtar1, N. A. M. Shabery2, M. Roslan3, K. Raman1 and H. Singh1
1Hepatobiliary Surgery, Selayang Hospital, Batu Caves, Malaysia; 2Anatomic Pathology, Selayang Hospital, Batu Caves, Malaysia; 3Radiology, Selayang Hospital, Batu Caves, Malaysia

Objectives: To report a rare case of metastatic liver tumour.

Methods: Patient’s clinical presentation, imaging and histopathological examination were reviewed.

Results: A 68-year-old lady, who had craniotomy, excision of meningeal haemangiopericytoma and adjuvant...
operative blood loss was a little. Operation time was 220 min and the amount of intra-corporaly visible during the liver parenchymal resection. (counter perfusion). Fluorescent navigation was contin-
could be clearly detected as a non-fluorescent area.

Results: The predicted resection area of segment 3

cal resection.

Methods: In this preliminary study, one patient with HCC at segment 3 was administered anatomical liver resection using the laparoscopic NIRF imaging system (D-light P system, Karl Storz, Germany). Laparoscopic liver resection using this NIRF system was performed as follows: (1) Encircle and clamp the Glissonian pedicle of segment 3. (2) Inject 1 mL of ICG water solution (2.5 mg/mL) intravenously and observe the fluorescent area. (3) Determine the cutting line and perform parenchymal resection. (4) Observe NIRF imaging several times and re-estimate the accurate direction of anatomical resection.

Results: The predicted resection area of segment 3 could be clearly detected as a non-fluorescent area (counter perfusion). Fluorescent navigation was continuously visible during the liver parenchymal resection. Operation time was 220 min and the amount of intra-operative blood loss was a little.

Conclusion: Our novel navigation technique using NIRF imaging might be useful for laparoscopic anatomical liver resection.

Transplantation

ESTABLISHMENT OF AN ACELLULAR FATTY LIVER EXTRACELLULAR MATRIX AS A THREE-DIMENSIONAL SCAFFOLD FOR LIVER ENGINEERING


Hepatobiliary Surgery, First Affiliated Hospital of Xi’an Jiaotong University, Xi’an, China

Objectives: To improve a new decellularization method for fatty liver, and establish an acellular fatty liver extracellular matrix as a three-dimensional scaffold for liver engineering.

Methods: The fatty liver which was collected from clinical inapplicable DCD (donation after cardiac death) organ underwent a process consist of repeated freezing-thawing, perfusion with gradient SDS and 1% Triton X-100 through portal vein and hepatic artery and a procedure of adipose tissue decellularization. The decellularized livers were examined by morphologic, biochemical and immunolabeling techniques for preservation of the native matrix architecture and composition. L-02 cells were seeded into the decellularized scaffolds to evaluate cell survival and function.

Results: The decellularized process preserved the three-dimensional macrostructure, the ultrastructure, the composition of the extracellular matrix components (ECM) and the native vascular network of the fatty liver. Residual DNA content in the decellularized scaffolds was 25.3 ± 14.6 ng/mg dry weight, less than 1% of total DNA in the fatty liver. L-02 cells were formation multicellular spheroids in scaffolds, and exhibited a spindle-like morphology with microvilli. Cell viability assay indicated 2D culture had a faster growth rate than scaffold culture.

Conclusion: The decellularized scaffold of fatty liver is a potential three-dimensional scaffold for liver engineering.

Malignant HPB Diseases

APHPB-0133

COMPARATIVE STUDY BETWEEN DUCT TO MUCOSA AND INVAGINATION PANCREATICOJEJUNOSTOMY AFTER PANCREATICODUODENECTOMY: A PROSPECTIVE RANDOMIZED STUDY

A. El Nakeeb

Gastroenterology Surgical Center, Faculty of Medicine, Mansoura University, Mansoura, Egypt

Objectives: The ideal technical pancreatic reconstruction following pancreaticoduodenectomy (PD) is still debated. The aim of the study was to assess the surgical outcomes of duct to mucosa pancreaticojejunostomy (PJ) (G1) and invagination PJ (G2) after PD.

Conclusion: Our novel navigation technique using NIRF imaging might be useful for laparoscopic anatomical liver resection.
Methods: Consecutive patients treated by PD at our center were randomized into either group. The primary outcome measure was the rate of postoperative pancreatic fistula (POPF); secondary outcomes included operative time, day to resume oral feeding, postoperative morbidity and mortality, exocrine and endocrine pancreatic functions.

Results: One hundred and seven patients treated by PD were randomized. The median operative time for reconstruction was significantly longer in G1 (34 vs. 30 min, p = 0.002). POPF developed in 11/53 patients in G1 and 8/54 patients in G2, p = 0.46 (6 vs. 2 patients had a POPF type B or C, p = 0.4). Steatorrhea after 1 year was 21/50 in G1, and 11/50 in G2, respectively (p = 0.04). The albumin level after 1 year was 3.4 g% in G1, and 3.6 g% in G2 (p = 0.03). There was no statistically significant difference regarding the incidence of DM preoperatorily and 1 year postoperatively.

Conclusion: Invagination PJ is easier to perform than duct to mucosa especially in small pancreatic duct. Soft friable pancreatic tissue can be problematic for invagination PJ as the parenchymal laceration. Invagination PJ was not associated with a lower rate of POPF but was associated with a decreased severity of POPF and a decrease in incidence of postoperative steatorrhea.

Benign HPB Diseases
APHPB-0134

INTRAOPERATIVE ENDOSCOPIC RETROGRADE CHOLANGIO-PANCREATOGRAPHY, A USEFUL TOOL IN HANDS OF HEPATOBILIARY SURGEON

A. El Nakeeb
Gastroenterology Surgical Center, Faculty of Medicine, Mansoura University, Mansoura, Egypt

Objectives: Endoscopic Retrograde Cholangio-Pancreatography (ERCP) is done by physicians, radiologists and rarely by surgeons. This study was planned to evaluate the efficacy of intraoperative ERCP combined with laparoscopic cholecystectomy (LC) for patients with gall bladder stone (GS) and common bile duct stone (CBDS) and to show the importance of ERCP for hepatobiliary surgeon.

Methods: Patients treated for GS with CBDS were included. LC and intraoperative transcystic cholangiogram (TCC) was done in most of cases. Intraoperative ERCP was done for cases with evidence of obstruction after doing intraoperative transcystic cholangiogram.

Results: Eighty patients had GS with CBDS were included. LC was successful in all cases. Intraoperative TCC revealed passed CBD stone in 4 cases so intraoperative ERCP was done only for 76 patients. Intraoperative ERCP showed dilated CBD with stones in 64 cases (84.2%) where removal of stones was successful, passed stone in 6 cases (7.9%), short lower end stricture with small stone present in two cases (2.6%) were treated by removal of stone with stent insertion, long stricture lower 1/3 CBD in one case (1.3%) was treated by open choledochojejunostomy, and one case (1.3%) was proved to be ampullary carcinoma and whipple’s operation was scheduled. Operative time was 98.5 ± 27.96 (75–200) min. The hospital stay was 21 ± 2 h with a mean cost 4430 ± 27.96 EP

Conclusion: The hepatobiliary surgeon should be aquized with operative ultrasound, endoscope and ERCP as the 3rd hand to expand his field of therapeutic options.

APHPB-0135

EFFECT OF TRADITIONAL CHINESE HERBAL FORMULA ALF ON LIVER FIBROSIS

X. Zhang, C. Koon, C. Ko, T. Yew, B. Lau, P. Leung and K. Fung
The Chinese University of Hong Kong, Institute of Chinese Medicine, Hong Kong, China

Objectives: Liver fibrosis is a common pathologic outcome of all chronic liver injuries which have caused about 800,000 deaths per year worldwide. This project aims to investigate the efficacy of a novel anti-liver fibrosis Chinese herbal formula ALF, which consists of Fructus Schisandrae, Artemisiae Scopariae Herba, Astragali Radix and Salviae Miltiorrhizae Radix et Rhizoma in anti-liver fibrosis.

Methods: HPLC analysis was performed to identify the main bioactive compounds in ALF. A human hepatic stellate cell line LX-2 was treated with ALF to assess the inhibitory effects in hepatic stellate cells. Bile duct ligation (BDL) was used to induce liver fibrosis. Mice were administered orally with either water or ALF 3 days before BDL and 14 days after BDL.

Results: Four major bioactive compounds in ALF were found, including chlorogenic acid (3.669 μg/mg), calycosin-7-O-β-D-glucoside (0.359 μg/mg), salvianolic acid B (5.812 μg/mg) and schisandrin A (1.471 μg/mg). It was found that the migration and fibrotic collagen induced by TGF-β1 was significantly inhibited by ALF at 250 μg/mL and 1 mg/mL (p < 0.05) in a dose-dependent manner. The in vivo model was successfully established. With high dose of ALF treatment, less apoptotic hepatocytes and fibrosis collagen accumulation were found in the liver tissues, when compared with control group. In addition, MMP1a and MMP2 mRNA levels were significantly up-regulated while Col1a1, Col3a1 and TIMP1 mRNA levels were significantly down-regulated by high dose of ALF.

Conclusion: We have presented the first evidence that aqueous extract of herbal formula ALF showed beneficial effects in liver fibrosis.
Malignant HPB Diseases
APHPB-0136
**CARBON ION BEAM COMBINED WITH GEMCITABINE AND CISPLATIN EFFECTIVELY DESTROYS CHOLANGIOCARCINOMA STEM-LIKE CELLS IN VITRO AND IN VIVO**

S. Sai, T. Wakai and T. Shirai

1Research Center for Charged Particle Therapy, National Institute of Radiological Sciences, Chiba, Japan; 2Division of Digestive and General Surgery, Niigata University Graduate School of Medical and Dental Sciences, Niigata, Japan; 3Research Center for Charged Particle Therapy, National Institute of Radiological Sciences, Niigata, Japan

**Objectives:** To investigate whether carbon ion beam alone or in combination with gemcitabine and cisplatin is effective in targeting putative human cholangiocarcinoma stem cells in vitro and in vivo

**Methods:** Putative cancer stem cells (CSCs) sorted from HuCCT1 and Huh28 cells were treated with or without carbon ion beam, X-ray alone or in combination with gemcitabine and cisplatin, then colony and spheroid formation assay, FACS analysis, YH2AX foci assay as well as xenograft tumor growth control analysis were performed.

**Results:** Colony and spheroid formation assay as well as in vivo tumorigenic assay confirmed that CD44+/ESA+ in HuCCT1, CD133+/CD90+ cells in Huh28 have CSC properties compared to CD44-/ESAl- and CD133--/CD90-- cells. The percentage of CSCs was increased in a dose-dependent manner by X-ray compared to carbon-ion beam alone, and it was significantly enhanced when combine with gemcitabine and/or cisplatin. The number of colony and spheroid formed from CSCs was remarkably reduced and a more large number and large-sized YH2AX foci were observed in CSCs after 24 h by carbon ion beam combined with gemcitabine and cisplatin compared to that of X-ray or carbon ion beam alone. Carbon ion beam with 35 Gy alone or with 25 Gy of carbon ion beam combined with gemcitabine and cisplatin induced severe xenograft tumor cell cavitation, fibrosis, necrosis, and significant tumor regression compared to that of X-ray irradiation.

**Conclusion:** Carbon ion beam combined with gemcitabine and cisplatin effectively eliminated putative cholangiocarcinoma stem cells with unreparable DNA damage in vitro and remarkably destroyed tumors in vivo.

---

**APHPB-0139**

**SURGICAL STRATEGY FOR HEPATO-BILIARY PANCREATIC MALIGNANCIES USING 3D MDCT SIMULATION IN JAPANESE COMMUNITY HEALTH CARE**


1Surgery, Hyogo College of Medicine, Nishinomiya, Japan; 2Surgery, Shiso Municipal Hospital, Shiso, Japan

**Objectives:** Because of geographic inconvenience, patients with hepato-biliary pancreatic (HBP) malignancy are likely to have disadvantage in terms of access to surgical resection, postoperative adjuvant chemotherapy, and survival. Authors assessed availability of preoperative simulation, surgical procedures, and long-term results for HBP malignancies in Japanese community health care.

**Methods:** Between 1997 and 2014, 41 patients in rural Japan were diagnosed and received surgery for HBP malignancy. Fifteen of 41 patients underwent preoperative multi-detector computed tomography (MD-CT), using three-dimensional (3D) virtual hepatectomy simulation. Software was programmed to reconstruct detailed 3D vascular structure and calculate liver volume based on hepatic circulation.

**Results:** There were 14 patients with cholangiocarcinoma (CC), 11 hepatocellular carcinoma (HCC), 9 pancreas cancer, and 7 metastatic liver cancer. Three patients underwent portal vein embolization preoperatively. Forty three surgical procedures were carried out, including right tri-sectionectomy with combined inferior vena cava (IVC) resection, segment 6 + 7 + 8 tri-segmentectomy, laparoscopic hepatectomy, left tri-sectionectomy, and pancreaticoduodenectomy with portal vein reconstruction. Postoperative surgical complication occurred in 13% and majorities were managed conservatively. Postoperative 5 year overall survival rates were 86%, 53%, and 33% in patients with liver, biliary, and pancreatic neoplasm, respectively. Six patients survived more than 5 years postoperatively and included a patient with CC undergoing right tri-sectionectomy with IVC resection.

**Conclusion:** Despite geographic disadvantage, comprehensive surgical strategy was applied safely to the patients with HBP malignancies in Japanese community health care and achieved satisfactory long-term survival.
Benign HPB Diseases  
APHPB-0140  
MIGRATED FISH BONE CAUSED LIVER ABSCESS PRESENTED AS A GASTROINTESTINAL STROMAL TUMOR DIAGNOSED BY ECHOENDOSCOPY  
M. Basaranoglu  
Gastroenterology, Ankara YIH, Ankara, Turkey  
Objectives: A 63-year-old man was presented with a 1-month history of abdominal pain in the clinic.  
Methods: Methods for Image Capture/Processing: A curvilinear echoendoscope (EG-530UT; Fujinon, Japan) was used during this procedure.  
Results: Esophagogastroduodenoscopy revealed a 40 mm in size, subepithelial lesion at antrum. GIST was suspected. Echoendoscope (EUS) revealed a 23 × 27 mm hypoechoic mass arising from gastric wall with a lineer hyperechoic tract (video imaging), from gastric antrum to the 3th segment of the left liver lobe. Subepithelial lesion producing pus by the EUS pressure. On this hepatic segment, there was a hypo- izo-echoic mass with 24 mm in diameter. During the surgical operation, a fibroenuous fistul tract with a 35 mm length was found between stomach and the liver. It was ex- ized. A foreign body, fish bone, was found within the fistula.  
Conclusion: Hepatic abscess due to fish bone penetration is a very rare and could be fatal. EUS provides further information in the evaluation of this kind of patients and a fundamental on the diagnosis of suspect foreign bodies and their complications.  

Malignant HPB Diseases  
APHPB-0141  
PERCUTANEOUS LIVER BIOPSY ON THE DIAGNOSIS OF CHOLANGIOCARCINOMA: EXPERIENCE OF A TERTIARY GI CENTER  
M. Basaranoglu  
Gastroenterology, Ankara YIH, Ankara, Turkey  
Objectives: Diagnosis of cholangiocarcinoma (CC) is a difficult and challenging issue. We investigated our pathology results to define the patients with CC.  
Methods: We evaluated our pathology records from 2008 to 2013. In our lab, every year approximately 13.000 specimens were examined. All of the materials, 70% was GI specimens and 7% was liver origin.  
Results: We found 44 patients by using the ICQ code. Any specimen with primer other than pancreas and biliary system which was detected by immunohistochemical stains was excluded from the further analysis. Anyone showed pancreas origin during the clinical and laboratory examinations was also excluded from the study. At the end, we had 19 patients with CC.  
Of the 19 patients with CC, one was diagnosed from the operation material, and one from the lymph node biopsy by endosonographic examination and diagnosis confirmed by ERCP brush cytology. The rest of them were diagnosed by percutaneous liver biopsy via the transabdominal ultrasonography or computerized tomography.  
Conclusion: Diagnosis of CC is still a challenging issue, and early diagnosis is not possible. Any clinical or lab examination such as tumor markers or radiologic imaging alone was not be found helpful. We stil need histopathologic examination which is gold standard to reach a desicion.  

APHPB-0142  
PROGNOSTIC FACTORS AFFECTING SURVIVAL AFTER PANCREATICODUODENECTOMY FOR PANCREATIC HEAD ADENOCARCINOMA  
W. Askr and A. El Nakeeb  
Gastroenterology Surgical Center, Faculty of Medicine-Mansoura University, Mansoura, Egypt  
Objectives: Background: Pancreatic cancer is considered to have the worst prognosis of the periamplary carcinomas.  
Objective: This retrospective study was to determine prognostic factors for survival after pancreatoduodenectomy in patients had pancreatic carcinoma  
Methods: Patients and method: Demographic data, preoperative, intraoperative and postoperative variables were collected from January 1996 to January 2011.  
Results: The study included 480 patients (282 males and 198 females with a median age of 53 years (range 30–80 years). At the time of analysis, 180 (37.5%) patients were still alive. The median survival was 19 months (range: 3–105 months). This corresponded to a 1-, 3-, and 5-year actuarial survival of 44%, 20%, and 15% respectively. Mass size less than 2 cm (p = 0.0001), lymph node ratio (p = 0.0001), safety margin (p = 0.0001), perineural, perivascular infiltration, age above 60 years (p = 0.03), gender, preoperative bilirubin, SGPT, liver status, pre and postoperative CEA, CA19-9 (p = 0.0001) were significant predictors of survival in patients undergoing PD for pancreatic cancer.  
Conclusion: Mass size <2 cm, lymph node ratio, safety margin, perineural, perivascular infiltration, age above 60 years, gender, preoperative bilirubin, SGPT, liver status, pre and postoperative CEA, CA19-9 are important predictors of survival in patients undergoing PD for pancreatic cancer.  

APHPB-0143  
COMPARATIVE STUDY BETWEEN UNCINATE PROCESS CARCINOMA AND PANCREATIC HEAD CARCINOMA AFTER PANCREATICODUODENECTOMY (CLINICOPATHOLOGICAL FEATURES AND SURGICAL OUTCOMES)  
W. Askr and A. El Nakeeb  
Gastroenterology Surgical Center, Faculty of Medicine, Mansoura University, Mansoura, Egypt  
Objectives: Background: Pancreatic head cancer is considered to have the worst prognosis of the periamplary
carcinomas. The clinicopathological features of uncinate process pancreatic cancer are poorly published.

**Methods:** We retrospectively studied patients who underwent pancreaticoduodenectomy (PD) for pancreatic head adenocarcinoma. This study included three groups of patients. Group A patients with pure pancreatic head carcinoma (PPHC), group B patients with combined head and uncinate process carcinoma (CPHUC) and group C patients with pure uncinate process carcinoma (PUPC). Preoperative, intraoperative and postoperative variables were collected.

**Results:** The study included 157 patients. Jaundice was the most common presenting symptoms in PPHC and CPHUC. Abdominal pain was the most common presenting symptoms in PUPC. The mean common bile duct (CBD) and pancreatic duct diameters were significantly smallest in PUPC group (p = 0.0001). The venous invasion was significantly observed more in PUPC group and vascular resection was done in 50% of cases. The number of patients with microscopically residual tumor was significantly highest in PUPC group after PD than in other two groups (p = 0.001). Recurrence rate occurred in 54.2% in PUPC group, 34.8% in CPHUC and 22.7% in PPUC group after PD (p = 0.007). The median survival was 19 months in PPHC groups, 16 months in CPHUC group, and 14 months in PUPC group (p = 0.02).

**Conclusion:** PUPC presented with abdominal pain with more vascular infiltration. The recurrence rate was common after PD for uncinate process carcinoma especially locoregional recurrence and the overall survival rate was found to be lower.

**Benign HPB Diseases**

**APHPB-0144**

**LONG TERM OUTCOMES OF CHOLEDOCHODUODENOSTOMY FOR COMMON BILE DUCT STONES IN THE ERA OF LAPAROSCOPY AND ENDOSCOPY**

T. Elshehawy and A. El Nakeeb

Gastroenterology Surgical Center, Faculty of Medicine, Mansoura University, Mansoura, Egypt

**Objectives:** Background: Choledochoduodenostomy (CDD) has been reported as an effective treatment of common bile duct stones (CBD). This study was designed to analyze short term and long term outcomes of CDD for CBDs.

**Methods:** Demographic data, preoperative, intraoperative and postoperative variables were collected. The long term assessment was done in a prospective manner included clinical examination, liver function, abdominal ultrasound, MRCP, upper GI endoscopy and assessment of quality of life using Gastrointestinal Quality of Life Index (GIQLI).

**Results:** A total of 388 consecutive patients underwent CDD, the mean age was 57.92 ± 13.25 years. The mean CBD diameter was 18.22 ± 4.01 mm. The mean operative time was 81.21 ± 20.23 min. Two patients had recurrent stone (0.06%) and managed successfully by endoscope. Gastritis was observed in 16.9% patients. No patient developed sump syndrome. Deterioration in liver function or cholangiocarcinoma. Total and subgroup scores on the GIQLI before and after CDD differed significantly at follow-up (p = 0.0001).

**Conclusion:** CDD is a safe and effective method of drainage of CBD after clearance of CBDs. Long term outcomes are acceptable with good quality of life. Sump syndrome is extremely rare; CDD may be associated with mild to moderate gastritis. CDD doesn’t lead to development of cholangiocarcinoma.

**Malignant HPB Diseases**

**APHPB-0145**

**ISOLATED ROUX LOOP PANCREATICOJEJUNOSTOMY VERSUS PANCREATICOGASTROSTOMY AFTER PANCREATICODUODENECTOMY: A PROSPECTIVE RANDOMIZED STUDY**

T. Elshehawy and A. El Nakeeb

Gastroenterology Surgical Center, Faculty of Medicine, Mansoura University, Mansoura, Egypt

**Objectives:** Background: The optimal reconstruction of the pancreas following pancreaticoduodenectomy (PD) is still debated. The aim of this study was to compare the outcomes of an isolated Roux loop pancreaticojunostomy (IPJ) with that of pancreaticogastrostomy (PG) after PD.

**Methods:** Consecutive patients treated by PD were randomized to either reconstruction. The primary outcome measure was the rate of POPF; secondary outcomes included operative time, day to resume oral feeding, postoperative morbidity and mortality, exocrine and endocrine pancreatic functions.

**Results:** Ninety patients treated by PD were randomized. The median total operative time was significantly longer in IPJ (320 vs. 300 min, p = 0.047). POPF developed in 9/45 patients in IPJ and 10/45 patients in PG, p = 0.796 (7 vs. 4 patients had a POPF type B or C, p = 0.710). The time to resume oral feeding was earlier in IPJ (p = 0.03). Steatorrhea after 1 year was 3.6 gm% in IPJ, and 3.3 gm in PG (p = 0.001).

**Conclusion:** IPJ was not associated with a lower rate of POPF but was associated with a decrease in incidence of postoperative steatorrhea. IPJ allowed early oral feeding and maintained oral feeding even if POPF developed.
APHPB-0146
VALIDATION OF THE SEVENTH EDITION OF THE UICC CLASSIFICATION OF DISTAL CHOLANGIOCARCINOMA
1Department of Surgery, Teikyo University School of Medicine, Tokyo, Japan; 2Department of Frontier Surgery, Graduate School of Medicine Chiba University, Chiba, Japan

Objectives: The seventh edition of the UICC TNM classification separates carcinoma of the extrahepatic bile duct into perihilar and distal cholangiocarcinoma and further changes the definition of the TNM classification. We validated the seventh edition of the TNM classification of distal cholangiocarcinoma.

Methods: Among 135 patients with distal cholangiocarcinoma undergoing surgery, a survival analysis was performed to evaluate the sixth edition of the TNM classification.

Results: The numbers of patients classified with pT1 and pT2 disease were 21 and 46, respectively, according to both the sixth and seventh editions. Patients previously classified as having pT3 (n = 41) and pT4 (n = 27) disease were newly classified with pT3 disease (n = 68). There were no new pT4 patients. According to the sixth edition, there were significant differences in survival rates between the categories of pT1 and pT3 and pT1 and pT4. According to the seventh edition, significant differences were observed in survival rates between the categories of pT1 and pT3. We analyzed our proposal for revising the new T categories. In our proposal, portal vein invasion is included in the new T4. According to the revised T categories, significant differences were observed in survival rates between the categories of pT1 and pT3.

Conclusion: Portal vein invasion should be included in the T4 group of the T category in the seventh edition of the TNM classification.

APHPB-0147
USEFULNESS OF PORTAL VEIN STENTING FOR POSTOPERATIVE PORTAL VEIN STENOSIS
S. Tsutsumi, Y. Toyoki, N. Kimura, D. Kudo, K. Ishido and K. Hakamada
Gastroenterological Surgery, Hirosaki University Graduate School of Medicine, Hirosaki, Japan

Objectives: Portal vein (PV) stenosis due to inflammatory change after liver transplantation or recurrent malignant tumor encasement causes portal hypertension, leading to varices. These varices can lead to gastrointestinal bleeding, which may be life-threatening. In malignant tumor, PV stenosis which causes liver dysfunction, ascites and splenomegaly leading to pancytopenia, makes it impossible to continue chemotherapy.

It is reported that PV stenting is safe and effective as a treatment option for PV stenosis. Herein we report about 5 cases underwent PV stenting in our institution.

Methods: We retrospectively reviewed the records of 5 patients who underwent PV stenting. Three of the patients were men and 2 were women. The median age of the patients was 56 (range 11–72 years). The causes of PV stenosis consisted of 4 recurrent malignant tumor encasements after surgery and one inflammatory change after liver transplantation.

Results: In patients with malignant tumor, the median time from surgery to PV stenosis was 464 (range 279–466 days), and the median patency time of the PV stent was 149 (range 22–149 days). Two of those could have resumed chemotherapy after PV stenting. On the other hand, in a patient with PV stenosis due to inflammatory change after liver transplantation, pancytopenia caused by secondary splenomegaly had been improved after PV stenting. In all patients, there were no complications.

Conclusion: PV stenting improved complications by PV stenosis minimally invasively, so it appears to be the effective therapeutic option for postoperative PV stenosis.

APHPB-0148
NEOADJUVANT HEPATIC ARTERIAL INFUSION CHEMOTHERAPY FOR INOPERABLE HEPATOCELLULAR CARCINOMA: A CASE REPORT
1General Surgery, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung City, Taiwan; 2Oncology, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung City, Taiwan

Objectives: The aim of this case report is to evaluate the effect of neoadjuvant therapy by using hepatic arterial infusion chemotherapy (HAIC) for unresectable hepatocellular carcinoma (HCC) to impact the hepatectomy with curative intent.

Methods: A 33-year-old female patient, with underlying hepatitis B virus infection, was found to have huge HCC with AJCC staging T3bN0M0, and BCLC staging B. The diameter of main tumor was measured of 13 cm with IVC compression. She received three sequential courses of HAIC with formula of doxorubicin (50 mg/m²) and cisplatin (50 mg/m²) every 4 weeks. Computed tomography angiography (CTA) showed significant down-size of main tumor from 13 to 6 cm after 3 months. Resection of tumor was proposed to patient.

Results: Good partial response was achieved after three courses of HAIC according to RECIST criteria (version 1.1). The toxicities of treatment were Grade I fatigue and alopecia. Patient received extended left lobectomy with complication of bile leakage.

Conclusion: This case demonstrated that neoadjuvant HAIC could be considered a option of treatment for patients with locally advanced HCC, which were assumed to be inoperable at diagnosis. Curative intent...
hepatectomy could be expected for cases with good response to neoadjuvant HAIC.

APHPB-0149
EFFECTS OF MICRORNA-638 ON TUMORIGENICITY OF HEPATOCELLULAR CARCINOMA
J. Cheng1, Y. Chen2, J. Han3, X. Wang2, J. Dong1, C. Huang2 and Y. Lv1
1Department of Hepatobiliary Surgery, First Affiliated Hospital of Xi’an Jiao Tong University, Xi’an, China; 2Key Laboratory of Environment and Genes Related to Diseases College of Medicine, College of Medicine, Xi’an Jiao Tong University, Xi’an, China

Objectives: To date, microRNA-638 (miR-638) has been suggested to play a substantial role in human gastric cancer, and has been identified as one of the miRNAs invasion front-specific down-regulated in colorectal liver metastases, but the expression levels of miR-638 in hepatocellular carcinoma (HCC) and its functions in the context of HCC remain unknown. The aim of this study was to investigate the expression and functional role of miR-638 in human HCC

Methods: We examined the expression level of miR-638 levels in 60 paired HCC and adjacent nontumor liver tissues and HCC cell lines by quantitative realtime reverse transcription polymerase chain reaction (qRT-PCR). The effects of miR-638 on the biological behavior of the human HCC cell line were further investigated in this study. Based on a bioinformatics analysis, the vascular endothelial growth factor (VEGF) is predicted to be a target of miR-638. A luciferase reporter assay confirmed target association between miR-638 and VEGF.

Results: The proportion of miR-638 low expression was 78% among the 60 HCC patients, and the expression level of miR-638 in clinical HCC specimens and HCC cell lines were significantly lower than in nontumor controls. Enhanced expression of miR-638 suppressed HCC cell proliferation, migration, invasion and G1-S transition in vitro. Using a luciferase reporter assay, VEGF was determined to be a direct target of miR-638.

Conclusion: These findings indicate that miR-638 may target the VEGF suppresses HCC cell growth, migration and invasion, suggesting that miR-638 may play a tumor suppressive role in human HCC pathogenesis.

APHPB-0150
POST-ABLATION SAFETY MARGIN OF RADIOFREQUENCY ABLATION OF HEPATOCELLULAR CARCINOMA: PRECISE ASSESSMENT WITH A THREE DIMENSIONAL RECONSTRUCTION TECHNIQUE
M. Kuang1, C. Jiang2, X. Xie3, B. Liu3, M. Lin3 and M. Lu1
1Department of Hepatic Surgery, The First Affiliated Hospital of Sun Yat-sen University, Guangzhou, China; 2Division of Interventional Ultrasound, The First Affiliated Hospital of Sun Yat-sen University, Guangzhou, China; 3Department of Medical Ultrasounds, The First Affiliated Hospital of Sun Yat-sen University, Guangzhou, China

Objectives: To analyze the precise ablatable margin produced by radiofrequency ablation (RFA) by the fusing three-dimensional (3-D) images of tumor zones and ablated zones with a reconstruction technique.

Methods: From March 2011 to May 2013, 134 patients (21 female and 113 male) with 159 primary or recurrent hepatocellular carcinoma tumors less than 5 cm received RFA were enrolled. All tumors were treated by RFA with curative intention. Three dimensional tumor and ablated zones were reconstructed and fused to show the ablation margins for accurate measurement.

Results: Follow-up was conducted on all patients for a median of 16 months (range, 2–44 months). The reconstructed ablated zone covers the original tumor zone completely each tumor, but the minimal ablative margins (AM) varied in all directions. The minimal AM ranged from 1 to 9.3 mm (mean, 4.3 ± 1.8 mm) on the fusion image. During the follow-up, local tumor progression (LTP) was observed in 19 tumors, with cumulative LTP rates at 1, 2, and 3 years of 6.7%, 12.3%, and 28.0%, respectively. In the group analysis, an minimal AM of 3.3 ± 1.6 mm (ranged, 1–7.1 mm) was found at where LTP happened, while the minimal AM of those without LTP was 4.5 ± 1.8 mm (range, 1.3–9.3 mm) (p = 0.023). Multivariate analysis identified that only insufficient minimal AM was independent risk factor for LTP after RFA (p = 0.044).

Conclusion: Post-ablation evaluation of ablative margin with 3-D technique provides more information for local response of RFA. To achieve the best local efficacy, a post-ablation safety margin of at least 5 mm is necessary.

APHPB-0151
IMMUNOHISTOCHEMICAL AND CLINICOPATHOLOGICAL STUDY FOR SURGICALLY RESECTED AMPULLARY ADENOCARCINOMA
Department of Gastroenterological Surgery, Faculty of Medicine, Miki-cho, Kita-gun, Japan

Objectives: This study aimed to clarify immunohistochemical and clinicopathological characteristics and
prognostic factor for surgically resected ampullary adenocarcinoma.

**Methods:** Thirty one patients underwent pancreateoduodenectomy for an ampullary cancer at Kagawa University Hospital between 1990 and 2012. Immunohistochemical expression of CK20, CK7, CDX2, MUC1, MUC2, p53, p16, Smad4/Dpc4 and β-catenin were evaluated, and examined the relations with the clinicopathologic factors and prognosis after surgery.

**Results:** The patients included 19 men and 12 women, and the average age was 68.4 (46–83). The distribution of the patients according to the Union for International Cancer Control (UICC) stage was as follows; 6 (19.4%) in I, 6 (19.4%) in IB, 3 (9.7%) in IIA, 13 (41.9%) in IIB, and 3 (9.7%) in IV (no patients presented with UICC stage III). The actual 1-, 3-, and 5-year survival rates were 85.7%, 60.9%, and 50.0%, respectively. The recurrence of cancer occurred in 9 patients. MUC1 (p = 0.028) and p53 (p = 0.007) were significantly associated with recurrence of disease after surgery. Histological grade (p = 0.028), pancreatic invasion (p = 0.003), UICC stage (p = 0.040), MUC1 (p = 0.036), and p53 (p = 0.045) were significantly associated with disease-free survival rate. Pancreatic invasion (p < 0.001), and p53 (p = 0.029) were significantly associated with overall survival rate.

**Conclusion:** It was suggested that immunohistochemical expression of MUC1 and p53 were useful prognostic factor for ampullary cancer.

**APHPB-0152**

**SALVAGE RESECTION FOR UNCONTROLLABLE HEPATOCellular CARCINOMA UNDERGONE PRIOR PERCUTANEOUS ABLATION THERAPY**

M. Kuang1, W. Hu1, D. Li1, S. Shen1, B. Liu2, M. Lin2 and M. Lu1

1Department of Hepatic Surgery, The First Affiliated Hospital of Sun Yat-sen University, Guangzhou, China; 2Department of Medical Ultrasonics, The First Affiliated Hospital of Sun Yat-sen University, Guangzhou, China

**Objectives:** To summarize the experience with salvage resection for uncontrolled hepatocellular carcinoma (HCC) undergone percutaneous ablation therapy (PAT) in a single center.

**Methods:** From September 2006 and September 2013, 50 consecutive patients who underwent salvage resection after PAT were enrolled. Salvage surgery was performed for uncontrolled local recurrence in 29 cases. The remaining 21 patients underwent salvage resection for multiple intrahepatic recurrences (n = 6), recurrence in difficult location for PAT (n = 2), uncontrolled PAT-related complications (n = 3), or resectable extrahepatic metastases (n = 10). Safety, efficacy and survivals of these patients were analyzed. Moreover, the survival outcomes of patients those underwent salvage resection for PAT-related local recurrence were compared with those performed repeated PAT (n = 63).

**Results:** Among the patients performed salvage resection, curative treatment was achieved in all the patients. Postoperative follow-up ranged from 1 to 69 months. The disease-free survival was 38.6% at 1 year and 12.1% at 3 years after salvage resection. The median overall survival after salvage resection was 40 months, with 1-, 3-, 5-year overall survival (OS) rates of 85.2%, 46.4% and 34.8%, respectively. According to subgroup analysis in patients associated with post-PAT local recurrence, the 1-, 3-, and 5-year OS rates were 93.8%, 57.9%, and 28.9%, respectively, after salvage resection; and were 78.7%, 52.7%, and 45.8%, respectively, after repeated PAT (p = 0.284).

**Conclusion:** Salvage resection is a feasible when ablation fails or is inapplicable, and helps improve the overall prognosis in treatment of HCC. Compared with repeated PAT, salvage liver resection is a more radical treatment for patients with local recurrence after PAT, showing comparable survival outcomes.

**Benign HPB Diseases**

**APHPB-0153**

**CLINICAL SIGNIFICANCE OF BILE REFLUX INTO THE PANCREATIC DUCT WITHOUT PANC Reid MAK JUNCTION ASSESSED BY INTRAOPERATIVE CHOLANGIOGRAPHY**


Division of Hepato-Biliary-Pancreatic Surgery, Department of Surgery, Kobe University Graduate School of Medicine, Kobe, Japan

**Objectives:** Bile reflux into the pancreatic duct (BRPD) is sometimes demonstrated during intraoperative cholangiography (IOC) even in patients without pancreaticobiliary maljunction (PBM). However, the clinical significance of the finding is unclear. We examined the rate of BRPD in routine IOC, and the change in gallbladder mucosa was investigated in patients with BRPD.

**Methods:** Among 484 patients who underwent cholecystectomies, patients whose pancreatic duct was depicted in routine IOC were retrospectively extracted. The value of pancreatic amylase (p-amylase) of the gallbladder bile was compared to those in patients without BRPD. The value of p-amylase of the gallbladder bile and histological changes as well as the immunohistochemical expression of proliferating cell nuclear antigen (PCNA) in the gallbladder mucosa were analyzed in patients with BRPD, and the data were compared to those in patients without BRPD (control group).

**Results:** The rate of BRPD was 5.0% (24/484). The value of gallbladder bile p-amylase in patients with BRPD was significantly higher than that of the control group (250±31.6 vs. 42.5, p = 0.034). The value of PCNA-labeling index (LI) in patients with BRPD was significantly higher than that of the control group (15.7 vs. 4.3, p = 0.0026). Among the 24 patients with BRPD, pathological changes in the gallbladder mucosa were detected in 5 cases (2 hyperplasia and 3 metaplasia), but there was no correlation between the presence
of pathological change and PCNA-LI or p-amylase in gallbladder bile.

**Conclusion:** Since the levels of gallbladder bile p-amylase and PCNA-LI in patients with BRPD presented as high, these patients should be clinically dealt with similarly to patients with PBM.

**APHPB-0154**

**GALLBLADDER PERFORATION:** SINGLE CENTER EXPERIENCE OF 50 PATIENTS

V. Gupta, A. Chandra, H. Hatimi, A. Maurya, P. Singh and M. Naushif

*Surgical Gastroenterology, King George Medical University, Lucknow, India*

**Objectives:** To present our experience with gallbladder perforation (GBP).

**Methods:** Prospectively collected data from January 2009 to June 2014 was retrospectively analyzed to identify patients with GBP. Post-traumatic and iatrogenic perforations were excluded. Data was analyzed for demographics, clinical features, co-morbidity, perforation types (1: free; 2: contained; 3: cholecystoenteric fistula), management, and perioperative outcomes.

**Results:** Fifty (33 females; mean age 51 years; range 16–75) were found to have GBP. All except 1 had pain (mean duration 14.27 months, range 0.33–180), 50% had fever (mean duration 2.63 months, range 0.22–18), and 34% had jaundice (mean duration, 6.52 months, range 0.4–30 months).

Causes were acute cholecystitis (47), carcinoma gallbladder (2) and periampullary carcinoma (1). Associated co-morbidities were present in 24% and additional pathology e.g. choledocholithiasis in 40% patients. Perforation was diagnosed preoperatively in only 19 (38%) patients. Nine patients were managed conservatively while remaining 41 underwent surgery with a mean post-operative stay of 9.73 days (range 3–39), and post-operative morbidity of 39% (16/41) with no mortality.

Most of the patients had type 2 (56%) or type 3 (38%) perforation.

Nine patients had xanthogranulomatous cholecystitis. Subgroup analysis showed significantly more co-morbidities in type 1 than type 2 (p < 0.01) and type 3 (p < 0.05) with no difference in other variables (age, sex, symptoms, leucocytes counts, associated pathology, site of perforation, post-operative morbidity or stay).

**Conclusion:** GBP is usually diagnosed intraoperatively and is associated with high post-operative morbidity. Patients with co-morbidities have high risk of free perforation. High index of suspicion is required for preoperative diagnosis of GBP.

**Malignant HPB Diseases**

**APHPB-0156**

**RADIOLOGICAL AND PATHOLOGICAL CHARACTERISTICS IN OCCUPATIONAL CHOLANGIOCARCINOMA DEVELOPING AMONG YOUNG WORKERS AT A PRINTING COMPANY IN JAPAN**


1Hepato-Biliary-Pancreatic Surgery, Osaka City University, Osaka City, Japan; 2Pathology, Shizuoka Cancer Center, Shizuoka Prefecture, Japan

**Objectives:** An outbreak of cholangiocarcinoma has been reported in young workers at a printing company in Japan. All of them were exposed to 1,2-dichloropropane and/or dichloromethane. This study aimed to identify the radiological and pathological characteristics of the cholangiocarcinoma.

**Methods:** We examined retrospectively the findings of diagnostic imaging and pathological examination in 9 patients with occupational cholangiocarcinoma. In 3 patients in whom the whole resected liver was available, we evaluated the location of the carcinoma, atypical epithelium, and bile duct injuries. We also examined the association with the pathological findings and the diagnostic imaging findings.

**Results:** According to the diagnostic imaging, regional dilatation of the intrahepatic bile ducts without tumor-induced obstruction was observed in 5 patients. In a total of 9 patients, biliary intraepithelial neoplasia and/or intraductal papillary neoplasm of the bile duct were observed in various regions of the bile ducts in non-cancerous hepatic tissue. In the 3 patients in whom the whole resected liver was available, we evaluated the location of the carcinoma, atypical epithelium, and bile duct injuries. We also examined the association with the pathological findings and the diagnostic imaging findings.

**Conclusion:** In the patients with occupational cholangiocarcinoma, bile duct injury, precancerous or early cancerous lesions were pathologically found in the regional dilatation of bile ducts on diagnostic imaging.

© 2015 The Authors

*HPB* © 2015 Americas Hepato-Pancreato-Biliary Association
APHPB-0157

FATE OF THE PORTAL VEIN AFTER PANCREATODUODENECTOMY FOR PERIAMPULLARY CANCERS: PATENCY RATE AND ASSOCIATED COMPLICATIONS

Department of Surgery, Seoul National University College of Medicine, Seoul, Korea

Objectives: Previous studies have analyzed acute complications of pancreatoduodenectomy, but little is known about the fate of the portal vein (PV), especially its long-term patency and associated complications. The aim of this study was to explore the long-term fate of the PV after pancreatoduodenectomy, as determined by patency rate, risk factors for PV stenosis/occlusion and associated complications.

Methods: Serial CT images of patients who underwent curative pancreatoduodenectomy for periampullary cancers were evaluated for PV stenosis/occlusion.

Results: Of 826 study subjects, the PV stenosis/occlusion rate after curative pancreatoduodenectomy was 19.6%, and the 5-year patency rate was 69.9%. The most frequent cause of PV stenosis/occlusion was local recurrence followed by postoperative change and PV thrombosis. Patency rate was highest in patients with ampulla of Vater cancer and lowest in patients with thrombosis. Patency rate was highest in patients with recurrence followed by postoperative change and PV most frequent cause of PV stenosis/occlusion was local 19.6%, and the 5-year patency rate was 69.9%. The complication rate after curative pancreatoduodenectomy was known about the fate of the portal vein (PV), especially its long-term patency and associated complications. We conducted this study.

Conclusion: PV resection increases the risk of PV stenosis/occlusion after curative pancreatoduodenectomy. Although recurrence is the most frequent cause of PV stenosis/occlusion, a significant proportion of patients without disease recurrence experience PV stenosis/occlusion. The possibility of rare but fatal complications indicates the importance of PV monitoring after pancreatoduodenectomy.

APHPB-0158

GLIOMA-ASSOCIATED ONCOGENE-1 INHIBITOR AFFECTS THE CELL PROLIFERATION AND INVASIVENESS OF HUMAN HEPATOCELLULAR CARCINOMA

K. S. Jeng1, C. F. Chang2, Z. H. Hung2, M. C. Yu2, H. I. Hsiau2, F. Y. Chang2 and S. Y. Li2
1Surgery, Far Eastern Memorial Hospital, New Taipei City, Taiwan; 2Medical Research, Far Eastern Memorial Hospital, New Taipei City, Taiwan

Objectives: The sonic hedgehog (Shh) pathway is crucial for the development of hepatocellular carcinoma (HCC). To study whether the inhibitor of Shh pathway may affect the proliferation and invasiveness of HCC, we conducted this study.

Methods: Cell culture and sorting of CD133+ cells of human HCC cell line PLC/PRF/5 cells were performed. HPI-1, the Gli-1 inhibitor, with concentration of 0, 10, and 40 μM was added to PLC/PRF/5 cells. After treatment, we examined the mRNA expression of Shh, Ptc-1, Gli-1 and Smoh of PLC/PRF/5 cells. Cell proliferation, cell invasion assay, and mRNA expression of the factors of apoptosis or other related pathway were studied respectively.

Results: The percentage of the sorted CD133+ cells was about 35% in PLC/PRF/5 cells and the purity was over 90%. Gli-1 inhibitor HPI-1 altered the Shh signaling pathway by decreasing Shh, Smoh and Gli-1 expression in PLC/PRF/5 cells. High dose HPI-1 could inhibit cell proliferation in both CD133+ and CD133− cells. In addition, HPI-1 could reduce the cell invasion in both CD133+ (40%) and CD133− (15%) cells. CD133+ expression was also reduced. Whereas, the percentage of CD133− CD44+ increased after HPI-1 treatment.

Conclusion: Gli-1 inhibitor decreased cell proliferation via apoptosis and decreased invasiveness via down-regulation of factors of Shh signaling pathway with reduced CD133 expression. To inhibit Shh pathway may become a potential therapy for HCC.

Benign HPB Diseases

APHPB-0159

CLINICO-PATHOLOGICAL CO-RELATION IN PATIENTS OF PORTAL BILIOPATHY

S. Pujari, C. Kantharia, R. Prabhu, A. Supe and R. Bapat
Surgical Gastroenterology, Seth GS Medical College & KEM Hospital, Parel, Mumbai-12, India

Objectives: Patients with Portal Biliopathy usually are asymptomatic, This study analyses Clinical and radiological co-relation and Outcome of intervention in PB patients.

Methods: This is a Prospective analysis from March 2010 to 2012. Patients with EHPVO were assessed with regards to: etiology of PVT, Symptoms, serum alkaline phosphatase and total bilirubin. Doppler USG and MRCP were done in all. Patients were grouped into Clinically Symptomatic and Asymptomatic group.
ERCP and CT-Angiography to assess shuntable vessels performed in symptomatic patients. F/U of serum alkaline phosphatase and total bilirubin was done at end of 30, 90 and 180 days and thereafter 6 monthly. MRCP was done at end of 1 year in whom intervention was done. Statistical analysis done using SPSS v11.

Results: 39 patients were studied. 34 had radiological evidence of PB (87.17%). 9 (23.07%) were clinically symptomatic, 5 had Jaundice with cholangitis and 4 only jaundice. Radiological abnormality in 34 was: Varicoid: 23, Fibrotic: 7 Mixed: 4. Five of nine symptomatic patients were subjected to ERCP stenting. PSRS shunt done in two, Choledocho Jejunostomy in 1, and cholecystectomy with T-Tube insertion in 1

Conclusion:
1. There is definite Clinico-Radiological-Biochemical co-relation in patients with Symptomatic Portal Biliopathy.
2. Biochemical parameters are more realistic as compared to radiological parameters alone to investigate clinical condition.
3. Epicholedochal venous plexus, Stricture with dilatation, Delayed enhancement were found to be statistically significant.
4. Biochemical and Radiological parameters were statistically significant with the p-value < 0.0001 in the clinically symptomatic group.

APHPB-0160

PANCREATIC DUCT ASCARIASIS: CLINICAL PRESENTATION, MANAGEMENT AND OUTCOME

G. Javid, A. Showkat and S. Zargar
Gastroenterology, Sheri-Kashmir Institute of Medical Sciences (SKIMS), Srinagar, Jammu & Kashmir, India

Objectives: Infection with ascaris is seen globally. The adult roundworm frequently migrates into the biliary tree from the small intestine. Migration into the pancreatic duct is a rare event due to its narrow caliber and tortuosity. The aim is to present the incidence, clinical features, diagnostic modalities and outcome of pancreatic duct ascariasis.

Methods: This is a retrospective cum prospective study over a period of 18 years. During this period 3357 cases of hepatobiliary and pancreatic ascariasis were seen and 51 had pancreatic duct ascariasis.

Results: There were 28 females; 10(19.6%) patients were below 18 years of age. The mean age was 38 ± 5.3 years (range 7–48 years). Three types of pancreatic duct ascariasis were identified. 1) Isolated pancreatic duct ascariasis (15 patients); 2) concomitant pancreatic and bile duct ascariasis in (27patients); 3) worm across ampulla of Vater entering into the pancreatic duct (9 patients). Pancreatitis was mild in 43 (84.31%) and severe in 8 patients (15.69%). Ultrasonography is an excellent diagnostic tool. Majority of patients responded to conservative management. Endoscopy was performed in 23 patients with severe pain and in 9 patients’ worms hanging across the ampulla was extracted. Endoscopic retrograde cholangiopancreatography was performed in 11 patients with pyogenic cholangitis, severe pancreatitis and worsening cholecystitis. Surgery was done in 2 patients. Patients with concomitant worms in the biliary tree and pancreatic duct had significantly higher incidence of severe pancreatitis (p < 0.05), more complications and need for surgery (p < 0.05). Mortality was 1.9%.

Conclusion: In Western countries occurs in travelers or immigrant population.

APHPB-0161

UNAVOIDABLE RIGHT HEPATIC DUCT INJURY DURING LAPAROSCOPIC CHOLECYSTECTOMY

T. Lin1, K. C. Chen1, T. S. Lin2, Y. C. Chiu3, L. Tsang4, C. C. Wang1 and C. L. Chen1
1General Surgery, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung, Taiwan; 2Plastic and Reconstructive Surgery, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung, Taiwan; 3Hepato-Gastroenterology, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung, Taiwan; 4Diagnostic Radiology, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung, Taiwan

Objectives: Biliary complication during cholecystectomy is not unusual and will impact patients’ recovery. We present a patient with unusual biliary anatomy and encountered unavoidable bile duct injury during laparoscopic cholecystectomy.

Methods: A 63 year old female with gallstones presented right upper abdominal pain. Preoperative MRCP and ERCP didn’t show definite biliary anatomy variation. During laparoscopic cholecystectomy, the cystic duct was divided as close to GB as possible. However bile duct injury was found and the operation was converted to laparotomy. Right hepatic duct injury was confirmed and micro-surgeon performed anastomosis between right hepatic duct and cystic duct. After operation, the bile leakage was controlled with low pressure drain suction and endoscopic retrograde biliary drainage (ERBD). The patient was discharged with normal liver function. The ERCP 4 months after operation showed patent right hepatic duct and the ERBD was removed.

Results: In review the preoperative image and operative finding, the right hepatic duct drained into GB neck. Injury of the right posterior duct seems unavoidable. After recognizing the bile duct injury, immediate reconstruction was done. A micro-surgeon being experienced in bile duct anastomosis during liver transplantation performed duct to duct anastomosis. The patient recovered well without another operation.

Conclusion: Right hepatic duct injury during cholecystectomy is unavoidable when it drains into GB. Preoperative image is difficult to identify this bile duct variation. Management methods should be considered according to facilities of institution.
**Malignant HPB Diseases**

**APHPB-0162**

**THE IMPACT OF MAIN-PANCREATIC-DUCTAL SPREADS ON SURGICAL AND ONCOLOGICAL OUTCOMES IN RESECTED INVASIVE DUCTAL CARCINOMA PATIENTS**


1Surgery Surgical Oncology and Science, Sapporo Medical University School of Medicine, Sapporo, Japan; 2Surgical Pathology, Sapporo Medical University Hospital, Sapporo, Japan

**Objectives:** Invasive ductal adenocarcinoma of the pancreas (IDC) also spreads through the pancreatic duct system. The aim of this study was to clarify the surgical and oncological impact of the main pancreatic duct spread (i.e. ‘mpd’) in IDC patients.

**Methods:** We retrospectively examined the incidence of mpd in IDC and its correlation with clinicopathologic parameters in a series of 184 patients who underwent surgeries through 1990–2013 in our hospital.

**Results:** Mpd was identified in 42 patients (22.8%) and mpd in IDC and its correlation with clinicopathologic parameters in a series of 184 patients who underwent surgeries through 1990–2013 in our hospital.

**Conclusion:** To secure resectional margin 2 cm in performing radical surgery for invasive ductal carcinoma seemed to be appropriate in our study, however 3.8% of patients require surgical margins more than 2 cm. The patients with localized tumor had better be more taken care for pancreatic cut margin positive for cancer cell and intraoperative frozen section examination will be usually required.

**APHPB-0163**

**LIVER METASTASES FROM COLORECTAL CANCER AFTER METALLIC STENT PLACEMENT FOR COLORECTAL OBSTRUCTION**


Surgery, Toho University Ohashi Medical Center, Tokyo, Japan

**Objectives:** Colorectal stent placement is a procedure to treat colorectal obstruction using self-expandable metallic stent (SEMS). Traditionally, obstructive colorectal cancer was treated by performing temporary colostomy. However, this technique has decreased patients’ quality of life (QOL). In this study, we analyzed the patients with liver metastasis from obstructive colorectal cancer with SEMS avoiding the temporary colostomy.

**Methods:** From 2004 to 2014, 68 cases with obstructive colorectal cancer were inserted SEMS. Among these cases, 18 cases with liver metastases were analyzed.

**Results:** Synchronous liver metastases in 13 cases, asynchronous in 5 cases. Arteries before colorectomy was observed in 16 cases, depth of tumor invasion of primary colorectal cancer over SS in all, lymph node metastases in 11 cases. Hepatectomy was performed in 9 cases, unresectable in 9 cases including distant metastases in 5 cases, multiple liver metastases over H2 stage in 3 cases, peritoneal dissemination in 2 cases. Preoperative percutaneous transhepatic portal embolization was performed in 2 cases. 9 Hepatectoies included 4 cases of right hepatectomy, one case of medial sectionectomy, and 2 cases of partial resection, 2 cases of laparoscopic lateral hepatectomy. Regarding to the recurrence after hepatectomies, 3 cases were occurred hepatic recurrence, which were operated re-hepatectomies, and 2 cases were occurred lung metastasis, which were operated pneumectomy. Chemotherapy was introduced after surgery in 8 cases.

**Conclusion:** Regarding to the therapeutic strategy of the obstructive colorectal cancer, SEMS is a preferable management, which is possible to perform one stage colorectomy avoiding the temporary colostomy. This management seems to perform hepatetomies and chemotherapy in short interval and may improve QOL.

**Benign HPB Diseases**

**APHPB-0164**

**ST2 IS A BIOMARKER FOR LIVER CIRRHOSIS CAUSED BY SCHISTOSOMA JAPONICUM INFECTION**


1Hepatic Surgery Center, Tongji Hospital, Wuhan, China; 2Gastroenterology, Tongji Hospital, Wuhan, China; 3Allergy and Clinical Immunology, School of Medicine, The Johns Hopkins University, Baltimore, MD, USA

**Objectives:** Schistosoma japonicum infection is a significant public health problem in Asia, and chronic infection often leads to liver cirrhosis, which is life-threatening. ST2, a potent Th2 molecule, has been associated with hepatic fibrosis; however, the relationship between ST2 and schistosomiasis-induced liver cirrhosis is unknown. This study aims to elucidate the role of ST2 in liver cirrhosis associated with schistosomiasis.

**Methods:** 646 patients with schistosomiasis (339 with and 307 without liver cirrhosis) and 301 unaffected controls were recruited from Hubei province, China, an area endemic for S. japonicum. Six single nucleotide
polymorphisms (SNPs) in *ILIRIL*, the gene encoding ST2, were genotyped in all samples. Soluble ST2 (sST2) was measured by ELISA in serum samples from a subset of 868 participants and tests for association between ST2 SNPs and sST2 levels were performed using R and PLINK. The study was approved by the IRBs that subjects gave written consent.

**Results:** sST2 levels in the end-stage group were significantly higher than the chronic group (p = 0.000) and controls (p = 0.000). SNP rs12712135 was positively associated with sST2 levels after adjusting covariates (p = 1.30E-14). SNPs rs1420101, rs6543119, rs10206753 were negatively associated with sST2 levels (p = 1.25E-07; p = 2.08E-07; p = 0.002). SNPs rs12712135, rs1420101, rs6543119 were more strongly associated with risk of disease in the end-stage group (p = 3.72E-08, 2.84E-05, 2.44E-05 respectively) compared to the chronic group (p = 3.90E-07, 0.007, 0.008, respectively) and controls (p = 0.0002, 0.003, 0.007, respectively).

**Conclusion:** Our results implicate ST2 as a biomarker for S. japonicum-induced liver cirrhosis, and a role for ST2 polymorphisms in schistosomiasis.

**Malignant HPB Diseases**

**APHPB-0165**

**POSTOPERATIVE OUTCOME AFTER MAJOR LIVER RESECTION IN JAUNDICED PATIENTS WITH PROXIMAL BILE DUCT CANCER WITHOUT PREOPERATIVE BILIARY DRAINAGE**


Gastroenterology and Transplantation Center, Mansoura Faculty of Medicine, Mansoura, Egypt

**Objectives:** The need for routine use of preoperative biliary drainage (PBD) before major liver resection in jaundiced patients has recently been questioned. Our aim was to present our experience of patients with proximal bile duct cancer who undergo major liver resection without PBD and compare these results with patients without biliary obstruction who underwent major liver resection.

**Methods:** Eighty-six consecutive jaundiced patients underwent major liver resection without PBD. For each patient with malignant obstructive jaundice, subjects with underlying liver tumor were selected. Eighty-nine patients fulfilled all selection criteria and formed the control group.

**Results:** Forty-eight patients underwent right or extended right hepatectomy and 38 patients underwent left or extended left hepatectomy. Fifty-four jaundiced patients (63%) and 19 non jaundiced patients (21%) received blood transfusion (p = 0.04). Fifty-three patients (62%) in the jaundiced group and 17 (19%) in the control group experienced postoperative complications (p = 0.003) [Subphrenic collections (p = 0.02), wound infection (p = 0.02) and bile leaks (p < 0.001)]. In contrast, there were no significant differences for mortality (6% vs. 2%) and transient liver failure (10% vs. 3%) between both groups. Those patients who underwent extended right hepatectomy (more than 50% resection) express high morbidity and mortality.

**Conclusion:** Major liver resection without PBD leaving a liver remnant of more than 50% is safe in jaundiced patients. However, transfusion requirement and incidence of post operative complications are higher in jaundiced patients than in control. There is no evidence that PBD can reduce the rate of these complications.

**APHPB-0166**

**HEPATIC RESECTION FOR HCC IN PATIENTS WITH PORTAL HYPERTENSION: A LONG-TERM BENEFIT COMPARED WITH TRANSARTERIAL CHEMOEMBOLIZATION AND THERMAL ABLATION**

B. H. Zhang, H. Xiao, B. Mei, G. Wei, R. Wang, B. X. Zhang and X. P. Chen

Surgery, Tongji Hospital, Tongji Medical College, Hua Zhong University of Science and Tec, Wuhan, China

**Objectives:** The optimal treatment for HCC in cirrhotic patients with portal hypertension (PHT) is still controversial. The objective of this study is to compare the outcomes of hepatic resection for HCC in cirrhotic patients with PHT with those without PHT, and those with PHT but managed with transarterial chemoembolization (TACE) or thermal ablation.

**Methods:** A total of 167 cirrhotic patients with HCC were retrospectively analyzed. Patients were divided into 3 groups: presence (PHT-R group, n = 58) or absence (NPHT-R group, n = 67) of PHT at the time of hepatic resection, and those with PHT but managed with transarterial chemoembolization (TACE) or thermal ablation (PHT-O group, n = 42). The short- and long-term outcomes were compared among the 3 groups.

**Results:** The PHT-R group had better liver function compared with those in the PHT-O group (patients had Child-Turcotte-Pugh class B liver function: 5.2% vs. 31%, p = 0.001). Operative mortality and morbidity were all similar among the 3 groups. The 1-, 3-, 5-year survival rates were 80.4%, 55.6% and 28.1% in the PHT-R group, which were similar compared with the NPHT-R group (79.1%, 64.2% and 39.8%, p = 0.313), but significant better than those in the PHT-O group (60.7%, 24.4%, and 7.3%, p < 0.001). Multivariate analysis identified only serum alpha-fetoprotein level and number of tumors as independent predicting factors for survival.

**Conclusion:** Hepatic resection is associated with similar short-term outcomes and better long-term results for HCC in selected cirrhotic patients with PHT compared with TACE and thermal ablation.
RADIOFREQUENCY-ASSISTED RIGHT HEPATECTOMY FOR HEPATOCELLULAR CARCINOMA THROUGH ANTERIOR APPROACH – 32 CASES REPORTS

K. Ma, J. U. N. Yan, X. Feng, F. E. N. G. Xia, X. Li and P. I. N. G. Bie
Hepatobiliary Surgery, Southwest Hospital, Third Military Medical University, Chongqing, China

Objectives: To study the efficacy of radiofrequency-assisted right hepatectomy for hepatocellular carcinoma (HCC) through anterior approach.

Methods: The clinic datas of 32 HCC patients who underwent radiofrequency-assisted right hepatectomy through anterior approach from December 2012 to August 2014 were collected retrospectively. The 31 patients were male, 1 female, range from 39 to 73 years with a mean of (50 ± 7) years. 29 of the 32 patients were infected with hepatitis B virus. A retrohepatic tunnel anterior to the surface of the inferior vena cava (IVC) was created. The liver was hanged away from the IVC and radiofrequency ablation was carried out along the Cantline’s line. Clamp crushing was used to divide off the liver parenchyma along the middle of the ablated area until the parenchyma was fully resected. After short hepatic veins and the right hepatic vein were ligated, ligaments of right liver were fully isolated and right liver was resected.

Results: The surgical time was 195–445 min, with a mean of (281 ± 58) min. The bleeding was 200–1800 mL, with a mean of (574 ± 381) mL. The postoperative hospital stay was 4–54 days, with a mean of (16 ± 8) days. There were 8 medical complications and 1 postoperative death. Except one death patient, all other patients were cured and discharged.

Conclusion: Radiofrequency-assisted right hepatectomy for HCC through anterior approach is safe and effective.

ENDOSCOPIC NASO-GALLBLADDER DRAINAGE FOR ACUTE CHOLECYSTITIS IN HIGH RISK PATIENTS

Department of Surgery and Oncology, Kyushu University Hospital, Fukuoka, Japan

Objectives: This study aimed to clarify the usefulness of endoscopic naso-gallbladder drainage (ENGBD) for acute cholecystitis (AC) in patients at high risks to undergo percutaneous transhepatic gallbladder drainage (PTGBD).

Methods: Medical records of 6 patients who underwent ENGBD for AC were retrospectively reviewed. Five-French nasobiliary tube was used for drainage.

Results: The indications for ENGBD were usage of anticoagulation or antiplatelet drugs in 5 patients, and thrombocytopenia due to hematologic malignancy in the remaining one. In addition, there were anatomical obstacles against PTGBD such as ascites due to the presence of a ventriculoperitoneal shunt or a vascular graft in the right upper abdomen. AC was relieved by ENGBD in all of the 6 patients. Three of them underwent laparoscopic cholecystectomy (LC) with the ENGBD tube in place, and the tube was used for intraoperative cholangiography or as the guide to identify the cystic duct during LC. The patient with hematologic malignancy could be transferred to chemotherapy smoothly after removal of the ENGBD tube. The remaining 2 patients could be discharged after cutting the tube for conversion to internal stenting.

Conclusion: ENGBD is useful for patients who cannot undergo PTGBD or emergency LC safely. By enabling easy identification of the cystic duct, the ENGBD tube contributes to avoidance of bile duct injury during LC. Furthermore, because the ENGBD tube can be cut or removed immediately without the need for percutaneous fistula formation, patients can be discharged or transferred to the treatment of comorbidities quickly.

IDENTIFICATION OF NEW TISSUE BIOMARKERS TO PREDICT BIOLOGIC FEATURES OF HEPATOCELLULAR CARCINOMA

Y. Nomura1, H. Yano2, O. Nakashima3, S. Ogawawara2, Y. Hirakawa1, K. Takahash1, Y. Gotou1 and K. Okud1
1Surgery, Kurume University School of Medicine, Fukuoka, Japan; 2Pathology, Kurume University School of Medicine, Fukuoka, Japan; 3Clinical Laboratory Medicine, Kurume University School of Medicine, Fukuoka, Japan

Objectives: Biologic features of hepatocellular carcinomas (HCCs) relate with the treatment and the prognosis. Previously, we isolated the side population (SP) cells from 2 HCC cell lines established from a single HCC nodule. We further performed cDNA microarray analysis of both SP cells and found 11 increased gene expression in common. In the present study, we performed immunohistochemical examination and determined the relationship between the expression and biological features.

Methods: We used 100 cases of HCC (<5 cm in diameter) obtained from the patients who undergone curative hepatectomy. Immunoreactivity of Annexin A1 (ANXA1), E74-like factor 3 (ELF3), and Janus kinase and microtubule interacting protein 3 (JAKMIP3) was evaluated with IHC score obtained by multiplying intensity of positive cells by area of positive cells. The relationship between each or sum of IHC score of 3 molecules and clinicopathological parameters were examined.

Results: Each of IHC score was significantly higher in poorly differentiated HCCs, in HCCs with high incidence of portal vein invasion, and in HCCs with intrahepatic metastasis. Sum of 3 IHC scores could show...
the same or more significant results. When 100 cases were classified into 2 groups according to the sum of IHC score of 3 molecules, low IHC score group showed significantly better overall survival rate than high IHC group.

**Conclusion:** ANXA1, ELF3, and JAKMIP3 are strongly expressed in HCCs with more malignant biologic features and poor prognosis. Immunostaining of 3 molecules in HCC tissues may be useful to predict the biologic feature and prognosis.

**APHPB-0174**

**NEOPLASTIC SPINDLE CELLS ARE AN INDEPENDENT PROGNOSTIC FACTOR IN PANCREATIC CANCER**

K. Takahashi1, T. Hisaka1, H. Horiuchi1, H. Ishikawa2, M. Nakayama2, O. Nakashima2, H. Yano2, K. Okuda1 and Y. Akagi1

1Surgery, Kurume University School of Medicine, Fukuoka, Japan; 2Pathology, Kurume University School of Medicine, Fukuoka, Japan

**Objectives:** Several reports showed that Neoplastic spindle cells (NSCs) may be strongly involved in the invasion, metastasis and poor prognosis and epithelial-mesenchymal transition (EMT). It has not yet been investigated that NSCs relate to the recurrence and prognosis in various cancers. Furthermore, NSCs are participate in EMT in pancreatic cancer (PC) too. We clinicopathologically investigated the association between NSCs and the recurrence, prognosis, and EMT in PC.

**Methods:** We studied 68 PC patients. Cancer cells with a spindle or oval shape that do not exhibit luminal structures were defined as NSCs. We graded NSCs regarding to an area of NSCs at hematoxylin and eosin stain (NSC grade) and examined the participation in NSCs and EMT by immunohistostaining of Snail antibody and E-cadherin antibody.

**Results:** In multivariate analysis, NSC grade was an independent risk factor for disease-free survival and overall survival. This was independent of TNM stage and histological grade. NSCs were related to EMT pattern in immunohistostaining, significantly.

**Conclusion:** NSC grade significantly related to the recurrence and prognosis of PC. NSC grade assessment can be not only performed inexpensively and conveniently, but also used to guide future individualized therapeutic approaches. Furthermore, NSCs was found to relate to EMT, profoundly.

**Benign HPB Diseases**

**APHPB-0176**

**LAPAROSCOPIC COMMON BILE DUCT EXPLORATION: PATIENT SELECTION FOR NON EXPERIENCED SURGEON**


Gastroenterology and Transplantation Center, Mansoura Faculty of Medicine, Mansoura, Egypt

**Objectives:** Most laparoscopic surgeons prefer the ‘single-stage’ laparoscopic approach to cholelithiasis and choledocholithiasis in an attempt to decrease the need for multiple procedures and their associated morbidity and mortality. This is a preliminary experience aiming at evaluation of laparoscopic common bile duct exploration in a selected group of patients with choledocholithiasis to choose good selection criteria.

**Methods:** From March 2011 to May 2013, 50 patients with CBD stones underwent laparoscopic common bile duct exploration

**Results:** Fifty patients with common bile duct stones underwent laparoscopic common bile duct exploration, with successful completion in 47 cases and the remaining 3 cases requiring conversion to open surgery. Two patients underwent laparoscopic trans-cystic approach with successful CBD clearance in both patients as they have small stones below 0.5 cm. Forty-five patients requires laparoscopic choledochotomy. Hospital morbidity occurred in 2 (4%) patients; one with minor bile leak which managed conservatively, one with missed common bile duct stone who requires endoscopic stone removal 5 days postoperatively. There was no operative mortality.

**Conclusion:** Laparoscopic common bile duct exploration is a feasible, safe and effective procedure that carries a low morbidity and mortality. Patient selection is mandatory especially in the first few cases till the learning curve approached.

**APHPB-0177**

**COMPARISON OF SELECTIVE LAPAROSCOPIC COMMON BILE DUCT EXPLORATION WITH LAPAROSCOPIC CHOLECYSTECTOMY VERSUS ENDOSCOPIC RETROGRADE PANCREATOGRAPHY AND LAPAROSCOPIC CHOLECYSTECTOMY FOR CHOLEDOCHOLITHIASIS: A CASE SERIES STUDY**

M. Sharifudin1, D. Klokol1 and K. Vishakan2

1Unit of HPB Surgery, Department of Surgery, Hospital Queen Elizabeth, Kota Kinabalu, Malaysia; 2Department of Surgery, Hospital Queen Elizabeth, Kota Kinabalu, Malaysia

**Objectives:** The management of choledocholithiasis in the era of key-hole surgery is fraught with conundrums. An array of options exist (1) Laparoscopic CBD Exploration + Laparoscopic Cholecystectomy (2) ERCP + Lap Chole. The aim of our study is to prove the efficacy, safety, surgical outcomes and cost-effectiveness of performing selective Lap CBD explorations as a single stage treatment modality as opposed to a 2 stage procedure.

**Methods:** 27 patients were selected to the main group for laparoscopic cholecystectomy with CBD exploration. The control group was comprised of 39 patients whom ERCP followed by laparoscopic cholecystectomy was performed. The following data in both groups were analyzed and compared: complications rate, duration of hospital stay, total cost of treatment.

**Results:** In all 27 selected patients laparoscopic operation was successful, with zero conversion rate. No
significant intra-operative or post-operative complications were observed in the main group. 1 patient (3.7%) had minor post-operative bile leak. No cases of residual CBD stones noted. Mean hospital stay was 3–6 days.

Control group had higher rate of complications (post-ERCP pancreatitis and cholangitis) – 10.26%. Conversion rate in this group was 5.1%.

**Conclusion:** Single stage laparoscopic cholecystectomy with CBD exploration is a safe and effective procedure which can be recommended with the proper selection of patients.

**Malignant HPB Diseases**
APHPB-0178

**LAPAROSCOPIC RIGHT HEPATECTOMY VERSUS OPEN RIGHT HEPATECTOMY: META-ANALYSIS**
M. Kasai and M. Hilal

*Department of Gastroenterological Surgery, Sendai Kousei Hospital, Sendai, Japan; 2Department of Hepato-Biliary and Pancreatic Surgery, University Hospital Southampton NHS Foundation Trust, Southampton, UK*

**Objectives:** Laparoscopic right hepatectomy (LRH) have been reported as a most challenging but capable procedure by the number of experienced centers in the world. However the short-term outcomes including postoperative morbidity and mortality compared with open right hepatectomy (ORH) have not been properly evaluated. The purpose of this study to assessed the safety and benefits of LRH as the standard procedure.

**Methods:** Pubmed was searched for articles which reported LRH compared with ORH up to July 2014. Short-term outcomes including blood loss, operative time, length of hospital stay and postoperative complication and mortality were analyzed.

**Results:** There were a total of 131 patients in the LRH group and 175 in the ORH group. A total of 15 conversions (11.5%) from laparoscopic to Open or Lap-assist surgery were reported. Blood loss was significantly decreased in LRH (mean difference: 265 mL; 95% CI: −398 to −133 mL; p < 0.001). Hospital stay was significantly shorter in LRH (mean difference: 2.2 days; 95% CI: −3.1 to −1.3 days; p < 0.0001). The pooled odds ratios for postoperative morbidity was found to be 0.54 (OR: 0.54; 95% CI: 0.315–0.9098, p = 0.02). No significant difference was observed between the both groups for operative time and post-operative mortality.

**Conclusion:** This meta-analysis demonstrated that LRH may have potential short-term advantages in terms of blood loss and postoperative complications and hospital stay without prolonging operative time and increasing mortality rate. Larger prospective randomized studies with longer observation periods are ideal to verify long-term benefits of LRH.

**Benign HPB Diseases**
APHPB-0179

**TECHNIQUES AND INNOVATIONS IN LAPAROSCOPIC CHOLECYSTECTOMY VIA A SINGLE-INCISION APPROACH IN PATIENTS WITH DENSE ADHESIONS**

*Surgery, Toho University Ohashi Medical Center, Tokyo, Japan*

**Objectives:** The laparoscopic approach is sometimes rejected in favor of open surgery in cholecystectomy patients with dense adhesions from previous multiple or upper abdominal surgeries that require adhesiolysis and reduce intraperitoneal visibility, thus preventing ports from being safely placed. We present techniques and innovations for an multichannel access port +1 port single-incision approach for laparoscopic cholecystectomy (LC) in patients with dense adhesions. This approach is recommended for its safety rather than its cosmetic benefits.

**Methods:** The access ports are placed in a secure position following ultrasound assessment of abdominal wall adhesions. Minilaparotomy comprising a 2.5-cm vertical incision at the access port site is performed without cosmetic consideration. The access ports are inserted after adhesiolysis based on direct observation of adhesions surrounding the incision site. Despite the existence of dense adhesions such as omental adhesions, the single-incision approach facilitates safe adhesiolysis under a good field of vision. An additional 5-mm port placed in the right hypochondrium further facilitates gall bladder access and manipulation.

**Results:** In all our patients treated using this method, no intra- or postoperative complications were observed and no additional port placements or conversions to laparotomy were required.

**Conclusion:** In patients with dense adhesions, a single-incision laparoscopic approach extends the field of vision and enables safe and easy adhesiolysis with minimal invasiveness. Multichannel access port +1 port LC in patients with dense adhesions due to previous abdominal surgery offers an effective surgical technique from the perspective of safety rather than cosmetic considerations.

© 2015 The Authors
HPB 2015, 17 (Suppl. S2), 25–266

© 2015 Americas Hepato-Pancreato-Biliary Association
APHPB-0180

EFFECT OF SPLENECTOMY ON IMMUNE CELL STATE IN HEPATITIS C VIRUS RELATED CIRRHOTIC PATIENTS WITH PORTAL HYPERTENSION

N. Huang¹, F. Ji², S. Zhang¹, Z. Cai², A. Jiang³, R. Zhou¹, B. Li¹, S. Ren¹ and Z. Li³
¹National-Local Joint Engineering Research Center of Biodiagnostics & Biotherapy, The Second Affiliated Hospital, College of Medicine, Xi'an Jiaotong University, Xi'an, China; ²Infectious Disease, The Second Affiliated Hospital, College of Medicine, Xi'an Jiaotong University, Xi'an, China; ³General Surgery, The Second Affiliated Hospital, College of Medicine, Xi'an Jiaotong University, Xi'an, China

Objectives: To investigate the immunological changes after splenectomy in hepatitis C virus (HCV) related cirrhotic patients with portal hypertension, and then to evaluate the immunological function of hypertensive spleen in these populations.

Methods: From December 2011 to 2013, 12 HCV related cirrhotic patients with portal hypertension underwent splenectomy were included in this prospective study. We evaluated natural killer (NK) cell and NKT cell activity, T-lymphocyte subsets such as CD4⁺, CD8⁺ and CD4⁺/CD8⁺ ratio, and the ratio of CD19⁺B cells to all lymphocytes by flow cytometry in peripheral blood just before and 2–6 weeks after splenectomy.

Results: The activity of CD3⁺CD56⁺⁺ NK cell and CD3⁺CD56⁺CD16⁺ NK were significantly enhanced in 2 and 6 weeks after splenectomy (all p < 0.05). The activity of CD3⁺⁺CD56⁺⁺ NKT cell activity, T-lymphocyte subsets such as CD4⁺⁺, CD8⁺ and CD4⁺⁺/CD8⁺⁺ ratio, and the ratio of CD19⁺⁺ B cells to all lymphocytes by flow cytometry in peripheral blood just before and 2–6 weeks after splenectomy.

Conclusion: Hypertensive spleen may play a negative role in immune regulation function in patients with HCV cirrhosis. Splenectomy may cause beneficial immunological changes in cirrhotic patients with HCV infection.

Malignant HPB Diseases

APHPB-0182

SURVIVAL AFTER PANCREATICODUODENECTOMY FOR PERIAMPUPLARY CARCINOMAS, MANSOURA EXPERIENCE – EGYPT

Gastroenterology Surgical Center, Faculty of Medicine, Mansoura University, Mansoura, Egypt

Objectives: Although the safety of pancreaticoduodenectomy has notably improved over the past several decades, the reported survival of patients remains poor.

Methods: This study was held in Mansoura Gastroenterology Center, Mansoura University, Egypt. 555 consecutive patients underwent pancreaticoduodenectomy for periampullary carcinomas between 1992 and 2011. Patients from 1992 to 2001 (Group I) were compared with patients from 2002 to 2011 (Group II). Detection of patient survival was the main outcome measure. The effects of various factors on patient survival were studied.

Results: During the time period analyzed, 555 patients underwent pancreaticoduodenectomy to treat periampullary carcinomas. There were no operative deaths. Hospital mortality was 34/555 (6.1%); 22/105 (21%) among group I and 12/450 (2.7%) among group II (p < 0.05). Missed cases from follow up were 51/555 (9.2%). One year survival was 65%; 45.5% (Group I) and 69.5% (Group II). Three years survival was 39.9%; 26.8% and 43.8% respectively. Five years survival was 14.9%; 10.6% and 16.6% respectively. Both groups had equivalent demographic and pathological characteristics. Predictors of poor survival were pancreatic carcinoma, poorly differentiated tumors, lymph node metastases, perineural invasion, operative blood loss of more than 500 mL and undergoing an operation before 1998 (p < 0.05).

Conclusion: Survival after pancreaticoduodenectomy for periampullary carcinomas has substantially improved due to improved operative technique. Factors associated with prolonged survival were being well differentiated ampullary carcinomas, the absence of lymph node metastases and perineural invasion in the resected tumor specimen, less blood loss and undergoing an operation more recently.

APHPB-0183

PANCREATIC JUICE CYTOTOLOGY IS A GOOD PREDICTOR FOR MALIGNANT BRANCH DUCT INTRADUCTAL PAPILLARY MUCINOUS NEOPLASM (IPMN) OF THE PANCREAS HAVING WORRISOME FEATURES

K. Date, T. Ohtsuka, T. Fujimoto, H. Kimura, T. Matsunaga, Y. Watanabe, K. Tamura, S. Takahata and M. Tanaka
Surgery and Oncology, Kyushu University Hospital, Fukuoka, Japan

Objectives: It still remains difficult to predict malignant intraductal papillary mucinous neoplasm (IPMN)
Methods: The medical records of 120 patients who underwent pancreatoduodenectomy for IPMN at the Department of Surgery and Oncology, Kyushu University, between January 2006 and April 2014 were retrospectively reviewed. Patients with concomitant pancreatic ductal adenocarcinoma were excluded. High grade dysplasia and invasive carcinoma were classified as malignant. The clinical factors evaluated in this study were as follows; ‘high-risk stigmata’ and ‘worrisome features’ defined in Fukuoaka international consensus guidelines, abnormal level of carcinoembryonic antigen and carbohydrate antigen 19-9, presence of symptom, mural nodules, pancreatic juice cytology (PJC).

Results: Twenty-three of 38 main duct IPMN (MD-IPMN) (61%) and 32 of 82 branch duct IPMN (BD-IPMN) (39%) were malignant. Eighteen of 22 ‘high-risk BD-IPMNs’ (82%), 14 of 52 (27%) ‘worrisome BD-IPMNs’, and none of 8 (0%) ‘low risk BD-IPMNs’ were malignant. In the ‘worrisome BD-IPMNs’, PJC was a significant predictive factor for malignancy by univariate and multivariate analyses. The sensitivity, specificity, accuracy of PJC in ‘worrisome BD-IPMNs’ were 67%, 94%, 87%, respectively.

Conclusion: ‘Worrisome BD-IPMNs’ with positive PJC as well as MD-IPMNs and ‘high-risk BD-IPMNs’ are good predictors for malignant IPMNs.

APHPB-0184

IS THERE THE DIFFERENCE OF THE LOCATION OF LYMPH NODE METASTASIS DEPENDING ON THE SITE OF TUMOR IN THE EXTRAHEPATIC BILE DUCT CANCER?


Hepatobiliary Pancreatic Surgery, National Cancer Center Hospital East, Kashiwa, Japan

Objectives: We planned to reveal the frequent site of the lymph node metastasis depending on the location of tumor in the extrahepatic bile duct cancer.

Methods: 94 patients underwent pancreatodudodenectomy (PD) for extrahepatic bile duct cancer with curative intent in our institution. The clinicopathological factors and survival outcomes of the patients were analyzed retrospectively. We measured the distance from papilla to lowermost margin of tumor, uppermost margin of tumor, uppermost margin of pancreas and orifice of cystic duct to investigate the correlation tumor location and the frequent site of nodal metastasis.

Results: The frequency of nodal metastasis was as follows; common hepatic artery (CHA) node in 7 (7.4%), celiac artery (CA) node in 1 (1.1%), hepatoduodenal ligament (HDL) node in 17 (18.1%), posterior pancreaticoduodenal (PPD) node in 26 (27.7%), anterior pancreaticoduodenal (APD) node in 3 (3.2%), superior mesenteric artery (SMA) node in 6 patients (6.4%). In the cases that the length from papilla to lower margin was more than 30 mm (n = 66), the frequency of nodal metastasis to PPD node (7.1%) and SMA node (0.0%) is significantly lower than the cases <30 mm (n = 64); the frequency of nodal metastasis to PPD node (36.4%) and SMA node (9.0%). In the cases that the length from papilla to upper margin was <40 mm (n = 30), the frequency of nodal metastasis to CHA node (0.0%) and HDL node (6.7%) is significantly lower than the cases more than 40 mm (n = 64); the frequency of nodal metastasis to CHA node (10.9%) and HDL node (23.4%).

Conclusion: The frequency of nodal metastasis is different according to tumor location.

APHPB-0186

HISTOSTOGAMICAL SEVERITY OF CIRRHOSIS DETERMINES LONG-TERM OUTCOMES OF LIVER RESECTION FOR HEPATOCELLULAR CARCINOMA

B. Liang, Z. Huang and X. Chen
Research Laboratory and Hepatic Surgery Center, Department of Surgery, Tongji Hospital, Tongji Medical College, Huazhong University of Science & Technology, Wuhan, China

Objectives: The impact of histological severity of cirrhosis on long-term outcomes of liver resection for hepatocellular carcinoma (HCC) has not been well defined. This study aims to investigate the impact of histological severity of cirrhosis on long-term outcomes of liver resection in patients with HCC.

Methods: 1537 patients with HCC undergoing liver resection were retrospectively studied. By analyzing surgical specimen, these patients were stratified into 4 groups (no cirrhosis, mild cirrhosis, moderate cirrhosis, and severe cirrhosis) based on evaluation of severity of cirrhosis according to the Laennec system. The long-term outcomes and clinicopathologic factors were analyzed.

Results: The 5-year recurrence-free and overall survival rates were 38.0% and 67.8%, respectively, in the group of no cirrhosis; 36.0% and 62.8%, respectively, in the group of mild cirrhosis; 16.7% and 44.9%, respectively, in the group of moderate cirrhosis and 6.0% and 25.6%, respectively, in the group of severe cirrhosis. There was no significant difference between the group of no cirrhosis and the group of mild cirrhosis in recurrence-free or overall survival, whereas the recurrence-free and overall survivals in the groups of moderate or severe cirrhosis were significantly worse than those in the groups of no cirrhosis or mild cirrhosis.

Conclusion: Histological severity of cirrhosis significantly affects long-term outcomes of liver resection in patients with HCC. For those HCC patients with no cirrhosis or mild cirrhosis, liver resection achieves favorable long-term outcomes and therefore is the ideal treatment. For those with moderate or severe cirrhosis, liver transplantation could be a consideration.
APHPB-0187
SIMULTANEOUS RESECTION FOR COLORECTAL CANCER AND SYNCHRONOUS LIVER METASTASES
Y. Fukami, Y. Kaneoka, A. Maeda, Y. Takayama, S. Onoe and M. Isogai
Surgery, Ogaki Municipal Hospital, Gifu-shi, Japan

Objectives: The correct timing of hepatectomy in patients with synchronous colorectal liver metastases is unclear. The aim of this study was to assess the clinical value of simultaneous resection (SR) for patients with colorectal cancer and synchronous liver metastases.

Methods: Between January 2006 and December 2013, 158 patients underwent the resection of primary colorectal cancer and liver metastases. Ninety-five patients possessed metachronous colorectal liver metastases, and the remaining 63 had synchronous colorectal liver metastases. Of those with synchronous colorectal liver metastases, 41 patients (65%) underwent SR, and 22 (35%) underwent delayed resection (DR). The clinicopathologic and operative data and the surgical outcomes of patients in the SR and DR groups were retrospectively analyzed and compared.

Results: The mortality rates were zero in both groups. The type of primary/liver resection, liver resection time, total blood loss volume, R0 resection rate, and morbidity rate were similar in the two groups. The SR group was associated with a shorter total postoperative hospital stay (21 vs. 32 days, p < 0.001). The overall survival rate was similar in the two groups (3-year survival, 65.6% in the SR group versus 66.8% in the DR group, p = 0.054). Multivariate analysis indicated that male gender (p = 0.004) and a liver tumor size of ≥5 cm (p = 0.031) were independently associated with overall survival after surgery.

Conclusion: When compared with DR, the simultaneous resection of colorectal cancer and synchronous liver metastases in patients is associated with a comparable morbidity rate and shorter hospital stay, even when following a rectal resection and major hepatectomy.

Benign HPB Diseases
APHPB-0188
COMPARISON BETWEEN TOKYO GUIDELINES 2007 (TG07) AND 2013 (TG13) IN OUR CASES OF THE ACUTE CHOLECYSTITIS
Surgery, Tohoku University Hospital, Sendai, Japan

Objectives: TG07 were reported in 2007 as the first international practical guidelines for management of acute cholangitis and cholecystitis. Recently the Tokyo guideline were revised as TG13. This study aimed to verify TG13 compared to TG07.

Methods: We investigated retrospectively the patients underwent cholecystectomy for acute cholecystitis from January 2010 to September 2014.

Results: A total of 35 (open cholecystectomy: 3, laparoscopic cholecystectomy: 32) patients were included in the analysis. Of these, 19 patients (54%) underwent operation within 3 days from onset. The mean age was 65.2 ± 15.6 years. Most of patients had some kind of preoperative complication (ASA class 1: 3, class 2: 20, class 3: 12). The severity grades according to TG07 were mild in 11, moderate in 11, and severe in 13 patients. According to TG13, on the other hand, they were mild in 12, moderate in 19, and severe in 4 patients. The mean operating time was 162 min. The mean bleeding was 169.4 ± 191.3 mL. No patients died and morbidity rate associated with operation were 2.9%.

Conclusion: We performed early cholecystectomy for acute cholecystitis safely. In TG13, as for the patient who has ‘severe’ severity, an operation is not recommended, but it is thought that some of them will be permitted to have an operation. The condition for operation is a subject for future analysis.

Malignant HPB Diseases
APHPB-0189
PREOPERATIVE NUTRITION SCORE IS A USEFUL PROGNOSTIC INDICATOR OF PALLIATIVE SURGERY IN PATIENTS WITH UNRESECTABLE PANCREATIC CANCER
Surgery, Saiseikai Kumamoto Hospital, Kumamoto City, Japan

Objectives: Patients with unresectable cancer are sometimes required to perform palliative surgery to relieve unpleasant symptom. When obstruction of the gastrointestinal tract and/or biliary tract occurs in patients with unresectable pancreatic cancer, we need to consider bypass surgery. However, there is a possibility that bypass surgery disadvantage to the patients without improvement. Therefore, it is important that clarification of indication for bypass surgery. The aim of this study was to determine the prognostic factors associated with an indication for palliative surgery in patients with unresectable pancreatic cancer.

Methods: Between January 2011 and June 2014, 25 patients with unresectable pancreatic cancer underwent palliative bypass operation. We assessed tumor-related factors and patients factors, including CONUT (Controlling Nutritional Status) score as nutritional status to identify a useful indicator, using a prospective database.

Results: The median survival time (MST) of these patients was 108 days, with a 6-month survival rate of 32%. An univariate cox proportional regression analyses revealed that CONUT ≥3, presence of dissemination, presence of other organ invasion, absence of postoperative chemotherapy were significant negative prognostic factors. A multivariate cox proportional regression analyses revealed that CONUT ≥3 and presence of dissemination were significant prognostic indicators. Cut-off value of CONUT score was indicated to
2.5 in ROC analysis. The MST of patients with CONUT $<$2.5, and $>$2.5 was 194 and 60.5 days, respectively.

**Conclusion:** This study demonstrated that CONUT score is one of the most useful indicators for palliative bypass operation in patients with unresectable pancreatic cancer.

### Benign HPB Diseases

**APHPB-0191**

**RANDOMIZED CONTROLLED TRIAL OF PREEMPTIVE ADMINISTRATION OF PARECOXIB AS PREPROCEDURE ANALGESIA IN REDUCING PAIN POST ENDOSCOPIC RETROGRADE CHOLANGIO PANCREATOGRAPHY (ERCP)**

N. A. Nur Dzainuddin$^1$, A. C. Ariffin$^2$, Z. Zuhdi$^1$, A. Azman$^1$, H. A. Othman$^1$ and R. Jarmin$^1$

$^1$Hepatobiliary Unit, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia; $^2$Surgery, Universiti Sains Islam Malaysia, Kuala Lumpur, Malaysia

**Objectives:** Pain during endoscopic retrograde cholangiopancreatography (ERCP) is common. Parecoxib has been used for acute pain. The aim of this study is to determine the clinical efficacy of preemptive administration of parecoxib for diagnostic and therapeutic endoscopic retrograde cholangiopancreatography (ERCP) patients.

**Methods:** Sixty patients were randomly assigned to placebo group (P, $n=30$) and parecoxib group (C, $n=30$). Group P received normal saline and group C received 40 mg parecoxib which given 60 s before administration of the sedative agents. All patients were sedated with titrated midazolam as well as pethidine. Pain visual analog scale (VAS: 0–10) were recorded before and after procedure at 2 and 6 h respectively.

**Results:** The demographics were similar in both groups. There were no significant differences in pre-procedural VAS score between the two groups ($p = 0.0555$). However, VAS score at 2 and 6 h post-endoscopic retrograde cholangiopancreatography (ERCP) show significant differences with $p = 0.011$ and 0.025, respectively. COX-2 have better pain control at 2 and 6 h post procedure with median (IQR) were 0 (0.1) and 0 (0.0) respectively as compared to placebo: 2 (0.4) and 0 (0.2) respectively. Complications during and immediately after endoscopic retrograde cholangiopancreatography (ERCP) were not statistically significant.

**Conclusion:** Preemptive intravenous parecoxib (40 mg) significantly reduced postoperative pain in patients who had undergone an endoscopic retrograde cholangiopancreatography (ERCP) procedure. The analgesic efficacy of a standard dose of parecoxib was clearly demonstrated during the first 2 h post-procedure. Additionally, patient VAS score in the parecoxib group was also less than in the control group.

### APHPB-0192

**BILIARY OBSTRUCTION IN CHRONIC PANCREATITIS – RESULTS OF A MODIFIED TECHNIQUE OF CHOLEDOCHO DUODENAL ANASTOMOSIS**

N. Shellagi and P. J. Halder

Surgical Gastroenterology, Jagjivan Ram Western Railway Hospital, Mumbai, India

**Objectives:** Biliary obstruction is one of the known complications of chronic pancreatitis leading to obstructive jaundice. The aim of the study was to assess the feasibility of performing a modified technique of Choledocho – duodenostomy, in patients with chronic pancreatitis with biliary obstruction.

**Methods:** Patients with Chronic pancreatitis with biliary obstruction were included in the study over an 11 year period from June 2003 to 2014. Clinical, biochemical and imaging criteria were used for establishing biliary obstruction.

**Results:** Out of 110 patients operated for chronic pancreatitis, 36 had biliary obstruction, of which 24 underwent modified Choledocho – duodenal anastomosis. Pre – operative serum bilirubin levels were up to 5.0 mg/dL in 14 patients, between 5.1 and 10 mg/dL in 14 patients and more than 10 mg/dL in 8 patients. Intra operative bile duct diameter measured up to 15 mm in 16 patients, between 15.1 and 20 mm in 14 patients and more than 20 mm in 6 patients.

On regular follow – up, only 2 patients had anastomotic narrowing successfully dilated endoscopically.

**Conclusion:**

1. The modified choledocho – duodenal anastomosis is a safe and effective biloenteric bypass.
2. The technique can be used even in bile ducts < 20 mm diameter.
3. Technically easier to perform than a hepatico – jejunostomy/choledocho – jejunostomy.
4. CBD transaction is not required.
5. Endoscopic management is feasible.

### APHPB-0193

**POST-CHOLECYSTECTOMYBILE DUCT INJURIES. A SINGLE CENTER EXPERIENCE OF 330 PATIENTS**

G. Elebidy

General Surgery, Faculty of Medicine, Mansoura University, Mansoura, Egypt

**Objectives:** Iatrogenic bile duct injuries continue to occur despite increase in experience with laparoscopic cholecystectomy.

**Methods:** Between 1995 and 2012, 330 patients with post-cholecystectomy bile duct injuries presented to Gastroenterology Surgical Center, Mansoura University, Egypt. Of these patients, 232 were females and 98 patients were males. Their mean age was 38 ± 12 years. 63% of the patients were referred from private hospitals while 34.5% were referred from primary hospitals. 252 patients had open cholecystectomy-
mies while 78 patients had laparoscopic cholecystectomies. Regarding the type of injuries according to Strasberg-Bismuth classification, the most common was type E2 injury (31.2%) followed by type A injury (20.6%). According to the time of diagnosis, 10 patients were diagnosed intra-operatively, 236 patients were diagnosed early (within 1 month of the cholecystectomy) and 84 patients were late diagnosed (more than 1 month after the cholecystectomy). Patients presented with generalized peritonitis, localized peritonitis with fistulae or with progressive jaundice.

**Results:** 229 patients were managed surgically where 217 patients underwent bilio-enteric reconstruction while 122 were managed by endoscopic dilatation and stent out of which 21 patients needed surgical reconstruction after failed repeated dilatations. 87.3% of patients who were managed surgically showed excellent outcomes according to Johns Hopkins criteria compared to 78.6% for endoscopic management.

**Conclusion:** As a conclusion, early diagnosis of iatrogenic bile duct injuries together with management by experienced hepatobiliary surgeon greatly improves the patient outcomes.

**Malignant HPB Diseases**

**APHPB-0194**

**USEFULNESS OF GNAS AND KRAS MUTATION STATUS TO DISTINGUISH INVASIVE CARCINOMA DERIVED FROM INTRADUCTAL PAPILLARY MUCINOUS NEOPLASMS OF THE PANCREAS FROM CONCOMITANT PANCREATIC DUCTAL ADENOCARCINOMA**

K. Tamura1, T. Ohtsuka1, K. Date1, T. Fujimoto1, T. Matsunaga2, H. Kimura1, S. Takahata1, Y. Oda2, K. Mizumoto1 and M. Tanaka1

1Surgery and Oncology, Kyushu University Hospital, Fukuoka, Japan; 2Anatomic Pathology, Kyushu University Hospital, Fukuoka, Japan

**Objectives:** Although pancreatic ductal adenocarcinoma (PDAC) concomitant with intraductal papillary mucinous neoplasms (IPMN) of the pancreas has been widely recognized, it is sometimes hard to distinguish invasive carcinoma derived from IPMN (Inv-IPMC) from concomitant PDAC when these two lesions exist in close vicinity. This study aimed to clarify the usefulness of *GNAS* and *KRAS* mutation analyses to distinguish Inv-IPMC from concomitant PDAC.

**Methods:** The data of 15 patients with resected concomitant PDAC were retrospectively reviewed, and *GNAS* and *KRAS* mutation analyses were performed in both IPMN and distinct PDAC lesions. As controls, the mutational patterns were assessed between invasive and non-invasive components in one lesion, and between primary Inv-IPMC and metastatic site. Mutational analysis was performed using high resolution melting curve (HRM) analysis and subsequent Sanger sequencing and/or pyrosequencing.

**Results:** *GNAS* and *KRAS* mutation status of invasive and non-invasive components of Inv-IPMN was consistent in 9 of 10 (90%), and the mutational patterns were also identical between the primary tumor and metastatic site in 3 Inv-IPMC patients (2 with lymph node and one with lung metastases). On the contrary, mutational patterns of IPMN and distinct PDAC lesions in the same pancreas were different with each other in all 15 patients.

**Conclusion:** It may be possible to distinguish Inv-IPMC from concomitant PDAC by assessing *GNAS* and *KRAS* mutation status.
APHPB-0196
REMANT PANCREATIC RESECTION FOR PANCREATIC CANCER
A. Urakami1, M. Takaoka1, Y. Hirabayashi1, J. Hayashi1, K. Shigemitsu1, K. Yoshida1, Y. Naomoto1, H. Nakashima2, M. Nakamura2 and T. Tsunoda2
1General Surgery, Kawasaki Medical School, Okayama, Japan; 2Gastroenterological Surgery, Kawasaki Medical School, Kurashiki, Japan
Objectives: Long-term survival is rarely achieved in patients with pancreatic cancer. Recurrence and/or metastasis frequently develop in multiple organs, including the liver, lymph nodes, peritoneum, lung and bone, even after curative resection. Only a few reports of recurrence or second primary lesions in the remnant pancreas after a pancreatectomy have been reported in the literature. The value of surgical treatment is unclear in such situations. The aim is to evaluate the outcome of surgical treatment in patients with pancreatic cancer recurrence in the remnant pancreas.
Methods: All patients who underwent surgical resection for pancreatic cancer from 1990 to 2011 (n = 115) were evaluated from the database. Surgical outcomes were examined in patients who underwent remnant pancreatic resection for pancreatic cancer recurrence.
Results: Five patients, 3 males and 2 female, with a mean age of 68 years old at the initial operation were studied. The mean interval period between the initial and second operations was 26 months. The operative procedures were pancreaticoduodenectomy (PD) followed by distal pancreatectomy (DP) in 4 patients and DP followed by PD for another. Histologically, tubular adenocarcinoma was diagnosed in both lesions in all patients. Four patients died with peritoneal dissemination or liver metastasis, with mean survival time of 40 months. Only one patient is alive without recurrence for 72 months.
Conclusion: Resection for recurrence or second primary lesions in the remnant pancreas might result prolonged survival. When a suspected lesion develops in the remnant pancreas, surgical resection might be considered as an option for the treatment of recurrent pancreatic cancer.

Benign HPB Diseases
APHPB-0197
THE RISK FACTOR OF POSTOPERATIVE COMPLICATIONS IN PATIENTS WITH ACUTE CHOLECYSTITIS
Surgery, Toho University, Tokyo, Japan
Objectives: We analyzed the risk factor of postoperative complications in patients with acute cholecystitis (AC).
Methods: Two-hundred fifty-five AC patients were enrolled in this study. The risk factor of postoperative complications was divided into the preoperative factors, therapeutic strategy, intraoperative factors, and severity factors.
Results: Postoperative complications were occurred in 21 patients (8.2%) including superficial SSI in 12 patients, organ space SSI in 2 patients, and postoperative bile leak in 4 cases. There was one mortality patients after surgery due to the cerebral hemorrhage. Univariate analysis of the risk factor for postoperative complication revealed that age, comorbidty, body temperature, white blood cell count, and c-reactive protein was a significant risk factor in preoperative characteristics. Regarding to the therapeutic strategy, preoperative gallbladder drainage, open surgery including conversion to open surgery, no performance of early laparoscopic cholecystectomy, operation time, and estimated blood loss revealed significant risk factor of postoperative complications. Regarding to the severity factor, the presence of marked local inflammation such as gangrenous cholecystitis revealed the significant risk factor of postoperative complication. Multivariate analysis showed elderly patients more than 72 years old and intraoperative blood loss more than 90 g revealed significant risk factor for postoperative complications.
Conclusion: Age more than 72 years and intraoperative blood more than 90 g may reveal significant predict parameter for postoperative complications.

APHPB-0199
XANTHOGranulomatous CHOLECYSTITIS: CASE SERIES AT ARMED FORCES HOSPITAL, MUSCAT, SULTANATE OF OMAN
Department of Surgery, Armed Forces Hospital, Muscat, Oman
Objectives: Xanthogranulomatous cholecystitis (XGC) is an unusual variant of chronic cholecystitis, characterized by marked thickening of the gallbladder wall with accumulation of lipid laden macrophages and formation of multiple yellow-brown intramural nodules in areas of destructive inflammation and may mimic with carcinoma of the gallbladder.
Methods: Twelve cases of histologically proven XGC were identified from prospective analysis of 673 patients who underwent elective cholecystectomy at the Department of Surgery, Armed Forces Hospital, Muscat, Sultanate of Oman, from January 2011 to December 2013.
Results: The incidence of XGC was (1.7%) in this study. Five (41%) of the patients required emergency admission at first presentation. Ten (83%) patients had gallbladder stones. Two patients (16%) presented with a right upper quadrant mass, when a gallbladder carcinoma was suspected preoperatively. The most common sonographic finding was diffuse or focal thickening of the gallbladder wall. A gallbladder carcinoma was suspected radiologically in two patients (16%), perforated gallbladder with biloma formation was found in one patient. Increased serum carbohydrate antigen 19-9 (CA19-9) was observed in 4 (33%) patients, however,
the elevated levels of CA19-9, returned to normal after surgery.

**Conclusion:** XGC is difficult to recognize and distinguish from carcinoma of the gallbladder both pre-operatively or intra-operatively. Laparoscopic surgery is often complex due to firm adhesions of the gallbladder to neighboring tissues and may result in high conversion rate. Intra-operative frozen-section examination should be carried out to allow the adoption of an appropriate treatment.

**Malignant HPB Diseases**

**APHPB-0200**

**CLINICOPATHOLOGICAL FEATURES OF DISTAL CHOLANGIOCARCINOMA: COMPARISON BETWEEN EXTRA- AND INTRAPANCREATIC BILE DUCT**


**Surgery, Tohoku University Graduate School of Medicine, Aoba-ku, Sendai, Japan**

**Objectives:** Organs around distal bile duct are different between extra and intrapancreatic bile duct. The aim of the present study is to elucidate clinicopathological differences between extra- and intrapancreatic distal cholangiocarcinoma (DCC).

**Methods:** This retrospective study included 129 consecutive patients with distal cholangiocarcinoma who underwent pancreaticoduodenectomy or bile duct resection. According to tumor position, they were divided into the two groups, namely extrapancreatic DCC (EPDCC) and intrapancreatic DCC (IPDCC). Clinicopathological factors and prognosis were comparatively analyzed.

**Results:** Incidence of pancreatic or duodenal invasion was lower in EPDCC than in IPDCC (25.9% vs. 65.3%; p < 0.001; 5.6% vs. 29.3%; p < 0.001). EPDCC included T2 and Stage I more than IPDCC (48.2% vs. 25.7%; p = 0.009, 46.3% vs. 29.7%; p = 0.050, respectively). T3 was significantly less in EPDCC than in IPDCC (38.9% vs. 68.9%; p < 0.001). In IPDCC, Stage I indicated a significantly more favorable prognosis than Stage IIA (3-year OS, 85.9% vs. 59.5%, p = 0.047), whereas in EPDCC did not (70.5% vs. 60.0%, p = 0.945). Stage I in EPDCC had a poorer prognosis than that in IPDCC (p = 0.050), while there was no difference in Stage IIA between EPDCC and IPDCC. Prognostic factors identified by multivariate analysis were different between EPDCC and IPDCC; duodenum invasion (p = 0.008), portal vein invasion (p = 0.003) and lymph node metastasis (p < 0.001) for EPDCC, neural invasion (p = 0.076) for IPDCC.

**Conclusion:** Clinicopathological features are likely to be different between EPDCC and IPDCC, not showing that factors defining T category are significant predictors of survival in EPDCC. Staging for EPDCC might not reflect prognosis between Stage I and IIA due to including underestimated T2 cases.

**APHPB-0201**

**LAPAROSCOPIC ANATOMICAL HEPATECTOMY FOR HEPATOCELLULAR CARCINOMA**

T. Ryu, G. Honda, M. Kurata, S. Kobayashi, K. Sakamoto and M. Honjo

**Department of Surgery, Tokyo Metropolitan Cancer and Infectious Diseases Center, Komagome Hospital, Tokyo, Japan**

**Objectives:** Anatomical hepatectomy is ideal for curative treatment of hepatocellular carcinoma (HCC). We have performed laparoscopic anatomical hepatectomy (LAH) as successfully as open anatomical hepatectomy.

**Methods:** From November 2008 to April 2014, we performed totally LAH for HCC in 40 patients with a median age of 69 years (range, 33–86). Liver function was Child A in all patients. The median number of resected tumors was 1 (range, 1–2). The median largest dimension of the resected tumor was 3.9 cm (range, 1.1–17.0). Postoperative complications, local therapeutic efficacy, and long-term outcome were retrospectively analyzed.

**Results:** Lobectomy was performed in 7 patients, sectionectomy was performed in 15, and segmentectomy was performed in 18. The median operative time was 382 min (range, 117–605), with median blood loss of 250 g (range, 0–1600). The conversion rate was 5.0%. Postoperative morbidity rate was 12.5% (prolonged ascites in 1, bile leakage in 2, and intra-abdominal abscess in 2) and mortality was zero. The median length of hospital stay after surgery was 8 days (range, 5–129). The median follow-up time after surgery was 16.0 months (range, 1.4–67.6) and no local recurrence was found. The 1- and 3-year overall survival rates were 89.0% and 81.2%, respectively. The 1- and 3-year disease-free survival rates were 68.5% and 40.7%, respectively.

**Conclusion:** Totally LAH for HCC could be performed safely and we could significantly raise the quality of LAH toward the level of open anatomical resection.

**Benign HPB Diseases**

**APHPB-0203**

**GALLSTONE DISEASE; A DIFFERENT DISEASE IN SRI LANKA. A STUDY TO DETERMINE THE PREVALENCE OF DIFFERENT TYPES OF GALLSTONES IN SRI LANKAN POPULATION**


1Surgery, National Hospital of Sri Lanka, Colombo, Sri Lanka; 2Chemical Pathology, National Hospital of Sri Lanka, Colombo, Sri Lanka; 3Anaestheis, University of Peradeniya, Peradeniya, Sri Lanka

**Objectives:** This study was carried out to determine the prevalence of different types of gallstones in Sri Lanka and to identify the association of known risk factors to the formation of a particular type of stone.

**Methods:** Gallstones were harvested from a continuous sample of 60 patients who underwent cholecystectomy for symptomatic gallstone disease in Colombo, Sri...
Lanka over a period of one year. Gallstones were analyzed physically and chemically and categorized into the three major types.

**Results:** 55.3% had pigmented stones, 38.3% had mixed cholesterol stones and only 8.3% had pure cholesterol stones. Advancing age is significantly associated with the occurrence of pigmented stones (p = 0.003). Majority of the study population were overweight (36.7%) or obese (56.7%), but no correlation between the BMI and the stone type was observed. Total cholesterol was significantly higher in patients with mixed cholesterol stones (p = 1.000). No positive correlations were observed between the type of stone and any co-morbid condition or between demographic variables except age.

**Conclusion:** Pigmented stones are the commonest stone type in Sri Lankan population and the prevalence of it is associated with advancing age. Mixed cholesterol stones were associated with high serum total cholesterol levels. Pure cholesterol stones are very rare in Sri Lankan population.

**Malignant HPB Diseases**

**APHPB-0204**

**POSTOPERATIVE INFECTIOUS COMPLICATIONS AFTER PANCREATIC SURGERY**

**Gastroenterological Surgery, Kagawa University, Miki-cho Kita-gun, Japan**

**Objectives:** This study aimed to identify the clinical features and impact of infectious complications on immediate surgical outcome after pancreatic surgery.

**Methods:** The Japanese Society of Pancreatic Surgery conducted a nationwide multi-institutional retrospective analysis of infectious complications for patients who underwent pancreatoduodenectomy (PD; 4147 patients) or distal pancreatectomy (DP; 1692 patients) from January 2010 to December 2012.

**Results:** The incidence of infectious complications was 35.2% in the PD group and 25.2% in the DP group, respectively. The major types of infections were ISGPF 35.2% in the PD group and 25.2% in the DP group, with the occurrence of pigmented stones (p = 0.003). Majority of the study population were overweight (36.7%) or obese (56.7%), but no correlation between the BMI and the stone type was observed. Total cholesterol was significantly higher in patients with mixed cholesterol stones (p = 1.000). No positive correlations were observed between the type of stone and any co-morbid condition or between demographic variables except age.

**Conclusion:** Pigmented stones are the commonest stone type in Sri Lankan population and the prevalence of it is associated with advancing age. Mixed cholesterol stones were associated with high serum total cholesterol levels. Pure cholesterol stones are very rare in Sri Lankan population.

**APHPB-0207**

**CLINICAL SIGNIFICANCE OF POSTHEPATECTOMY HEPATIC FAILURE IN PATIENTS WITH COLORECTAL CANCER LIVER METASTASIS**

D. S. Kim, H. S. Jo, S. W. Jung, Y. D. Yu and S. O. Suh  
**Division of HBP Surgery & Liver Transplantation, Korea University College of Medicine, Seoul, Korea**

**Objectives:** Liver resection can provide the best long term outcome for patients with colorectal cancer (CRC) liver metastasis. Posthepatectomy hepatic failure (PHF) is one of the most feared and serious complication after liver resection. For hepatocellular carcinoma, PHF was significantly associated with overall survival (OS) and recurrence free survival (RFS). We investigated various factors affecting occurrence of PHF after liver resection for CRC liver metastasis and its effect on OS and RFS.

**Methods:** We reviewed clinical data of patients who was diagnosed with CRC liver metastasis and underwent hepatectomy with curative intent from 2003 to 2010 in our center. A total of 143 patients were divided into PHF and non-PHF group based on definition by the International Study Group of Liver Surgery (ISGLS). We compared clinicopathologic and liver resection-related factors between two groups. We also assessed OS and RFS.

**Results:** Nineteen patients (13.3%) satisfied the ISGLS definition of PHF. Extent of liver resection (p = 0.001), metachronous metastasis (p = 0.013) was identified as independent risk factors for development of PHF. The 5-year OS rate of PHF group and non-PHF group was 32.9% and 63.8% respectively, and 5-year RFS rate was 53.0% and 57.3% [95%CI 13.6%] respectively. However, there was no statistically significant difference between the two groups. Multivariate analysis revealed colon cancer differentiation (p < 0.001), resection margin (p = 0.001), extent of surgery (p = 0.007) was significantly associated with overall survival.

**Conclusion:** For CRC liver metastasis patients, extent of resection was an important factor for development of PHF. In terms of overall survival and recurrence, primary tumor biology and margin-free resection was more important.
APHPB-0208
NEGATIVE MODULATION OF THE EPIGENETIC REGULATOR BY THYROID HORMONE RECEPTORS SUPPRESSES LIVER CANCER CELL GROWTH
S. M. Wu, P. J. Tai and K. H. Lin
Graduate Institute of Biomedical Sciences, Chang Gung University, Taoyuan, Taiwan

Objectives: Thyroid hormone (T3) and its receptor (TR) are involved in metabolism and growth. In addition to their developmental and metabolic functions, TRs play a tumor suppressor role, and therefore, their aberrant expression can lead to tumor transformation. Aberrant epigenetic silencing of tumor suppressor genes promotes cancer progression. The epigenetic regulator, Ubiquitin-like with PHD and ring finger domains 1 (UHRF1), is overexpressed in various cancers.

Methods: Real-time qRT-PCR or immunoblot analysis was conducted to determine the expression of UHRF1. To determine the UHRF1 promoter activity, 5'-flanking regions were cloned and reporter activities were assayed. The physical interaction of Sp1 with UHRF1 promoter region was determined by chromatin immunoprecipitation (ChIP). To confirm the clinical significance of UHRF1 expression in liver cancer, immunohistochemistry and tissue microarray were performed.

Results: In the current study, we demonstrated that T3 negatively regulates UHRF1 expression, both in vitro and in vivo. Our results further indicate that UHRF1 regulation by T3 is indirect and mediated by Sp1. Sp1-binding elements of UHRF1 were identified at positions -664/-505 of the promoter region using the luciferase and chromatin immunoprecipitation assays. Notably, UHRF1 and Sp1 levels were elevated in subgroups of hepatocellular carcinoma (HCC) patients and inversely correlated with TR expression. Knockdown of UHRF1 expression should therefore provide a means to inhibit hepatoma cell proliferation. Expression of UHRF1 was downregulated by TRs, in turn, relieving silencing of the UHRF1 target gene, p21.

Conclusion: Collectively, we propose that T3/TR signaling induces hepatoma cell growth inhibition via UHRF1 repression.

APHPB-0209
LARGE SCALE ANALYSIS FOR TREATMENT STRATEGY ACCORDING TO GENETIC ALTERATIONS OF K-RAS AND DPC4 (SMAD4) GENES IN PANCREATIC DUCTAL ADENOCARCINOMA
Surgery, Asan Medical Center, Seoul, Korea

Objectives: International treatment guidelines for branch duct intraductal papillary mucinous neoplasm (BD-IPMN) of the pancreas have been proposed in terms of features associated with malignancy and invasiveness. We investigated clinicopathologic characteristics predictive of malignancy/invasiveness and recurrence of the disease.

Methods: A review of 324 patients with resected and pathologically confirmed BD-IPMN between March 1997 and December 2013 was conducted.

Results: One hundred forty four patients (44.4%) had low grade dysplasia (LGD), 138 (42.6%) intermediate grade dysplasia (IMGD), 17 (5.3%) high grade dysplasia (HGD), and 25 (7.7%) invasive carcinoma (invIPMC). The 5 year survival rates were 98.1% in LGD, 95.3% in IMGD, 100% in HGD, and 71.8% in invIPMC. In univariate analysis, male sex was associated
with malignancy and CA19-9 was related with both malignant and invasive IPMN. High risk or worrisome features of international guideline were associated with both malignant and invasive IPMN; total bilirubin of head/uncinate lesion, tumor size, mural nodule, size of main pancreatic duct (MPD). In multivariate analysis, male sex, elevated CA19-9, mural nodule, and dilated MPD diameter were independently correlated with malignant IPMN. Elevated CA19-9 and dilated MPD diameter were also correlated with invasive carcinoma. Patient age and initial pathologic diagnosis were strongly associated with disease recurrence following surgical resection. 

Conclusion: High risk or worrisome features of current treatment guideline for BD-IPMN is confined to morphologic characteristics of the disease. Patient factors and biological features should be considered in terms of optimal therapeutic or surveillance strategies.

**APHPB-0211**

**SERUM HCC MARKERS DIFFERENTLY INFLUENCE ON SURVIVAL OF SURGICAL RESECTION AND RADIOFREQUENCY ABLATION IN MILAN CRITERIA’S HEPATOCELLULAR CARCINOMA**

M. Ueno, M. Kawai, S. Hirono, S. Hayami, S. Yamaguchi, K. Okada and H. Yamaue

*Second Department of Surgery, Wakayama Medical University Hospital, Wakayama, Japan*

**Objectives:** Serological markers of hepatocellular carcinoma (HCC) indicate its invasiveness. We aimed to investigate whether the prognostic influences of surgical resection (SR) and radiofrequency thermal ablation (RFA) on HCC patients were different among positivity conditions of previous three HCC markers: Alpha-fetoprotein (AFP), Lens culinaris agglutinin-reactive fraction of AFP (AFP-L3) and des-γ-carboxy prothrombin (DCP).

**Methods:** Retrospectively 362 Milan criteria’s HCC patients with Child-Pugh score from 5 to 7 were reviewed. Patients received either SR (n = 156) or RFA (n = 206) curatively. Recurrence free survival and overall survival were compared between SR and RFA based on positivity conditions of previous three HCC markers (defined as none-positive, single-positive, double-positive, and triple-positive).

**Results:** Two-year recurrence free survival rates in none, single, double, and triple-positive patients of the SR group were 64.7%, 59.5%, 51.8%, and 53.9%, respectively. Those of the RFA group were 81.5%, 66.2%, 34.0%, and 23.2%, respectively (p values were 0.04, 0.06, 0.02, and <0.01, respectively). According to multivariate analyses, RFA itself became independent prognostic factors for recurrence in the double-positive and triple-positive groups and their odds [95% confidential interval (CI)] were 1.6 [1.0–2.5] and 1.4 [1.0–1.9], respectively. RFA itself also independently affected on overall survival in the triple-positive group and the odds [95%CI] was 1.6 [1.0–2.5].

**Conclusion:** Positivity conditions of HCC markers influenced on prognosis differently between SR and RFA when treating Milan criteria’s HCC. RFA itself became an independent prognostic factor when all three HCC markers were positive. Preoperative evaluation of multiple HCC markers might become an index for selecting treatment modalities.

**APHPB-0212**

**MANAGEMENT OF INCIDENTAL CARCINOMA OF THE GALLBLADDER**

C. Kantharia, R. Prabhu, S. Pujari, A. Supe and R. Bapat

*Surgical Gastroenterology, KEM Hospital, Seth GS Medical College, Parel, Mumbai-12, India*

**Objectives:** There is an increase in frequency of detection of incidental gallbladder carcinoma. No guidelines exist with respect to its optimum management. The present study assesses the optimal management of Incidental Ca GB.

**Methods:** Clinical records of patients presenting with Ca GB over last 5 year (2008–2013) were reviewed. Of 48 patients of Ca GB (34 female) identified, 11 were identified to have Incidental Ca GB (8 females, age 29–80 years). All 11 had undergone Laparoscopic cholecystectomy. They were subjected to CECT-Scan, detailed Histopathological assessment and restaged. Their further treatment was planned accordingly. Survival and QOL based on SF-36 score were assessed. Follow up ranged from 6 to 80 months with post operative monitoring by USG and CECT Scan.

**Results:** CECT Scan revealed no evidence of malignancy in 4, LN involvement in 5 and liver infiltration in 2 patients. Histopathology showed involvement of Lamina Propria in 4, perimuscular layer in 5 and serosa in 2 patients. On restaging 4 had Stage I (T1, N0, M0), 5 had Stage II (T1, N1, M0) and 2 had Stage III (T3, N0, M0). 4 with mucosal involvement were left alone, (median survival 64 months with QOL 8). 5 with LN involvement, were subjected to extended cholecystectomy with bile duct excision in 2 (median survival 54 months QOL 6). Segmental Resection performed in 2 patients with Liver infiltration (median survival 48 months, QOL 6).

**Conclusion:** Re –Surgery is a must for patients beyond Stage I of Carcinoma Gall Baldder, with acceptable survival and good Quality of Life.

**APHPB-0213**

**IMPACT OF VISCERAL OBESITY ON PANCREATICODUODENECTOMY**


*Surgery, National Hospital Organization Osaka National Hospital, Osaka, Japan*

**Objectives:** It is still controversial whether obesity influences postoperative complications after gastroenterological surgery. In this study, we investigated an influence of visceral obesity on pancreaticoduodenectomy.
Methods: We enrolled 106 patients undergoing pancreaticoduodenectomy in this study. Visceral Fat Area (VFA) was used as an indicator of visceral obesity. VFA was measured by bioelectrical impedance analysis using body composition analyzer InBody 720 (BIOSPACE Co. Ltd.). We inquired a correlation between intraoperative blood loss, operation time, postoperative complications and VFA.

Results: According to VFA assessment, 51 patients with VFA over 100 cm² were judged as visceral obesity (OB group). The remaining 55 patients with VFA under 100 cm² were categorized as non-OB group. Median blood loss of OB group was much more than that of non–OB group (900 vs. 730 mL, p = 0.06). Also, median operation time of OB group was significantly longer than that of non-OB group (580 vs. 531 min, p = 0.04). As for the postoperative complications, pancreatic fistula, surgical site infection and delayed gastric emptying were observed in 41, 18 and 14 patients, respectively. The incidence rate of grade B/C pancreatic fistula in ISGPF classification was significantly higher in OB group (27% vs. 11%, p = 0.04). Furthermore, visceral obesity was an independent risk factor of grade B/C pancreatic fistula with multiple logistic regression analysis, (p = 0.04, HR: 3.22, 95% CI: 1.07–9.71).

Conclusion: It was suggested that visceral obesity influences intraoperative blood loss and operation time of pancreaticoduodenectomy, and also that grade B/C pancreatic fistula after pancreaticoduodenectomy would increase in patients with visceral obesity.

APHPB-0215

PANCREATIC FISTULAE SECONDARY TO TRYPsinogen ACTIVATION BY PSEUDOMONAS AERUGINOSA AND ENTEROBACTER CLOACAE INFECTIONS AFTER PANCREATODUODENECTOMY


1Gastroenterological Surgery, Fukuoka University School of Medicine, Fukuoka, Japan; 2Microbiology and Immunology, Fukuoka University School of Medicine, Fukuoka, Japan; 3Integrated Center for Mass Spectrometry, Kobe University, Kobe, Japan

Objectives: The development of pancreatic fistula after pancreaticoduodenectomy (PD) is associated with high mortality and morbidity. Trypsinogen activation has been postulated to play a role, as have bacteria, in the development of pancreatic fistula, yet the relationship between the two and the mechanism involved have not been elucidated. Consequently, we examined the impact of bacteria on the activation of pancreatic juice in the perioperative period of PD at foci of infection at sites of pancreatic fistula formation.

Methods: One hundred patients underwent PD and the pancreatic fistulae that developed were graded based on the International Study Group for Pancreatic Fistula grading criteria. Bacteria were isolated from cultures of drainage fluid. Digested peptides from trypsinogen and bacterial culture supernatants were separated by SDS–PAGE and analyzed with mass spectrometry. Zymography was used to detect the trypsinogen activator.

Results: Several bacterial species, including Enterobacter cloacae and Pseudomonas aeruginosa, were isolated from drainage fluid. Pseudomonas aeruginosa was found only in patients with grades B and C pancreatic fistulae. These bacteria were able to cause trypsinogen activation, which was prevented by use of a serine protease inhibitor. Zymography suggested that a protease in the supernatant of Pseudomonas aeruginosa acted as the trypsinogen activator.

Conclusion: The present results suggest that infection with Pseudomonas aeruginosa and Enterobacter cloacae during the perioperative period of PD entails secretion of a protease that processes trypsinogen into trypsin. Providing measures of bacterial infection control in the perioperative PD period could be crucial for preventing the development of pancreatic fistula.

Benign HPB Diseases

APHPB-0216

EVALUATION OF BISAP SCORE IN ASSESSING MORTALITY AND INTERMEDIATE MARKERS OF SEVERITY IN ACUTE PANCREATITIS

S. Kurunkar, C. Kantharia, S. Pujari and R. Prabhu

Surgical Gastroenterology, KEM Hospital, Seth GS Medical College, Parel, Mumbai-12, India

Objectives: Evaluation of the ability of BISAP score in identifying patients at risk for increased morbidity and mortality, in patients of Acute Pancreatitias.

Methods: Prospective analysis undertaken over last 6 years from May 2008 to 2013. All patients of Acute Pancreatitis were included in the study. They underwent a complete hemogram, coagulation profile studies, serum calcium, RFT, LFT, Blood gas analysis within 48 h of admission. CECT of abdomen was performed after 4 days of onset of disease and repeated as indicated, depending upon the course of disease. All patients were managed conservatively. BISAP score was evaluated in all patients within 24 h of presentation.

Results: 90 cases of AP were identified. BISAP scores were calculated in all, using data within 24 h of presentation. The study revealed 34.4% patients had BISAP score more than or equal to 3% and 65.6% had BISAP score ≥ 3. Overall mortality was 3.3% and organ failure seen in 20% and pancreatic necrosis in 15.5% of patients. It was revealed that BISAP scores of ≥ 3 represent a simple way to identify patients at risk of increased mortality and the development of intermediate markers of severity within 24 h of presentation.

Conclusion: BISAP score represents a simple way to identify patients at risk of increased mortality and the development of intermediate markers of severity within 24 h of presentation.
APHPB-0217
SOLID PSEUDOPAPILLARY TUMOR (SPT): LITERATURE REVIEW AND CURRENT CONSENSUS OF MANAGEMENT OF MALIGNANT SPT
S. Seow, C. Tee, V. Leow, L. Vasupillai and K. Manisekar
Surgical Department, Hospital Sultanah Bahiyah, Alor Setar, Malaysia

Objectives: Solid pseudopapillary tumor (SPT) is a rare cystic pancreatic tumor with low grade malignant potential and uncertain origin. This disease entity accounts for about 1–3% of all pancreatic tumors. It usually occurs in young women in second to third decade of life. Metastatic disease can occur, usually involving the liver, but the current consensus on the management is not well defined. Our objective is to review a single institution’s experience of this rare tumor.

Methods: A retrospective study of patients who diagnosed with SPT and managed in Hospital Sultanah Bahiyah, a tertiary referral center, between January 2008 and December 2013 was performed. The clinical features, radiological findings and surgical interventions were analyzed.

Results: Five cases of solid pseudopapillary tumor were diagnosed and treated in our institution in the study period. Four of them were young lady with the age ranging 13–22 years old and a 56-year-old gentleman. Distal pancreatectomy was performed for 3 patients, one patient underwent distal pancreatectomy and liver resection for liver metastasis. The other patient had Whipple procedure only. Two patients developed liver metastases after resection of tumor where one of them is still on chemotherapy and the other patient had multiple recurrence despite multiple operations and completion of gemcitabine. The rest of the patients are still well and asymptomatic.

Conclusion: SPT of pancreas should be considered as a potentially malignant disease in all patients. Complete resection is the mainstay of treatment, however long term regular follow-up is mandatory for vigilance of recurrence.

Transplantation
APHPB-0222
LIVING DONOR LIVER TRANSPLANTATION FOR HEPATOCELLULAR CARCINOMA. FACTORS AFFECTING SURVIVAL AND RECURRENTNESS
O. Fathy
General Surgery, Gastroenterology Surgical Center, Mansoura University, Mansoura, Egypt

Objectives: Living donor liver transplantation (LDLT) for hepatocellular carcinoma (HCC) offer potential cure for both cirrhosis and tumour.

Methods: From January 2005 to December 2013, 70 patients with HCC underwent LDLT in Gastroenterology Center, Mansoura University out of 270 patients underwent LDLT in the same period. All are adult LDLT and all are related except 12 patients. Right lobe underwent LDLT and all are related except 12 patients. Right lobe LDLT and all are related except 12 patients. Right lobe LDLT and all are related except 12 patients.

Results: The mean age 50.3 ± 55 years, 68 were Male and 2 Female, HCV was the main cause of cirrhosis in 67 Pts. MELD score 16.6 ± 49 (R 7–27) the mean size of the tumor 4.8 ± 3 cm (R 1–15.5 cm). Majority of the Pts were child B, 29 Pts while child A and C were 15, 26 respectively. Alfa Feto Protein 124 ± 281 (R 1.2–1283), the mean waiting time 119 ± 84. Postoperative outcome, the median survival >5 years were 75.4 years. The only factor affecting survival are Alfa Feto Protein >200 ng/mL and +ve vascular invasion.
Conclusion: The recurrence occur in 9/70 (12.8%). In univariate analysis many factors affecting recurrence. Mean while, in multivariate analysis, the only significant factor is Alfa Feto Protein >200 ng/mL.

Malignant HPB Diseases
APHPB-0223

PREOPERATIVE SARCOPENIA NEGATIVELY IMPACTS POSTOPERATIVE OUTCOMES FOLLOWING MAJOR HEPATECTOMY WITH EXTRAHEPATIC BILE DUCT RESECTION
H. Otsuji, Y. Yokoyama, T. Ebata, T. Igami, G. Sugawara, T. Mizuno and M. Nagino
Division of Surgical Oncology, Department of Surgery, Nagoya University Graduate School of Medicine, Nagoya, Japan

Objectives: The objective was to analyze the relationship between preoperative sarcopenia and postoperative morbidity/mortality in patients who underwent major hepatectomy with extrahepatic bile duct resection.

Methods: This study included 256 patients who underwent major hepatectomy with extrahepatic bile duct resection from December 2008 to February 2014. Preoperative sarcopenia was assessed by a measurement of the total psoas muscle area (TPA). The measured TPA was normalized by height. Preoperative sarcopenia was defined as the presence of a normalized TPA in the lowest sex-specific tertile.

Results: A total of 54 males and 31 females were determined to have preoperative sarcopenia. The length of the postoperative hospital stay for patients with sarcopenia was significantly longer than for those without sarcopenia (39 vs. 30 days, p < 0.001). Patients with sarcopenia experienced a significantly higher rate of liver failure (International Study Group of Liver Surgery grade ?B) (33% vs. 16%), major complications with Clavien grade ?3 (54% vs. 37%), and intra-abdominal abscess (29% vs. 18%) than those without sarcopenia (all p < 0.05). After a multivariate analysis, preoperative sarcopenia was identified as an independent risk factor for the development of liver failure (odds ratio = 2.19).

Conclusion: This study demonstrated that preoperative sarcopenia increased the morbidity rate including the rate of liver failure, in patients who underwent major hepatectomy with extrahepatic bile duct resection.

APHPB-0224

ADULT HEPATOBlastoma – A CASE REPORT
S. Balakumaran, V. Rajendran, S. Sugaparakash, A. Amuthan, D. Bennet, R. Prabhakaran, D. Kannan and S. M. Chandramohan
SGE Department, Madras Medical College, Chennai, India

Objectives: Adult hepatoblastoma is a rare malignant liver neoplasm. Surgery is the treatment of choice, but recurrence is common even after complete resection. No standard therapeutic strategy has been established so far.

Methods: A 14-year-old female presented with a right hypochondriac mass. Pain preceded the appearance of the mass. Clinical examination revealed a 15 cm x 15 cm mass occupying the right hypochondrium and epigastrium. CECT Abdomen (64 slice) showed 15 x 11 x 9 cm multiseptated loculated mass lesion involving right lobe of liver segment 5, 6, 7, 8. USG guided biopsy done revealed suspected Hepatic Adenoma. Preop AFP was more than 30,000. With this preoperative diagnosis the tumor was completely resected off the inferior vena cava with Right hepatectomy. The histopathological diagnosis was mixed hepatoblastoma. The postoperative course went smoothly.

Results: Hepatoblastoma is a rare malignant tumor of the liver and usually occurs in the first three years of life. Most of these tumors arise in the embryo; hence it seems to be unusual that hepatoblastomas occur in adult age patients. Early detection may lead to improved prognosis and survival but they are often detected late.

Conclusion: We report here the first case of adult hepatoblastoma in India to our best of our knowledge. We are presenting this case due to the rarity of hepatoblastoma in adults and its preoperative diagnostic difficulty and successful surgical treatment with hepatectomy.

APHPB-0225

GOOD CANDIDATES FOR A THREE TIMES LIVER RESECTION OF COLORECTAL METASTASIS
S. Yamazaki, T. Takayama and T. Higaki
Digestive Surgery, Nihon University School of Medicine, Tokyo, Japan

Objectives: To assess the feasibility and survival benefits of three liver resections.

Methods: Between 2004 and 2011, 273 consecutive patients with colorectal metastases were analyzed. The patient characteristics, tumor status, operation-related variables, degree of liver steatosis, and short- and long-term outcomes were compared according to the number of liver resections.

Results: The history of preoperative chemotherapy was higher for patients who had a three liver resections as compared with other resections (one resection, two resections, and three resections: 41.0% vs. 56.8% vs. 81.8%, p = 0.04). Patients receiving three liver resections had a high rate of liver steatosis (17.9% vs. 32.4% vs. 59.1%, p = 0.03). The median operation time for three resections was significantly longer [359 min (range: 115–579 min) vs. 395 (178–740) vs. 482 (195–616), p = 0.04] than for the other resections. However, the complication rate and the postoperative hospital stay did not differ among the three groups. The 1-, 3- and 5-year-survival rates did not differ significantly among the three groups (83.3%, 57.5% and 44.6% for one resection vs. 92.3%, 52.1% and 35.7% for two resections vs. 93.3%, 49.0% and 34.1% for three resections). Patients who <5 tumors at third liver
A resection and a recurrence interval of ≥500 days from the second resection were good candidates for three resections.

Conclusion: Three resections of colorectal metastasis is feasible and provides a similar survival benefit as one or two resections, without increasing morbidity or mortality.

APHPB-0227
DOES CEFUROXIME-AMIKACIN-METRONIDAZOLE PROVIDE ADEQUATE AND APPROPRIATE ANTIBIOTIC COVERAGE FOR Pancreaticoduodenectomy in Developing Countries: A Prospective Study

R. Gaurav¹, S. Banerjee¹, S. Bhattacharya², S. Chatterjee³, M. Mallath¹ and M. Roy¹
¹GI Surgery Unit, Tata Medical Center, Kolkata, India; ²Clinical Microbiology, Tata Medical Center, Kolkata, India; ³Digestive Disease, Tata Medical Center, Kolkata, India

Objectives: Antibiotic stewardship is mandatory in contemporary clinical practice. This new oncology hospital in Eastern-India had instituted antibiotic policies based on practices prevalent in developed nation. The present study explores their relevance in biliary microflora in patients undergoing pancreatico-duodenectomy (PD).

Methods: During PD, bile was aspirated from bile duct and detailed record of microbiology and antibiogram was maintained. The data were prospectively captured in a bespoke electronic database.

Results: Between October 2011 and August 2014, 52 patients underwent PD for myriad malignant conditions [male: 37, female: 16; median age: 57 years, IQR 51–64]. Of this, 37 (71%) had pre-operative biliary stenting (plastic: 23, metal: 9, both types: 1). Median interval between stent placement and PD was 28 days (IQR 22–42). Of the 15 non-stented patients, bile was sterile in 11 (73%), while all, but 2, stented patients harboured microbes. In these 35 stented patients, bile from 8, 15 and 12 patients grew 1, 2 and 3 flora respectively. Of these 74 samples, 45 (61%) were gram negative, 24 (32%) gram positive and 5 were candida. Amongst the gram negatives, Klebsiella pneumoniae (38%) and Escherichia coli (33%) constituted the predominant organisms and their sensitivity towards commonly used antibiotics were: Amikacin (67%), Co-amoxyclyclav (20%), Carbapenem (62%), Piperacillin-Tazobactam (42%) and Colistin (96%). Cefuroxime tested in 29 samples, was found sensitive in 5 (17%) only.

Conclusion: High incidence of multi-drug resistant bacteria in bile samples in stented is an ominous finding. This mandates close cooperation between the gastroenterologist and the surgeon and revision of antibiotic policies.

Benign HPB Diseases
APHPB-0228
Diabetes Mellitus is More Commonly Associated With IL28B Non-C/C Genotype Than in C/C Genotype in Patients With HCV

V. Gupta, A. Kumar, P. Sharma, P. Tyagi, N. Bansal, V. Singla and A. N. I. L. Arora
Department of Gastroenterology and Hepatology, Sir Ganga Ram Hospital, Delhi, India

Objectives: IL28b polymorphism is an important predictor for HCV response to therapy; and IL28b C/C genotype is considered to have favorable response as compared to non-C/C genotype. However, whether IL28b genotypes also influence other non-treatment related clinical parameters is not clear.

Methods: In this retrospective analysis, patients with HCV related chronic liver disease attending Sir Ganga Ram Hospital, New Delhi, from 2013 to 2014 were analyzed. The SNPs rs12979860 (IL28B) was investigated by RT-PCR and IL28b genotypes were correlated with various clinical parameters.

Results: A total of 115 patients were included in the study (median age 48, 70% males). The most common IL28B genotype was C/C 53% (61/115), while rest 47% were non-C/C [C/T 42% (48/115) and T/T 5% (6/115)]. Overall, 43/115 (37%) patients had chronic hepatitis, while rest 72/115 (63%) were cirrhotics. Clinical and laboratory parameters like Hb, WBC, platelets, bilirubin, AST, ALT, and albumin were similar in C/C and non-C/C genotypes. Diabetes mellitus was found in 22% (25/115) of patients. Patients with non-C/C genotype had significantly higher prevalence of diabetes mellitus than patients with C/C genotype [31% (17/54) vs. 13% (8/61); p = 0.023].

Conclusion: Diabetes Mellitus was found to be more commonly associated with IL28b non-C/C genotype than in C/C genotype in patients with HCV. Since insulin resistance is more common in carriers of the T allele of SNP rs12979860 than in C/C homozygotes, this may explain higher prevalence of diabetes in non-C/C genotypes. We recommend doing IL28b genotype in all HCV patients to predict occurrence of diabetes.

Transplantation
APHPB-0229
Portal Vein Thrombosis and Arterioportal Shunting Due to Chronic Cholangitis: A Rare Complication of Living Donor Liver Transplantation

C. Hsieh¹, C. Chou², K. Lin³, C. Lin³ and Y. Chen³
¹Liver Transplantation, Changhua Christian Hospital, Changhua, Taiwan; ²Department of Radiology, Changhua Christian Hospital, Changhua, Taiwan; ³Attending Physician General Surgery, Changhua Christian Hospital, Changhua, Taiwan

Objectives: The incidence of late onset portal vein thrombosis after living donor liver transplantation (LDLT) is approximately 6% in adults and 8% in children. To the
best of our knowledge, portal vein thrombosis and arterioporal shunting due to chronic cholangitis after LDLT has never been reported.

**Methods:** We present a patient with portal vein thrombosis due to chronic cholangitis after liver donor liver transplantation (LDLT).

**Results:** A 52-year-old woman with a history of hepatitis B virus-related liver cirrhosis underwent LDLT. After the surgery, the patient had recurrent episodes of cholangitis due to common bile duct and intrahepatic bile duct stricture. Biliary stricture due to cholangitis eventually resulted in acute portal vein thrombosis. A stent was inserted via percutaneous transluminal portography. Blood flow through the portal vein progressively improved from the third through the 10th day after stent placement. The anticoagulation regimen was changed to acetylsalicylic acid and clopidogrel hydrogen sulfate (Plavix®). On post-stenting day 10, follow-up CT scan showed good patency of the main portal vein and no evidence of arterioporal shunting.

**Conclusion:** Cholangitis after liver transplantation is a rare cause of portal vein thrombosis. Regular follow-up examinations with color Doppler ultrasound are needed to monitor portal vein flow in patients with biliary complications after LDLT.

### Malignant HPB Diseases

**APHPB-0232**

**SEROSAL INVASION SHOULD BE CONSIDERED AS ONE OF THE STRONGEST PROGNOSTIC FACTORS AFTER CURATIVE RESECTION OF HEPATOCELLULAR CARCINOMA: A RETROSPECTIVE SEARCH FOR CONSECUTIVE 275 CASES**


**Gastroenterological Surgery, Nagoya University Graduate School of Medicine, Nagoya, Japan**

**Objectives:** In this study, we intended to clarify the individual prognostic factors after curative and primary resection of hepatocellular carcinoma (HCC). Reliable prognostic factors and tumor staging for HCC have been required to predict appropriate prognosis. However, in HCC, no staging system is still received universally and there are several tumor factors that seemed to relate HCC prognosis but they are not definitive. At present, few studies have mentioned the importance of serosal invasion as a prognostic factor.

**Methods:** A retrospective search of our database identified consecutive 275 cases that underwent primary and curative hepatectomy for HCC at our department, between January 1998 and December 2012. Risk factors for recurrence free survival (RFS) and overall survival (OS) were analyzed with Cox proportional hazard model, Kaplan–Meier method and log-rank tests.

**Results:** Multivariate analyses showed that serosal invasion [hazard ratio (HR); 2.40, p = 0.0019] and vascular invasion (HR; 1.75, p = 0.0237) were independently correlated with RFS and that also showed liver cirrhosis (HR; 2.52, p = 0.0018), tumor differentiation (poor versus well/moderate, HR; 4.26, p = 0.0056), serosal invasion (HR; 2.22, p = 0.0290) and vascular invasion (HR; 2.69, p = 0.0014) were independently correlated with OS. Kaplan–Meier method and log-rank tests revealed that the patients with serosal invasion showed significantly worse prognosis both in RFS (p < 0.0001) and OS (p = 0.0035) as well as vascular invasion (RFS, OS; p < 0.0001).

**Conclusion:** Serosal invasion as well as vascular invasion should be regarded as one of the strongest independent predictors for both RFS and OS in curatively resected HCC cases.

### APHPB-0233

**DECREASED EXPRESSION OF RETINOIC ACID RECEPTOR-RELATED RECEPTOR ALPHA (RORALPHA) IS ASSOCIATED WITH A POOR PROGNOSIS IN HEPATOCELLULAR CARCINOMA**

M. Q. Lu and R. D. Fu

**Hepatic Surgery, The Third Affiliated Hospital of Sun Yat-sen University, Guangzhou, China**

**Objectives:** RORalpha has been proven to play a tumor suppressive role in certain types of solid tumors. However, the clinical characteristic of RORalpha has not been reported by far. This study investigated the expression of RORalpha in HCC and evaluated its relationship with clinical parameters and prognosis in HCC patients.

**Methods:** qRT-PCR and Western blots were performed to detect RORalpha expression levels in 20 paired HCC and corresponding adjacent non-cancerous tissues. Immunohistochemistry was performed on 100 archived paraaffin-embedded HCC samples. Statistical analyses evaluated the correlations between RORalpha expression and clinicopathological features.

**Results:** qRT-PCR and Western blots showed that RORalpha mRNA and protein expression were down-regulated in tumors compared to the adjacent non-cancerous tissues. Immunohistochemistry revealed that decreased RORalpha expression was present in 65% of HCC patients. Correlation analyses showed that RORalpha expression was correlated with AFP (p = 0.005), pathology grade (p < 0.001), tumor recurrence (p = 0.008), and vascular invasion (p < 0.001). Kaplan–Meier analysis revealed that patients with low RORalpha expression levels had shorter overall and disease-free survival than patients with high expression (p < 0.001 and p = 0.002, respectively). Multivariate regression analysis indicated that RORalpha was an independent predictor for overall survival (HR 0.362; 95%CI 0.168–0.780; p = 0.001) and disease-free survival (HR 0.391; 95%CI 0.207–0.735; p = 0.004).

**Conclusion:** RORalpha mRNA and protein expression were significantly down-regulated in HCC tissues. Down-regulated RORalpha expression was associated with poorer prognosis in HCC patients. RORalpha may be a new potential prognostic marker for HCC patients.
Benign HPB Diseases
APHPB-0234

POST CHOLECYSTECTOMY RIGHT ANTERIOR SECTORAL DUCT INJURY – DELAYED PRESENTATION LEADING TO MISDIAGNOSIS

N. Shivathirthan and C. Shivannaiah
Surgical Gastroenterology, Apollo BGS Hospital, Mysore, India

Objectives: To report a case of post cholecystectomy right anterior sectoral injury, discuss its presentation and management.

Methods: A 30 years female was referred 6 months post laparoscopic cholecystectomy with recurrent right upper quadrant pain and collection. Patient had been evaluated earlier with CECT and multiple attempts at percutaneous drainage done. She had also been treated with Anti Tuberculosis medicines for the recurrent collection as a ERCP had failed to reveal a biliary leak. She was referred to our department after 6 months of surgery with a large right upper quadrant cyst. MRCP showed large collection 20 × 15 × 14 cm, right anterior sectoral duct communicating with the biloma and cut off sign on right anterior sectoral duct. A diagnosis of right anterior sectoral duct injury (Strasberg type C) was made. Ultrasound guided pig-tail catheter drainage was done to make it a controlled fistula.

Results: Surgical exploration and restoration of bilioenteric continuity was planned. Intraoperatively on opening the biloma cavity, an opening was seen through which the injured sectoral duct was traced. A Roux-en-Y cholangio-jejunostomy to the right anterior sectoral duct was done. Recovery was good and patient was discharged on post operative day 6.

Conclusion: Anterior sectoral duct injury after laparoscopic cholecystectomy is an extremely rare complication. High index of suspicion coupled with ERCP + MRCP is necessary to map the injury and to avoid mismanagement of this condition. Surgical management is similar to other injuries and involves maintaining bilio enteric anastomosis.

Malignant HPB Diseases
APHPB-0235

PRIMARY HEPATIC NEUROENDOCRINE TUMOUR MIMICKING INTRAHEPATIC CHOLANGIOCARCINOMA. A CASE REPORT AND LITERATURE REVIEW

V. Leow1, N. Misron2, T. Kumar3, C. Tee3, V. Letchumanan3 and M. K. Subramaniam3
1HPB Unit, Division of Surgery, Department of General Surgery, Advanced Medical and Dental Institute (AMDI), Science University of Malaysia (USM) and Sultanah Bahiyah Hospital, Penang, Malaysia; 2Department of Pathology, Sultanah Bahiyah Hospital, Kedah, Malaysia; 3HPB Unit, Division of Surgery, Department of General Surgery, Sultanah Bahiyah Hospital, Kedah, Malaysia

Objectives: Primary hepatic neuroendocrine tumour (PHNET) is an extremely rare disease entity. Extensive workup and long term follow up are required for the diagnosis as well as treatment of this tumour.

Methods: We present a 49 year-old female patient with vomiting, anorexia and weight loss for 6 months. Clinically, there were no remarkable findings. A series of laboratory blood results were in normal range. A triphase computed tomography (CT) of the liver showed features of intrahepatic cholangiocarcinoma. Her Ca 19-9 was normal and carcinoembryonic antigen (CEA) was 7.2 l/L. She was tested negative for hepatitis B and C screening. Preoperative upper and lower gastrointestinal endoscopies revealed no positive findings. Subsequently, she underwent extended right hemihepatectomy. Following this she had a stormy recovery. Her histopathological report revealed grade 3 neuroendocrine carcinoma with resection margin involvement. The tumour cells were positive for chromogranin, synaptophysin, CDX-2 and CK19. The proliferative index was approximately 30%. Endoscopic ultrasound performed postoperatively showed no lesions in the pancreas.

Results: Literatures documented primary neuroendocrine tumour of the liver can mimic intrahepatic cholangiocarcinoma and hepatocellular carcinoma. Careful preoperative interpretation of the radiographic images is vital for accurate diagnosis and planning for further investigations. Complete resection of the tumour is still the mainstay of treatment. Adjuvant treatment is recommended for incomplete resection.

Conclusion: Meticulous preoperative evaluation and workup of primary liver tumour is of paramount important. R0 liver resection is desired for curative intent. Lengthy surveillance and adjuvant treatment is recommended for residual disease.
APHPB-0236
NEUTROPHIL TO LYMPHOCYTE RATIO PREDICTS THERAPEUTIC OUTCOME AFTER PANCREATICODUODENECTOMY FOR CARCINOMA OF THE AMPULLA OF VATER
Department of Surgery, Jikei University School of Medicine, Tokyo, Japan
Objectives: Preoperative systemic inflammatory response is associated with a poor long-term prognosis after resection for malignant tumors. Several markers of systemic inflammation have been reported to be a predictor of outcomes, but have not been fully investigated. Therefore, we retrospectively investigated the relation between preoperative neutrophil to lymphocyte ratio (NLR) and disease-free as well as overall survival after pancreaticoduodenectomy for carcinoma of the ampulla of Vater.
Methods: The study comprised 37 patients who had undergone pancreaticoduodenectomy for carcinoma of the ampulla of Vater between January 2000 and December 2011. We retrospectively investigated the relation between preoperative NLR and disease-free as well as overall survival.
Results: In multivariate analysis, preoperative biliary drainage (p = 0.044) and advanced lymph node metastasis (p = 0.027) were independent and significant predictors of disease-free survival, while significant predictors of overall survival consisted of advanced lymph node metastasis (p = 0.025) and NLR ≥ 3 (p = 0.026). Moreover, preoperative biliary drainage (p = 0.006) and greater T factor (p = 0.007) were significantly greater in high NLR group.
Conclusion: Preoperative NLR is an independent and significant indicator of long-term outcomes in patients with carcinoma of the ampulla of Vater after pancreaticoduodenectomy.

Benign HPB Diseases
APHPB-0237
LAPAROSCOPIC DISTAL PANCREATECTOMY USING A NOVEL TECHNIQUE FOR ENSURING OPERATIVE FIELD
Surgery, Tohoku University Graduate School, Sendai, Japan
Objectives: Laparoscopic distal pancreatectomy (LDP) is an emerging operation for managing benign and low-grade malignant lesions of the pancreatic body and tail. One of the most important elements in laparoscopic pancreatectomy is to ensure the operative fields by retracting the stomach. Although various types of techniques performed for securing the operative fields in LDP, they were far away from satisfaction. Herein, we described a new surgical technique, which we refer to as the ‘stomach roll-up technique’, for securing suitable surgical field in LDP.
Methods: The first step of this technique is to expose the pancreas by opening the greater omentum. The left gastroepiploic vessels and short gastric vessels were divided if Warshow’s procedure is not indicated, and the stomach was thoroughly separated from the spleen. Subsequently, the round ligament and falciform ligament of the liver was divided and the round ligament was ligated by Endo-loop™. After dividing the lesser omentum, the round ligament was retracted upward through the lesser and greater curvature by pulling Endo-loop™ out of abdominal cavity. Then, the stomach was rotated over the liver and the pancreas is well identified in a laparoscopic view.
Results: From January 2014 we performed LDP using this technique in 7 cases. There was no significant difference between this technique and conventional LDP in operation time, blood loss, and morbidity.
Conclusion: The stomach roll-up technique is simple and easy and can ensure a suitable surgical field during LDP. This new surgical procedure can improve the safety of laparoscopic pancreatic surgery.

APHPB-0238
TWO-INCISION THREE-PORT (TILC) LAPAROSCOPIC CHOLECYSTECTOMY. A FEASIBLE AND SAFE TECHNIQUE
V. Leow1, F. Mohamed Sikandar2, M. Sharii2, C. Tee2, V. Letchumanan2, K. Yang2 and M. K. Subramaniam2
1HPB Unit, Division of Surgery, Department of General Surgery, Advanced Medical and Dental Institute (AMDI), Science University of Malaysia (USM) and Sultanah Bahiyah Hospital, Penang, Malaysia; 2HPB Unit, Division of Surgery, Department of General Surgery, Sultanah Bahiyah Hospital, Kedah, Malaysia
Objectives: Standard laparoscopic cholecystectomy (LC) involved the use of four ports. Gradually as cosmetic reason has become the primary goal, the numbers of port used have reduced to one. This has been achieved with single incision laparoscopic cholecystectomy. However, these techniques may necessitate certain degree of learning curve and technically more demanding. The aim of this clinical study was to explore an alternative technique of laparoscopic cholecystectomy which offers a simpler learning curve and less demanding technique.
Methods: This was a prospective descriptive study performed from September 2009 to February 2011 in Sultanah Bahiyah Hospital. A total of 58 patients underwent two incisions three ports laparoscopic cholecystectomy (TILC) which were being performed by the senior consultant hepato-pancreato-biliary (HPB) surgeon and two HPB trainees. The study end points included operative time, postoperative pain, length of hospital stay and early postoperative complications. The follow up period was 4 weeks.
Results: The overall operative time taken was 44 ± 18 min. None of the patients had major compli-
cation or incisional hernia postoperatively. A total of 98% of the patients discharged within 24 h. Postoperative analgesia used was mainly NSAIDs.

Conclusion: Two-incision three-port laparoscopic cholecystectomy is feasible and safe to be performed.

Malignant HPB Diseases

APHPB-0240
THE SURVIVAL BENEFIT FOR THE PATIENTS WITH INTERMEDIATE AND ADVANCED HEPATOCELLULAR CARCINOMA BY LIVER RESECTION WITHOUT BLOOD TRANSFUSION

T. Miura, N. Kimura, D. Kudo, K. Ishido, Y. Toyoki and K. Hakamada
Gastroenterological Surgery, Hirosaki University Graduate School of Medicine, Hirosaki, Japan

Objectives: The aim of this study was to elucidate the patient characteristics that would be suitable to liver resection for intermediate and advanced hepatocellular carcinoma (stage B/C HCC) in order to obtain the survival benefit.

Methods: The 166 patients with HCC who underwent initial liver resection at Hirosaki University Hospital between January 2001 and December 2012 were analyzed in a retrospective manner. Demographic, clinical and pathological data were analyzed using Mann–Whitney U, χ², and log-rank tests. Multivariate analysis was performed by Cox proportional hazards model.

Results: The 142 patients were classified as early HCC (stage A) and 24 patients as stage B/C. The patients with stage B/C had significantly lower rate of 5-year overall survival than those with stage A, 17% and 63% respectively. The multivariate analysis among 166 patients identified that stage B/C [HR 4.01 (95% CI 2.12–7.59)], vascular invasion [HR 2.48 (95% CI 1.37–4.47)], and allogenic blood transfusion [HR 2.06 (95% CI 1.16–4.47)] were independently poor prognostic factors. The allogenic blood transfusion was the only significant factor associated with short-term overall survival among stage B/C patients. The predictive scoring system characterized by platelet counts (10 × 10⁹ /mm³), γ-fetoprotein (≥800 ng/mL), tumor size (≥4 cm) and major hepatectomy was useful for assessing the need for allogenic blood transfusion and could predict the survival benefit of liver resection for the patients with stage B/C HCC.

Conclusion: The survival benefit would be expected for the patients with stage B/C HCC who underwent liver resection without blood transfusion, which could be predictive using preoperative factors.

APHPB-0242
IS IT TRUE THAT THE LEFT HEPATIC DUCT IS LONGER THAN THE RIGHT HEPATIC DUCT?

T. Hirose, T. Igami, T. Ebata, Y. Yokoyama, G. Sugawara, T. Mizuno and M. Nagino
Division of Surgical Oncology, Department of Surgery, Nagoya University Graduate School of Medicine, Nagoya-shi, Japan

Objectives: To investigate whether the anatomical consideration that ‘the left hepatic duct is longer than that of the right hepatic duct’ is correct.

Methods: In surgical study, the lengths of the resected bile duct were measured in 475 patients with perihilar cholangiocarcinoma who underwent right- or left-sided hepatectomy. In radiological study, estimated lengths of the bile duct to be resected were measured, using cholangiograms reconstructed from portal phase multidetector-row computed tomography (MDCT) images, in 61 patients with distal bile duct obstruction who underwent MDCT.

Results: In surgical study, the length of the resected left hepatic duct was 25.1 ± 6.4 mm in anatomic right trisectionectomy (n = 37) and 14.9 ± 5.7 mm in right hepatectomy (n = 167). The length of the right hepatic duct was 14.1 ± 5.7 mm in left hepatectomy (n = 149) and 21.3 ± 6.4 mm in left trisectionectomy (n = 122). In radiological study, the lengths of the bile duct corresponding to the surgical study were 34.1 ± 7.8 mm, 22.4 ± 7.1 mm, 20.8 ± 4.8 mm, and 31.6 ± 5.3 mm, respectively. Both studies showed that the length of the resected bile duct was (1) similar between right and left hepatectomies, (2) significantly shorter in right hepatectomy than in left trisectionectomy, and (3) the longest in anatomic right hepatic trisectionectomy with statistical significance.

Conclusion: Anatomical consideration that ‘the left hepatic duct is longer than the right hepatic duct’ lacks scientific validation and is just surgeon’s biased view. A ‘blind selection’ of right hepatectomy should be reconsidered.

APHPB-0243
THE USEFULNESS OF MICROBIAL CULTURE IN THE DRAIN FLUID AS A PREDICTOR OF PANCREATIC FISTULA AFTER PANCREATODUODENECTOMY

N. Kimura, Y. Toyoki, K. Ishido, D. Kudo, S. Tsutsumi and K. Hakamada
Department of Gastroenterological Surgery, Hirosaki University Graduate School of Medicine, Hirosaki, Japan

Objectives: Early bacterial contamination in the ascitic fluid after pancreatoduodenectomy (PD) may lead to the development of clinically relevant pancreatic fistula (CR-POPF). We investigated the relationship between CR-POPF after PD and bacteria isolated from the drain fluid.

Methods: Seventy-eight consecutive patients underwent PD at our institute from 2012 to 2014. Microbial culture was routinely obtained from the drain fluid on
postoperative day (POD) 1, 3, and 6. The relationship between CR-POPF and clinical factors was assessed by univariate and multivariate analysis.

**Results:** CR-POPF occurred in 30.8%. In univariate analysis, significant predictors of CR-POPF were estimated blood loss (p = 0.009), smaller pancreatic duct (p = 0.004), soft pancreas (p = 0.007) and bacterial contamination in the drain fluid on POD1 or 3 (p = 0.001). In multivariate analysis, bacterial contamination in the drain fluid on POD1 or 3 was the only independent predictor of CR-POPF (OR = 6.18, 95% CI 1.68–22.72). In 45.8% of the patients with CR-POPF, bacteria were isolated from the drain fluid up to POD3. The most commonly isolated bacteria were *Enterococcus faecalis* (25.0%), *Pseudomonas aeruginosa* (16.7%), and *Enterobacter cloacae* (8.3%). Furthermore, imipenem, meropenem and levofloxacin had strong sensitivity for them.

**Conclusion:** Early bacterial contamination of the ascitic fluid might be responsible for CR-POPF. Routine microbial culture obtained from the drain fluid in the early postoperative period is useful to predict CR-POPF. Therefore, it is important to prevent the surgical field from becoming contaminated with enteric bacteria intraoperatively and to perform the early administration of more sensitive antibiotics.

**APHPB-0245**

**RISK FACTORS ASSOCIATED WITH MORTALITY AND RECURRENCE FOR PATIENTS WITH HUGE HEPATOCELLULAR CARCINOMA AFTER HEPATECTOMY**

W. Zhang, X. Wang, G. Yuan and X. Chen

Hepatic Surgery Center, Tongji Hospital, Tongji Medical College, Hua Zhong University of Science and Tec, Wuhan, China

**Objectives:** Controversy still exists in deciding whether surgical resection can be performed on the patients with huge hepatocellular carcinoma (HCC) ≥10CM, but some cases do indeed have good prognosis. However, risk of operative morbidity and mortality for huge HCC increase in the hepatic resection because of the need for major hepatic resections. Here we describe whether hepatic resection carried out for huge HCC is safe and effective.

**Methods:** From January 2010 to December 2012, 58 patients with huge HCC underwent surgical resection were enrolled in this study. Survival and recurrence data were collected. Prognostic factors were analyzed.

**Results:** Major postoperative complications (clavien classification ≥Grade III) may occur in up to 13% platelet, PTA, postoperative TP and Ishak score were independent risk factor. 3 patients (5.17%) died within 60 days followed hepatectomy. Multivariate analysis showed that 60-day mortality was significantly associated with platelet (p = 0.04), Ishak score (p = 0.009), and future liver remnant (p = 0.034). Ishak score in survival and mortality group is 9.53 ± 1.95 and 14.00 ± 1.00 (p = 0.001). 36.2% of the patients suffered from early recurrence (within 1 year after hepatic resection). The presence of vascular invasion (p = 0.05) and satellite nodules (p < 0.001) were independent risk factors for early recurrence.

**Conclusion:** Surgical resection is safe and feasible for selected huge primary liver cancer, and our data showed that platelet <150 × 10⁹/L, high Ishak score and future liver remnant <40% were the independent risk factors for the mortality within 60 days after hepatectomy. Vascular invasion and satellite nodules are strongly associated with early recurrence.

**APHPB-0245**

**EMBRYONAL RHABDOMYOSARCOMA OF LIVER IN A 16 YEAR OLD MALE—RARE CASE REPORT**

R. Rajendran, D. Benet, A. Amudhan, R. Prabhakaran, D. Kannan and S. M. Chandramohan

Gastroenterology, Madras Medical College, Chennai, India

**Objectives:** Primitive mesenchymal tumors represent about 9–15% of all hepatic tumors in children. Only about 150 cases have been reported in the literature so far. Hereby we report a case of Ruptured Embryonal Rhabdomyosarcoma.

**Methods:** A boy aged 16 years old with weight of 26 kg presented to us with sudden onset of abdominal pain and fever. Clinical examination revealed a tender hepatomegaly about 6 cm below Right costal margin. CECT abdomen revealed 15 × 11 × 9 cm heterogeneous multi septated loculated mass lesion involving right lobe of liver segments 5, 6, 7, 8. Diagnostic laparoscopy was done which showed a tumor occupying the entire right lobe of liver with no other deposits. The tumor capsule was seen ruptured on the right lateral side for which we did emergency right Hepatectomy. Weight of the specimen was 2.8 kg.

**Results:** Histopathology revealed the lesion as Embryonal Rhabdomyosarcoma with co-existing mesenchymal hamartoma. Immunohistochemistry showed Vimentin and Desmin positive. Patient was started on carboplatin and Ifosfamide based chemotherapy. Patient expired on 30th postoperative day due to acute respiratory distress.

**Conclusion:** Improved survival can be expected only if we detect the disease early. This case report will enlighten this type of rare tumor in young children and an early referral to the specialist.

**Benign HPB Diseases**

**APHPB-0246**

**THE FREQUENCY AND THE CHARACTERISTICS OF EXTRAHEPATIC MANIFESTATIONS ASSOCIATED WITH CHRONIC HEPATITIS C**

L. Coldea

Faculty of Medicine, Lucian Blaga University, Sibiu, Romania

**Objectives:** The aim of study is to establish the characteristic and frequency of extrahepatic manifestations.
Methods: The study is retrospective based on 162 cases of chronic hepatitis with antibodies HCV positive, 78 cases with chronic hepatitis C were followed up prospective for duration of hospitalisation. Each patient had a clinical observation paper with personal dates, personal pathological and heredity history, the anamnesis and clinical dates, the results of lab tests and paraclinical investigations.

Results: The group of 162 cases with chronic hepatitis with antibodies HCV positive are composed by 102 females (63%) and 60 males (37%). In my study I observed that it was a preponderant affection of age 60–69 years (27.16%).

In my group, 53 patients (33%) present without hepatic manifestation, extrahaemepatic manifestations, and 109 patients present only hepatic manifestations. The distribution of cases with extrahepatic manifestations is: 16 patients with endocrine manifestations (30.18%), 22 patients with cryoglobulinemia (41.53%); 5 patients with skin manifestations (9.43%); 8 patients with hematological manifestations (15.09%), 2 patients other manifestations (3.77%).

One third of patients present extrahepatic manifestations which showed high frequency of extrahepatic manifestations.

Conclusion: Chronic hepatitis C is frequently associated with extrahepatic manifestations, the most frequent extrahepatic manifestations is cryoglobulinemia mixed. In some of extrahepatic manifestations the role of HCV is well established, while in others it is still speculative. The number of extrahepatic manifestations in chronic hepatitis C is in continues growth and became a open field of research.

Malignant HPB Diseases
APHPB-0248

NEOPLASTIC NEEDLE TRACK SEEDING FOLLOWING PERCUTANEOUS RFA FOR HEPATOCELLULAR CARCINOMA: A CASE REPORT
S. Mathur1, G. Goel2, D. Amrakurk3 and D. Chhabra4
1Surgical Oncology, Bombay Hospital and Medical Research Centre, Mumbai, India; 2General Surgery, Shushrusha Citizen’s Cooperative Hospital, Mumbai, India; 3Gastroenterology, Bombay Hospital and Medical Research Centre, Mumbai, India

Objectives: Background: Neoplastic needle tract seeding (NNTS) may arise after diagnostic or therapeutic percutaneous procedures for hepatocellular carcinoma (HCC). The risk of seeding is greater with diagnostic biopsy as compared to therapeutic percutaneous procedures such as Radiofrequency ablation (RFA). Literature reports 0.5–2.8% incidence of post RFA NNTS and the time to recurrence is not well documented. We present here a case of NNTS after percutaneous RFA, in a patient surviving with HCC for 8 years.

Methods: Case: A 42 year old, HBsAg positive cirrhotic male underwent a Transarterial Chemoembolization in 2006 for a 5.1 cm HCC. The AFP levels were normal at diagnosis and no biopsy was performed. A percutaneous RFA was done 4 years later for a recurrent 31 mm intrahepatic nodule detected adjacent to the previous tumor. Two passes were made for ablation. A follow up MRI scan at 24 months that showed non enhancing 8 mm nodule in the parities and attributed to a scar increased to 13 × 14.4 × 10.5 cm over subsequent 12 months; its base reaching upto the liver capsule. The primary tumor in the liver was stable and the ablated lesion showed no activity.

Results: The patient underwent a wide local excision with segmental excision of 10th and 11th ribs. There was no inprteritoneal tumor extension. The histology confirmed a metastatic well differentiated HCC of anterior abdominal wall. Tumor cells expressed hepatocyte specific antigen (OCH1E5) and glypican 3.

Conclusion: Post RFA NNTS remains a potential complication despite non-subcapsular, non AFP secreting well differentiated HCC.

Transplantation
APHPB-0249

SALVAGE LIVER TRANSPLANTATION FOR HEPATOCELLULAR CARCINOMA RECURRENCE IN YOUNG AGE PATIENTS
Y. J. Hung, K. H. Lin, C. J. Ko and Y. L. Chen
Surgery, Changhua Christian Hospital, Changhua, Taiwan

Objectives: Salvage liver transplantation (SLT) is considered a feasible option for the treatment of recurrent hepatocellular carcinoma (HCC). Little is known about outcomes for SLT in young age patients with recurrent HCC. The aim of this study was to evaluate the clinical efficacy and prognostic factors for SLT for HCC recurrence in young age patients.

Methods: During 2002–2013, 218 patients younger than 50 years old undergoing liver resection (LR) for HCC, 69 of them experienced recurrence and 23 of them were intrahepatic. 9 patients (SLT group) received SLT for tumor recurrence treatment while the other 14 patients (nSLT group) had TACE, RFA and repeat LR. The clinical findings and outcomes were compared between the two groups.

Results: 1 patient in SLT group dies because of tumor recurrence, the overall survival rate was 88.8% in SLT group, 9 out of 14 patients died in nSLT group and the overall survival was 35.7%. The average of time to recurrence was 5.7 months for nSLT group and 19.6 months for SLT group. No perioperative mortality was noted in SLT group.

Conclusion: Our single institution experience demonstrated that salvage liver transplantation followed by liver resection is a feasible treatment for HCC patients younger than 50 years old. With the shortage of graft and preserved liver function in young HCC patients, LR may considered as first line treatment and followed by SLT if intrahepatic recurrence occurred.
Malignant HPB Diseases
APHPB-0250

PREOPERATIVE S-1 AND CONCURRENT RADIATION FOR PATIENTS WITH POTENTIALLY RESECTABLE PANCREATIC CARCINOMA
N. Yamamoto, K. Okano, E. Asano and Y. Suzuki
Gastroenterological Surgery, Kagawa University, Kitagun, Japan

Objectives: Standardization of adjuvant chemotherapy have improved the prognosis for pancreatic cancer (PC), but still not sufficient. Therefore preoperative treatment is expected for improving the prognosis with a resectable PC. We report the results of neoadjuvant chemoradiotherapy (NACRT) for resectable PC, and examined its safety and efficacy.

Methods: The study retrospectively reviewed 57 patients who underwent pancreatectomy for PC in 2009.9–2014.9. Patients with NACRT (n=15) were treated before surgery with S1 (60 mg/m², day 1–14) and radiation (30 Gy in 3Fr). Perioperative results and prognosis were analyzed and compared with patients who received surgery first (SURGERY, n=42).

Results: NACRT was indicated for patients with a resectable PC. Neutropenia (2 patients), nausea and anorexia (2 patients) and cholangitis (1 patient) were experienced as adverse events. Preoperative leukocytes, lymphocytes, platelets, and cholinesterase values were significantly lower in comparison with SURGERY (p<0.005), but there was no significant difference in Hemoglobin and Albumin. There was no significant difference between the groups for patient background, perioperative result, complications, tumor size and lymph node metastasis. Thirteen of 15 patients with NACRT (86.7%) received surgery and all cases were confirmed R0 in pathologic evaluation. 1-, 2-year survival rate were 88%, 70% in NACRT and 79%, 54% in SURGERY, respectively. There was no significant difference between the groups in overall survival and recurrence free survival.

Conclusion: Although NACRT affected the preoperative nutrition or several blood components, NACRT is well tolerated and safe in perioperative results. In addition, the present preliminary results suggested NACRT may improve the prognosis for resectable PC.

APHPB-0251

THE PROGNOSTIC VALUE OF HEPATOCYTE GROWTH FACTOR RECEPTOR EXPRESSION IN PATIENTS WITH PERIHILAR CHOLANGIOCARCINOMA
H. Watanabe, Y. Yokoyama, T. Kokuryo, T. Ebata, T. Igami, G. Sugawara, T. Mizuno, J. Yamaguchi and M. Nagino
1Surgery, Nagoya University Graduate School of Medicine, Nagoya, Japan

Objectives: The overexpression of mesenchymal-epithelial transition factor (MET) and Recepteur d’Origine Nantais (RON) has been shown to be associated with poor prognosis in some types of cancer. The aim of this study was to determine the expression profile of MET and RON in histologically curatively resected surgical specimens of perihilar cholangiocarcinoma (PHC). The strength of MET or RON expression and its association with patient prognosis were also analyzed.

Methods: One hundred and sixty-nine patients who underwent histologically curative resection for PHC were subjected to immunohistochemical analysis for MET and RON.

Results: There were 27 patients (16%) who revealed a positive expression for both MET and RON. Although clinicopathological features in the either MET- or RON-negative group were not significantly different compared to the both MET and RON-positive group, the prognosis tended to be worse in the patients with both MET and RON positivity. When the analysis was limited to the advanced stage patients (stage III and IVa), a multivariate analysis revealed that both MET and RON positivity and lymph node metastasis were identified as independent poor prognostic factors.

Conclusion: This study demonstrated that the overall survival rate with both MET and RON positivity was worse than that with either MET or RON negativity in the patients with advanced PHC. The poor prognosis in these patients was not associated with unfavorable clinicopathological features. The examination of MET and RON expression in PHC may enable a tailored method for patient classification that could not otherwise be achieved using the conventional pathological classification system.

Benign HPB Diseases
APHPB-0252

THE FIRST REPORTED HEPATIC ACTINOMYCOTIC MASS IN MALAYSIA
C. S. Tee, V. M. Leow, L. Vasupillai and S. Manisekar
Hepato-Pancreto-Biliary, Hospital Sultanah Bahiyah, Alor Setar, Malaysia

Objectives: Primary hepatic actinomycotic mass is a rare occurrence with a reported incidence of <5%. This is a case report of isolated hepatic actinomycosis masquerading as hepatocellular carcinoma. It was diagnosed on histopathological examination of the surgical specimen and is the first such reported case in Malaysia.

Methods: History, physical examination, blood tests, computed tomography and laparotomy with left hepatectomy were done to establish the presence and origin of the mass in the left liver. Histopathological findings of eosinophilic ‘Splendor-Hoeppli material’ with apparent normal liver parenchymal were confirmed to establish the diagnosis.

Results: A 42-year-old man came with complaint of 1 month history of dull epigastric pain. On examination, a mass arising from the left liver was felt. Computed tomography revealed a unequivocal solid mass on the arterial phase, occupying the whole left liver. No evidence of vascular invasion or abdominal lymphadenopathy or other focal lesions. Alpha fetoprotein and other blood tests were normal.
The patient underwent left hepatectomy. Grossly, the cut section appeared solid. Histology revealed greenish microabscesses with the presence of eosinophilic ‘Splendor-Hoepli material’ and apparent liver parenchyma. The patient was treated and discharged with penicillin based antibiotic for 6 months upon established diagnosis.

**Conclusion:** Due to its rarity, primary hepatic actinomycosis is often overlooked etiology for a liver mass. Given its non-descript symptomatology and indolent course, surgeons should be made aware of this differential, especially in endemic area, and the potential pitfalls in diagnosis and management.

**Transplantation**  
**APHPB-0253**

**FACTORS THAT PREDISPOSE TO HEPATOCELULAR CARCINOMA RECURRENCE POST LIVER RESECTION**

J. Gan¹ and S. Chang²

¹Trauma and Orthopaedics, Royal Albert Edward Infirmary, Wigan, UK; ²Hepatobiliary Surgery, National University Hospital, Singapore, Singapore

**Objectives:** We aim to determine the factors influencing recurrences following curative resection for Hepatocellular Carcinoma.

**Methods:** Data from patients who underwent curative resection for hepatocellular carcinoma at our hospital (National University Hospital) from 2000 to 2008 were reviewed retrospectively. Univariate and multivariate analysis were conducted to identify prognostic factors associated with recurrence-free survival and overall survival.

**Results:** The mean overall patient survival was 86.3 months (95% confidence interval 74.31–97.47). Gross vascular invasion was significantly associated with overall survival (p = 0.049). Fifty three patients (52%) had recurrences; the median recurrence-free survival was 22.6 months (95% confidence interval [CI] 11.77–33.39). Microscopic vascular invasion (p = 0.0001, Hazard Ratio [HR] = 3.53, 95% CI 1.83–6.80), pretreatment with radiofrequency ablation (RFA) (p = 0.007, HR = 4.79, 95% CI 1.56–14.74) and transcatheter chemoembolization (TACE) (p = 0.013, HR = 2.48, 95% CI 1.22–5.07) were associated with recurrence-free survival. Pre-operative RFA treatment (p = 0.001), multiple tumours (p = 0.029), microvascular invasion (p = 0.01), higher pre-operative Alpha fetoprotein levels (p = 0.002), and gross vascular invasion (p = 0.04) had significant association with intrahepatic recurrence; microscopic vascular invasion (p = 0.043) and a larger tumour size (p = 0.008) were associated with increased risk of extrahepatic recurrence.

**Conclusion:** Microscopic vascular invasion remains a consistent predictor of hepatocellular carcinoma recurrence. We also found tumour size and microscopic vascular invasion as predictors of extrahepatic recurrences, which may preclude patients from therapy like liver transplantation.

**Benign HPB Diseases**  
**APHPB-0254**

**THE TIMING OF CHOLECYSTECTOMY AFTER PERCUTANEOUS TRANSHEPATIC GALLBLADDER DRAINAGE**

D. Park and K. Kim

Surgery, Wonkwang University Hospital, Iksan, Korea

**Objectives:** Laparoscopic cholecystectomy is the standard treatment for acute cholecystitis. The percutaneous gallbladder drainage (PTGDB) is an alternative treatment option to resolve acute cholecystitis in patients with severe comorbidities. However, time for cholecystectomy after PTGDB is still controversial. The objective of this study is to determine optimal timing for laparoscopic cholecystectomy after PTGDB for acute cholecystitis.

**Methods:** This retrospective study was conducted on patients who underwent cholecystectomy after PTGDB from January, 2012 through June, 2014. For-five patients were included in this study and patients were divided into two groups. Group 1 patients underwent cholecystectomy within 10 days after PTGDB (n = 23). Whereas group 2 patients underwent cholecystectomy at more than 10 days after PTGDB (n = 22).

**Results:** There were no significant differences between groups in conversion rate to open surgery, operation time, periopeative complications and hospital stay after cholecystectomy. But, complications related to PTGDB was significantly higher in group 2 than that in group 2 (p > 0.032).

**Conclusion:** In this study, the timing of laparoscopic cholecystectomy after PTGDB didn’t influence the rate of conversion to open surgery, operation time, perioperative complications and hospital stay after cholecystectomy. So the best timing of laparoscopic cholecystectomy after PRGBD be made after considering patient general condition and surgeon’s experiences. And further prospective study is required to support this findings.

**Malignant HPB Diseases**  
**APHPB-0255**

**COMPARISON OF OPEN PANCREATODUODENECTOMY AND LAPAROSCOPIC PANCREATODUODENECTOMY**

H. Sunagawa, N. Oshiro, T. Orokawa and K. Ogura

Surgery, Nakagami Hospital, Okinawa, Japan

**Objectives:** Currently, laparoscopic procedure has been used in many organs. Laparoscopic pancreaticoduodenectomy (PD) has not spread yet. Laparoscopic PD represents one of the most advanced abdominal operations owing to the necessity of a complex dissection and reconstruction. In this report, we compared the feasibility between open pancreaticoduodenectomy (PD) and laparoscopic PD.

**Methods:** The 62 patients with periampullary and pancreatic disease during 2009–2014 were divided into open PD group (OG) and laparoscopic PD group (LG). All PD were performed by one surgeon. We
underwent a pylorus preserving methods and Child’s reconstructions. A totally laparoscopic approach was used for the entire procedure using a five-port technique in LG basically. Clinical, perioperative and outcome data were retrospectively analyzed.

**Results:** The ratios of pancreatic cancer patients were 17% (OG) and 0% (LG). But there was no difference in background other factors between the two groups. The median operative time in LG was longer than in OG (585 vs. 410 min, \( p = 0.036 \)). The median blood loss in LG was less than in OG (250 vs. 750 mL, \( p = 0.001 \)). The pancreatic fistula (PF) rate in OG was 13.5% (≥grade B). The PF rate in LG was 12% (≥grade B). The median hospital stay in LG were shorter than in OG (12 vs. 22 days, \( p = 0.0005 \)).

**Conclusion:** Laparoscopic PD is a feasible for well-selected patients.

**Transplantation**

**APHPB-0256**

**LOW CALORIC INTAKE AND GRAFT FUNCTION IN THE EARLY PERIOD AFTER LIVER TRANSPLANTATION**

Y. Nah1, K. Kyoung2, C. Nam1, H. Park1 and S. Lee3
1Surgery, Ulsan University Hospital, Ulsan, Korea; 2Emergency Medicine, Ulsan University Hospital, Ulsan, Korea; 3Surgery, Asan Medical Center, Seoul, Korea

**Objectives:** Effects of caloric supplementation on the graft function after deceased donor liver transplantation (DDLT) have not been investigated much. The authors investigated the correlation between the caloric intake and early graft function and compared caloric/body weight ratio (C/BWR) and calorie/graft weight ratio (C/GWR) as a guidance for nutritional provision.

**Methods:** 40 patients who underwent DDLT between January 2010 and December 2013 were divided into the low caloric group (<18 kcal/kg/day) and eucaloric group (≥18 kcal/kg/day) according to caloric intake until 48 h post-DDLT. To check the impact of caloric intake on the graft function, aminotransferase level, bilirubin level, and international normalized ratio (INR) on postoperative days (POD) 0, 2, and 7 were compared between the 2 groups. Recovery of graft function was compared according to the C/BWR and C/GWR.

**Results:** 32 patients received low caloric intake during the first 48 h after DDLT and 8 patients received eucaloric intake. INR on POD 2 was significantly better in the low caloric group (\( p = 0.018 \)). C/GWR was more strongly correlated with INR on POD 2 than C/BWR (\( r = 0.08, p = 0.63 \) vs. \( r = 0.36, p = 0.024 \)).

**Conclusion:** Low caloric intake was better than eucaloric intake in the restoration of early graft function. C/GWR was superior to C/BWR as a standard for nutritional supplementation.

**APHPB-0257**

**EFFECT OF BETEL NUT CONSUMPTION ON TACROLIMUS TROUGH CONCENTRATION IN LIVER TRANSPLANT RECIPIENTS**

1Pharmacy, Changhua Christian Hospital, Changhua, Taiwan; 2General Surgery, Changhua Christian Hospital, Changhua, Taiwan; 3Transplant Medicine & Surgery Research Centre, Changhua Christian Hospital, Changhua, Taiwan

**Objectives:** A number of studies shown that betel nut chewing is related to submucosal fibrosis and esophageal cancer. However, studies on the pharmacokinetics of tacrolimus with betel nut chewing are rare. Herein, we aimed to investigate tacrolimus level in liver transplant (LT) recipients with and without betel nut consumption.

**Methods:** This was a retrospective study during January 2013 to June 2014. 42 patients with LT at the Changhua Christian Hospital were stratified into two groups depending on patients had chewed betel nut or not. Of these patients, 14 was betel nut chewer (group 1) and 28 had never chewed betel nut (group 2). All clinical and laboratory data were obtained, including age, tacrolimus dosage and level, serum creatinine, and estimated glomerular filtration rate (eGFR). We used a one-to-two matching analysis, the chi-square test for categorical comparisons of data and the Mann-Whitney U-test to determine differences in the means of continuous variables.

**Results:** Our results shown that mean eGFR were similar between two groups, 71.6 mL/min/1.73 m² in group 1 (mean age, 50.29 ± 5.58 years) and 73.7 mL/min/1.73 m² in group 2 (mean age, 51.93 ± 7.04 years). However, the mean tacrolimus levels after adjusted tacrolimus daily-dose were significantly lower in the group 1 at fifth month (0.626 vs. 0.984 ng/mL; \( p < 0.035 \)).

**Conclusion:** In the present study, patients with betel nut chewing tends to have low tacrolimus level. With this preliminary finding, we suggest that it is necessary to adjust tacrolimus dosage in order to prevent rejection in LT recipients with betel nut chewing.

**Benign HPB Diseases**

**APHPB-0258**

**HEPATIC–BONE–ADIPOKINES METABOLISM: PATHOPHYSIOLOGICAL LINKS AND CLINICAL IMPLICATIONS IN OLDER PATIENTS WITHOUT OVERT LIVER DISEASE**

A. Fisher
Geriatric Medicine, The Canberra Hospital, Australian National University Medical School, Canberra, ACT, Australia

**Objectives:** To examine liver function tests (LFTs) in relation to age, comorbidities, mineral-bone metabo-
lism, adiponectin, leptin and resistin status and their predictive value in patients with hip fracture

**Methods:** In 294 older patients (mean age 82.2 ± 7.9 years, 72.1% women) with osteoporotic HF we measured serum levels of alanine aminotransferase (ALT), gamma-glutamyltransferase (GGT), alkaline phosphatase (ALP), bilirubin, albumin, adiponectin, leptin, resistin, 25(OH) vitamin D, PTH, calcium, phosphate, magnesium, osteocalcin (OC), bone-specific alkaline phosphatase (BAP), and urinary concentration of cross-linked N-telopeptide of type 1 collagen (corrected for creatinine, NTx/Cr).

**Results:** Abnormal LFTs were observed in <10% of patients. Ageing was associated with decline in GGT, ALT and leptin and increase in adiponectin and PTH levels. In multivariate linear regression analyses, lower OC was an independent predictor of higher GGT, ALT and bilirubin, whereas BAP and NTx/Cr were positively associated with GGT and ALP. Adiponectin was an independent predictor of GGT, leptin was a determinant of OC and NTx/Cr, and PTH was an independent determinant for adiponectin. Higher GGT levels (>30 U/L) were associated with coronary artery disease (CAD), diabetes mellitus, low OC levels and prolonged hospital length of stay (>20 days). The risk of in-hospital death was 3 times higher if albumin <33 g/L.

**Conclusion:** Parameters of liver, adipokines and mineral-bone metabolism are significantly interrelated. Adiponectin (but not leptin, resistin, 25(OH) vitamin D or PTH) is an independent determinant of GGT. Higher GGT may indicate impaired bone metabolism and is predictive of prolonged hospital stay; low albumin is associated with in-hospital death.

**APHPB-0260**

**SINGLE INCISION LAPAROSCOPIC CHOLECYSTECTOMY WITH CONVENTIONAL INSTRUMENTS AND PORTS: A STUDY AT A TERTIARY CARE HOSPITAL IN PAKISTAN**

A. Shaikh

*Surgery, Liaquat University of Medical Health & Sciences Jamshoro, Hyderabad, Pakistan*

**Objectives:** To assess the safety, feasibility and short term outcome of single incision laparoscopic cholecystectomy with conventional instruments.

**Methods:** A prospective study conducted at surgical department of Liaquat University of Medical Health and sciences Jamshoro Pakistan from January 2010 to December 2011 of all fit cases of symptomatic cholelithiasis who consented for laparoscopic surgery and wanted better cosmetic results. The exclusion criteria were acute cholecystitis, acute gall stone pancreatitis, common bile duct stones and patients with comorbidities.

**Results:** Total no of cases were 50. The age ranged from 30 to 59 years (mean 35.20 years). There were 43 females and 07 males. A midline incision made supraumbilically and 10 mm port placed. Two 5 mm ports placed on either side of umbilicus slightly superior and laterally in order to triangulate. A 2/0 prolene suture placed through the infundibulum of the gall bladder. The rest of the procedure is like standard laparoscopic cholecystectomy. The operating time was 80 min (range 50–120). Four case were converted to standard four incision laparoscopic cholecystectomy due to bleeding and difficult dissection in calot’s triangle. There was minimal blood loss during the operation. There was no postoperative complication. The median pain scale was three. The cosmetic results were satisfactory. The length of hospital stay was 01 day (range 1–2).

**Conclusion:** The laparoscopic cholecystectomy can be done safely with conventional laparoscopic instruments and ports without additional cost of single port and articulated instruments, the cosmetic results are excellent with minimal increase in the operating time.

**Malignant HPB Diseases**

**APHPB-0261**

**COMPARATIVE ANALYSIS OF LAPAROSCOPIC VERSUS OPEN SURGICAL RADIOFREQUENCY ABLATION FOR MALIGNANT LIVER TUMORS**

K. S. Chun and I. S. Song

*Department of Surgery, Chungnam National University Hospital, Daejeon, Korea*

**Objectives:** This study aims to evaluate the comparative effectiveness of the two surgical approaches on the treatment outcomes of radiofrequency ablation (RFA) for malignant liver tumors.

**Methods:** Fifty-seven patients with malignant liver tumors, hepatocellular carcinoma, cholangiocarcinoma and liver metastases, were candidates for radiofrequency ablation underwent laparoscopic or open surgical approach.

**Results:** The patients’ characteristics were comparable in the two groups, as were open (n = 33, 57.9%) and laparoscopic (n = 24, 42.1%) surgical approach. There were no statistically significant differences between the two groups in terms of recurrence rate (p = 0.337) and overall survival (p = 0.423). However, patients in the laparoscopic RFA group had significantly shorter hospital days (14.13 vs. 5.89, p < 0.05) and experienced less complications (Grade I, 62.5% vs. 26.3%, p = 0.102).

**Conclusion:** Laparoscopic RFA can be performed for malignant liver tumors with lower morbidity rates, less invasiveness and expense comparative to open surgical approach.
APHPB-0262

PERCUTANEOUS TRANSSH EPATIC PORTAL VEIN STENTING FOR RECURRENT PERIHILAR CANCER WITH MALIGNANT SEVERE PORTAL VEIN STENOSIS

T. Mizuno1, T. Ebata1, Y. Yokoyama1, T. Igami1, G. E. N. Sugawara1, Y. Mori2, K. Suzuki2, S. Naganawa2 and M. Nagino1

1Department of Surgery, Nagoya University Graduate School of Medicine, Nagoya, Japan; 2Department of Radiology, Nagoya University Graduate School of Medicine, Nagoya, Japan

Objectives: To assess the clinical efficiency of transhepatic portal vein (PV) stenting in patients with severe PV stenosis due to the recurrence of perihilar biliary malignancy.

Methods: Between 2007 and 2013, nine consecutive patients (5 male, 4 females; mean age, 66 years) with severe PV stenosis due to the recurrence of perihilar biliary malignancy underwent transhepatic PV stenting. Their medical records were retrospectively analyzed with regard to the procedure, both technical and clinical success rate, and following anticancer therapy after the PV stent insertion.

Results: The primary tumor location was perihilar in 8 and gallbladder in one patient. The surgery for the primary lesion was left trisectionectomy with pancreateoduodenectomy (PD) in 4, and left trisectionectomy in 3, left hepatectomy in 1 and resection of the gallbladder bed with PD in one, respectively, and concomitant vascular resection was performed in 6. The median interval between the primary resection and the PV stenting was 19 months. Six of the 9 patients were symptomatic; gastrointestinal bleeding in 2, thrombocytopenia in 4, and hepatic coma in one patient. Technical- and clinical success was achieved in 7, and 5 of the 9 patients, respectively. Seven patients could be resumed following anticancer treatment. Median survival time after PV stent insertion was 11 months.

Conclusion: PV stenting appears to be feasible in cases of severe PV tumor invasion and stenosis. This procedure does not only improve the quality of life, but allow a following anticancer therapy and may contribute to improve survival.

APHPB-0264

PROGNOSTIC FACTORS OF CLINICOPHYSIOLOGICAL FINDINGS IN PANCREATIC CANCER

S. Suzuki1, Y. Goto1, H. Kajiyama1, A. Takemura1, S. Konishi1, J. Shimazaki1, T. Nakachi1, K. Tabuchi1, K. Nishida1, H. Ubukata1, N. Harada1 and M. Suzuki2

1Gastroenterological Surgery, Ibaraki Medical Center, Tokyo Medical University, Aiminachi, Inashikigun, Ibaraki, Japan; 2Gastroenterological Surgery, Hachioji Digestive Disease Hospital, Hachioji, Tokyo, Japan

Objectives: We aimed to evaluate the prognostic factors of clinicophysiological findings in pancreatic cancer (PDAC).

Methods: A total of 75 patients who underwent pancreatic resections for PDAC between 2007 and 2013 at our center and related hospitals were examined retrospectively. Clinicophysiological parameters (T-Bil, albumin, creatinine, HbA1c, amylase, CRP, BMI, WBC, lymphocyte number, Neutrophil-to-lymphocyte ratio (NLR), Hb, Plate, prognostic nutritional index (PNI) CA19-9, CEA, decompensation of jaundice, complications, postoperative hospital days, R, and TNM stage ≤2) were collected and analyzed for predictors of recurrence-free and overall survivals. Univariate and multivariate analyses were performed using the Cox proportional hazards model. Survival curves were analyzed using the Kaplan–Meier method.

Results: There were 31 male and 44 female patients. The mean age was 68.8 years (range, 48–83 years). All the patients had pathologically confirmed PDAC. Primary distal pancreatectomy and pancreateoduodenectomy (PD) were performed on 23 and 52 patients, respectively. Of these, 3, 40, and 9 patients underwent conventional, pylorus-preserving, and subtotal stomach-preserving PDs, respectively. Univariate analysis showed that NLR, R and TNM stage ≤2 were independent prognostic factors for recurrence-free and overall survivals. Multivariate analysis showed that R and TNM stage ≤2 were independent prognostic factors for recurrence-free and overall survivals, and NLR was independent prognostic factors for overall survivals.

Conclusion: Our results show that R and TNM stage ≤2 were independent predictors of survival after pancreatic resection in PDAC patients. NLR was independent prognostic factors for overall survivals.
Results: 19 patients developed SSI: 9 with superficial or deep SSI and 10 with organ/space SSI. In univariate analysis, preoperative platelets, aspartate aminotransferase and alanine aminotransferase concentrations, intraoperative blood loss, perioperative transfusion, procedure of skin closure, and postoperative bile leakage differed statistically between the two groups. Patients with SSI required significantly longer hospitalization than those without SSI. In multivariate analysis, conventional skin closure and postoperative bile leakage were the significant risk factors.

Conclusion: It is important to prevent bile leakage to reduce postoperative SSI. Moreover, subcuticular suture for skin closure would be effective in preventing incisional SSI. Continuous efforts should be made to prevent SSI and further study is needed to develop additional new strategies for preventing SSI.

APHPB-0266
SIGNIFICANCE OF PROXIMAL RESECTION MARGIN IN HILAR BILE DUCT CANCER

S. J. Park, S. S. Han, S. H. Kim, S. D. Lee, S. A. Lee, S. M. Woo, W. J. Lee and E. K. Hong
Center for Liver Cancer, National Cancer Center, Goyang, Korea

Objectives: To evaluate the prognostic significance of resection margin (RM) status in resected hilar cholangiocarcinoma (HCCA) patients and to identify prognostic factors that affect survival.

Methods: We reviewed the records of 96 HCCA patients who underwent operation from 2001 to 2012 and analyzed the RM status and prognostic factors that affecting survival.

Results: Of 96 patients, 31 (32.3%) patients with negative RM had better survival than those (n = 65, 67.7%) with positive margin (p = 0.011). In histological classification, 6 (6%) patients who had ductal margin with carcinoma in situ have survival outcome similar to 54 (68%) patients who had free margin (p = 0.45) but marginal difference from 65 (67.7%) patients who had margin with invasive carcinoma (p = 0.097). 22 patients with free margin of ≥5 mm had an improvement in survival compared with patients with positive RM (p = 0.012). According to location of RM, however, there was no survival difference between positive distal and negative RM group (p = 0.62). In analysis of prognostic factors, only lymph node involvement is independently associated with survival.

Conclusion: The length and location of RM status have prognostic significance in patients with HCCA. Clear proximal RM is also one of most important prognostic factors for survival especially in patients with node-negative HCCA. Therefore, surgeon should aim at complete clearance of tumor with adequate proximal RM and aggressive distal bile duct resection may not be optional to improve survival.

APHPB-0267
LAPAROSCOPIC LEFT LATERAL SECTIONECTOMY IN PATIENTS WITH CIRRHOSIS

C. Im, J. Y. Cho, H. S. Han, Y. S. Yoon, Y. Choi, W. Lee, J. Y. Jang and H. Choi
Surgery, Seoul National University Bundang Hospital, Seong-nam si, Gyounggi-do, Korea

Objectives: Laparoscopic treatment is considered as standard procedure for left lateral sectionectomy (LLS), showing better outcome compared to open LLS. However, laparoscopic LLL in patients with cirrhosis is still controversial.

Methods: We evaluated data of 108 patients who underwent laparoscopic LLS between July 2003 and 2013. The patients were classified into two groups according to the presence of pathologically proven cirrhosis or not; group A (presence of cirrhosis; n = 22) and group B (absence of cirrhosis; n = 86). Intraoperative and postoperative functional outcomes were compared between two groups.

Results: There were no differences between two groups in terms of operation time and blood loss (p = 0.912 and 0.155, respectively). The rate of transfusion was also similar between two groups (13.6% vs. 2.3%; p = 0.384). Conversion to laparotomy occurred in no patient in group A and two patients in group B (2.3%; p = 1.000). Postoperative peak results of total bilirubin was higher in group A than group B (median 1.3 vs. 1.0; p = 0.019). However, there was no difference in postoperative complication rate (9.1% vs. 7.0%; p = 0.660) and hospital stay (7 vs. 7 days; p = 0.760). No mortality or postoperative liver failure occurred in cirrhotic patients.

Conclusion: Laparoscopic LLS could be standard operation even in patients with cirrhosis.

Benign HPB Diseases

APHPB-0268
A CASE REPORT ON THE USEFULNESS OF EARLY ENDOSCOPIC ULTRASOUND (EUS)-GUIDED TRANSGASTRIC INTERNAL STENTING FOR SEVERE BLUNT PANCREATIC TRAUMA

Digestive Surgery Breast and Thyroid Surgery, Graduate School of Medical and Dental Sciences, Kagoshima University, Kagoshima, Japan

Objectives: Introduction: Therapeutic strategies for pancreatic trauma vary greatly depending on its severity. Surgical intervention is recommended in cases of severe pancreatic injuries for which standard therapy is not advised. We present a two-step treatment method for severe pancreatic injury using an endoscopic ultrasound (EUS)-guided transgastric internal stent.

Methods: Clinical case: A 50 year-old male with blunt abdominal trauma sustained in a traffic accident was...
transported with vital signs indicating shock and CT findings of complete transection of the proximal pancreas and a huge hematoma. A life-saving primary emergency damage control operation was performed. A secondary EUS-guided transgastric internal stent was placed into the pancreatic fluid collection on post-operative day 8 (POD 8). The pancreatic juice secreted from the transected pancreatic tail eventually flowed along the internal stent and emptied completely into the stomach. The patient did not display prognostic symptoms at discharge.

**Results:** Discussion: EUS-guided transgastric internal stenting is currently considered the first line of therapy for pancreatic pseudocysts. It is recommended that pseudocyst drainage occur at least four weeks or more after its formation. In this severe case of blunt pancreatic trauma, the primary damage control operation saved the patient’s life. Following primary surgery, a secondary early operation involved insertion of an EUS-guided transgastric internal stent into the collection of pancreatic juice secreted from the transected pancreatic tail, which allowed complete recovery without surgical extraction or reconstruction of the pancreatic tail.

**Conclusion:** In cases of severe pancreatic trauma, practitioners should consider the value of early EUS-guided transgastric internal stenting.

Malignant HPB Diseases

**APHPB-0269**

**ORAL S-1 WITH CONCURRENT RADIOTHERAPY VERSUS S-1 ALONE IN PATIENTS WITH LOCALLY UNRESECTABLE PANCREATIC CANCER**

H. Shinchi¹, K. Maemura², Y. Matakì², H. Kurahara², K. Hiwatashi², K. O. J. I. Minami², S. Ino², M. Sakoda², S. Ueno², S. Takao² and S. Natsugoe²

¹Department of Health Sciences, Faculty of Medicine, Kagoshima University, Kagoshima, Japan; ²Department of HBP Surgery, Faculty of Medicine, Kagoshima University, Kagoshima, Japan

**Objectives:** We have confirmed the efficacy and safety of S-1 combined with radiotherapy in patients with locally advanced and unresectable pancreatic cancer (Br J Cancer 2007; JHPB Sciences 2012). This randomized trial was conducted to evaluate the survival benefit of S-1 combined with radiotherapy compared to S-1 alone.

**Methods:** Eligible patients had locally advanced and unresectable pancreatic cancer without distant metastases, an ECOG performance status of 0-1, adequate organ and marrow functions, and no prior anticancer therapy. Patients were randomized to receive S-1 combined with radiotherapy versus S-1 alone. S-1 was given orally at a dose of 80 mg/m²/day twice daily on days 1-21 in both groups. Radiotherapy was delivered in fractions of 1.25 Gy twice daily, 5 days per week for 4 weeks.

**Results:** A total of 33 patients were evaluated. Seventeen patients received S-1 combined with radiotherapy, and 16 patients received S-1 alone. There was no treatment-related death or grade 4 toxicity in the both groups. Median overall survival of 19.7 months in the S-1 with radiotherapy group was significantly better than 14.9 months in the S-1 alone group (p = 0.073). Survival rates at 1 and 2 years were 79% and 32% in the S-1 with radiotherapy group and 67% and 10% in the S-1 alone group, respectively.

**Conclusion:** Combination therapy with S-1 and radiotherapy is considered a promising, well-tolerated regimen that can be recommended as a more effective treatment compared to S-1 alone for locally advanced pancreatic cancer.

**APHPB-0270**

**IS PURE LAPAROSCOPIC LEFT LATERAL SECTIONECTOMY FOR HEPATOCELLULAR CARCINOMA IN PATIENTS WITH CIRRHOSIS A STANDARD APPROACH? A COMPARATIVE STUDY IN A SINGLE INSTITUTE**

Surgery, Li Ka Shing Faculty of Medicine, The University of Hong Kong, Hong Kong, Hong Kong China

**Objectives:** The data on long term outcome of laparoscopic left lateral section resection in patients with HCC and cirrhosis is still limited. The aim of this study is to analyze the survival outcome of laparoscopic left lateral sectionectomy in patients with HCCs.

**Methods:** Between January 2004 and December 2013, 21 patients had undergone pure laparoscopic left lateral sectionectomy for hepatocellular carcinoma (HCC). 33 patients who had received open left lateral sectionectomy for HCC were included for comparison. These patients were comparable in terms of age, sex, tumour number, tumour size and preoperative liver function evaluations. The immediate operation outcome including operation morbidity and survival results were compared.

**Results:** Comparing laparoscopic group to open resection group, the median operation time was 235 vs. 195 min (p = 0.33), the median blood loss was 150 vs. 400 mL (p = 0.002). Hospital stay was 5 days in laparoscopic group versus 6 days in the open group (p = 0.15). There was no difference between the two groups in terms of complications. The median survival in laparoscopic group was 104 vs. 114 months in the open group (p = 0.372). The annual percentage of performing left lateral sectionectomy for HCC by pure laparoscopic approach raises from 0% to 100% over a period of 10 years.

**Conclusion:** Laparoscopic left lateral sectionectomy for HCC is a safe and simple procedure associated with less blood loss. The survival outcome is comparable with conventional open approach.
Benign HPB Diseases
APHPB-0271

OUTCOME OF CONSERVATIVE PERCUTANEOUS CHOLECYSTOSTOMY IN HIGH-RISK PATIENTS WITH ACUTE CHOLECYSTITIS AND RISK FACTORS LEADING TO SURGERY

K. Joo1, S. Joo2 and J. Lim3

1Gastroenterology, Kyung Hee University School of Medicine, Seoul, Korea; 2Surgery, Kyung Hee University School of Medicine, Seoul, Korea

Objectives: Laparoscopic cholecystectomy (LC) is the treatment for acute cholecystitis. However, the morbidity and mortality rates are high in elderly patients or in those with co-morbidities at the time of surgery. Percutaneous cholecystostomy (PC) is also well known treatment for acute cholecystitis. This study aimed to evaluate the safety and efficacy of PC for acute cholecystitis and investigate the post-PC factors leading to subsequent LC.

Methods: Ninety-three patients with acute cholecystitis who underwent PC were enrolled. We evaluated patient age, presence of co-morbidities, American Society of Anesthesiologists (ASA) score, duration of drainage of the PC tube, performance of LC, and 30-day mortality. We compared these characteristics in two study groups: 31 were treated with only conservative PC (group I) and 62 with PC followed by elective LC (group II).

Results: Patients in group I were older than those in group II (80.4 vs. 70.5 years, p < 0.05). More group I patients had an ASA score of III or IV compared to group II patients (80.6% vs. 37.0%, p < 0.05). Age, ASA score, and CVA were significantly correlated when analyzing factors used to decide surgery (p < 0.05). Two patients in group I died within 30 days. Six patients (19.3%) in group I experienced recurrent cholecystitis after PC tube removal.

Conclusion: PC is a safe and effective therapeutic option in high-risk patients with acute cholecystitis, or for preoperative management. The decisive risk factors for surgery after PC were ASA score, age, and CVA.

Malignant HPB Diseases
APHPB-0272

THE PREDICTION AND IMPACT OF INTRA-OPERATIVE POSITIVE BILIARY CULTURES ON OUTCOMES FOLLOWING PANCREATICODUODENECTOMIES


General Surgery, National University Health System, Normanton Park, Singapore

Objectives: We aim to analyse the predictors of positive biliary cultures and its impact on outcome after pancreaticoduodenectomies. Secondarily we aimed to identify predictors of atypical biliary cultures.

Methods: A prospectively held database of pancreaticoduodenectomies was analysed. Clinico-pathological patient variables, pre-operative stenting procedures and duration as well as outcome such as complications and length of stay was identified. Positive biliary cultures were subdivided into typical (gram negative) and atypical (gram positive and fungal) growth. Predictors of positive cultures were identified and impact of this on outcome detailed. In a subset analysis, predictors of atypical growth were identified.

Results: Between January 2000 and December 2010, 83 pancreaticoduodenectomies were carried out. Intraoperative positive bile cultures were associated with greater complications (82% vs. 5% p < 0.001) but not length of hospital stay. Predictors of positive bile cultures include male gender, pre-operative stenting (p = 0.02 and p < 0.0001) but not age, the presence of diabetes, length of days with biliary stent and pre-operative bilirubin. When classified into typical and atypical growth, only age >60 years was associated with increased probability of atypical growth. However, atypical growth had no impact on complications or length of hospital stay.

Conclusion: Pre-operative biliary stenting is associated with an increased likelihood of positive biliary cultures and this in turn increased the post-operative complication rate. Only age >60 was associated with atypical cultures that may require appropriate modification of anti-microbial therapy. However, in this small single centre series, atypical growth had no added adverse impact on outcome.

Benign HPB Diseases
APHPB-0273

SURGICAL OUTCOMES IN THE MANAGEMENT OF BLEEDING PSEUDOANEURYSMS FOLLOWING ACUTE Pancreatitis

N. Swamygowda, V. K. Gunasekaran, V. Nanjegowda, T. Guttii, G. Giriyappa and K. V. Ashok Kumar

Surgical Gastroenterology, Victoria Hospital, Bangalore Medical College, Bangalore, India

Objectives: The overall incidence of pseudoaneurysms following pancreatitis is 8–15%. Bleeding Pseudoaneurysms, if left alone, have significant mortality up to 90%. Though, Angioembolisation is considered the standard of care in the management of Pseudoaneurysms, surgery is required in cases of failed Embolisation and hemodynamic instability. Our objective is to present the surgical outcomes in patients with bleeding Pseudoaneurysms following acute pancreatitis.

Methods: The records of patients with bleeding Pseudoaneurysms associated with acute pancreatitis treated between August 2008 and September 2014 were retrospectively reviewed. Alcohol was the predisposing factor in all patients (24/24, 100%). All were male patients with a mean age of 38 years. Median follow-up in our study was for 36 months (4–80 months). Surgery or angiographic embolization was determined by the patient’s clinical condition.

Results: Twelve patients (50%) underwent operation, 6 urgently without angiographic evaluation. Splenic artery aneurysm was identified and ligated in 7 patients, GDA in 3 patients; in 2 patients both splenic
artery and GDA were ligated. Seven patients who underwent surgery had an associated Pseudocyst which was managed by cystoenterostomy. Mean duration of surgery was 210 min. Angiographic embolization was done in 12 patients (66.6%) as primary treatment; Angiography had a sensitivity of 83.3% (15/18). The overall mortality rate was 8.3% (2/24; 1-faecal fistula, 1-DIC). The overall morbidity was 22% (6/24).

**Conclusion:** Surgery in Bleeding Pseudoaneurysms following acute pancreatitis is a real challenge because of the associated inflammation and necrosis. Bleeding pseudoaneurysms associated with pseudocysts have better outcome compared to aneurysms with free intraabdominal rupture.

**APHPB-0275**

RE_EVALUATION OF THE TREATMENT STRATEGY OF TOKYO GUIDELINES 2013

Y. Mayama, H. Sunagawa, K. Ogura, T. Orokawa and N. Ooshiro

**Surgery, Nakagami Hospital, Okinawa, Japan**

**Objectives:** Tokyo guidelines 2013 (TG13) have recommendations of treatment for acute cholecystitis (AC) based on severity assessment criteria. In our hospital, conventionally most of patients with Grade II AC underwent laparoscopic cholecystectomy (LC) and many of patients with Grade III AC underwent emergency surgery. This study aimed to examine the validity of the treatment strategy of TG13.

**Methods:** We retrospectively analyzed 254 patients with AC between January 2006 and July 2014. We compared our conventional treatments strategy for Grade II or Grade III AC with the treatment strategy of TG13.

**Results:** We compared LC with open cholecystectomy for Grade II AC. There was no significantly difference in severity of local inflammation and duration of symptom. There was no significantly difference in complications but LC tends to lower intraoperative blood loss and shorter length of post-operative stay. We also compared emergency surgery with elective surgery after gallbladder drainage for Grade III AC. Operative time was significantly shorter in the emergency surgery group, and there was no difference in intraoperative blood loss, length of post-operative stay and complications.

**Conclusion:** We conclude that LC for Grade II AC is feasible and all of Grade III patients don’t need gall-bladder drainage.

**APHPB-0276**

IMPACT OF SINGLE LAYER END-TO-SIDE PANCREATICOJEJUNOSTOMY BY INVAGINATION METHOD AFTER PANCREATICODUODENECTOMY

J. Kadono¹, A. Furoi², H. Kumemura², T. Nakazono³, S. Motoi¹, M. Inoue³, I. Kitazono¹, H. Futawatari² and Y. Imoto¹

¹Advanced Therapeutics Cardiovascular and Respiratory Disorders, Kagoshima University Graduate School of Medical and Dental Science, Kagoshima, Japan; ²Surgery, Kirishima Medical Center, Kirishima, Japan

**Objectives:** Postoperative pancreatic fistula (POPF) is still a major morbidity after pancreaticoduodenectomy (PD). We present a novel technique for pancreaticojejunostomy (PJ) by single layer end-to-side invagination technique.

**Methods:** (1) Patients. Twenty-five patients (11 pancreatic cancer, 9 bile duct cancer, 3 cancer of ampulla of Vater, 2 Intraductal papillary mucinous tumor) underwent PD. POPF is defined according to International study group of POPF (ISGPF). (2) Anastomotic technique. PJ is performed by interrupted single layer suture using 4-0 polypropylene. Pancreatic juice is totally drained by external stent tube. A full-thickness jejunotomy in two third of pancreatic lateral diameter was created. The suture is started at 1.5 cm from the edge to 0.5 cm from the edge. Then, whole layer of the jejunotomy is sutured. Number of sutures: upper and lower edge, three sutures in the posterior wall, three to five in anterior wall. It is important to place the suture where the pancreatic capsule exists. (3) Evaluation. Pancreatic duct diameter, hardness of pancreatic parenchyma, amylase level in the drained fluid and frequency of POPF.

**Results:** Median pancreatic duct diameter: 3 mm. Soft pancreatic parenchyma/hard: 11/14. Median amylase level on postoperative day 1 and 3: 519 and 73 IU/L. Median duration of peritoneal drainage: 6.5 days. POPF: Grade A 5 (soft/hard: 4/1), B 1 (soft), C 1 (hard). Frequency of grade B and C was 8%. 

**Conclusion:** Single layer end-to-side PJ by invagination technique is a feasible technique with low POPF incidence. However, long-term results should be evaluated.

**Transplantation**

APHPB-0277

EVALUATION OF SPRAY DIATHERMY AS A PARENCHYMATOUS DIVISION IN LDLTX


Surgery, Gastroenterology Surgical Center, Mansoura University, Mansoura, Egypt

**Objectives:** Evaluation of spray diathermy as division technique of liver in rt lobe LDLTX compared to harmonic scalpel.

**Methods:** 23 donors for rt lobe donationation, 16 males and 5 females, age (18–42) were included.
Benign HPB Diseases
APHPB-0278

PANCREATIC STELLATE CELLS ARE MAJOR CELLULAR COMPONENTS DURING PANCREATIC REGENERATION
K. Joo¹, S. Joo² and J. Lim³
¹Gastroenterology, Kyung Hee University School of Medicine, Seoul, Korea; ²Surgery, Kyung Hee University School of Medicine, Seoul, Korea; ³Gastroenterology, Kyung Hee University School of Medicine, Seoul, Korea

Objectives: Pancreatic regeneration is initiated by newly generated epithelial cells forming tubular complexes and spindle shaped mesenchymal cells. The origin of the epithelial cells is well characterized, expressing the embryonic marker PDX-1. However, that of the mesenchymal cells has not still been elucidated. The aim of our study is to clarify characteristics of spindle shaped mesenchymal cells in the processes of the regeneration in an animal model.

Methods: We adopted previous our new animal model for necrotizing pancreatitis (Pancreatology 2012).

Results: After pancreatic necrosis, three distinct cellular areas were noted; hypercellular area, consisted of mesenchymal cells (Zone 1); area of epithelial forming tubular structure, which were surrounded by mesenchymal cells (Zone 2); mixed area with tubular structures and regenerated acini (Zone 3). Among them, the most predominant portion was Zone 1. At the beginning of regeneration, the tubular structure first was noted at the periphery of the lesion. They were scattered separately or nested in the area of mesenchymal cells or intermingled with newly formed acinar cells. In particular epithelial cells within the cluster of acinar cells were more swallowed and showed abundant cytoplasm, looked like acinar cells, compared to those as nested or scattered epithelial cells. Immunohistochemical stainings for pancreatic stellate cells (α-SMA and desmin) were strongly positive for mesenchymal cells in Zone 1-2, but negative for epithelial cells forming tubular structures and acini.

Conclusion: The results of this study suggest that pancreatic stellate cells are major cellular components and may participate in regeneration after pancreatic necrosis.

APHPB-0279
GIANT HEPATIC HEMANGIOMAS RESECTIONS- A TERTIARY CENTER EXPERIENCE
B. Santhanamuthukrishnan, A. Amudhan, D. Benet, R. Prabhakaran, S. M. Chandramohan and D. Kannan
Surgical Gastroenterology, Madras Medical College, Chennai, India

Objectives: Aim: The aim of this study is to discuss the outcomes of surgical resection for giant hemangiomas. The study also discusses the various modalities of resection like Non anatomical resection and anatomical resections.

Methods: Patients and methods: This is a retrospective analysis of the Hepatic hemangiomas treated in our hospital from March 2012 to 2014. We included only the patients who are Symptomatic and treated by surgical resection and size of the lesion more than 10 cm.

Results: We included 20 patients with symptomatic Giant hemangiomas in this study. Out of them 16 patients underwent anatomical resection and 4 patients underwent Non anatomical resection. The median blood loss is 380 mL, average duration is 3 h and 15 min. Intra operatively we had no major complications other than one patient who had persistent bleeding from the raw area who was managed with peri hepatic packing and the pack removed successfully on the next day. Liver resection was done using Kelly clause and Diathermy technique in 14 cases. Raw area bleeding was arrested with suture ligation in majority of the cases. Post operatively only one patient developed liver failure and expired. Median duration of stay was 8 days post operatively.

Conclusion: We conclude at this point that for symptomatic giant hemangiomas the best method of management is surgical resection.

APHPB-0280
OUTCOME OF BILE DUCT INJURIES
C. Kantharia, R. Prabhu, S. Pujari, A. Supe and R. Bapat
Surgical Gastroenterology, KEM Hospital, Seth GS Medical College, Parel, Mumbai-12, India

Objectives: Review of our results of outcome of BDI presenting to us over the last ten years (2004–2013).

Methods: 63 patients were identified to have BDI (45 females; age range 25–68 years). 54 were following Laparoscopic Cholecystectomy and 9 following Open Cholecystectomy. BDI were classified according to the Strasberg and Bismuth classification following Laparoscopic and open cholecystectomy respectively, and treatment was instituted accordingly. Outcome was assessed with respect to return of LFT to normal. Follow up ranged from 120 to 7 months. HIDA scan performed six weeks post surgery.

Results: 5 had Type A injury, 2 type B and C (Right accessory duct), 10 type D, 16 Type E1, 10 type E2, 8 E3, 2 E4 and 1 E5. In the open group 6 had E3 injury and 3 E4 injury. Type A, B, C and D were managed with ERCP stenting with good outcome. Type E1, E2, E3, E4 and E5
were subjected to Hepp Couinaud's side to side hepatico-jejunostomy. 2 had restricture and were treated with PTC guided balloon, and 1 patient required re-surgery. **Conclusion:** Delayed Surgical repair for bile duct injury in a tertiary referral centre yields good results.

**Malignant HPB Diseases**  
**APHPB-0283**

**HOW TO OPERATE LAPAROSCPY ASSISTED RIGHT HEMIHEPATECTOMY SAFELY; USEFULNESS OF DOUBLE LAPAROSCOPIES FOR DISSECTION OF MAJOR HEPATIC VEINS**

R. Hirai and T. Yamano  
*Gastroenterological Surgery, Japanese Redcross Okayama Hospital, Okayama-shi, Japan*

**Objectives:** As well as open right hemihepatectomy, the hanging maneuver is a useful technique in laparoscopy assisted right hemihepatectomy (LARH). However, since passing a tape between the right hepatic vein (RHV) and the middle hepatic vein (MHV) behind liver is a quite difficult and dangerous procedure, it might cause injury of RHV, MHV or the inferior vena cava (IVC) and sudden massive bleeding. In this report, we propose use of two laparoscopes in LARH (named 'Double-scope Technique'). By using this method, passing the hanging tape between RHV and MHV behind liver will be easier and safer.

**Methods:** Procedures of the ‘Double-Scope Technique’ in LARH:

1. Perform the dissection between IVC and the caudate lobe completely to the root of RHV and MHV under the first laparoscopic view.
2. Insert an additional access port from the right anterior seventh intercostal area into the abdominal cavity via diaphragm.
3. Insert 5 mm flexible fiberscope through this access port, then, the root of RHV and suprarepatic area should be dissected carefully under the second laparoscopic view.
4. By simultaneous use of two laparoscopes, pass the liver hanging tape through easily and safely between RHV and MHV behind liver under two directional views.

**Results:** Surgical outcomes of previous cases. 8 patients were performed LARH from 2011 to 2013. Conversion to laparotomy; 3pts of 8  
Post-operative complication; Bile leakage (1pts).  
Post-operative hospital stay (mean); 10.6 day  
Mortality; none  
**Conclusion:** We consider that this method could prevent injury of major hepatic veins and conversion to laparotomy in LARH.

**Benign HPB Diseases**  
**APHPB-0285**

**HEAD CORING FOR CHRONIC CALCIFIC PANCREATITIS (CCP) WITHOUT HEAD MASS- SHORT TERM OUTCOME ANALYSIS**

R. Rajendran, A. Amudhan, R. Prabhakaran, D. Benet, D. Kannan and S. M. Chandramohan  
*Gastroenterology, Madras Medical College, Chennai, India*

**Objectives:** Debilitating abdominal pain remains the most common presentation of chronic pancreatitis and the treatment remains challenging. As head is the pacemaker of pain in chronic pancreatitis coring out the head even in the absence of inflammatory head mass provides better pain relief.

**Methods:** This retrospective cum prospective study analyzed the outcome of Frey procedure in Chronic Calcific Pancreatitis patients without inflammatory head mass. For the period between 2010 and 2013, 140 patients with chronic pancreatitis underwent Frey procedure for intractable abdominal pain. Of them 80 patients without head mass were included in the study. The mean follow-up was 6 months. Using Visual analogue scale score Pain was analyzed both preoperatively and postoperatively. Endocrine and exocrine insufficiency is also analyzed.

**Results:** There was no 30-day mortality. Statistical analysis showed significant improvement of Pain score. The improvement of Pain score in the patients without head mass is comparable to the patients with head mass for whom Frey procedure was done. Though there is improvement in Endocrine and exocrine insufficiency they are not statistically significant as per Chi-square test.

**Conclusion:** This study shows that the head coring Pancreaticoduodenectomy procedure described by Frey provides a better quality of life and better pain relief with acceptable morbidity and nil mortality even in the patients with no head mass. Head coring procedure can be therefore strongly recommended for pain relief even in pancreatitis without head mass.

**Malignant HPB Diseases**  
**APHPB-0286**

**PANCREATIC STUMP MANAGEMENT FOLLOWING PANCREATICO-DUODENECTOMY- TERTIARY CENTRE EXPERIENCE**

A. Duraisamy, R. Rajendran, R. Prabhakaran, A. Amudhan, R. Sandeep, D. Kannan and S. M. Chandramohan  
*Surgical Gastroenterology, Madras Medical College, Chennai, India*

**Objectives:** Primary aim is to analyse the outcome of pancreatic stump anastomosis of various types in relation to major and minor morbidities and mortality. Secondary end point is to analyse and compare isolated PJ technique outcome to conventional methods.

**Methods:** Retrospective data from 2010 to 2014 on 138 patients who underwent Whipple procedure was done.
Preoperative, intraoperative and postoperative variables were analysed. Patients who underwent Pancreatic stump anastomosis were categorised into three groups - A- PG, B-PJ, C- Isolated PJ. C group further categorised into Duking type C1 and duct to mucosa C2. Incidence of mortality, major complications like leak, hemorrhage, DGE and intra-abdominal abscess and minor morbidities like Pneumonitis, UTI and wound infection have been compared with different anastomotic techniques.

**Results:** The mean age is 51.7. The indications for Whipple were periampullary 102 (79.68%), pancreatic cancer 15 (11.7%), distal CBD growth 6 (6%) and duodenal growth 6 (6%) were analysed. Among them after pancreaticoduodenectomy- PG (A, n = 40), PJ (B, n = 60) and Isolated PJ (C, n = 39) was done. DGE is the most common complication 44% (n = 57). Overall complications include pancreatic leak - 30.96%, haemorrhage- 5.4%, intraabdominal collection- 5%. Minor complications were 31%.

**Conclusion:** Among various techniques of pancreas stump reconstruction, none of them showed statistical significant morbidity or mortality of the existing standard. Isolated loop PJ has had statistically significant lower grade leak and increased DGE. Subgroup analysis within the isolated loop has no difference in outcome.

**APHPB-0287**

**SURGICAL OUTCOME OF A LAPAROSCOPIC MAJOR LIVER RESECTION – A LARGE VOLUME CENTER’S 10 YEARS’ EXPERIENCE**

W. Cho, C. D. Kwon, J. Joh, S. Kim, J. Kim, G. Choi, J. Choi and S. Lee

**General Surgery, Samsung Medical Center, Seoul, Korea**

**Objectives:** The application of laparoscopic liver resection (LLR) has had little progress since the first case was performed two decades because of technical difficulty of the operation, fear of gas embolism, potential massive bleeding, and possible inferior outcome in malignant diseases. This study reports the surgical outcome and how we can overcome difficulties of major LLR.

**Methods:** Between August 2004 and 2014, a total of 569 patients of Samsung Medical Center were underwent LLR. Among this the major LLR was 226 cases. All major LLRs were intended totally laparoscopic and anatomical resection.

**Results:** We start to apply bipolar electro-cautery, temporary increase of intra-abdominal pressure (IAP), and temporary inflow control of Glissonian pedicle (TIC-GIL) method after 2012. So we divided major liver resection into two groups, before and after 2012. Open conversion rate in major LLR was 29.7% (n = 11) before 2012, and 6.9% (n = 13) between 2012 and August, 2014. Open conversion rate and estimated blood loss decreased, but there were no statistical significance in operation time, and hospital stay between two periods. Postoperative complication rate of major LLR was 9.3% and bile leakage was most common complication (3.1%).

**Conclusion:** Advance laparoscopic surgical technique induced the good result in approach for major liver resection. We are now in an era where major LLR is being accepted more widely and it has become important for institutions to have a good laparoscopic program.

**APHPB-0288**

**HEPATIC BLOOD INFLOW OCCLUSION WITHOUT HEMIHEPATIC ARTERY CONTROL IN RESECTION OF HEPATOCELLULAR CARCINOMA**

C. Dai, C. Jia, X. Zhao, F. Xu, S. Peng, Y. Xu, Y. Zhao, C. Zhao and L. Zhao

**Hepatobiliary Surgery, Shengjing Hospital of China Medical University, Shenyang, China**

**Objectives:** To investigate the efficacy of hepatic blood inflow occlusion without hemihepatic artery control (BIOwHAC) in resection of hepatocellular carcinoma (HCC).

**Methods:** Ninety-four patients of resection of HCC with liver cirrhosis from January 2006 to November 2013 in our department were compared retrospectively. Based on the inflow occlusion techniques, these cases were divided into two groups: Pringle maneuver group (n = 38); BIOwHAC group (n = 56). The characteristics of patients and perioperative parameters including the demographics, types of virus hepatitis, severity of liver cirrhosis, size and location of the tumors, liver function, operative method and time, numbers and time of hepatic blood inflow occlusion, intraoperative blood loss, intraoperative transfusion requirements, incidence of postoperative complications, and length of hospital stay were summarized and compared between two groups.

**Results:** Patient characteristics were comparable and there were no significant differences in the types of virus hepatitis, size and location of the tumors, preoperative liver function (serum AST, total bilirubin, albumin levels), operative method and time, numbers and time of hepatic blood inflow occlusion, intraoperative blood loss, intraoperative transfusion requirements, incidence of postoperative complications, and length of hospital stay between two groups. Although the severity of liver cirrhosis and preoperative ALT level were significantly higher in BIOwHAC group, the recovery of the postoperative liver function was more rapid in BIOwHAC group with statistical significance.

**Conclusion:** For patients with HCC, BIOwHAC was a better inflow occlusion method than Pringle manoeuvre, especially for cases with cirrhosis.
EXPERIENCE OF THE 105 LIVING RELATED LIVER TRANSPLANTATION IN THE STATE RESEARCH CENTER BURNAZYAN FMBC OF THE FMBA OF RUSSIA


Objective: To study the immediate and long-term results of the living related liver transplantation.

Method: Liver Transplantation Program was started in 2010. 105 liver transplantations of the right liver lobe from closely related donors in the form 'adult-to-adult' have been performed from June 2010 to September 2014. Liver cirrhosis in the outcome of autoimmune hepatitis, primary sclerosing cholangitis, viral hepatitis, Wilson’s disease, Budd-Chiari syndrome, primary and secondary biliary cirrhosis, liver alveococcosis, alimentary cirrhosis and cryptogenic cirrhosis were indications for surgical treatment. 2 liver transplantations were performed in 2010, 13 – in 2011, 34 – in 2012, 37 – in 2013 and 19 – from January 2014 to September 2014. ‘Complicated’ reconstruction of portal venous inflow or outflow from the cava vein from liver graft was required in 65 cases (61.9%) because of the donors vascular anatomy abnormalities and lesions of the cava gate of the recipients liver.

Results: Hospital mortality among recipients was 2.8%, morbidity was 20.9%. Vascular complications were 1.9%. Frequency of biliary complications was 8.6%. The long-term survival in recipients was 96.1% in the 1 year, 96.1% in the 2 year and 96.1% in the 3 year. Morbidity among donors was 10.5%. Mortality among donors was absent. Mean postoperative hospital stay was 21 (18–30) days for recipients and 13 (10.5–18.5) days for donors.

Conclusion: Presented technologies allows to achieve a good venous inflow and outflow from the liver transplant and thereby provide a satisfactory immediate and long term results of the living-related liver transplantations, even in ‘complicated’ cases.

Malignant HPB Diseases

NEW TRENDS IN THE SURGICAL TREATMENT OF PANCREATIC HEAD CANCER

S. E. Voskanyan, K. V. Kotenko, A. I. Artemiev, E. V. Naydenov and D. A. Zabechinsky

Objective: To study the influence of the extended lymphadenectomy and neurodissection to immediate and long-term results of the surgical treatment of pancreatic head cancer.

Method: Pancreaticoduodenectomy with extended lymphadenectomy and total celiac and mesenteric neurodissection have been performed to 75 patients.

Results: Mortality was 1.3%. Morbidity was 34.7%. The postoperative hospital stay was 21 (15–30.5) days. 24 different sites of the perineural invasion of the pancreatic cancer were found at the morphological study of the postoperative material. In addition, perineural invasion was found in 40% of the patients with the stage IA, 59.1% in stage IB, 91.7% in stage IIA and 100% in stage IIB. The overall frequency of the perineural invasion was 81.7%. The frequency of the locoregional recurrence was 16.0%. Long-term survival was 78.2% after first year, 64.0% after 2 years, 52.2% in after 3 years, 32% after 4 years, 21.3% after 5 years. The median of the survival of the patients was 28.4 months. The median of the disease-free period was 24.5 months.

Conclusion: Perineural invasion can be found in any parts of the celiac and mesenteric plexus even in the early stages of the disease, therefore, neurodissection is a necessary step of the surgical treatment of the proximal pancreatic cancer, and extirpation of the celiac and mesenteric plexus should be satisfied always. Using of the technologies of the extended lymphadenectomy and neurodissection can significantly reduce the incidence of the locoregional recurrence and significantly improve the long-term survival of the patients after surgical treatment.

GALLBLADDER PERFORATION: STRUGGLING FOR A DIAGNOSIS AND TREATMENT STRATEGY COMPLICATED BY UNSTABLE ANGINA

H. Oya, S. Komukai and Y. Ohashi

Objective: Bile peritonitis is considered to indicate urgent operation. However, the medical treatment of abdominal disease occurring with unstable angina needs a priority considering the illness severity. In this case, a patient scheduled for gallstone operation exhibited symptoms of ischemic heart disease. It was diagnosed as bile peritonitis, which occurred with unstable angina, and it was difficult to determine a treatment strategy.

Method: A 64-year-old male was scheduled for gallstone operation. He was admitted to the hospital due to upper abdominal pain. He was diagnosed with acute coronary syndrome since he had electrocardiographic abnormalities with chest pain and heart type fatty acid-binding protein (H-FABP) became positive. CT revealed slight ascites, but no gallbladder swelling. The circulatory organ ICU performed medical treatment of unstable angina. Ascites increased after five days, and bile leaked to the abdominocentesis. It resulted in a diagnosis of bile peritonitis due to gallbladder perforation, which occurred with unstable angina.
Results: Intra-aortic-balloon-pumping support was required in case an urgent laparotomy. Clinical symptoms and inflammation improved, so conservative medical management was continued. Four branches of coronary artery bypass grafting (CABG) were performed. Cholecystectomy was planned electively. The cholecystectomy and the abscess drainage were performed 24 days after CABG. He left our hospital 13 days after the biliary operation.

Conclusion: In addition to the bile peritonitis due to gallbladder perforation, this case had unstable angina. Although it was difficult to determine a treatment strategy, his general state was improved by intensive care, and there were no complications from the two operations.

APHPB-0292
COMPARISON OF LAPAROSCOPIC VERSUS OPEN LEFT SIDE HEPATECTOMY FOR INTRAHEPATIC DUCT STONES

Y. Shin, J. Jang, M. Kang, W. Jung, J. Chang and S. Kim
Surgery, Seoul National University College of Medicine, Seoul, Korea

Objectives: This study was sought to evaluate and compare the perioperative and clinical outcomes between laparoscopic and open hepatectomy for left IHD stones.

Methods: From January 2002 to December 2013, 40 patients underwent laparoscopic hepatectomy [left hemihepatectomy (n = 7) or left lateral sectionectomy (n = 33)] and 201 patients underwent open hepatectomy: among them, 54 patients underwent left side hepatectomy without co-operation and previous operation histories were included [left hemihepatectomy (n = 24) or left lateral sectionectomy (n = 30)]. We analyzed the perioperative and clinical outcomes including the stone clearance rate, stone recurrence rate, and median follow-up duration.

Results: There was no difference in age (56.8 ± 8.2 vs. 55.6 ± 9.6 years, p = 0.531), sex (1.0:4.0 vs. 1:0:1.8, p = 0.108), or BMI (22.8 ± 2.8 vs. 22.9 ± 3.0, p = 0.802) between laparoscopic and open hepatectomy group. Laparoscopic group had higher proportion of lateral sectionectomy (33/40 vs. 30/54, p = 0.010), shorter operation time (174.2 ± 56.6 vs. 210.4 ± 51.6 min, P = 0.002), shorter postoperative hospital stay (7.9 ± 2.6 vs. 14.3 ± 5.5 days, p < 0.001), and lower complication rate (17.5 vs. 40.7%, p = 0.016), especially surgical site infection (5.0% vs. 18.5%, p = 0.052) compared with open hepatectomy group. It also showed similar results in comparisons of the subgroup according to the operation. There was no operation related mortality. There were no significant differences in initial stone clearance rate (85% vs. 75.9%, p = 0.279), final clearance rate (95.0% vs. 96.3%, p = 0.758), stone recurrence rate (2.5% vs. 5.6%, p = 0.468) within comparable follow-up periods (48 ± 33.6 vs. 59.2 ± 41.7 months, p = 0.235)

Conclusion: Laparoscopic hepatectomy can be a safe and effective option for well-selected left IHD stones when performed by experienced surgeons.

Malignant HPB Diseases
APHPB-0294
SYNCHRONOUS HEPATIC AND PULMONARY METASTASES IN ADENOID CYSTIC CARCINOMA OF LACRIMAL GLAND-SURGERY REVISITED

G. Daga, S. Sharma and S. Lamba
Oncosurgery, Bombay Hospital, Mumbai, India

Objectives: To our knowledge, only few cases of metastatic adenoid cystic carcinomas (ACC) of the lacrimal to the liver has been reported where surgical resection of the metastases was performed. ACC of lacrimal gland are rare, aggressive but slow growing malignant tumours accounting for 1.6% of orbital tumours which may locally invade and occasionally metastasise via haematogenous spread to lungs, brain and bone. Our patient probably represents the first case of lacrimal ACC with synchronous hepatic and pulmonary metastases four years after primary resection and was still managed surgically.

Methods: A middle-aged female operated for left lacrimal ACC, with adjuvant chemoradiation, presented after four years of follow up with right upper abdominal pain and tenderness. The liver profile, tumour markers, orbital studies were normal and CT revealed 10 × 8 × 5 and 4 × 3 × 3 cm lesions in segment VI and IVB respectively along with multiple bilateral irregular pulmonary nodules. FNAC of liver lesion confirmed metastatic ACC. The decision was to treat liver metastasises firstly as Standardized Uptake Value of lung lesions was comparatively less and static. She underwent classical right hepatectomy with wide excision of segment IVB. On follow up, multiple pulmonary nodules marginally increased in size and staged pulmonary metastasectomy was done

Results: Histopathology confirmed metastases of adenoid cystic carcinoma to the liver and lungs-cirriiform type. She is presently doing well.

Conclusion: Unpredictability of ACC emphasises a life long follow up. Hepatic metastasectomy should always be considered since adjuvant therapy has minimal role.

Benign HPB Diseases
APHPB-0295
MANAGEMENT OF HEPATOLITHIASIS IN A TERTIARY CARE CENTER IN SOUTH INDIA: RETROSPECTIVE STUDY

R. Vellaissamy, B. Sathyamoorthy, A. Anbalagan, P. Raju, B. Duraisamy, C. Servarayan Murugesan and K. Devygounder
Institute of Surgical Gastroenterology, Rajiv Gandhi Government General Hospital, Madras Medical College, Chennai, India

Objectives: Hepatolithiasis is rare in this part of world. We are presenting 10 cases of Hepatolithiasis managed in our center.

Methods: This is a retrospective study from August 2011 to August 2014. The age range was between 24
and 56 years. The demography, clinical presentation, surgical management and outcome were analysed.

**Results:** Ten patients including 7 female and 3 male were treated. They were treated with hepatectomy 3, choledochoduodenostomy alone 4, choledochoduodenostomy with access loop 1, Hepaticojejunostomy with Jejunojejunostomy 1, PTBD with stricturoplasty 1 and CDD with cholangiojejunostomy 1.

<table>
<thead>
<tr>
<th>SNo</th>
<th>Age</th>
<th>Sex</th>
<th>Diagnosis/Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>24</td>
<td>F</td>
<td>Choledocholithiasis/hepatolithiasis</td>
</tr>
<tr>
<td>2</td>
<td>29</td>
<td>F</td>
<td>Hepatolithiasis</td>
</tr>
<tr>
<td>3</td>
<td>41</td>
<td>F</td>
<td>Choledocholithiasis/hepatolithiasis</td>
</tr>
<tr>
<td>4</td>
<td>42</td>
<td>M</td>
<td>Choledocholithiasis/hepatolithiasis</td>
</tr>
<tr>
<td>5</td>
<td>45</td>
<td>M</td>
<td>Hepatolithiasis</td>
</tr>
<tr>
<td>6</td>
<td>54</td>
<td>F</td>
<td>Choledocholithiasis/hepatolithiasis</td>
</tr>
<tr>
<td>7</td>
<td>50</td>
<td>F</td>
<td>Choledochal cyst type 4/left lobe</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Hepatolithiasis/post cholecystectomy status</td>
</tr>
<tr>
<td>8</td>
<td>56</td>
<td>F</td>
<td>Choledocholithiasis/post cholecystectomy</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>status/blateral heptolithiasis/atrophic of</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>segment 2, 3, 6, 7</td>
</tr>
<tr>
<td>9</td>
<td>36</td>
<td>M</td>
<td>Caroli disease/hepatolithiasis/post right</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>hepatectomy/IVC/thrombosis/left hepatic</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>hemangioma/BD calculus with hilar stricture</td>
</tr>
<tr>
<td>10</td>
<td>34</td>
<td>F</td>
<td>Post cholecystectomy status/post hepatico</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>jejunostomy status/anastomotic stricture/</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>cholangitis</td>
</tr>
</tbody>
</table>

**Conclusion:** Hepatolithiasis is rare in southindia. Surgical management depends on the liver parenchymal status, cholangitis, diameter of CBD, biliary stricture and distribution of stones. Anatomical hepatectomy, Cholecdochoduodenostomy following cholangioscopic removal of stones with or without access loop, hepaticojejunostomy and cholangiojejunostomy were the various methods used in our practice.

---

**Benign HPB Diseases**
APHPB-0298

**THORACOABDOMINAL APPROACH FOR SYMPTOMATIC GIANT HEPATIC HEMANGIOMA AFTER FAILED ANGIOEMBOLISATION AND SORAFENIB THERAPY**

R. Vellaisamy, J. S. Jesudason, B. Sathyamoorthy, A. Anbalagan, B. Duraisamy, P. Raju, C. Servarayan Murugesan and K. Devygounder
Institute of Surgical Gastroenterology, Rajiv Gandhi Government General Hospital, Madras Medical College, Chennai, India

**Objectives:** Surgical resection of Symptomatic Giant Hepatic hemangiomas can be very challenging due to their large size and its relation to IVC and diaphragm. We report a challenging case of 5200 g symptomatic hepatic hemangioma of size 37 × 19 × 15 cm in a 34 year old female who was managed by thoroabdominal approach after failed chemoembolisation and sorafenib therapy.

**Methods:** Considering the post hepatectomy liver failure, Staged Procedure was planned. At first, we performed transcatheter arterial chemoembolisation by injecting the gelatin particles to the right hepatic artery but patient failed to show any improvement. After literature review, we found similar lesion managed with sorafenib. The patient was started on sorafenib and followed up with ultrasound. Sorafenib was stopped later due to toxicity even though it showed 55.6% reduction in size.

Since the patient continued to be symptomatic, she was planned for right hepatectomy by using combined thoroabdominal approach due to its huge size and its relation to IVC and Diaphragm. By making makucchi incision and median sternotomy, suprahepatic and infrarehepatic control achieved. Right hepatectomy done using pringle maneuver. 14 units of blood products were transfused during the 7 h surgery.

**Results:** After initial inotropic and ventilatory support patient was started on oral diet on third day with good outcome. Patient is asymptomatic after one year followup.
Conclusion: Thoraco abdominal approach may be safely employed with less morbidity with good surgical outcome in a case of Giant Hepatic Hemangioma.

APHPB-0299

CLINICAL CHARACTERISTICS OF PATIENTS WITH SEVERE ALCOHOLIC HEPATITIS

H. Tanaka, H. Sasaki and M. Arita
Internal Medicine, Kihoku Hospital, Wakayama Medical University, Wakayama, Japan

Objectives: The patients with alcoholic hepatitis develop by one repeats drinking a great deal of alcohol continuously. Among them, patients with severe alcoholic hepatitis (SAH) with the complications such as hepatic encephalopathy, pneumonia, acute renal failure, and gastrointestinal bleeding may die within 1 month without the improvement of hepatic enlargement, even if one abstains from drinking. Although this disease is a bad prognosis like a fulminant hepatitis, the knowledge of this disease is only little. We report the clinical characteristics of SAH.

Methods: The subjects were eight patients (mean ages 43.3 ± 10.2 year) who were diagnosed based on the criteria by Takada, et al. in Japan. The control were six patients (mean ages 59.3 ± 7.0 year) with acute viral hepatitis (AH) who were hospitalized at the same period. The expected formula of mortality rate which was reported by Horia Y, et al was used.

Results: On admission, the age of SAH was significantly lower than that of AH. The serum value of ALT, albumin and PT% of SAH were also significantly lower than those of AH. On the contrary, the serum value of total bilirubin and WBC of SAH significantly increased. Although the expectation of mortality rate which was formulated was 78.3 ± 49.3%, the actual mortality rate was 25%. The analysis of period of hospitalization between SAH and AH (44.4 ± 17.5 days vs. 29.7 ± 10.2 days) was no significance.

Conclusion: For 7 years, we experienced 8 patients with SAH and recognized the improved outcomes of treatment.

Malignant HPB Diseases

APHPB-0300

CORRELATION BETWEEN PREOPERATIVE BILIARY DRAINAGE, BILE CONTAMINATION AND POSTOPERATIVE INFECTIOUS COMPLICATIONS FOR EXTRAHEPATIC BILE DUCT RESECTION

K. Arakawa1, R. Kurosaki1, K. Kobayashi1, H. S.1, K. Iwamatsu1, Y. Enokida1, N. Tomizawa1, T. Ando1 and I. Takeyoshi2
1Surgery, Maebashi Redcross Hospital, Maebashi, Japan; 2Thoracic Visceral Organ Surgery, Gunma University School of Medicine, Maebashi, Japan

Objectives: The relationship between preoperative biliary drainage, intraoperative bile culture, and postoperative infectious complications remains controversial. The aim of this study is to investigate the effects of preoperative bile culture on intraoperative biliary drainage and postoperative infectious complications.

Methods: Eighty-four patients underwent operation for malignant biliary, pancreatic and duodenal tumor, consisting of hepatobiliary resection with cholangiojejunostomy and pancreatoduodenectomy. An intraoperative bile specimen was prospectively collected immediately after division of bile duct. Postoperative infectious complication was evaluated.

Results: Of 90 patients evaluated, 57 patients (63.3%) had preoperative biliary drainage, 33 did not. The incidence of positive bile culture was higher in the preoperative drainage group (84.2%) than in the nondrainage group (21.2%) (p < 0.05). The incidence of postoperative infectious complications in the drainage group was higher but not statistically significant compared to the incidence in the nondrainage group (43.9% vs. 30.3%). The incidence of postoperative infectious complications was higher in the intraoperative bile culture positive group (45.5%) than in the negative group (28.6%). Microorganism identified by intraoperative bile cultures highly corresponded to those isolated from infected site (71.0%).

Conclusion: Preoperative biliary drainage increased bacterial contamination of bile, but did not significantly increased the incidence of postoperative infectious complications. However, intraoperative bile culture positive patients have increased risk of developing infectious complications. When infectious complication occurs, Intraoperative bile culture is useful for the prediction of infected microorganisms.

Benign HPB Diseases

APHPB-0301

EFFICIENCY OF LIPOSOMAL ALBENDAZOLE IN TREATING COMPLEX ALVEOLAR ECHINOCOCOSIS: A COMPARATIVE ANALYSIS OF CEUS, CT AND PET/CT

H. Li1, T. Song2, Y. Shao1, Y. Qin3, W. Liu4, X. Li3 and H. Wen1
1Hepatobiliary & Hydatid Department of Digestive and Vascular Surgery Centre, The First Affiliated Hospital of Xinjiang Medical University, Urumqi, China; 2Department of Ultrasonography, The First Affiliated Hospital of Xinjiang Medical University, Urumqi, China; 3Department of Nuclear Medicine, The First Affiliated Hospital of Xinjiang Medical University, Urumqi, China; 4State Key Lab Incubation Base of Xinjiang Major Diseases Research (2010DS890294) and Xinjiang Key Laboratory of Echinococcosis, The First Affiliated Hospital of Xinjiang Medical University, Urumqi, China

Objectives: To investigate the clinical efficiency of liposomal albendazole (L-ABZ) in treating complex alveolar echinococcosis (CAE) using CEUS, CT and PET/CT, respectively.

Methods: Twelve patients with complex alveolar echinococcosis (CAE) admitted to our hospital from June 2000 to 2011 were included in this retrospective analysis. CEUS, CT and PET/CT were performed to
evaluate the clinical efficiency of these patients. Effectiveness with clinical significance was defined as complete response after chemotherapy. Effectiveness was defined as significant response after chemotherapy. Non-effectiveness was defined as no response after chemotherapy. The follow-up duration was 3–11 years.

**Results:** Ten patients (83.3%) showed a ratio of averaged gray scale in the enhanced band to the hepatic tissues of ≤1.1, among which 6 patients (50.0%) showed a ratio of ≤0.9 as revealed by CEUS. A total effective rate of 91.6% was noticed according to the CT scanning results. With regard to the PET/CT, a maximal standard uptake value (SUVmax) of <2.5 was reported in 9 patients (75.0%) and were evaluated as effective, while high uptake of FGD was noticed in 3 patients (25.0%) with the SUVmax of ≥2.5 and were defined as non-effective.

**Conclusion:** L-ABZ is effective for treating CAE as revealed by CEUS, CT and PET/CT, respectively. These techniques provide objective evaluation of the clinical efficiency of L-ABZ.

**Malignant HPB Diseases**

**APHPB-0302**

**THE USEFULNESS OF RISK ASSESSMENT AND EARLY ENTERAL NUTRITION FOR ? PANCREATODUODENECTOMY**

S. Sekine\(^1\), T. Nagata\(^1\), S. Sawada\(^2\), K. Hirano\(^1\), K. Shibuya\(^3\), K. Yoshioka\(^1\), K. Matsui\(^1\), T. Okumura\(^1\), K. Tazawa\(^1\) and K. Tsukada\(^1\)

\(^1\)Department of Surgery and Science, University of Toyama, Toyama City, Japan; \(^2\)Department of Surgery, Toumei Atsugi Hospital, Atsugi City, Japan; \(^3\)Department of Surgery, Itoigawa Hospital, Itoigawa City, Japan

**Objectives:** Pancreaticoduodenectomy (PD) is a highly invasive surgery. Evaluation of low nutritional status of pre-operative patients and appropriate nutrition therapy contribute to the improvement of compromised immune function. It is useful for the reduction of post-operative complications. Early enteral nutrition has also been recommended in recent years.

**Methods:** Patient (n = 148) who had undergone PD/PpPD were studied. We examined the utility for the post-operative infection risk of Body mass index (BMI), Prognostic Nutrition Index (PNI) and Controlling Nutritional Status Score (CONUT). Presence or absence of infection onset, the effect of early enteral nutrition in PD (Surgical site infection; SSI, Remote infection; RI).

**Results:** Of the 148 patients, 44 suffered from SSI (29.7%) and 54 suffered from RI (36.7%). Postoperative infection rate by CONUT are as follows; Low: 51/121 (42.2%), Moderate: 15/25 (60%), High: 2/2 (100%). In PNI cases, 45 < PNI: 28/71 (39.4%), 40 < PNI <45: 21/45 (46.7%), PNI <40: 19/32 (61.3%). Both CONUT and PNI, the incidence of infection was higher postoperative preoperative poor nutritional state cases. SSI rates were also similar results. It was more pronounced in CONUT. There was a significant difference both CONUT and PNI incidence of the RI (p < 0.05). In the early EN group, the incidence of postoperative infection was lower than the Control group (p = 0.06).

**Conclusion:** Postoperative infection incidence of PD/PpPD is a high rate, but by early enteral nutrition and postoperative preoperative screening by PNI and CONUT, it is possible to reduce these events.

**Benign HPB Diseases**

**APHPB-0303**

**MANAGING AN UNPREDICTABLE DISEASE: A PROSPECTIVE ANALYSIS OF THE REVISED ATLANTA CLASSIFICATION**


Institute of Surgical Gastroenterology, Madras Medical College, The TN Dr MGR Medical University, Chennai, India

**Objectives:** With numerous prognostic systems in use and the changing indications for intervention, our aims were:

1. A Prospective study to evaluate the outcome of severe acute pancreatitis (SAP) in a cohort of 118 patients
2. Does the severity as defined by Revised Atlanta Classification (RAC) predict prognosis compared to earlier systems.
3. Does the severity categories classified by RAC predict Intervention.

**Methods:** 118 patients admitted with AP to a Surgical gastroenterology ward between 2012 and 2014. BISAP, CT severity scores and RAC scores were calculated at admission. Statistical correlation between these scoring systems with the current RAC were carried out. The treatment included primary surgery, radiological or endoscopic procedures in line with international Protocols. Primary outcome was mortality. Secondary outcomes were rate of ICU admission, organ failure, local complications and Interventional procedures used. A quantitative analysis of the moderately severe and severe classes of RAC was done.

**Results:** CT severity score has higher accuracy but very low sensitivity and BISAP score has higher negative predictive value in SAP. There is no difference in the rate of endoradiological interventions versus surgical intervention in either moderately severe or severe groups of the RAC but the timing of the intervention is predicted.

**Conclusion:** This is the largest prospective cohort of patients with SAP reported in South India. The RAC has high reliability in predicting prognosis in terms of mortality and morbidity while previous scoring systems are limited in predicting SAP. The RAC can also predict the timing of intervention in AP but not the rate or need for intervention.
APHPB-0304

INTRAHEPATIC MIGRATION OF PERFORATED FOREIGN BODIES – A CASE REPORT AND REVIEW OF LITERATURE

Institute of Surgical Gastroenterology, Madras Medical College, The TN Dr MGR Medical University, Chennai, India

Objectives: Our aims: Report of a 14 year old with successfully managed intra-hepatic foreign body. A systematic review of well described cases of paediatric and adult migrated intra-hepatic Foreign bodies to define the best available evidence for presentation, management and outcome

To analyse the differences between adult and paediatric presentations.

Methods: The authors report a case of 14 year old girl with a personality disorder who had a history of multiple sharp foreign body ingestion and was serially monitored and treated with endoscopic removal. She was referred when her symptoms did not improve and x-rays suggested a possible impaction of the Foreign Body. A CECT confirmed that the ingested FB had migrated into the left lobe. As diagnostic laparoscopy was not successful, a laparotomy and removal of the foreign body was done.

Results: Data were collected from a systematic review that identified 67 well-described cases. In the paediatric cases, presentation was more commonly incidental, asymptomatic with right lobe location and fewer complications. Conservative treatment is reported in only 1 case. While in Adults, abdominal pain and related symptoms were seen in 85% of cases. Presence of comorbidities like diabetes can lead to complications like abscess. Surgery is the rule while conservative treatment is reported in 2 adult cases.

Conclusion: There is a lack of evidence regarding the recommended management of ingested foreign bodies with intrahepatic migration (no randomized studies). The concerns raised is the delay in diagnosis accurate CT reading, surgical exploration where necessary and prompt reassessment of treatment failure.

Malignant HPB Diseases
APHPB-0308

USEFULNESS OF MEASURING FUNCTIONAL LIVER VOLUME BY USING 99MTC-GALACTOSYL HUMAN SERUM ALBUMIN SCINTIGRAPHY SINGLE-PHOTON EMISSION COMPUTED TOMOGRAPHY

Gastroenterological Surgery, Yokohama City University, Yokohama, Japan

Objectives: We investigated the usefulness of measuring functional liver volume using 99mTc-galactosyl human serum albumin (GSA) scintigraphy single-photon emission computed tomography/computed tomography (SPECT/CT) imaging.

Methods: We performed a prospective analysis of 34 patients with colorectal liver metastases or hepatocellular carcinomas, underwent hepatic resection after portal vein embolization (PVE), and evaluated their functional liver volume perioperatively with GSA SPECT/CT. The percentage of the non-tumorous remnant liver volume (%) and the percentage of functional remnant liver volume (%FLV) were estimated. We have been using the prediction score (PS) (Yamanaka et al. Ann Surg. 1994; 219(4): 342–6) which consists of %LV, indocyanine green retention rate, and patient’s age for predicting postoperative liver failure. We compared the PS and modified PS (mPS) which adopted %FLV instead of %LV for prediction of postoperative liver failure using Area under receiver operating characteristic curve (AUC).

Results: The %LV increased significantly, from 39.5% to 53.2%, and the increment was 13.7% (p < 0.01). The %FLV was also increased significantly, from 42.3% to 63.1%, and the increment was 20.8% (p < 0.01). The increment was 7.1% greater for the %FLV compared to that of the %LV (p = 0.01). All patients were received subsequent operation following PVE. Postoperative liver failure of grade B and C (ISLGS definition) occurred in 2 cases. AUC of PS and mPS were 0.753 and 0.968, respectively.

Conclusion: Increment of %FLV was greater than that of %LV between before and after PVE. Accuracy of the prediction of the postoperative liver failure may be improved by FLV using GSA SPECT/CT.

Transplantation
APHPB-0309

PAEDIATRIC LIVING DONOR LIVER TRANSPLANTATION AND HEPATOCELLULAR CARCINOMA

K. Palaniappan, N. Shanmugam, M. Vij, G. Narashiman, S. Reddy and M. Rela
Institute of Liver Disease & Transplantation, Global Hospitals Chennai, Chennai, India

Objectives: Primary liver tumors in children are rare and accounts for 1–4% of all solid tumors in children. The most common cause of primary liver cancer in children is hepatoblastoma with a 43% incidence rate. Hepatocellular carcinoma (HCC) is the second most common paediatric malignancy with a 23% incidence rate. The median age for children with HCC is 10–11.2 years. The male to female ratio is 2:1 in young children, but increases with age. We report our data on outcomes of childhood hepatocellular carcinoma, who underwent liver transplantation.

Methods: A total of 354 transplants were done between January 2010 – Till August 2014. Of this, 102 were paediatric liver transplants (age <18 years). Of these 6 patients were found to have evidence of hepatocellular carcinoma in the explants. Two children had HCC, detected pre-operatively who underwent TACE as a bridging treatment.
Results: Age group varied from 12 months to 12 years. Male/Female ratio was 4:2. Size varied from 1 to 3.5 cm in size. Pathology revealed Tyrosinemia Type I in 3, Progressive Familial Intrahepatic Cholestasis in 2 and Congenital hepatic fibrosis in 1 child. Sr.Alfa fetoprotein was elevated in only one child. Two children underwent TACE as bridging therapy. All underwent living donor liver transplantation. Immunostaining revealed Epcam positivity in all tumors. None had vascular invasion. All children had uneventful recovery.

Conclusion: HCC develops in small percentage of children. CECT Abdomen revealed hypervascularity in all. Alfa fetoprotein is not a reliable tumor marker for surveillance. Liver transplantation is an effective treatment option.

Malignant HPB Diseases
APHPB-0311
TWO CASES OF ADENOSQUAMOUS CARCINOMA ARISING FROM THE PANCREAS
K. Hasebe, T. Seki, K. Hiramatsu and T. Arai
Surgery, Anjo Kisei Hospital, Anjo, Japan

Objectives: Adenosquamous carcinoma of the pancreas is rare and its prognosis is poor. We try to clarify the prognosis.

Methods: We report two cases of adenosquamous carcinoma arising from the pancreas and review the literatures.

Results: Case 1: A 71-year-old man with upper abdominal pain visited our hospital. CT showed a tumor, measuring 3.5 cm in diameter, in the uncus of the pancreas. Subtotal stomach-preserving pancreaticoduodenectomy (SPPPD) was performed. Histological examination revealed the mixture of adenocarcinoma and squamous cell carcinoma (50%) and histological diagnosis was adenosquamous carcinoma, T3N0M0, Stage IIA (UICC). He was not given surgical adjuvant chemotherapy because of repeated cholangitis. He had liver metastasis 12 months after the surgery, and gemcitabine was administered. He died 17 months after the surgery.

Case 2: A 77-year-old woman with upper abdominal pain visited our hospital. CT showed a tumor, measuring 3.5 cm in diameter, in the head of the pancreas. SPPPD was performed. Histological examination revealed the mixture of adenocarcinoma and squamous cell carcinoma (30%). Histological diagnosis was adenosquamous carcinoma, T3N1M0, Stage IIB (UICC). She was not given surgical adjuvant chemotherapy. She had liver metastasis and local recurrence 3 months after the surgery, and she died 7 months after the surgery. Median survival of resected cases in the literatures was about 12 months. 1 year survival was 51.5% and 3 years survival rate was 21.4%.

Conclusion: The prognosis of our cases was poor as well as the literatures. Development of effective therapies for this cancer is desired.

Benign HPB Diseases
APHPB-0312
TYROSINEMIA AS A CAUSE OF NEONATAL CHOLESTASIS
M. Rezaie1, S. Karami Magham1 and F. Hashemi2
1Pediatrics, Shiraz University of Medical Sciences, Shiraz, Iran; 2Plant Pathology, Shiraz Azad University, Shiraz, Iran

Objectives: Genetic tyrosinemia is an autosomal recessive disorder with wide range of manifestations. Type I tyrosinemia (prevalence 1/100,000 in general population) is the most severe form that can be presented in neonatal period with liver failure, vomiting, bleeding, septicemia, hypoglycemia and/or renal tubulopathy and impaired cognitive function after neonatal period. Diagnosis is possible by detection of elevated succinylacetone in urine and elevated tyrosine and methionine in plasma. Nitisinone (NTCB), phenylalanine and tyrosine-restricted diet can be effective for treatment if started before onset of acute liver failure.

Methods: In June and July 2014 we had two cases of prematurity and cholestasis. These neonates were managed for prematurity, RDS and their complications in level 2 NICUs of peripheral hospitals, and referred to our NICU (Shiraz Namazee Hospital) because of severe acute liver failure.

Results: We started management of liver failure and sent laboratory tests for diagnosis of the cause of cholestasis. Results of these tests were in favour of tyrosinemia type I and treatment started for them.

Conclusion: Tyrosinemia type I is a genetic disorder with potential of mortality and morbidity in neonatal period, and must be considered in early diagnostic evaluation of neonatal cholestasis.

Malignant HPB Diseases
APHPB-0313
RESULTS OF NEOADJUVANT HEPATIC ARTERIAL INFUSION CHEMOTHERAPY IN INOPERABLE HCC PATIENTS WITH CHILD-PUGH CLASS A
S. Yun, H. Kim, D. Lee and M. Kim
Department of Surgery, HBP Division, Yeungnam University Hospital, Daegu, Korea

Objectives: The prognosis of HCC patients with main portal vein tumor thrombosis (PVTT) or multiple intrahepatic lesions, or both is extremely poor and many surgeons regard them inoperable disease and also not suitable for liver transplant. We tried neoadjuvant hepatic arterial infusion chemotherapy (HAI) for them to improve their survival and convert operability.

Methods: Between April 2003 to March 2013, 46 inoperable HCC patients with Child-Pugh class A were treated with neoadjuvant HAI chemotherapy. HAI was performed via a port inserted through femoral artery. The patients were treated with 5-FU (750 mg/m²) and cisplatin (25 mg/m²) from days 1 to 4. HAI was repeated every 4 weeks. We analysed the chemoresponse with RECIST guidelines and survival rate.
Pancreatic cancer has a dismal prognosis. But controlled randomized trials are needed.

Objectives: Pancreatic cancer has a dismal prognosis. Especially in advanced stage, there is no standard therapy. But, several studies showed us higher rates of negative margin and better survival with neoadjuvant therapy for unresectable (borderline resectable) pancreatic cancer. We report two cases of complete resection with negative resection margin in unresectable (borderline resectable) pancreas body cancer after neoadjuvant chemoradiation therapy.

Methods: Enrolled two patients who had pancreas body cancer with celiac trunk encasement. They were diagnosed with unresectable (borderline resectable) pancreatic body cancer. They received neoadjuvant chemoradiation regimen with TS-1 (80 mg/BSA, alternative day, for 5 weeks) and Gemcitabine (1000 mg/BSA, at 1.8 day, for 3 weeks) plus concurrent radiotherapy (50 Gy).

Results: After neoadjuvantchemoradiation therapy, follow up study shows regression of tumor. They received surgery for remained cancer, and negative resection margin were achieved. All of them had experienced 1 episode of NCI grade 3 myelosuppression after gemcitabine IV infusion. One patient had experienced postoperative intestinal obstruction and enterocutaneous fistula, and another had experienced postoperative acute renal failure. We don’t think both complications were related to neoadjuvantchemoradiation therapy. They all recovered from complication, and survived until now (Survival months were 8, 11 months, respectively).

Conclusion: Neoadjuvant HAI chemotherapy can be another good option to treat inoperable HCC patients with good liver function.

APHPB-0314

TWO CASE TRIALS OF NEOADJUVANTCHEMORADIOThERAPY WITH TS-1+GEMCITABINE +50 GY RADIOThERAPY IN UNRESECTABLE (BORDERLINE RESECTABLE) PANCREAS BODY CANCER

S. Yun, H. Kim, D. Lee and M. Kim
Department of Surgery, HBP Division, Yeungnam University Hospital, Daegu, Korea

Objectives: Pancreatic cancer has a dismal prognosis. Especially in advanced stage, there is no standard therapy. But, several studies showed us higher rates of negative margin and better survival with neoadjuvant therapy for unresectable (borderline resectable) pancreatic cancer. We report two cases of complete resection with negative resection margin in unresectable (borderline resectable) pancreas body cancer after neoadjuvantchemoradiotherapy.

Methods: Enrolled two patients who had pancreas body cancer with celiac trunk encasement. They were diagnosed with unresectable (borderline resectable) pancreatic body cancer. They received neoadjuvant chemoradiation regimen with TS-1 (80 mg/BSA, alternative day, for 5 weeks) and Gemcitabine (1000 mg/BSA, at 1.8 day, for 3 weeks) plus concurrent radiotherapy (50 Gy).

Results: After neoadjuvantchemoradiation therapy, follow up study shows regression of tumor. They received surgery for remained cancer, and negative resection margin were achieved. All of them had experienced 1 episode of NCI grade 3 myelosuppression after gemcitabine IV infusion. One patient had experienced postoperative intestinal obstruction and enterocutaneous fistula, and another had experienced postoperative acute renal failure. We don’t think both complications were related to neoadjuvantchemoradiation therapy. They all recovered from complication, and survived until now (Survival months were 8, 11 months, respectively).

Conclusion: Neoadjuvant HAI chemotherapy can be another good option to treat inoperable HCC patients with good liver function.

APHPB-0314

TWO CASE TRIALS OF NEOADJUVANTCHEMORADIOThERAPY WITH TS-1+GEMCITABINE +50 GY RADIOThERAPY IN UNRESECTABLE (BORDERLINE RESECTABLE) PANCREAS BODY CANCER

S. Yun, H. Kim, D. Lee and M. Kim
Department of Surgery, HBP Division, Yeungnam University Hospital, Daegu, Korea

Objectives: Pancreatic cancer has a dismal prognosis. Especially in advanced stage, there is no standard therapy. But, several studies showed us higher rates of negative margin and better survival with neoadjuvant therapy for unresectable (borderline resectable) pancreatic cancer. We report two cases of complete resection with negative resection margin in unresectable (borderline resectable) pancreas body cancer after neoadjuvantchemoradiotherapy.

Methods: Enrolled two patients who had pancreas body cancer with celiac trunk encasement. They were diagnosed with unresectable (borderline resectable) pancreatic body cancer. They received neoadjuvant chemoradiation regimen with TS-1 (80 mg/BSA, alternative day, for 5 weeks) and Gemcitabine (1000 mg/BSA, at 1.8 day, for 3 weeks) plus concurrent radiotherapy (50 Gy).

Results: After neoadjuvantchemoradiation therapy, follow up study shows regression of tumor. They received surgery for remained cancer, and negative resection margin were achieved. All of them had experienced 1 episode of NCI grade 3 myelosuppression after gemcitabine IV infusion. One patient had experienced postoperative intestinal obstruction and enterocutaneous fistula, and another had experienced postoperative acute renal failure. We don’t think both complications were related to neoadjuvantchemoradiation therapy. They all recovered from complication, and survived until now (Survival months were 8, 11 months, respectively).

Conclusion: Neoadjuvant HAI chemotherapy can be another good option to treat inoperable HCC patients with good liver function.

Transplantation

APHPB-0316

DOUBLE TROUBLE IN LIVING DONOR LIVER TRANSPLANTATION – IMPLICATIONS OF DOUBLE DONOR GRAFT ARTERY

1Institute of Liver Disease & Transplantation, Global Hospitals Chennai, Chennai, India

Objectives: Hepatic artery thrombosis (HAT) after LDLT is a potentially life-threatening complication. Introduction of microsurgical techniques has significantly decreased incidence of HAT after LDLT, still a challenge for surgeons. The need for revascularisation of multiple graft arteries in living donor liver transplantation is controversial. The aim of this retrospective study is to analyse the outcomes of recipients who had grafts with multiple graft arteries.

Methods: Of 352 total liver transplants, 244 patients underwent LDLT between January 2010 and August 2014 at our institution. Donors were evaluated by standard protocol and had preoperative Triphasic CECT Scan for analysing graft anatomy. Grafts with more than artery were included.

Results: No grafts had more than two arteries. 29 grafts (11.8%) had multiple arteries. The liver grafts were grouped into three. Group I (n = 215) had single artery which was reconstructed. Group II (n = 22) single artery being reconstructed and Group III (n = 7) where two arteries were reconstructed. The decision to reconstruct was based on vascular supply based on the preoperative CECT and also intra operatively in the donor (looking for back bleed, by simultaneously clamping the portal venous inflow and clamping one of the arteries). In two patients, back table reconstruction was done to the graft and two patients had two separate anastomosis. Two patients (9.09%) in group II had bile leak. No arterial thrombosis. The biliary stricture rates were not statistically significant (p = 0.08)

Conclusion: Based on our criteria, we had an excellent outcome of grafts with multiple arteries. We recommend a single arterial revascularisation of the graft, if the above criterion is fulfilled.

Benign HPB Diseases

APHPB-0318

ADULT HEPATOBLASTOMA – A CASE REPORT

B. Sathyamoorthy, R. Vellaichamy, A. Anbalagan, P. Raju, B. Duraisamy, C. Servarayan Murugesan and K. Devygounder
Institute of Surgical Gastroenterology, Rajiv Gandhi Government General Hospital, Madras Medical College, Chennai, India

Objectives: Adult hepatoblastoma is a rare malignant liver neoplasm. Surgery is the treatment of choice, but
recurrence is common even after complete resection. No standard therapeutic strategy has been established so far.

**Methods:** A 14-year-old female presented with a right hypochondrial mass. Pain preceded the appearance of the mass. Clinical examination revealed a 15 cm × 15 cm mass occupying the right hypochondrium and epigastrium. CECT Abdomen (64 slice) showed 15 × 11 × 9 cm multisepatated locuated mass lesion involving right lobe of liver segment 5, 6, 7, 8. USG guided biopsy done revealed suspected Hepatic Adenoma. Preop AFP was more than 30,000. With this preoperative diagnosis the tumor was completely resected off the inferior vena cava with Right hepatectomy. The histopathological diagnosis was mixed hepatoblastoma. The postoperative course went smoothly.

**Results:** Hepatoblastoma is a rare malignant tumor of the liver and usually occurs in the first 3 years of life. Most of these tumors arise in the embryo; hence it seems to be unusual that hepatoblastomas occur in adult age patients. Early detection may lead to improved prognosis and survival but they are often detected late

**Conclusion:** We report here the first case of adult hepatoblastoma in India to our best of our knowledge. We are presenting this case due to the rarity of hepatoblastoma in adults and its preoperative diagnostic difficulty and successful surgical treatment with hepatectomy.

**Malignant HPB Diseases**

**APHPB-0319**

**LONG-TERM SURVEILLANCE OF INTRAHEPATIC CHOLANGIOCARCINOMA DIAGNOSED AFTER 20 YEARS FOLLOW-UP FOR HEPATIC HEMANGIOMA: A CASE REPORT AND LITERATURE REVIEW**

Q. Zheng, M. Li, B. Shu and Z. Song

Hepatobiliary Surgery, Union Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China

**Objectives:** Intrahepatic cholangiocarcinoma is the second most common primary malignancy of liver with poor prognosis. Four patients of intrahepatic cholangiocarcinoma were diagnosed after several years’ observation, ranging from 3 to 5 years, with hepatic hemangioma in recent reports. Herein, we present a rare case of much longer surveillance of intrahepatic cholangiocarcinoma diagnosed after 20 years follow up for hepatic hemangioma.

**Methods:** We collected the medical records and imaging data of the patient during hospitalization as well as 20 years’ follow up. We also searched medical database for relevant literature.

**Results:** An asymptomatic 74-year old Chinese man was admitted to our hospital for recent enlarged liver mass lesion after 20 years follow-up for hepatic hemangioma. He was first diagnosed with a hemangioma in segment 8 of liver by abdominal ultrasound in February 1994, on basis of slightly hyperechoic feature with 1.6 1.1 cm in size. The mass lesion has enlarged markedly since 2013, which was approved by ultrasound, computed tomography, magnetic resonance imaging and positron emission tomography. Thus, hepatectomy was performed and histological characteristic revealed that the mass lesion was intrahepatic cholangiocarcinoma.

**Conclusion:** We reported the longest disease course of intrahepatic cholangiocarcinoma, which may change the former understanding of the biological behavior of intrahepatic cholangiocarcinoma and worth further studied.

**APHPB-0320**

**DOES AGGRESSIVE APPROACH FOR LARGE AND MULTIFOCAL HCC JUSTIFY**

J. Chinburen1, M. Gillet2, E. Tsiiregzen3, E. Chinbold1, T. Erdenebileg1 and N. Punsagdulam4

1HPBS Department, National Cancer Center of Mongolia, Ulanbator, Mongolia; 2National Cancer Center of Mongolia, Ulanbator, Mongolia; 3General Surgery, Intermed Hospital, Ulanbator, Mongolia; 4General Surgery, Health Science University, Ulanbator, Mongolia

**Objectives:** Indications for surgical treatment of patients with large or vascular invasive HCC remain controversial. According to the BCLC classification, hepatic resection should be performed only in patients with early stage HCC, but not for patients with intermediate and advanced stages. This study aimed to determine whether hepatic resection improves survival for patients with BCLC stages B and C.

**Methods:** A retrospective review of 347 HCC patients who underwent hepatic resection at the National Cancer Center (NCC) of Mongolia between 2008 and 2012 was conducted. Of 347 patients, 125 had BCLC stage 0/A disease, 211 had stage B disease and 11 had stage C disease. Mortality and survival outcomes were analyzed.

**Results:** For patients with BCLC stages 0/A, B and C disease 30-day hospital mortality was 1.6%, 2.8% and 0%, respectively. The 1-year overall survival rates were 91.2% in BCLC stage 0/A patients, 80.1% in stage B patients and 31.2% in stage C patients (p < 0.001); and the 2-year overall survival rates were 68% in stage 0/A patients and 51.8% in stage B patients (p = 0.05). All patients with stage C disease died within 432 days after surgery. Serum alpha-fetoprotein (AFP) level above 600 ng/mL was found to be an independent predictor of overall survival.

**Conclusion:** Patients with BCLC stages B and C HCC can tolerate hepatic resection with low mortality and survival benefits, especially those with serum AFP below 600 ng/mL. These results show that hepatic resection can provide survival benefit for patients with advanced HCC especially in resource-poor settings with limited access to adjuvant therapy.
APHPB-0321
RISK FACTORS AND OUTCOME OF PATIENTS WITH PANCREATIC FISTULA AFTER RADICAL PANCREATICODUODENECTOMY
Surgery, Queen Mary Hospital, Hong Kong, China
Objectives: This study aimed to evaluate the risk factors and outcome of patients with pancreatic fistula after radical pancreaticoduodenectomy.
Methods: Retrospective study of 277 patients with radial pancreaticoduodenectomy performed in Queen Mary Hospital, Hong Kong.
Results: The 30-day mortality and hospital mortality rate in this series was 2.5% and 5.1% respectively. 40 patients (14.5%) developed pancreatic fistula. Risk factors associated with pancreatic fistula as identified by univariate analysis included presence of co-morbid illness, intra-operative blood transfusion, non-pancreatic pathology, pylorus-preserving pancreaticoduodenectomy and normal pancreatic consistency. By multivariate analysis, presence of co-morbid illness (risk ratio 3.66; 95% confidence interval 1.48–9.01; p = 0.005), non-pancreatic pathology (risk ratio 3.68; 95% confidence interval 1.36–9.91; p = 0.01) and normal pancreatic consistency (risk ratio 8.2; 95% confidence interval 1.7–38.06; p = 0.007) were identified as independent risk factors for pancreatic fistula. All patients with biochemical leak were managed conservatively. For those patients with clinical leak, 12 out of 19 were managed conservatively. 4 required image-guided drainage and 1 patient required open drainage. Those with clinical leak were associated with statistically significantly prolonged intensive care unit stay, hospital stay, ventilation, total parenteral nutrition as well as time in resuming oral diet.
Conclusion: Pancreatic fistula rate remained high after radical pancreaticoduodenectomy. Risk factors for pancreatic fistula included presence of co-morbid illness, normal pancreatic consistency and non-pancreatic pathology. Majority of patients with pancreatic fistula could be treated conservatively with low mortality.

APHPB-0322
CLINICOPATHOLOGIC DIFFERENCE OF PERIPHERAL INTRAHEPATIC CHOLANGIOCARCINOMA (PICC) AND PERIHILAR INTRAHEPATIC CHOLANGIOCARCINOMA (HICC)
Department of Gastroenterological Surgery, Yokohama City University School of Medicine, Yokohama, Japan
Objectives: We evaluate the clinicopathological characteristics between PICC and HICC.
Methods: The basis of this study was 92 patients, who received operation for intrahepatic cholangiocarcinoma in our hospital since 1993–2013. We divided them to two groups, the one was PICC group (n = 55) and another was HICC group (n = 27). We compared clinicopathological factors and therapeutic results between two groups.
Results: The frequency of preoperative jaundice, blood loss, vascular reconstruction, periductal infiltrative type, positive for lymph node metastasis: n(+) was significantly higher than that of PICC. According to cumulative survival rate, MST of HICC (24.8 months) was significantly poor than that of PICC (50.7 months) (p = 0.022). In PICC, there was significant difference in cumulative survival rate between n(−) (MST:52.9 months) and n(+) (MST:15.1 months) (p = 0.012), but there was no significant difference in HICC (p = 0.573). Adjuvant chemotherapy (AC) of gemcitabine was performed in 13 cases of 18 cases of HICC with n(+) AC improved cumulative survival rate of HICC with n(+), whereas there was no significant difference. There was no significant difference in cumulative survival rate between intrahepatic metastasis positive: im(+) and negative: im(−) either in HICC or in PICC.
Conclusion: The prognosis of HICC was poor than that of PICC. AC may improve the prognosis of patients of HICC with n(+). Prognosis of patients of HICC with im(+), extremely poor and AC can’t improve the prognosis.

Benign HPB Diseases
APHPB-0323
CORRELATION OF FIBROSCAN WITH LIVER BIOPSY (LB) IN BENIGN BILIARY STRICTURES
S. Bannoth1, T. D. Yadav1, V. Singh2 and A. Das3
1General Surgery, Postgraduate Institute of Medical Education & Research, Chandigarh, India; 2Hepatology, Postgraduate Institute of Medical Education & Research, Chandigarh, India; 3Histopathology, Postgraduate Institute of Medical Education & Research, Chandigarh, India
Objectives: Aim of this study was to evaluate the utility of fibroscan in assessment of liver fibrosis in patients with benign biliary strictures (BBS).
Methods: This prospective observational study was conducted in 40 patients of BBS from January 2013 to June 2014. Patients with ascites and raised ALT (>10 times normal) were excluded from study. A preoperative fibroscan was performed in all the patients and an LB was taken intraoperatively from suspicious part of liver. Histopathology findings were graded from no fibrosis to stage IV fibrosis and liver elasticity (derived from fibroscan) was compared with the grade of fibrosis by Spearman’s correlation.
Results: A total of 40 patients (11 males, 29 females; mean BMI 23.5 ± 4.16) with BBS were evaluated. Mean liver function parameters including serum bilirubin, AST, ALT and ALP were 3.56 ± 4, 86.6 ± 53.23, 100.3 ± 72.7 and 412.93 ± 315.5 respectively. Liver stiffness measurement (LSM) ranged from 4 to 75 in the patient population. Mean LSM for no fibrosis to stage 4 fibrosis was 6.26 kpa, 11.98 kpa, 15.26 kpa, 18.2 kpa, 46.05 kpa respectively. The 50th
and 75th percentiles of individual stages were 5.8 kpa, 7.2 kpa (stage 0); 8.5 kpa, 11.05 kpa (stage I); 9.1 kpa, 19.4 kpa (stage II); and 46.05 kpa and 56.75 (stage IV) respectively. Spearman’s correlation coefficient was 0.546 which was significant.

**Conclusion:** Our study showed that fibroscan findings correlate well with stages of fibrosis on LB. Thus fibroscan may be a simple, noninvasive, reproducible alternative modality to evaluate liver fibrosis in patients with biliary strictures.

**Malignant HPB Diseases**

**APHPB-0324**

**THE ROLE OF EPITHELIAL-MESENCHYMAL TRANSITION AND MESENCHYMAL-EPITHELIAL TRANSITION IN THE DIFFERENTIATION OF HEPATIC OVAL CELLS INTO HEPATOCELLULAR CARCINOMA IN VIVO**

C. Li and Z. Tu

Liver Department, Huzhong University of Science & Technology, Wuhan, China

**Objectives:** To study the plasticity of hepatic oval cells and the role of epithelial-mesenchymal transition (EMT) and MET in the differentiation of oval cells into hepatocellular carcinoma (HCC) with the cooperation of the HBx gene and AFB1 in vivo.

**Methods:** The transfected HBx oncogene rat hepatic oval cells were implanted into the subcutaneous tissue of nude mice to develop tumor for 10 weeks, then the subcutaneous tumors were collected and divided to transplant into liver parenchyma, at the same time treating with aflatoxin B1 for 18 weeks. The subcutaneous tumors and intrahepatic tumors were collected and stained by haematoxylin and eosin (H&E) and immunohistochemistry staining, as well as observed by Western-Blot.

**Results:** We found that subcutaneous implanted HBx-oval cells formed mesenchymal tumors with EMT, which was associated with decreased expression of E-cadherin, and increased expression of TGF-β1/Smad3, Snail and vimentin. Then part of HBx mesenchymal tumor can trans-differentiate into HCC with MET when these subcutaneous tumors were transplanted into the liver parenchyma, with increased E-cadherin expression, and decreased expression of TGF-β1/Smad3, Snail and vimentin. By contrast, the control group did not present MET.

**Conclusion:** These data illustrated that HBx can promote HBx mesenchymal cells transiting to epithelial cells MET by inhibiting TGF-β1/Smad3 and Snail signaling pathways, and EMT-MET may play an important role in these processes.

**APHPB-0325**

**THE IMPACT OF VISCERAL FAT VOLUME ON SURGICAL SITE INFECTION AFTER PANCREATICODUODENECTOMY**


Surgery, Saiseikai Kumamoto Hospital, Kumamoto, Japan

**Objectives:** The aim of this prospective study was to evaluate the impact of visceral fat on surgical site infection (SSI) after pancreaticoduodenectomy (PD).

**Methods:** Seventy-two patients underwent PD for periampullary carcinoma at Saiseikai Kumamoto hospital between 2007 and 2013. Their visceral fat volume was estimated by CT scan, using Fat Scan software. Risk factors associated with SSI were following variables: laboratory examination data, including visceral fat and intraoperative factors. We first investigated significant factors associated with SSI in a univariate logistic regression analyses, and significant variables were subsequently tested in a multivariate analysis. Statistical difference was considered to be significant at p < 0.05.

**Results:** Study subjects included 26 women and 46 men. The average age of the patients was 70 years. Pancreatic cancer was in 25 pts, and biliary tract cancer was in 47 pts. SSI after PD occurred in 31 pts (43%). A univariate logistic regression analyses revealed that BMI, visceral fat volume, age, prognosis nutrition index (PNI), operation time, and bleeding volume was the significant risk factors. A multivariate analysis of the factors that significantly predicted risk of SSI in the univariate analyses revealed that age (OR 7.76, p = 0.015), PNI (OR 12.4, p = 0.019) and visceral fat (OR 6.14, p = 0.049) were the independent risk factors of SSI. Moreover, visceral fat volume were correlated with operation time (r = 0.29, p = 0.004) and blood loss (r = 0.30, p = 0.034).

**Conclusion:** Visceral fat volume was one of the independent risk factors of SSI after PD. In addition, visceral fat volume was correlated with operation time and blood loss.

**APHPB-0326**

**LAPAROSCOPIC VERSUS OPEN HEPATECTOMY FOR HCC**


Surgery, Komagome Hospital, Tokyo, Japan

**Objectives:** We introduced laparoscopic hepatectomy in 2008, and it is also standardized in anatomical hepatectomy.

**Methods:** We conducted a retrospective study for each of laparoscopic hepatectomy (L) and open hepatectomy (O) as the primary hepatectomy for HCC in the period of August 2008 to December 2013. Patient background, liver function, surgical procedures, tumor-related data and postoperative outcomes were investigated.

**Results:** O group included 45 cases and L group included 60 cases. Indocyanine green retention rate at
15 min was higher in O group (18.0%) than in L group (14.6%) (p = 0.04). No other significant differences were found in patient background and liver function. No differences were found in tumor size, tumor number and surgical procedures. No difference was found in mean operative time, but the blood transfusion rate [11% (5/45) vs. 0% (0/60), p = 0.01], mean blood loss (849 vs. 317 g, p < 0.05) and postoperative hospital stay (12 vs. 8 days, p < 0.05) were significantly better in L group. Regarding the fluctuations in blood biochemical tests, CRP was lower, and AST and ALT were higher in L group in the early postoperative period. However, there were no significant differences in these data after patient discharge. Relapse-free survival and overall survival showed no significant difference between the two groups.

**Conclusion:** L group had better results in terms of short-term outcomes than O group against almost the same background. We considered that laparoscopic-specific factors, such as pneumoperitoneum, have no effect.

**APHPB-0328**

**SURGICAL MANAGEMENT OF HEPATOCELLULAR CARCINOMA WITH CAVO-ATRIAL TUMOR THROMBUS**

K. Palaniappan, M. Shrivastava, A. Bharathan, S. Govil, G. Narashiman, S. Reddy, V. Kota and M. Rela

**Institute of Liver Disease & Transplantation, Global Hospitals Chennai, Chennai, India**

**Objectives:** HCC is currently third leading cause of cancer-related deaths worldwide. Tumor thrombus into IVC/RA is a rare occurrence and found in 3–4% of cases. Outcome for HCC patients with symptomatic, intra-atrial tumor growth is dismal, with median survival of 1–4 months. Currently there is no consensus on the management of patients with IVC/RA tumor thrombus. Hereby we report our results of patients who presented with IVC/RA thrombus.

**Methods:** Retrospective review was undertaken of patients with HCC and IVC/RA tumor thrombus who were potential candidates for surgery but who were finally treated surgically and nonsurgically between January 2010 and Till March 2014. The patients were subdivided according to therapeutic modalities, and the results for each group were compared.

**Results:** Of total of 352 patients who presented with HCC, 26 (7.3%) had IVC/RA tumor thrombus at presentation. 5 cases (19.2%) underwent hepatectomy and thrombectomy. TACE was offered in 12 (57.1%), only Sorafenib in 9 (42.2%). Operative mortality was 20%. The one and three year survival was 80% and 40% respectively with a median survival of 28 months. In TACE group, 1 and 3 year survival was 41.6% and 16.6% (Median survival 8.5 months). In sorafenib group 1 year survival was 11.1% and no patient survived for 3 years. Patients managed surgically survived longer (p < 0.001) than other groups.

**Conclusion:** Surgery for HCC with IVC/RA tumor thrombus can be safely performed in selected patients and should be considered in patients with resectable primary tumor and sufficient hepatic reservoir. Surgery significantly improves survival when compared with TACE or Sorafenib.

**APHPB-0329**

**SURVIVAL COMPARISON BETWEEN SURGICAL RESECTION AND TRANSARTERIAL EMBOLIZATION FOR HEPATOCELLULAR CARCINOMA MORE THAN 10 CM- A PROPENSITY SCORE MODEL**

Y. Chan, C. Wang, C. Kabiling, G. Aguilar, P. Vinod, T. Lin and W. Li

**General Surgery, Kaohsiung Medical Center, Chang Gung Memorial Hospital, Kaohsiung, Taiwan**

**Objectives:** Recommended management for BCLC stage B and C hepatocellular carcinomas (HCC) are TACE and Sorafenib. HCC ≥10 cm may have better outcomes with surgical resection (SR). This study reviews survival outcomes of patients with HCC ≥10 cm treated at a tertiary level hospital in Taiwan, and aims to find survival advantage of surgical resection over embolization therapy using a propensity scores matching model.

**Methods:** Data of 192 patients newly diagnosed with HCC ≥10 cm between 2005 and 2010, who had SR (n = 104) and TAE (n = 88) were retrospectively studied. Patient demography, tumor characteristics, therapeutic intervention, cumulative overall survival (OS) and disease-free survival (DFS) were analysed. Thirty-two patients in each group were selected by propensity scores matching models for comparison.

**Results:** Survival rates at 1, 3, 5 years of patients in BCLC stage B who had SR and TAE were 78.5%, 61.4%, 54.2% and 30%, 12.9%, 12.9%, (p < 0.001) respectively. For stage C, survival rates were 77.8%, 56.4% and 47% at 1, 3, 5 years in SR group while it was 12.7% at 1 year in TAE group, p < 0.001. Match analysis based on propensity score showed estimated 1-, 3-, and 5-year survival rates of patients receiving SR and TAE were 90.2 vs. 26.4%, 64.3 vs. 3.3%, and 51.5 vs. 3.3%, respectively (p < 0.001).

**Conclusion:** Propensity scores matching analysis showed that SR group had significantly better 5 year survival than TAE group. Overall survival of BCLC stage B may be improved by considering SR as first treatment option for resectable large HCCs, provided patient is fit for surgery with good liver remnant.
Benign HPB Diseases
APHPB-0330
MYRIADS OF ISOLATED IGG4 CHOLANGIOPATHY MASQUERADING AS BILIARY MALIGNANCIES
A. Arora¹, N. Agrawal¹, K. S. Arvind¹, A. Murali¹, C. Bihari², A. Arora³, V. Pamecha¹ and T. K. Chattopadhyay¹
¹HPB Surgery, Institute of Liver and Biliary Sciences, Delhi, India; ²Pathology, Institute of Liver and Biliary Sciences, Delhi, India; ³Radiology, Institute of Liver and Biliary Sciences, Delhi, India

Objectives: Isolated IgG4 cholangiopathy is a very rare entity. We herein describe a spectrum of presentation involving the various sites of hepatobiliary system and mimicking malignancy.

Methods: We report four cases all involving different sites and presenting as malignant masquerade.

Results: Patient one and two presented as painless, fluctuating jaundice of 1 month duration with peak bilirubin levels of 4.6 and 8.0 mg/dL respectively. CECT revealed a hilar mass in first and a mid CBD mass in second patient. They underwent right hepatectomy and CBD excision with RYHJ respectively. Patient three presented with vague upper abdominal pain and investigations revealed a SOL in segment VIII of liver, radiologically suggestive of intrahepatic cholangiocarcinoma. Patient underwent right hepatectomy. Patient four presented with pain right hypochondrium of 6 month duration. CECT revealed a mass in the fundus of gall bladder suggestive of gall bladder cancer. Patient underwent radical cholecystectomy. Final histopathology of all these patients revealed IgG4 related disease with no evidence of malignancy.

Conclusion: Isolate IgG4 cholangiopathy can involve any site of biliary tree from ampulla of vater to intrahepatic bile ducts, can mimic malignancy and should be kept as a differential diagnosis. Any atypical presentation and/or atypical radiological imaging findings should alert an astute clinician to this entity. Serum IgG4 levels may not always be elevated in this disease. Most of these cases are still diagnosed postoperatively but awareness of this entity can avoid surgery in many.

Malignant HPB Diseases
APHPB-0332
OPTIMAL EXTENT OF LYMPH NODE DISSECTION FOR LEFT-SIDED PANCREATIC CANCER
Surgery, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea

Objectives: Lymph node metastasis is a poor prognostic factor in the patients with pancreatic cancer. However, there is still controversy that extended lymph node dissection is essential for left-sided pancreatic cancer. The aim of this study is to evaluate the outcomes according to the extent of lymph node dissection and tumor location in patients with left-sided pancreatic cancer.

Methods: From January 2005 to December 2013, we retrospectively identified 120 patients who underwent curative intent surgery for left-sided pancreatic cancer. We included only patients with grossly and microscopically no residual tumor. The left-sided pancreatic cancer were divided into pancreatic body or tail cancer. The lymph nodes were divided into three groups; celiac group, superior mesenteric group, and peripancreatic group.

Results: We included 65 patients with pancreatic body cancer and 55 patients with pancreatic tail cancer. The median follow-up period was 16 months (range, 4–101 months). The 49 patients with pancreatic body cancer and 33 patients with pancreatic tail cancer underwent celiac group lymph node dissection. In patients with pancreatic body cancer, the celiac group lymph node dissection was associated with improved disease free survival (DFS) (p = 0.011). However, celiac group lymph node dissection could not enhance DFS in patients with pancreatic tail cancer (p = 0.833). Superior mesenteric group lymph node dissection was not associated with survival outcomes in both pancreatic body and tail cancer patients.

Conclusion: Celiac group lymph node dissection improves survival in patients with pancreatic body cancer. However, it is not necessary in pancreatic tail cancer.

APHPB-0335
DEBAKEY FORCEPS CRUSHING TECHNIQUE FOR HEPATIC PARENCHYMAL TRANSECTION IN LIVER SURGERY: A REVIEW OF 100 CASES AND ERGONOMIC ADVANTAGES
S. Jain¹, B. Sharma² and L. Jain¹
¹G.I. HPB Minimal Access & Bariatric Surgery, Fortis Hospital, Jaipur, India; ²General & Laparoscopic Surgery, Soni Manipal Hospital, Jaipur, India

Objectives: Bleeding is an important complication in liver transactions. To determine the safety and efficacy of Deabkey forceps for liver parenchymal transaction and its ergonomic advantages over clamp crushing method we analysed our data.

Methods: We used Deabkey crushing technique in 100 liver resections and analysed data for transection time, transfusion rate, morbidity, mortality, hospital stay, influence of different types of liver conditions and Ergonomical features of Deabkey forceps.

Results: Mean age, transection time and hospital stay of 100 patients were 52.38 ± 17.44 years, 63.36 ± 33.4 min and 10.27 ± 5.7 days. Transection time and hospital stay in patients with cirrhotic liver (130.4 ± 44.4 min, 14.6 ± 5.5 days), and cholestatic liver (75.8 ± 19.7 min, 16.5 ± 5.1 days), was significantly greater than in patients with normal liver (48.1 ± 20.1 min., 6.7 ± 1.8 days) (p < 0.01). Transection time improved significantly with experience (first fifty versus second fifty cases – 70.2 ± 31.1 min vs. 56.5 ± 34.5 min, p < 0.04). Qualitative evaluation
revealed that Debakey forceps had ergonomic advantages over Kelly clamp.

**Conclusion:** Debakey forceps crushing technique is safe and effective for liver parenchymal transection in all kinds of liver. Transection time improves with surgeon’s experience. It has ergonomic advantages over Kelly clamp and is better choice for liver transection.

**APHPB-0337**

**PANCREATICODUODENECTOMY (PD) WITH CONCOMITANT MAJOR VESSEL RESECTIONS (BOTH VENOUS & ARTERIAL) FOR BORDERLINE REsectABLE DUODENAL AND PANCREATIC HEAD CANCERS – FEASIBILITY AND PERIOPERATIVE OUTCOME**

S. Jain and N. Bhatija

*G.I. HPB Minimal Access & Bariatric Surgery, Fortis Hospital, Jaipur, India*

**Objectives:** Pancreaticoduodenectomy (PD) with vascular resections is associated with high morbidity and mortality. We analysed our data to assess the feasibility and perioperative outcome.

**Methods:** We performed concomitant vascular resection in 10 patients of total 202 pancreaticoduodenectomies (PD). Sleeve resection of the portal vein was carried out when <1/3rd and segmental resection was done when >1/3rd of circumference of portal vein was involved. Arterial resections were performed only when the replaced right hepatic artery or small segment of common hepatic artery away from the celiac axis, was involved in the tumor. Arterial reconstructions were done using gastroduodenal and splenic arteries.

**Results:** Portal vein sleeve resections with repair was done in 4/10 patients, 3/10 patients had segmental portal venous resections ranging from 2.5 to 4 cm length with end to end reconstructions, 3/10 patients had concomitant hepatic artery and portal vein sleeve resections. The operative time was 5 1/2 to 8 h. Blood was transfused in 4/10 patients. Postoperative ICU stay was 12–18 h with total Hospital stay of 8–25 days. There was no 30-day mortality. Post-operative complications included ascites, hepatic encephalopathy and pneumonitis with sepsis.

**Conclusion:** Pancreaticoduodenectomy with concomitant vascular (both venous and arterial) resections is a feasible operation in patients with borderline resectable cancers of head of pancreas and periampullary region, though with high perioperative morbidity.

**Benign HPB Diseases**

**APHPB-0338**

**BILE DUCT INJURIES AFTER CHOLECYSTECTOMY – TIMING AND PRESENTATION IN SOUTH INDIA**

K. Sivakumar, S. M. Chandramohan, D. Kannan, R. Prabhakaran and A. Benet Duaraisamy

*Surgical Gastroenterology, Madras Medical College, Chennai, India*

**Objectives:** Bile duct injury (BDI) is a dreaded complication of cholecystectomy, often caused by misinterpretation of biliary anatomy. This paper presents bile duct injuries after cholecystectomy – Timing and presentation in south India.

**Methods:** This study analyses 32 cases of bile duct injury managed by the Department of Surgical Gastroenterology at Rajiv Gandhi Government General Hospital/Madras Medical College from July 2010 to March 2014.

**Results:** Bile duct injuries occurred after laparoscopic cholecystectomy-18 cases and after open method-14 cases. Age distribution ranging from 29 to 72 years with female sex preponderance. Bilioma as initial presentation-19, established biliary stricture-17, on table recognised-1, biliary peritonitis-3. Most common type of bile duct injury is Strasberg type A and D followed by E3. Type E1-5 cases, Type E2-5 cases, Type E3-7 cases. 2 cases presented with secondary biliary cirrhosis. Immediate PCD 19 cases, ERCP and stenting-8, open drainage-3 patients. Hepaticojejunostomy-13. Choledochoduodenostomy-1. PTBD-1.

**Conclusion:** Bile duct injuries most commonly occurs after lap cholecystectomy than open cholecystectomy. Female are most affected than male. In our centre type A and D type of injuries managed with both PCD and ERCP stenting .Type E1 to E5 injuries are best treated with definitive surgical management like hepaticojejunostomy. PTBD useful in cholangitis when ERCP unsuccessful. Best results are obtained if delayed surgical procedure are performed than early surgical intervention.

**Malignant HPB Diseases**

**APHPB-0339**

**HEPATIC EPITHELOID ANGIOMYOLIPOMA (PECOMA): A RARE HEPATIC TUMOR!**

S. Mathur1, C. Tampi2 and D. Chhabra3

1Surgical Oncology, Bombay Hospital and Medical Research Centre, Mumbai, India; 2Pathology, Lilavati Hospital and Research Centre, Mumbai, India; 3Surgical Oncology, Lilavati Hospital and Research Centre, Mumbai, India

**Objectives:**

**Background:** Hepatic angiomyolipoma (HAML) is a rare, benign mesenchymal neoplasm composed of varying amounts of smooth muscle cells, adipose tissue, and vessels. Perivascular epithelioid cells (PEC), which have no known normal cellular counterpart, are intimately related to blood vessels and are involved in a growing list
of unusual tumors and tumor-like lesions (PEComas) sharing the expression of homatropine methylbromide 45 (HMB45) and smooth muscle actin (SMA). Its morphological diversity often poses diagnostic problems. PEComas can display characteristics of both benign and malignant tumors and the primary treatment is resection. The authors report a peculiar case of epithelioid HAML.

Methods:
Case Report: A 59-year-old female presented with abdominal pain and discomfort. CECT demonstrated a 12.3 × 9.2 × 11 cm heterogeneous hypodense exophytic mass arising from segment II of the liver and in close proximity to left hepatic vein. The mass indented the gastric fundus. The AFP levels were normal. A diagnosis of Hepatic adenoma versus a well-differentiated Hepatocellular carcinoma was suspected. No biopsy was performed and the patient underwent left lateral sectionectomy.

Results: Histologically, the tumour was mainly composed of epithelioid cells arranged in trabeculae and sheets admixed with mature adipose tissue and thick-walled blood vessels. Most of the epithelioid tumour cells were immunoreactive to HMB-45 and SMA with faint positivity for S-100. Morphological pattern and immunophenotype were consistent with epithelioid HAML.

Conclusion: Our case adds to the volume of reported rare cases of epithelioid HAML/primary hepatic PEComas, and helps to increase awareness and understanding of this rare tumor.

APHPB-0340
EXPRESSION AND CLINICOPATHOLOGICAL SIGNIFICANCE OF SURVIVIN PROTEIN IN GALLBLADDER CANCER
V. Gupta¹, M. Goel² and A. Chandra³
¹Surgical Gastroenterology, King George Medical University, Lucknow, India; ²Pathology, King George Medical University, Lucknow, India

Objectives: Clinical significance of survivin (inhibitor of apoptosis protein) in gallbladder cancer is not yet established. This study was performed to assess the expression pattern of survivin in benign and malignant gallbladder lesions, and to assess its clinicopathological significance.

Methods: After due approval from the ethics committee of the hospital and after having written informed consent, tissue samples from resected gallbladder for cholelithiasis (n = 27) and carcinoma gallbladder (n = 24) were evaluated for survivin expression by immunohistochemistry. Its expression was correlated with different clinicopathological parameters and survival.

Results: Benign group [19 females, age (mean ± SD) 45 ± 14 years] and malignant group [20 females, age (mean ± SD) 48.9 ± 13.4 years] were comparable with respect to age, sex, menopausal status, presence, size and types of stones. However, survivin expression was significantly higher [66.7%, 95% confidence interval (CI) 24–75] in gallbladder cancer than in cholelithiasis group [33%, (CI 46–83), p = 0.025]. Its expression did not correlate with gender, age, menopausal status, presence of gallstones or their size, number and type, tumor grade, tumor stage, and overall survival.

Conclusion: Significantly higher expression of survivin protein in gallbladder cancer as compared to cholelithiasis group suggests its role in gallbladder carcinogenesis though it may not have prognostic value. Targeting survivin for therapeutic purpose in gallbladder cancer may be a possibility in future.

APHPB-0341
ALPPS AFTER THE LEARNING PHASE IS A SAFE PROCEDURE WITHOUT MORTALITY OR SEVERE SURGICAL COMPLICATION – PERSONAL EXPERIENCE OF 22 CONSECUTIVE CASES
J. Li¹, F. Ewald¹, A. Kantas¹, A. Koops², E. Achilles¹, L. Fischer¹ and B. Nashan¹
¹Hepatobiliary Surgery and Visceral Transplantation, University Medical Center Hamburg-Eppendorf, Hamburg, Germany; ²Diagnostic and Interventional Radiology, University Medical Center Hamburg-Eppendorf, Hamburg, Germany

Objectives: Associating liver partition and portal vein ligation for staged hepatectomy (ALPPS) was reported as a procedure associated with a relevant morbidity and mortality. The current study aims to access the safety of ALPPS after the learning period.

Methods: Lessons from the initial learning period (November 2010 to April 2012), regarding the patient selection, surgical technique and perioperative management, were respected since ALPPS was introduced in authors institute in May 2012. Following instructions were followed: (1) simplifying the stage I operation to avoid bile leakage, infection and unnecessary manipulation of the diseased liver; (2) choosing the length of the waiting time of average 2 weeks till stage II operation to avoid liver failure; (3) regarding hilar cholangiocarcinoma as a contraindication. The postoperative complication, mortality as well as the oncological efficacy were analyzed accordingly.

Results: 13 consecutive ALPPS have been performed for radical resection of colorectal liver metastasis (n = 9), gall bladder carcinoma (n = 2), intrahepatic cholangiocarcinoma (n = 1), hepatocellular carcinoma (n = 1). The efficacy of ALPPS in form of future liver remnant hypertrophy, completion of the tumor resection and residual tumor status were comparable to the results from the largest ALPPS registry. The postoperative complications were found in 11 of 13 patients without mortality. All complications were Clavien-Dindo classification grade I or II, except a grade IIIA in one patient undergoing right trisectionectomy with pancreaticoduodenectomy.

Conclusion: Being the first case series without severe complication and mortality after ALPPS, the authors found that by following the fundamental instructions mentioned above, ALPPS itself is a safe procedure.
Benign HPB Diseases

APHPB-0342

DAMAGE CONTROL SURGERY FOR LIVER LACERATION WITH MAJOR VESSEL INJURY: VASCULAR CONTROL FOLLOWED BY DELAYED HEPATECTOMY

H. Kim, E. Park, W. Kang and J. Kim

Department of Surgery, Chonnam National University Medical School, Gwangju, Korea

Objectives: Grade V liver laceration with major hepatic vein injury and hemodynamic instability requires an immediate surgery. Herein, we report a case of severe liver laceration with major hepatic vein and portal vein injury successfully managed by the portal pedicle and hepatic vein ligation, followed by delayed heptectomy.

Methods: A 10-year-old boy referred to our hospital with an abdominal distension and hemodynamic instability after traffic accident. Blood pressure was 70/40 mmHg. On laboratory findings, hemoglobin was 8.3 g/dL, platelet count was 85,000/mm³, prothrombin time international normalized ratio (PT INR) was 2.13. An abdominal computed tomography (CT) showed an active bleeding from right hepatic vein, right portal vein, and right inferior hepatic vein with extensive liver laceration of right hepatic lobe and large amount hemoperitoneum.

Results: An immediate laparotomy was performed. After ligation and division of gallblader neck, the right portal pedicle was secured using Glissonean approach. The coronary ligament and the right triangular ligation were dissected, and the root of right hepatic vein was ligated. After rotating the liver to left side, injured inferior vena cava; the root of right inferior hepatic vein, was sutured. However, parenchymal resection could not be performed because of diffuse oozing from disseminated intravascular coagulopathy (DIC). Perihepatic pad packing was performed and the abdominal wall was closed temporarilly.

After 2 days from the initial operation, completion right hemihepatectomy was performed without massive uncontrollable bleeding tendency.

Conclusion: Severe liver injury in hemodynamically unstable patient was could be successfully managed with an immediate vascular control and delayed hepatic parenchymal resection.

Malignant HPB Diseases

APHPB-0343

THE DEVELOPMENT OF A MORE RELIABLE APPROACH DURING LAPAROSCOPIC PANCREATITICODUODENECTOMY

C. Liao¹, S. Wang¹, C. Fu¹, C. Hsu¹, C. Tsai², K. Liu² and T. Yeh²

¹Trauma and Emergency Surgery, Chang Gung Memorial Hospital, Taoyuan, Taiwan; ²General Surgery, Chang Gung Memorial Hospital, Taoyuan, Taiwan

Objectives: The feasibility and safety of laparoscopic pancreaticoduodenectomy (LPD) had been proved by several authors with experienced laparoscopic skills. However, there were still limited centers who performed LPD as a routine procedure. Due to its difficulty, the approach method was still not concluded.

Methods: We conducted a prospective data collection and retrospective review of all patients underwent LPD from April 2012 until April 2014 at Chang Gung Memorial Hospital (CGMH), Linkou, Taiwan. For patients’ superior mesenteric artery (SMA) was approached as the first step of operation were included into artery-first group, the others were included non-artery-first group.

Demographic data, operative approach method, anastomosis method, postoperative, and information regarding complications were recorded.

Results: Totally 21 patients who underwent LPD or LPPPD in this periods. The median operation time was 380 min. There were 14 patients had arterial-first approach and the other 7 patients didn’t. The blood loss amount were significant shorter in artery-first group and the respectability could be identified in first stage of operation. The pancreatic fistula rate is lower in artery-first group without significant difference. The length of hospital stay were similar in both groups.

Conclusion: Like conventional open surgery, the artery-first approach was appreciated in LPD. By this approach, we can identified the respectability in early phase operation. After control of SMA and SMV, the bleeding during dissection could be minimized.

APHPB-0344

PROBLEMS OF LONG SURVIVAL FOLLOWING SURGERY IN PATIENTS WITH NONBONC-HCC: COMPARISON WITH HBV AND HCV RELATED-HCC


Department Digestive Surgery Breast and Thyroid Surgery, Kagoshima University Graduate School of Medical and Dental Science, Kagoshima, Japan

Objectives: The number of patients with hepatocellular carcinoma (HCC) in the absence of both hepatitis B virus surface antigen (HBsAg) and hepatitis C virus antibody (HCVAb) (NBNC-HCC) has been rapidly increasing in Japan. The objective of this study was to compare the clinical and pathological characteristics between patients with NBNC-HCC and those with HBsAg positive or HCVAb positive HCC (BC-related HCC). A better understanding will facilitate the development of postoperative strategies to better manage patients with NBNC-HCC.

Methods: Consecutive 219 patients with primary HCC: (BC related, n = 139; NBNC, n = 80) were treated by hepatic resection or ablation. Clinicopathological characteristics including postoperative course were retrospectively compared between the two groups.

Results: When comparing within stage I and II, the NBNC-HCC group had improved recurrence free survival (RFS) (p = 0.041) but tended to have lower overall survival (OS). Moreover, the NBNC-HCC group showed higher rate of death due to other cancers and
cardiovascular disease (p = 0.041). Multivariate analysis revealed that the only prognostic factor for RFS in the NBNC-HCC group was high total bilirubin.

**Conclusion:** In the patients with NBNC-HCC, elevated bilirubin could predict poor RFS after surgery. Furthermore, patients must be carefully followed-up not only for HCC but also for the occurrence of other critical diseases including multiple other cancers.

**Transplantation**

**APHPB-0345**

**INTIMAL FIXATION FOR HEPATIC ARTERY DISSECTION, EVALUATION OF A NEW TECHNIQUE**

M. El Shobari, T. Salah, A. Sultan, A. Anwer, M. Abdelwahab and H. Hamed

Surgery, Gastroenterology Surgical Center, Mansoura University, Mansoura, Egypt

**Objectives:** Evaluation of the technique of intimal fixation in hepatic artery dissection (three quadrant and four quadrant) in LDLTX.

**Methods:** From May 2004 to July 2014, 313 cases of LDLTX were done in MANSOURA GASTROENTEROLOGY SURGICAL CENTER. Single anastomosis in 303 cases and double in 10 cases. Arterial anastomosis was done using 8/0 prolene interrupted using surgical loop 4.5. Mean diameter is 3 mm.

288 cases were anastomosed to rt hepatic artery branch and 23 to left hepatic. 4 quadrant complete arterial dissection was found in 15 cases- intimal fixation using 8/0 prolene was done in all cases.

**Results:** In 14 cases INTIMAL FIXATION was successful. In one case failure to do anastomosis was noted and splenic artery was used. Splenic artery anastomosis was successful in 2 cases. Long term follow up using Doppler and in suspected cases ct angiography show good patency in 13 cases. One case showed thrombosed HA IN DAY 1.

Intervention radiology using angi was successful.

**Conclusion:** Intimal fixation technique is a useful alternative to interposition grafts in LDLTX with good results.

**Malignant HPB Diseases**

**APHPB-0346**

**A CASE OF PANCREATIC DUCTAL ADENOCARCINOMA CONCOMITANT WITH IGG4-RELATED DISEASE**


Surgery, Teikyo University School of Medicine, Tokyo, Japan

**Objectives:** IgG4-related disease (IgG4-RD) is an increasingly recognized syndrome of unknown etiology comprised of a collection of disorders including autoimmune pancreatitis (AIP) and sclerosing cholangitis, and relationship between IgG4-RD and malignant tumors is unknown.

**Methods:** Here, we reported a case of pancreatic ductal adenocarcinoma (PDAC) arisen in the treatment for IgG4-RD.

**Results:** A 55-year-old man presented with upper abdominal pain with elevation of serum amylase level, making a clinical diagnosis of acute pancreatitis with unknown etiology. He did not have history of alcohol abuse and no gallstones were identified. MRCP showed stricture both in the main pancreatic duct and distal bile duct (double duct sign), and CT scan showed a vague low density tumor-like lesion in the head of pancreas with positive uptake of FDG-PET. Serum CA19-9 level was normal and IgG4 level was elevated. A steroid challenge test was administrated under the clinical diagnosis of IgG4-related AIP rather than PDAC, and it was dramatically effective with normalized serum IgG4 level and improved biliary and pancreatic duct stricture. However, he had obstructive jaundice with re-elevation of IgG4 level. In addition, CA19-9 level was also elevated this time, and multiple liver tumors appeared. A systemic chemotherapy was administrated, and liver tumors were disappeared. After additional chemotherapy, we performed PPPD. Pathological diagnosis showed a focal IgG4-related sclerosing cholangitis and T1N0 pancreatic ductal adenocarcinoma.

**Conclusion:** The relationship between IgG4-RD and PDAC has not been proven. It should be noted that pancreatic ductal cancer may be occurred during the course of IgG4-RD.

**APHPB-0347**

**SUITABLE TREATMENT FOR HCC FROM THE POINT OF VIEW OF RECURRENT PATTERN**


Surgery, Keio University, Tokyo, Japan

**Objectives:** The aim of this study was to clarify the most suitable treatment for both primary and recurrent hepatocellular carcinoma (HCC).

**Methods:** Retrospective studies were performed based on the medical records of 117 patients who were treated from 1993 to 2014 for recurrent HCCs after curative hepatic resection (HR) and/or ablative therapy (AT). Patients were divided into two groups with regards to recurrent pattern. Prognostic factors associated with recurrence and survival on each groups were evaluated using Cox proportional hazard models.

**Results:** The mean recurrence-free survival (RFS) after HR for primary HCC was 39.4 ± 4.7 months, compared to 19.9 ± 2.5 months after AT (p < 0.001). Factors affecting early recurrence after the secondary therapy were female (p = 0.002), T2/3/4 of primary HCC (p = 0.02), platelet count (p = 0.028) and tumor size of recurrent HCC (p = 0.046) in the multicentric recurrence group, and HR + AT for primary HCC (p = 0.04) and tumor multiplicity of primary HCC (p = 0.031) in the intrahepatic recurrence group. Multivariate analysis also identified that platelet count (p = 0.012) and T3/4 of recurrent HCC (p < 0.001) were associated with overall survival (OS) in the multicentric recurrence group, and that AT for primary
HCC \((p = 0.027)\), the Child-Pugh class B \((p = 0.005)\) and T3/4 of recurrent HCC \((p < 0.001)\) were associated with OS in the intrahepatic recurrence group.

**Conclusion:** AT has been more likely to cause intrahepatic recurrence. The first treatment for primary HCC can strongly affect the prognosis in spite of the secondary treatment for recurrence.

**APHPB-0348**

**USEFULNESS OF THE EVALUATION OF PREOPERATIONAL LIVER FIBROSIS BEFORE HEPATECTOMY**

M. Ishii, O. Itano, M. Shinoda, M. Kitago, Y. Abe, H. Yagi, T. Hibi and Y. Kitagawa

_Surgery, Keio University, Tokyo, Japan_

**Objectives:** To assess the dynamic liver function, we investigated the new parameter of postoperative liver failure.

**Methods:** Total of 66 patients were performed hepatectomy in our Hospital by July, 2014 from May, 2013. These people were examined by Fibroscan, ARFI US (these US showed liver fibrosis), serous fibrosis marker, the indocyanine green (ICG) clearance test, liver biochemistry and coagulation profile before operation.

**Results:** These liver tumors included hepatocellular carcinoma in 23 patients, colorectal metastases in 20, hepatic portal region bile duct cancer in eight, intrahepatic cholangiocarcinoma in seven, metastatic liver tumor (other than colorectal cancer) in six and benign tumor in two. There were 11 liver failure cases after the operation in our Hospital (ISGLS classification A/B/C = 6/5/0). The factors, type 4 collagen 7s \((p < 0.001)\) and PT-INR in preoperation \((p = 0.038)\) showed clear significant relationships with the outcome of liver failure in both univariate and multivariate models. ICG-15 clearance rate that is said to be useful in a liver function evaluation did not show the relationship \((p = 0.163)\) in univariate analysis. The score of ARFI was marginally significant in univariate analysis, so it was included in a secondary multivariate model \((p = 0.054)\).

**Conclusion:** Preoperative liver fibrosis is associated with postoperative liver failure from the analysis in our Hospital. The preoperative hepatic fibrosis evaluation may be new parameter of preoperative liver function that we decide operative method.

**APHPB-0349**

**SURGICAL RESECTION VERSUS ABLATION FOR HEPATOMOBILAR CARCINOMA LESS THAN 3 CM: A POPULATION BASED ANALYSIS**

J. T. Miura, R. T. Groeschl, F. M. Johnston, S. Tsai, K. K. Christians, K. K. Turaga and T. C. Gamblin

_Surgery, Medical College of Wisconsin, Milwaukee, WI, USA_

**Objectives:** Ablation for \(\leq 3\) cm hepatocellular carcinoma (HCC) has been demonstrated to be an effective treatment strategy. Whether ablation achieves a similar survival benefit as compared to surgical resection for early stage HCC remains ill defined. The present study sought to examine the outcomes of patients with \(\leq 3\) cm HCC following ablation versus resection.

**Methods:** Patients treated by ablation or surgical resection for \(\leq 3\) cm T1 HCC were identified from the National Cancer Database (2002–2011). Cox proportional hazards models were used to assess overall survival (OS) between treatment types (ablation versus resection) following adjustment for age, gender, alpha-fetoprotein (AFP), Charlson Comorbidity Score, and cirrhosis.

**Results:** A total of 2804 patients underwent ablation \((n = 1984)\) or resection \((n = 820)\) for solitary HCC \(\leq 3\) cm. The median age of the collective cohort was 61 (IQR: 55–70) with the majority being male \((n = 1967, 70.1\%)\). Patients treated with ablation as compared to resection had a higher frequency in AFP elevation \((46.5\%\ vs. 39.1\%, p < 0.01)\) and presence of cirrhosis \((22.2\%\ vs. 14.5\%, p < 0.01)\). Unadjusted OS at 3 and 5 years was greater following resection \((67\%, 55\%)\ versus ablation \((52\%, 36\%, p < 0.01)\). In multivariable models, resection was independently associated with improved OS \((HR: 0.65, 95\% CI: 0.51–0.83; p < 0.01)\).

**Conclusion:** While more invasive, resection of HCC \(\leq 3\) cm results in better long-term survival as compared to ablation. Treatment strategies for small solitary HCC should emphasize a resection first approach, with ablation being reserved for patients precluded from surgery.

**Benign HPB Diseases**

**APHPB-0351**

**CAN WE PREDICT POST ERCP PANCREATITIS? A PROSPECTIVE STUDY IN A TERTIARY CARE CENTER**

T. Samarasinghe, T. Wijeratne, B. D. Gamage, M. De Silva, G. Nanayakkara and C. Alahakoon

_Department of Surgery, Faculty of Medical Sciences, University of Sri Jayewardenepura, Nugegoda, Sri Lanka_

**Objectives:** Accurate prediction of risk of complications can improve the safety of ERCP. Objectives of this study were to describe the basic patient characteristics and to identify the risk factors related to post ERCP pancreatitis (PEP).

**Methods:** Prospective study with relevant ethical approval of 246 consecutive patients undergoing ERCP at a tertiary care center in Sri Lanka from 2012–2014 with regard to epidemiology, indications, outcomes and PEP. Univariate and multivariate analysis of risk factors associated with post-ERCP pancreatitis (PEP) using logistic regression was done using SPSS software.

**Results:** Our patients’ ages ranged from 21–85 years \((mean = 57.6 years)\). Majority 134 \((54.5\%)\) were males. Commonest findings were biliary calculi \((43.9\%)\), benign strictures \((18.7\%)\) and malignancies \((16.3\%)\). There were no mortalities following procedure. PEP which was the commonest post procedure complication developed in 25 \((10.2\%)\) of the patients. Univariate analysis of 16 described risk factors for PEP showed statistical association only with male gender \((p = 0.023)\).
and contrast injections (p = 0.048). However multivariate analysis revealed male gender (OR = 3.17; 95% CI 1.1–9.1), contrast injection (OR = 11.15; 95% CI 1.1–109.9), presence of biliary stricture (OR = 7.38; 95% CI 1.3–40.7) and balloon dilatation (OR = 4.85; 95% CI 1.2–18.8) as significantly associated with development of PEP. PEP was not associated with age, inadvertent pancreatic duct cannulation, previous ERCP or abnormal ampulla in our cohort.

**Conclusion:** Some risk factors associated with PEP in our study group were different from the previously described risk factors for PEP in western populations. Proper identification of risk factors using further multicenter randomized studies with larger number of patients will enable accurate prediction of complications in our population.

**APHPB-0352**

**PANCREATIC ARTERIOVENOUS MALFORMATION**

S. Chou, Y. Shyr and S. Wang

Division of General Surgery, Department of Surgery, Taipei Veterans General Hospital, Taipei, Taiwan

**Objectives:** Pancreatic arteriovenous malformation is very rare, but may cause significant clinical symptoms such as catastrophic bleeding. Herein, we discuss the clinical presentation and management of pancreatic arteriovenous malformations.

**Methods:** The data pool for the analysis was collected from pancreatic arteriovenous malformation cases encountered by our institution and sporadic case reports in the English literature.

**Results:** A total of 89 cases of pancreatic arteriovenous malformation were collected for this study, including 59 cases of arteriovenous malformation in the pancreatic head (62.3%) and 30 in the pancreatic body-tail (33.7%). The most commonly associated complications for overall cases of pancreatic arteriovenous malformation were bleeding (50.6%), pancreatitis (16.9%), portal hypertension (6.7%), and pseudocyst (3.4%). The most common presenting symptom of pancreatic arteriovenous malformation was gastrointestinal bleeding (47.2%), followed by epigastric pain (46.1%). Surgery (43.8%) was the most common treatment for pancreatic arteriovenous malformation cases, followed by transarterial embolization (11.2%), a combination of surgery and transarterial embolization (10.1%), and radiotherapy (2.2%). No intervention was done for 29.2% of the cases of pancreatic arteriovenous malformation.

**Conclusion:** Pancreatic arteriovenous malformation occurs most commonly in pancreatic head; gastrointestinal bleeding is the main symptom. Surgical resection or transarterial embolization appears to be indicated in patients with symptomatic pancreatic arteriovenous malformation.

**Malignant HPB Diseases**

**APHPB-0354**

**LONGTERM SURVIVAL AFTER PANCREATICODUODENECTOMY FOR PERIAMPULLARY ADENOCARCINOMAS**

S. Chen, S. Wang and Y. Shyr

General Surgery Department, Veterans General Hospital, Taipei, Taiwan

**Objectives:** The aim of this study was to identify predictors for longterm survival following pancreaticoduodenectomy (PD) for pancreatic and other periampullary adenocarcinomas.

**Methods:** Clinicopathological factors were compared between short-term (<5 years) and longterm (more than 5 years) survival groups. Rates of actual 5-year and actuarial 10-year survival were determined.

**Results:** There were 109 (21.8%) longterm survivors among a sample of 501 patients. Patients with ampullary adenocarcinoma represented 76.1% of the longterm survivors. Favourable factors for longterm survival included female gender, lack of jaundice, lower blood loss, classical PD, absence of postoperative bleeding or intra-abdominal abscess, non-pancreatic primary cancer, earlier tumour stage, smaller tumour size (≤2 cm), curative resection, negative lymph node involvement, welldifferentiated tumours, and absence of perineural invasion. Independent factors associated with longterm survival were diagnosis of primary tumour, jaundice, intra-abdominal abscess, tumour stage, tumour size, radicality, lymph node status and cell differentiation. The prognosis was best for ampullary adenocarcinoma, for which the rate of actual 5-year survival was 32.8%, and poorest for pancreatic head adenocarcinoma, for which actual 5-year survival was only 6.5%.

**Conclusion:** The majority of longterm survivors after PD for periampullary adenocarcinomas are patients with ampullary adenocarcinoma. The longterm prognosis in pancreatic head adenocarcinoma remains dismal.

**APHPB-0355**

**PANCREATICOJEJUNOSTOMY: CONTINUOUS DUNKING TECHNIQUE EXPERIENCE**

R. Singh Bhandari and D. Joshi lakhey

Surgery, IOM, Kathmandu, Nepal

**Objectives:** Pancreatocenteric anastomosis technique used by pancreatic surgeons at Alfred, Melbourne involves end to end dunking with continuous sutting. This technique was applied by two surgeons following pancreatic resections at Tribhuvan University Teaching Hospital in Kathmandu, Nepal, one of whom had completed hepatopancreatobiliary fellowship at Alfred. We present our perioperative results of pancreatic resections performed over two and half years period with described technique.

**Methods:** Prospectively maintained database of patients undergoing pancreatic resections between October 2011 to March 2014 was analyzed and all who had pancreatocenteric anastomosis performed by described technique
were included. Reporting of complications was done in accordance to definitions by ISGPS. **Results:** Total 45 pancreatic resections requiring pancreaticoenteric anastomosis were performed. Total 30 patients had pancreaticoenteric anastomosis according to the described technique and were analyzed. Total 87% had classical while two had pylorus preserving and one central. Commonest indication was ampullary (47%) followed by duodenal tumor (17%) then pancreatic (13%) and others (23%). Age ranged between 30 and 75 years. Only 2 underwent preoperative biliary drainage. None recieved neoadjuvant while 47% received adjuvant therapy. Octeotride was routinely used. Overall, 90% had curative while 10% R1 resections. Fistula rates (all grades) was 30% while clinically relevant fistula rate was 10%. Two fulfilled the criteria for DGE and both had PPPD. Incidence of PPH was 10% and were successfully managed conservatively. Perioperative mortality rate was 10%.

**Conclusion:** Continuous dunking technique of pancreaticoenteric anastomosis following pancreatic resections is simple and teachable technique which has been adapted to achieve satisfactory outcomes at Tribhuvan University Teaching hospital, Nepal.

APHPB-0356

**Efficacy of adjuvant chemotherapy for colorectal liver metastasis by the clinical risk score**

T. Nakai, H. Ishikawa, T. Tokoro, Y. Takeyama and K. Okuno

**Surgery, Kinki University Faculty of Medicine, Osaka-Sayama, Japan**

**Objectives:** Efficacy of adjuvant chemotherapy after hepatectomy of colorectal liver metastases (CRLM) remains controversial. We investigated adjuvant chemotherapy for CRLM with the clinical risk score (CRS) proposed by Fong et al. (Ann Surg 1999).

**Methods:** Patients with CRLM who were treated between 1992 and 2012 were classified as having low CRS (0–1), intermediate CRS (2–3), or high CRS (4–5). The efficacy of adjuvant chemotherapy was retrospectively analyzed in each CRS.

**Results:** 161 patients who underwent hepatectomy, 100 received adjuvant chemotherapy (group A) and 61 did not (group N). In intermediate CRS, 5-year disease free survival rates (DFS) was statistically significant difference between the groups (group A 33.9% vs. group B 23.2% p = 0.008) and 5-year overall survival rates (OS) of group A was higher than group N (53.5% vs. 36.5% p = 0.048). In low CRS and high CRS, 5-year DFS and OS were similar between the groups, respectively. Multivariate analysis of OS extracted major resection (p = 0.05) for low CRS and adjuvant chemotherapy (p = 0.05) for intermediate CRS. High CRS was not identified prognostic factor.

**Conclusion:** Adjuvant chemotherapy for CRLM was effective in intermediate CRS patients. In low CRS patients, adjuvant chemotherapy is not necessary, adequate surgical resection is important.

Benign HPB Diseases

APHPB-0357

**A case of intrahepatic arterio-portal shunt with massive ascites 7 years after liver resection**

T. Yamaguchi, K. Hasegawa, T. Kokudo, N. Akamatsu, J. Kaneko, T. Aoki, Y. Sakamoto, Y. Sugawara and N. Kokudo

**Hepato-Biliary-Pancreatic Surgery Division, Department of Surgery, Graduate School of Medicine, The University of Tokyo, Tokyo, Japan**

**Objectives:** Arterio-portal shunt is a rare vascular disorder caused through trauma, iatrogenic procedures, congenital vascular malformation, tumor, aneurysm. Iatrogenic procedure includes surgical maneuver (such as manual exploration, mobilization, and temporary vessel occlusion) which occasionally causes tissue damage and circulatory disturbance. We experienced a case of successfully-treated arterio-portal shunt through radiologic intervention.

**Methods:** A 78-year-old man, suffering from remarkable weight gain (8 kg/month) was admitted to our department. An abdominal ultrasound revealed massive ascites. The patient had been regularly followed up since liver resection for colorectal liver metastasis for 7 years without recurrence. A contrast-enhanced CT revealed the left portal vein and the hepatic artery in arterial phase, suggesting the presence of arterio-portal shunt. Angiography of the left hepatic artery revealed the left portal vein through the shunt. Since there were no other causes for massive ascites, we suspected that this arterio-portal shunt increased the portal pressure and thus causing massive ascites.

**Results:** We occluded the shunt by interventional radiology techniques, and the symptoms of portal hypertension remarkably improved. He lost 8.3 kg of weight during the 3 weeks after the embolization. The CT imaging 3 months after embolization revealed significant decrease of ascites.

**Conclusion:** The arterio-portal shunt in this case might be related to the past surgical maneuvers. The shunt had remained for 7 years without symptom, but portal hypertension gradually developed and finally led to massive ascites. During the follow-up patients of post hepatectomy, the arterio-portal shunt should be always kept in mind as one of causes of ascites.
Malignant HPB Diseases
APHPB-0358
PREOPERATIVE VOLUME-BASED PET PARAMETER MTV2.5 AS A POTENTIAL SURROGATE MARKER FOR TUMOR BIOLOGY AND RECURRENCE IN RESECTED PANCREATIC CANCER
S. Lee1, C. Kang1, H. Hwang1, S. Choi1, J. Lee2 and W. Lee2
1Department of Surgery, Yonsei University College of Medicine, Seoul, Korea; 2Department of Nuclear Medicine, Yonsei University College of Medicine, Seoul, Korea

Objectives: This study aims to evaluate the role of volume-based PET parameters as potential surrogate markers for tumor recurrence in resected pancreatic cancer.

Methods: Between January 2008 and October 2012, the medical records of patients who underwent surgical resection for pancreatic ductal adenocarcinoma and completed 18F-FDG PET/CT as part of a preoperative staging work-up were retrospectively reviewed. Not only clinicopathologic variables, but also PET parameters, such as SUVmax, MTV2.5 (METABOLIC TUMOR VOLUME), and TLG (TOTAL LESION GLYCOLYSIS) were obtained.

Results: Twenty-six patients were female and 31 were male with a mean age of 62.9 ± 9.1 years. R0 resection was achieved in all patients. Forty-five patients (78.9%) received postoperative adjuvant chemotherapy with or without radiation therapy. Median overall disease-free survival was 12.8 months with a median overall disease-free survival of 25.1 months. SUVmax did not correlate with radiologic tumor size (p = 0.001) and TLG (p = 0.009) were significantly associated with radiologic tumor size. In addition, MTV2.5 (p < 0.001) and TLG (p < 0.001) were significantly correlated with tumor differentiation. There were no significant differences in TLG and SUV-max according to LNR (lymph node ratio); only MTV2.5 was related to LNR with marginal significance (p = 0.055). In multivariate analysis, LNR (Exp(β)=2.425, p = 0.025) and MTV2.5 (Exp(β)=2.273, p = 0.034) were identified as independent predictors of tumor recurrence following margin-negative resection.

Conclusion: A preoperatively determined volume-based PET parameter, MTV2.5, can potentially be used as a surrogate marker to estimate tumor biology. Thus, more effective treatment strategies for pancreatic cancer can be determined based on the results of preoperative MTV2.5.

APHPB-0359
RECOMBINANT ADENOVIRUS ENCODING FAT10 SMALL INTERFERING RNA INHIBITS HCC GROWTH IN VITRO AND IN VIVO
C. Ping and C. Jingxiang
Hepatobiliary Surgery, Daping Hospital, The Third Military Medical University, Chongqing, China

Objectives: To explore the effects on Hepatocellular carcinoma by knocking down FAT10 expression in Hepatocellular carcinoma cells.

Methods: Utilized adenovirus-mediated RNA interference to knock down FAT10 expression in hepatocellular carcinoma cells and observed its effects on hepatocellular carcinoma cell growth in vitro and in vivo.

Results: Interference of FAT10 could inhibit cell proliferation by inhibiting the cell cycle S-phase entry and inducing cell apoptosis. In addition, in vivo experiments showed that adenovirus Ad-siRNA/FAT10 significantly suppressed tumor growth and prolonged the lifespan of tumor-bearing mice.

Conclusion: Knock down of FAT10 by adenovirus-delivered siRNA may be a promising therapeutic strategy for treatment of Hepatocellular carcinoma.

Transplantation
APHPB-0361
LONG-TERM OUTCOME OF ISCHEMIA-TYPE BILIARY STRICTURE AFTER ENDOSCOPIC TREATMENT IN LIVER LIVING DONORS
S. Kim, H. Shin, G. Song, D. Jung, T. Ha, G. Park, C. Ahn, D. Moon, K. Kim and S. Lee
Division of Hepatobiliary Surgery and Liver Transplantation, Department of Surgery, Asan Medical Center, Seoul, Korea

Objectives: The wall of normal proximal bile duct is often thin with close approximation of the right hepatic artery (RHA), thus isolation of RHA can result in excessive thinning of the remnant proximal bile duct wall during right liver graft harvest. This injury can induce delayed stricture of the donor common bile duct. This study intended to review the clinical course of such ischemia-type donor bile duct injury which were managed with endoscopic treatment.

Methods: A retrospective review of medical records was performed with 4 donors who suffered from ischemia-type donor bile duct injury and followed up for more than 5 years.

Results: A right liver graft was harvested from these 4 donors (incidence of 0.1%), whose mean age was 29.5 ± 3.1 years and all were male. Bile duct anatomy was normal bifurcation in 2 and anomalous branching in 2. All of them recovered from donor surgery and discharged uneventfully, but liver function abnormality and/or subclinical left hepatic duct dilatation was identified 1–2 months after surgery. After imaging study including magnetic resonance cholangiography, they underwent endoscopic balloon dilatation and temporary stent [endoscopic retrograde biliary drainage
36 patients were included at time of report. Results: Biopsies were taken at the gastroesophageal junction and antrum for CLO test and histopathology. Noted. Presence of duodenogastric reflux was noted occasionally. Patients referred to the Gold Coast University Hospital between 2013 and 2014 with symptomatic gallstones were considered for inclusion. Patients with significant comorbidities and age >75, patients with atypical features were excluded, as well as patients with confirmed duodenogastric reflux observed occasionally in symptomatic gallstones may influence H. pylori infection rate. This study aims to identify whether there is an increased risk of developing H. pylori infection when duodenogastric reflux has not been observed, in patients with symptomatic gallstones. Methods: Patients referred to the Gold Coast University Hospital between 2013 and 2014 with symptomatic gallstones were considered for inclusion. Patients with atypical features were excluded, as well as patients with significant comorbidities and age >75. Patients underwent upper gastrointestinal endoscopy prior to cholecystectomy. Presence of duodenogastric reflux was noted. Biopsies were taken at the gastroesophageal junction and antrum for CLO test and histopathology.

Results: 36 patients were included at time of report. H. pylori incidence was 11.1% (n = 4). Duodenogastric reflux incidence was 30.6% (n = 11). In patients with duodenogastric reflux (n = 11) no concomitant H. pylori was observed, whilst those with confirmed H. pylori infection (n = 4) demonstrated no duodenogastric reflux. The relative risk of H. pylori in patients exposed to no duodenogastric reflux was 4.15, compared to 0.24 in those with duodenogastric reflux.

Conclusion: Our data suggests that duodenogastric reflux in symptomatic gallstones may be protective against H. pylori infection. It has also revealed that overall prevalence of H. pylori may be reduced in the symptomatic gallstone population, when compared to the overall population.

Benign HPB Diseases
APHPB-0362
ARE SYMPTOMATIC GALLSTONES PROTECTIVE AGAINST H. PYLORI INFECTION? A PROSPECTIVE TRIAL
E. Jeyarajan, A. Sebastian, M. Phegan and H. Puhalla
Surgery, Gold Coast University Hospital, Southport, Qld, Australia

Objectives: H. pylori infection and symptomatic gallstones are highly prevalent worldwide. Studies suggest that global prevalence of H. pylori may exceed 50%. Previous studies postulate that the two diseases may be causally related, but thus far studies are inconclusive. Some studies suggest that duodenogastric reflux observed occasionally in symptomatic gallstones may influence H. pylori infection rate. This study aims to identify whether there is an increased risk of developing H. pylori infection when duodenogastric reflux has not been observed, in patients with symptomatic gallstones.

Methods: Patients referred to the Gold Coast University Hospital between 2013 and 2014 with symptomatic gallstones were considered for inclusion. Patients with atypical features were excluded, as well as patients with significant comorbidities and age >75. Patients underwent upper gastrointestinal endoscopy prior to cholecystectomy. Presence of duodenogastric reflux was noted. Biopsies were taken at the gastroesophageal junction and antrum for CLO test and histopathology.

Results: 36 patients were included at time of report. H. pylori incidence was 11.1% (n = 4). Duodenogastric reflux incidence was 30.6% (n = 11). In patients with duodenogastric reflux (n = 11) no concomitant H. pylori was observed, whilst those with confirmed H. pylori infection (n = 4) demonstrated no duodenogastric reflux. The relative risk of H. pylori in patients exposed to no duodenogastric reflux was 4.15, compared to 0.24 in those with duodenogastric reflux.

Conclusion: Our data suggests that duodenogastric reflux in symptomatic gallstones may be protective against H. pylori infection. It has also revealed that overall prevalence of H. pylori may be reduced in the symptomatic gallstone population, when compared to the overall population.

Benign HPB Diseases
APHPB-0364
THE VASOPRESSIN ANALOGUE TERLIPRESSIN PROTECTS THE LIVER FROM OXIDATIVE STRESS INDUCED APOPTOSIS VIA THE WNT-BETA-CATENIN-SGK1-FOXO3 PATHWAY
R. TAO1, X. Q. Liu1, T. H. Ma2, D. S. Huang1 and X. Z. Lin3
1Hepatobiliary-Pancreatic Surgery, Zhejiang Provincial People’s Hospital, Hangzhou, China; 2Zhejiang Institute of Clinical Medicine, Zhejiang Provincial People’s Hospital, Hangzhou, China; 3Radiology, Ruijin Hospital, Shanghai Jiaotong University, Shanghai, China

Objectives: The synthetic vasopressin analogue, terlipressin, has been extensively used in the management of certain complications associated with end-stage liver diseases, however concerns have been raised regarding
its impact on liver function. Study of a cohort of patients unexpectedly identified significantly improved hepatic function after use of terlipressin.

Methods: We therefore used both mouse nonlethal hepatic ischemia-reperfusion (IR) model and hepatocyte hypoxia-reoxygenation model to study the effect of terlipressin on hepatic function as well as the underlying mechanisms.

Results: Terlipressin administration either prior to lobectomy pedicle occlusion or after reperfusion markedly attenuated IR-induced liver apoptosis and necrosis, hepatic MPO activity and proinflammatory gene expression. Furthermore, terlipressin ameliorated apoptosis in HMGB1−/− but not TLR4−/− mouse livers undergone IRI, suggesting such hepatoprotective effect is TLR4− but not HMGB1-dependent. In vitro, the active component of terlipressin, lysine vasopressin effectively conferred hepatocyte resistant to oxidative stress induced apoptosis. Mechanistic studies revealed the vasopressin receptor engagement mediated calcium influx and activation of the Wnt-β-catenin-SGK1 pathway, which subsequently circumvented the proapoptotic events driven by FoxO3 and AP-1 mediated transcription of P27 and Bim, thus ameliorated hepatocyte apoptosis; while blockade of this signaling pathway, which subsequently circumvented the proapoptotic way, which subsequently circumvented the proapoptotic mechanism, subsequently circumvented the proapoptotic mechanism, subsequently circumvented the proapoptotic way, which subsequently circumvented the proapoptotic way, which subsequently circumvented the proapoptotic way, which subsequently circumvented the proapoptotic way.

Conclusion: These data raise the possibility that the interstitial pulmonary inflammation in preoperative CT scan images is a risk factor of ARDS after PD.

Malignant HPB Diseases

APHPB-0366

PANCREATIC SOLID-PSEUDOPAPILLARY NEOPLASM DEVELOPED IN MALE: REPORT OF TWO CASES


Department of Surgery, Tohoku University Graduate School of Medicine, Sendai, Japan

Objectives: Pancreatic solid-pseudopapillary neoplasm (SPN) is an uncommon tumor. It represents 3% of all pancreatic tumors and is predominantly observed in females (male : female ratio, 1 : 9).

Methods: We herein report two cases of pancreatic SPN developed in male.

Results: Case 1: a 69-year-old male presented with upper abdominal pain. Contrast-enhanced computed tomography (CECT) showed delayed-enhanced solid pancreatic head tumor. Endoscopic ultrasound-guided fine-needle aspiration biopsy (EUS-FNAB) was performed, and uniformly sized neoplastic cells with eosinophilic cytoplasm were histologically observed. The cells were positively stained for progesterone receptor, β-catenin, and CD10, although chromogranin A and synaptophysin were negative. Thus, the tumor was diagnosed as a pancreatic SPN, and subtotal stomach-preserving pancreaticoduodenectomy was performed. Case 2: Pancreatic tail tumor was detected by CECT in a 40-year-old male who had no symptom, and EUS-FNAB was subsequently performed. The histological findings were almost the same as those in Case 1. Therefore, laparoscopic distal pancreatectomy was performed with the diagnosis of pancreatic SPN. Both of our cases are still alive with no evidence of recurrence.

Conclusion: Pancreatic SPN is generally considered to be a low malignant potential tumor. However, the preoperative diagnosis had been difficult only in the CECT. Recently EUS-FNAB has become popular and a useful examination for the preoperative diagnosis of pancreatic tumors. Although pancreatic SPN developed in male is very rare, the prognosis is favorable and a complete resection of the tumor is recommended under the accurate preoperative diagnosis.

APHPB-0365

ACUTE RESPIRATORY DISTRESS SYNDROME AFTER PANCREATODUODENECTOMY-RISK FACTOR ANALYSIS


Hepato-Biliary-Pancreatic Surgery Division, Department of Surgery, Graduate School of Medicine, The University of Tokyo, Tokyo, Japan

Objectives: Acute respiratory distress syndrome (ARDS) after surgery is associated with a significant mortality. It has not been established how to identify patients at high risk for ARDS after abdominal surgery.

Methods: We retrospectively analyzed postoperative pulmonary complications and preoperative chest CT scan images of 208 patients who underwent pancreaticoduodenectomy (PD) between January 2009 and May 2014 in a tertiary care Japanese hospital.

Results: Among 208 patients, 2 patients developed postoperative fatal ARDS. Compared with the non-ARDS group, the ARDS group had significantly higher rates of asymptomatic interstitial pulmonary inflamma-

© 2015 The Authors

HPB © 2015 Americas Hepato-Pancreato-Biliary Association

HPB 2015, 17 (Suppl. S2), 25–266
COMPARISON OF DIAGNOSTIC ACCURACY BETWEEN MDCT AND ERC FOR LONGITUDINAL CANCER EXTENT OF BILE DUCT CANCER

Y. Nakama¹, R. Kawahara¹, M. Yasunaga¹, O. Koji¹, Y. Ishida², Y. Okabe², T. Tounan³, Y. Kuno³, M. Nakayama⁴ and N. Yoshiki⁴

¹Department of Surgery, Kurume University School of Medicine, Kurume, Japan; ²Division of Gastroenterology, Department of Medicine, Kurume University School of Medicine, Kurume, Japan; ³Department of Radiology, Kurume University School of Medicine, Kurume, Japan; ⁴Department of Pathology, Kurume University School of Medicine, Kurume, Japan

Objective: The purpose of the present study was to compare the diagnostic accuracy of multidetector-row computed tomography (MDCT) and endoscopic retrograde cholangiography (ERC) in the preoperative evaluation of the longitudinal spread of bile duct cancer for curative resection.

Methods: Images obtained from MDCT and from ERC of 26 patients with histopathologically proven bile duct cancer were retrospectively interpreted. The longitudinal cancer extent interpreted in MDCT and ERC were corresponded to the histological findings of the resected specimens.

Results: The sensitivity and specificity of MDCT were 81% and 92%, respectively, and these of ERC were 88% and 92%. In both modality, hilar margin is tended to be overestimated. There is no difference between MDCT and ERC in diagnostic accuracy for longitudinal cancer extent.

Conclusion: Diagnostic reliability of ERC and MDCT was equivalent. MDCT is a less invasive alternative imaging over ERC in preoperative evaluation for resectability.

NEW SURGICAL PROCEDURE, SPLENECTOMY DEVASCULARIZATION IS AN ALTERNATIVE PROCEDURE TO SPLENECTOMY IN PATIENT WITH HYPERSPLENISM SECONDARY TO LIVER CIRRHOSIS


Surgery, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea

Objective: Splenic devascularization is an effective therapeutic modality for the treatment of hypersplenism secondary to chronic liver disease. It is more simple and less complicated procedure than splenectomy, and it allows preservation of adequate splenic tissue to safeguard against overwhelming infection.

WARM DISSECTION IN LIVER GRAFT HARVEST FROM DECEASED DONOR


Surgery, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea

Objective: In the early days of organ procurement, exposure and complete dissection of each organ was preferred while the heart was still beating. Recently most dissection for liver harvest from deceased donor was performed by cold dissection technique. However, there were few reports about safety of cold or warm dissection technique. Herein, we share experience of our warm dissection technique.

Methods: Our center performed 262 cases of deceased donor liver transplantation from January 2010 to October 2013. In this study, we excluded cold dissection, split liver transplantation and pediatric liver transplantation. We included warm dissection in adult by one experienced surgeon.

Results: Total enrolled cases of warm dissection in organ harvest from deceased donor were 146. Parenchymal injuries were detected in 7 cases (6 capsular tear, 1 subcapsular hematoma). Vascular injuries were detected in 6 cases. There were 6 cases of arterial injury (5 Celiac axis, 1 Common hepatic artery). There was no right hepatic artery or left hepatic artery injury, venous and portal injury. Also, there was no bile duct injury.

Conclusion: Warm dissection is safe and also has advantage in donors whose liver are of a questionable quality by decreasing cold ischemic time.
Malignant HPB Diseases
APHPB-0370

PRE-OPERATIVE ASSESSMENT OF MUSCLE MASS TO PREDICT PROGNOSIS IN PATIENT WITH HEPATOCELLULAR CARCINOMA

Gastroenterological Surgery, Yokohama City University, Yokohama, Japan

Objectives: This study aimed to examine the impact of sarcopenia on survival outcomes in patients with hepatocellular carcinoma (HCC) after hepatectomy. Sarcopenia is the degenerative loss of skeletal muscle mass quality, and strength.

Methods: A retrospective review of 149 HCC patients who underwent hepatectomy from 2007 to 2013 in department of gastroenterological surgery, Yokohama City University. Sarcopenia was assessed on pre-operative computed tomography (CT) scan by measurement of the skeletal muscle. We analysed the relationship between sarcopenia and, overall survival rate, recurrence free survival rate, peri-operative laboratory data, surgical, and histopathological factors.

Results: Sarcopenia was present in 46 (30.8%) of 149 patients. Pre-operative laboratory data showed white blood cell count, pre-albumin, albumin was significantly lower in the patients with sarcopenia than without sarcopenia. In patients with sarcopenia and without sarcopenia, the 5-year overall survival rate was 69.4% and 44.8% respectively. Overall survival rate was significantly lower in patients with sarcopenia (p = 0.026).

Conclusion: The nutritional status and the prognosis of the patients with sarcopenia, was poor. Therefore intensive nutrition intervention is necessary for the patients with sarcopenia.

Transplantation
APHPB-0371

DONOR SAFETY AND RECIPIENT LIVER FUNCTION FOLLOWING RIGHT-LOBE LIVER TRANSPLANTATION FROM DONOR WITH GILBERT SYNDROME

W. Kang, S. Hwang, G. Song, D. Jung, K. Kim, G. Park, T. Ha, C. Ahn, D. Moon and S. Lee
Division of Hepatobiliary Surgery and Liver Transplantation, Department of Surgery, Asan Medical Center, Seoul, Korea

Objectives: Donor safety is the most important point of living donor liver transplantation (LDLT). Gilbert syndrome is an autosomal recessive condition that is a common cause of non-hemolytic unconjugated hyperbilirubinemia, and its prevalence is not negligibly low in healthy population. Gilbert’s syndrome can be classed as a minor inborn error of metabolism. This study intended to assess donor safety and recipient liver function following right-lobe LDLT from donor with Gilbert syndrome.

Methods: Among 2140 right-lobe graft donors performed between 2002 and 2011, we identified 12 donors (0.6%) who showed serum total bilirubin level > 2 mg/dL. They were clinically diagnosed of Gilbert syndrome, but genetic mutation study was not performed.

Results: Mean donor age was 24.6 years (range: 18–44) and 11 were male. All met the preoperative evaluation conditions of right liver donation except for unconjugated hyperbilirubinemia. Serum total bilirubin level of donors was 2.3 mg/dL (range: 2.0–2.5) before surgery and 2.2 mg/dL (range: 1.6–4.7) at 1 year after surgery. Preoperative direct bilirubin level was 0.4 mg/dL (range: 0.2–0.7). Preoperative indocyanine green retention rate at 15 minutes was 8.3% (range: 0.2–15.8). All donors recovered uneventfully following right-lobe graft donation. All recipients recovered uneventfully and are alive to date with serum total bilirubin level of normal limit except one recipient.

Conclusion: LDLT with donors of Gilbert syndrome can be safely performed, but special attention should be paid for meticulous preoperative evaluation.

Malignant HPB Diseases
APHPB-0372

SURGICAL TREATMENT FOR THE DISTANT METASTASIS DERIVED FROM IPMC. 2 CASES REPORT

G. Akasu, M. Suzuki, K. Shinozaki, Y. Iwasaki and Y. Mihara
Surgery, Akakura General Hospital, Akakura, Japan

Objectives: Several studies reported that patients with invasive carcinoma derived from IPMN (invasive IPMC) have a same poor prognosis as those with pancreatic ductal carcinoma. We report 2 cases experience that underwent surgical treatment for the distant metastasis derived from invasive IPMC, and get long-term survival.

Case 1: A 62-year-old man who underwent distal pancreatectomy for invasive IPMC in pancreas tail in July 2007. Abdominal CT detected a metastatic lesion in the left subdiaphragm in June 2008. The metastatic lesion got larger and the tumor marker increased, though chemotherapy and radiotherapy had been performed for the lesion.

Case 2: A 72-year-old woman who underwent distal pancreatectomy for invasive IPMC in pancreas tail in November 2011. Cervical CT detected a metastatic lesion to the left supraclavicular lymph node in September 2013. In this case, it was difficult to continue chemotherapy, since the side effect of chemotherapy was strong.

Methods: Case 1: CT and PET detected no other recurrence or metastatic lesion, tumor resection was performed in January 2010.

Case 2: CT and PET detected no other recurrence or metastatic lesion, lymphoidectomy was performed in February, 2014.

Results: Case 1: Now, the patient is still alive with no recurrence or metastasis after the tumor resection.
Case 2: Now, the patient is still alive with no recurrence or metastasis after the lymphoidectomy.

Conclusion: Surgical treatment could be provided a long-term survival for patients with distant metastasis derived from invasive IPMC after initial surgery.

APHPB-0373
THE POTENTIAL OF DEATH RECEPTOR 5 EXPRESSION AS AN INDICATOR OF TARGETED THERAPY IN GALLBLADDER CANCERS
B. Kim1, J. Sung1, C. Nam1, Y. Nah2, H. Choi2 and S. Jung2
1Surgery, Ulsan University Hospital, Ulsan, Korea; 2Pathology, Ulsan University Hospital, Ulsan, Korea

Objectives: The death receptor (DR)5 has been studied extensively in cancer cells recently, because of the ability of the tumor necrosis factor-related apoptosis-inducing ligand (TRAIL) to kill malignant cells selectively. Endothelial cells within tumor blood vessels can also selectively express DR5. DR5 activation in tumor endothelial cells induces apoptotic death thereby compromising vascular integrity and causing vessel congestion, intratumoral hemorrhage, decreased vascular density, and diminished tumor growth. But these are very little known in gallbladder cancers.

Methods: We investigated the expression of DR5 by immunohistochemistry and its prognostic significance in 102 cases of resected gallbladder cancers.

Results: DR5 immunoeexpression is not associated with clinical parameters. But more strong stained the cancer cells are likely to DR5 immunostain on vascular endothelial cells in tumor. In Gallbladder cancer cell, DR5 was expressed as 'high' in 58 among total 102 patients. In tumor endothelial cell, DR5 was expressed in 34 among total 102 patients. 27 patients among the 34 patients also revealed as high DR expression in gallbladder carcinoma cells. There was a significant statistical correlation between degree of DR5 expression in gallbladder cancer cells and DR5 expression of tumor endothelial cells (p = 0.002). This result suggests that when DR5 is expressed as high in gallbladder cancer cell, the probability of DR5 expression in tumor endothelial cells is increased.

Conclusion: Our study suggests that DR5 has significance as an indicator when considering target therapy or predicting the response. But this study has limitation of retrograde cross sectional study. Additional research including DR and TNF superfamily is needed through a systemic approach.

Transplantation
APHPB-0374
ROLE OF ENDOSCOPIC SCREENING FOR DE NOVO GASTRIC CANCER IN KOREAN LIVER TRANSPLANT PATIENTS
W. Kang, S. Hwang, C. Ahn, K. Kim, D. Moon, G. Song, D. Jung, G. Park, S. Kim and S. Lee
Division of Hepatobiliary Surgery and Liver Transplantation, Department of Surgery, Asan Medical Center, Seoul, Korea

Objectives: De novo malignancy is not uncommon after LT. Gastric cancer is one of the most common malignancy in Korean general population as well as in Korean LT recipients.

Methods: Among 3300 adult recipients who performed LT from January 1999 and December 2012, we identified 26 cases of gastric cancer through routine cancer screening with GFS and imaging studies.

Results: Mean patient age was 55 years (range: 44–65) and male were 24patients. After a mean period of 60 months posttransplantation (range: 6–128 months), 26cases of de novo gastric cancer was detected through routine endoscopic screening with imaging studies in 17 and work-up with clinical symptoms in 9. Routine screening found early gastric cancer in 14 and advanced gastric cancer in 4. Of them, 8 underwent endoscopic mucosal resection and 10 did open surgery including one case of repeat resection after EMR. In contrast, in 8 patients with symptoms, only one had early gastric cancer. EMR was performed in 2 patients, but they underwent repeat surgery due to AGC. Other 6 patients underwent open surgery and one received palliative stenting only. No significant surgical complication occurred after cancer treatment. Systemic chemotherapy was given to 4 patients with AGC. Two patients currently administer immunosuppressants including mTOR inhibitor. Overall 3-year patient survival rate after gastric cancer diagnosis was 80.8%.

Conclusion: LT recipients must be checked periodically for various de novo malignancies throughout their lives, especially for cancers common in the general population. Annual-to-biannual endoscopic screening depending on stomach status contributed to detection of EGC, by which survival outcome would be improved.

Benign HPB Diseases
APHPB-0375
TIF1G PLAYS A PROTECTIVE ROLE IN THE PROCESS OF LIVER CIRRHOSIS
J. Zhao1, Z. Ding1, J. Wang2, W. Zhang1, H. Liang1, W. E. I. Wang1, W. Chen1, Y. Sun1, B. Zhang1 and X. Chen1
1Hepatic Surgery Centre, Tongji Hospital Affiliated to Tongji Medical College HUST, Wuhan, China; 2Department of Gastroenterology, Tongji Hospital Affiliated to Tongji Medical College HUST, Wuhan, China

Objectives: The process of liver cirrhosis that is life-threatening, is ambiguous. TIF1γ, a RBCC/TRIM family
protein, is well-known to exert its function on embryonic development, hematopoiesis and maturation of immune cells, and involves in TGFβ pathway which is associated with hepaticfibrosis. However, the relationship between TIF1γ and liver cirrhosis is largely unknown. This study aims to illuminate the role of the TIF1γ plays in the process of liver cirrhosis.

**Methods:** In vitro, TIF1γ was knocked out and overexpressed in AML-12 murine hepatocytes, which were stimulated by TGFβ1 separately. EMT was determined by Western blot and immunoﬂuorescence (IF); the proliferation and apoptosis assays were measured by cck-8 and FACS respectively. In vivo, the expression of TIF1γ, TGFβ1 and other factors were assessed by IHC in human liver cirrhosis tissues and mouse liver cirrhosis tissue induced by CCl4.

**Results:** In vitro, the EMT was apparently impaired in TIF1γ-overexpressed AML-12 cells, but facilitated in TIF1γ-knockdown AML-12 cells. Simultaneously, we observed that TIF1γ has the ability to reverse the effect of proliferation inhibition and apoptosis induced by TGFβ1. The vivo experiment is now in process.

**Conclusion:** The results demonstrates that TIF1γ plays a protective role in the process of liver cirrhosis.

**Malignant HPB Diseases**

APHPB-0376

**DYNAMIC CHANGES OF IMMUNOCYTES IN SPLEEN DURING THE PROGRESSION OF MURINE LIVER CANCER**

B. Li1, S. H. U. Zhang1, N. A. Huang1, H. Chen1, P. Wang2, J. U. N. Li3, Y. Pu4, F. Ji5 and Z. Li2

1National & Local Joint Engineering Research Center of Biodiagnosis and Biotherapy, The Second Affiliated Hospital, College of Medicine, Xi’an Jiaotong University, Xi’an, China; 2General Surgery, The Second Affiliated Hospital, College of Medicine, Xi’an Jiaotong University, Xi’an, China; 3Infective Diseases, The Second Affiliated Hospital, College of Medicine, Xi’an Jiaotong University, Xi’an, China

**Objectives:** To explore the dynamic changes of immunocytes in spleen during tumor progression.

**Methods:** Orthotopic hepatocellular carcinoma (HCC) was established in BALB/c mice, the spleens of normal mice and tumor-bearing mice were collected on day 7, 14 and 19 respectively, 10^6 splenocytes were resuspended for further staining. The splenocytes were stained with CD16/CD32 antibody for FcR blocking, then stained with Gr-1, CD11b, CD3, CD4, CD8α, CD49b, CD25 and foxp3 antibody, respectively. The percentages of MDSC, CD3+ T cell, CD3+CD4+ T cell, CD3+CD8+ T cell, NK cell, Treg cell were analysed using flow cytometry.

**Results:** CD3+CD4+ T cell, CD3+CD8+ T cell and total CD3+ T cell were decreased on day 14 (30.63 ± 2.34% vs. 36.42 ± 4.35%, 14.48 ± 0.86% vs. 17.28 ± 1.72%, 47.28 ± 2.80% vs. 54.77 ± 6.19%, respectively). While the ratio of CD4+CD8+ T cell was not changed during tumor progression. NK cells were decreased on day 14 (2.00 ± 1.08%) and day 19 (1.40 ± 0.46%) compared to normal mice (4.55 ± 0.98%). The percentage of MDSC was increasing during the progression of HCC (7 days: 4.83 ± 1.10% vs. 14 days: 9.53 ± 5.48%; 14 days: 9.93 ± 3.67% vs. normal: 2.15 ± 1.24%). Treg cells in spleen were elevated on day 14 (15.43 ± 2.45%), but declined on day 19 (2.78 ± 1.00%) compared to normal spleen (9.95 ± 1.39%).

**Conclusion:** T cells and NK cells were decreased in tumor-bearing mice. Treg and MDSC cells, both have immune suppressive function, were increased in HCC. It is indicated the spleen play a negative role during the progression of murine liver cancer.

**Benign HPB Diseases**

APHPB-0377

**LARGE CHOLEDODOHOLITHIASIS IN ELDERLY – NON OPERATIVE MANAGEMENT WITH BILIARY STENTING, TREATMENT OF STENT COMPLICATIONS AND COMPLICATED WITH GALLSTONE ILEUS BY STONES WITH STENT IN-SITU**

K. V. Tay and A. Shaik

General Surgery, NUH, Singapore City, Singapore

**Objectives:** To report a case of large cholelitholithiasis in an elderly lady treated with biliary stenting initially and complicated by stent blocked and rooted in common bile duct (CBD) due to defaulted follow up, management and later on complicated with gallstone ileus.

**Methods:** Patient is a 86-year-old lady who has multiple comorbidities presented with gallstone disease since 2004. She had cholangitis due to large CBD stone (2 × 2 cm) hence underwent ERCP and biliary stent insertion in 2010. Multipe stone extraction attempts were failed and she refused surgical intervention at that point of time due to age and risks. She remained well but she defaulted subsequent follow up and represented with blocked stent in 2013. Stent exchange was failed due to chronic placement hence another stent inserted to decompress the bile duct.

**Results:** Patient underwent routine stent exchange since after and remained asymptomatic. Unfortunately she represented with gallstone ileus and underwent emergency laparotomy to remove the stones. Intra op we found multiple large gallstones and noted one of the large stone with stent in-situ.

**Conclusion:** Conservative management of large choledocho lithiasis via biliary stenting can be a feasible option for elderly with multiple comorbidities. However, routine stent replacement should be keep in mind to prevent stent complications.
Malignant HPB Diseases

APHPB-0380

UPREGULATION OF MIR-128 IN THE PATHOGENESIS OF HEPATOCELLULAR CARCINOMA


Surgery, Chonnam National University Medical School, Gwangju, Korea

Objectives: microRNAs (miRNAs) are endogenous non-coding 21–23 nucleotide RNAs that are involved in post-transcriptional regulation and they control various cellular processes, one of which is tumorigenesis. miRNAs were reported to be implicated in the pathogenesis of hepatocellular carcinoma (HCC) and the aim of this study is to evaluate the role of miRNAs in the development of HCC.

Methods: To find yet-to-be-identified miRNAs associated with HCC tumorigenesis, we carried out miRNA microarray analysis with miRNAs extracted from normal and HCC liver tissues resected from same patients. Of the miRNAs showing significantly different expression levels between normal and HCC liver tissues, we focused on miR-128. The difference in expression levels of miR-128 was verified by real-time PCR. In addition, the target gene of miR-128, axin1, was determined by bioinformatics study, luciferase assay and Western blotting.

Results: Four pairs of liver tissues were selected for RNA extraction. miRNA microarray and FDR calculation were performed and four genes were selected due to the previous report on their correlation with HCC. The results of luciferase assay and transfection of HepG2 cells indicated that miRNA-128 indeed binds to the 3′ UTR of Axin1. In Western blotting miR-128 indeed decreased Axin1 protein levels, demonstrating that Axin1 is a target of miR-128 in HepG2 cells.

Conclusion: In our study miR-128 is up-regulated in clinical HCC tissues and miR-128 binds to 3′ UTR of Axin1. The identification of miR-128 as oncomir and presence of lipopolysaccharide (LPS) conditions.

Benign HPB Diseases

APHPB-0381

DIFFERENTIAL EXPRESSION OF CYTOKINES IN MACROPHAGES OF RAT SPLEEN IN THE PRESENCE OF LPS


5General Surgery, The Second Affiliated Hospital, College of Medicine, Xi’an Jiaotong University, Xi’an, China; 4National & Local Joint Engineering Research Center of Biodiagnosis and Biotherapy, The Second Affiliated Hospital, College of Medicine, Xi’an Jiaotong University, Xi’an, China

Objectives: To identify the differentially expressed cytokines from macrophages of Rat spleen in the absence and presence of lipopolysaccharide (LPS) conditions.

Methods: Macrophages were isolated and purified from spleen by anchoring cultivation. The supernatants were harvested in the absence and presence of LPS and detected by the AAR-BLG protein chip technology.

Results: Totaling 90 cytokines were identified to be detected by the chips, and 19 cytokines showed differential expression in the chips, most of them are cytokines associated with monocytes chemotaxis and macrophages activation, such as MCP-1, IL-10, CXCR4, CCR4, IP-10, and so on. In addition, cytokines associated with angiogenesis, fibrosis and tissue remodeling up-regulate, such as MIF, IL-3, IL-4, CD106, and so on. Cytokines associated with regulation of neuron growth, development, such as, β-NGF, GFR-alpha, cytokines associated with inflammation, such as IL-6, MIP-1, MIP-2, IL-1β, IL-1, R6/IL-1, Rrp2, and so on.

Conclusion: Cytokines are significant differential expression in the absence and presence of LPS conditions by the AAR-BLG protein chip. Differential expression of cytokines may be new clues for inflammatory reaction of macrophages and immune response of spleen.

APHPB-0382

EFFECTS OF SPLENECTOMY ON THE PROCESS OF LIVER REPAIR AND REGENERATION IN A RAT MODEL OF ACUTE HEPATIC INJURY


1General Surgery, The Second Affiliated Hospital, College of Medicine, Xi’an Jiaotong University, Xi’an, China; 2Nursing, The Second Affiliated Hospital, College of Medicine, Xi’an Jiaotong University, Xi’an, China; 3National & Local Joint Engineering Research Center of Biodiagnosis and Biotherapy, The Second Affiliated Hospital, College of Medicine, Xi’an Jiaotong University, Xi’an, China

Objectives: To study the effects of splenectomy on the liver repair and regeneration in the SD rat model of acute hepatic injury induced by CCl4, and explore the role of spleen in the process of liver regeneration.

Methods: Rats were divided into four experimental groups: A, normal control; B, CCl4 group; C, splenectomy + CCl4 group; D, sham operation + CCl4 group. All rats were sampled at the appointed time (24 h, 72 h, 7 days, and 14 days post intra-peritoneal injection of CCl4). Serum liver enzyme and HE staining were applied for evaluating the improvement of hepatic histological damage. The expression of proliferating cell nuclear antigen (PCNA) of liver tissues was detected by western-blot.

Results: At 24 h, extensive macrovesicular fatty change in the midzonal lobe with some hepatocellular necrosis and inflammation were observed in group B and D; the liver was fully recovered with normal histology in 14 days post CCl4 injection. In contrast, the rats in group C exhibited much more rapid liver regeneration (7 days). The liver function of group C was also improved markedly as compared with the B and D
groups. Little expression of PCNA was detected in the group A. In group C, the protein level of PCNA was increased significantly at 24 h, then was decreased at 72 h, and was recovered to the normal level at 7 days. The up-regulated expression of PCNA in group B and D was observed at 72 h, and then was down-regulated slowly.

**Conclusion:** Splenectomy enhances the liver repair and regeneration after acute hepatic injury, indicating that spleen may play an important regulatory role in the process of liver regeneration.

**APHPB-0383**

**BAICALEIN IMPROVES DYSREGULATION OF THE INFLAMMATORY RESPONSE AND LYMPHOCYTE APOPTOSIS IN A RAT MODEL OF POLYMICROBIAL SEPSIS**

H. Chen¹, J. U. N. Li¹, S. Rui², N. A. Huang¹, J. U. N. Yan¹, F. Ji², Z. Li² and J. Li²

¹National & Local Joint Engineering Research Center of Biodiagnosis and Biotherapy, The Second Affiliated Hospital, College of Medicine, Xi’an Jiaotong University, Xi’an, China; ²General Surgery, The Second Affiliated Hospital, College of Medicine, Xi’an Jiaotong University, Xi’an, China; ³Infectious Diseases, The Second Affiliated Hospital, College of Medicine, Xi’an Jiaotong University, Xi’an, China; ⁴Infection Control, The Second Affiliated Hospital, College of Medicine, Xi’an Jiaotong University, Xi’an, China

**Objectives:** Dysregulation of the inflammatory response and lymphocyte apoptosis are key reasons for the high mortality rate in sepsis. Baicalein, as a traditional Chinese medicine, has more biological characteristics including anti-inflammatory and anti-apoptotic. Therefore this study was designed to investigate the therapeutic efficacy of baicalein in polymicrobial sepsis.

**Methods:** Sepsis was induced in Sprague-Dawley rats via cecal ligation and puncture (CLP). Rats were injected with saline or baicalein (10 mg/kg, intravenously) after CLP and sepsis investigated at three time points (6, 12 and 24 h after surgery). Survival, bacterial clearance, changes in T lymphocyte subsets, lymphocyte apoptosis, blood cytokine production and tissue damage were evaluated.

**Results:** Baicalein treatment significantly improved survival of septic rats and decreased the bacterial burden, which was also associated with moderate tissue damage. Compared with the CLP alone group, rats treated with baicalein had increased proportions of CD3⁺CD4⁺ helper T cells in the blood at 6, 12 and 24 h and a higher ratio of CD4⁺/CD8⁺ T cells at 6 h after surgery. Baicalein also dramatically raised apoptosis of lymphocyte at 6 h but attenuated at 24 h. The levels of TNF-α were significantly decreased at all time points investigated in the CLP + baicalein group versus CLP alone, while IL-6 was significantly decreased only at 24 h. Corresponding to this anti-inflammatory effect of baicalein, the levels of IL-10 were significantly increased at 24 h.

**Conclusion:** Baicalein may be an effective immunomodulator to combat immune dysregulation in the rat CLP model of polymicrobial sepsis.

**Malignant HPB Diseases**

**APHPB-0384**

**BAICALEIN PROTECTS AGAINST PANCREATIC INJURY IN RATS WITH SEVERE ACUTE PANCREATITIS BY INHIBITING PROINFLAMMATORY CYTOKINE EXPRESSION**

J. U. N. Li¹, J. Qi², A. Zhang², T. I. N. G. Tan², B. Bie¹, G. Wang¹, H. Chen¹, H. Liu¹ and Z. Li²

¹National & Local Joint Engineering Research Center of Biodiagnosis and Biotherapy, The Second Affiliated Hospital, College of Medicine, Xi’an Jiaotong University, Xi’an, China; ²General Surgery, The Second Affiliated Hospital, College of Medicine, Xi’an Jiaotong University, Xi’an, China; ³Infectious Diseases, The Second Affiliated Hospital, College of Medicine, Xi’an Jiaotong University, Xi’an, China; ⁴Infection Control, The Second Affiliated Hospital, College of Medicine, Xi’an Jiaotong University, Xi’an, China

**Objectives:** Inflammatory cytokines play an important role in the pathogenesis of severe acute pancreatitis (SAP). Systemic inflammatory response syndrome and the development of multiple organ failure are the main reasons for a high mortality rate in SAP. Elevated serum levels of interleukin (IL)-6 and tumor necrosis factor (TNF)-α are reliable markers of SAP severity. In our study, a natural flavonoid Baicalein was evaluated in vivo in a rat model of SAP.

**Methods:** Rat SAP was induced by retrograde injection into the common biliopancreatic duct of 5% sodium taurocholate. The rats with pancreatitis were intravenously injected with or without Baicalein immediately after SAP induction. The 12-h mortality was determined by counting the surviving and dead rats. The scites fluid volume was measured by the difference of dry/wet gauze weight. Amylase activity and proinflammatory cytokine production were assessed by spectrophotometry and ELISA. Histopathology score was evaluated by HE stain.

**Results:** The SAP rats treated with sodium taurocholate exhibited pancreatitis-like histopathology changes and showed increased fluid production, amylase activity and proinflammatory cytokine expression. When pre-treated with Baicalein, above dysfunction induced by sodium taurocholate were attenuated.

**Conclusion:** Baicalein attenuated the severity of SAP by reducing the production of proinflammatory mediators and inhibiting pancreatic injury. Baicalein could therefore be a promising novel therapeutic agent in patients for the treatment of SAP.
Benign HPB Diseases
APHPB-0385

SURGICAL MANAGEMENT OF
CHOLEDOCHOLITHIASIS – OUR
EXPERIENCE FROM A TERTIARY
CARE CENTRE

B. Santhanamuthukrishnan, R. Prabhakaran, A.
Amudhan, D. Benet, S. M. Chandramohan and D.
Kannan
Surgical Gastroenterology, Madras Medical College,
Chennai, India

Objectives: Operative outcome, recurrence rate of CBD
stones, and long-term bile duct complications of surgically
managed CBD stones.

Methods: A retrospective review of 100 cases who
underwent treatment for CBD stones in our institution
from the period of April 2012 to March 2014 was con-
ducted. All modality of managements are studied.
Operative outcome, recurrence rate of CBD stones, and
long-term bile duct complications were analyzed.

Results: Total number of cases are 100. Out of which
44 patients underwent choledochoduodenostomy. Three
patients underwent LC + LCBDE. Thirty one patients
were underwent ERCP and followed by laparoscopic cholecystectomy. Thirteen patients underwent open
cholecystectomy, CBD exploration and ‘T’ tube drain-
age. Four patients underwent OC + CBD exploration
and primary CBD closure. Laparoscopic cholecystectomy
followed by ERCP done for 2 patients. Hepatico-
jejunostomy was done in 6 patients. Surgical site infec-
tion was developed in 24 pts, cholangitis in 12 pts.
ERCP induced pancreatitis in 3 pts, perforation in 2
pts. There are 7 deaths mainly due to cholangitis and
MODS. During the period of follow up none of our
patients developed recurrent CBD stones or other
major complications.

Conclusion: LC + LCBDE is treatment of choice for
uncomplicated CBD stones. Dilated CBD >15 mm or
impacted stones warrants drainage procedure. Cholangitis is the main indication for two stage procedure.

Malignant HPB Diseases
APHPB-0386

DECREASED PREOPERATIVE SERUM
TOTAL CHOLESTEROL PREDICTS
RESECTABILITY OF
HEPATOCELLULAR CARCINOMA
WITH NON-B NON-C LIVER
CIRRHOSIS

Y. Shirai, H. Shiba, T. Horiiuchi, R. Iwase, K. Haruki,
Y. Fujiwara, K. Furukawa, Y. Futagawa and K.
Yanaga
Surgery, Jikei University School of Medicine, Tokyo,
Japan

Objectives: The leading causes of liver cirrhosis with
hepatocellular carcinoma (HCC) are hepatitis B and C
virus infection. Recently, patients with non-B non-C
HCC have increased. In patients with HCC with associ-
ated non-alcoholic fatty liver disease (NAFLD), discrep-
ancy of histopathological degree of liver damage
differ from preoperative liver function test including
indocyanine green retensuin at 15 min (ICG_R15). In
patients with NAFLD, serum total cholesterol (TC)
level is high, in contrast to cirrhotic patients for whom
serum TC level is low. Therefore, preoperative serum
TC level may reflect hepatic reserve in patients with
non-B non-C HCC.

Methods: The study included 30 patients without hep-
titis virus infection or history of alcohol abuse, who
underwent hepatic resection for HCC between 2000
and 2012 at Jikei University Hospital. We retrospec-
tively analyzed the relation between preoperative clini-
cal variables including serum TC level and histology of
the liver.

Results: Ten of 30 patients were diagnosed as histo-
opathologically liver cirrhosis. Preoperative ICG_R15 in 2
of the 10 non-B non-C cirrhotic patients were normal
(<10%). In preoperative serum TC level, there were sig-
ificant differences between the patients with liver cirr-
hosis (median TC 165 mg/dL; range 105–204) and
without liver cirrhosis (median TC 189.5; range 143–
411; p = 0.039). Prothrombin time (p < 0.001), and
serum total bilirubin (p = 0.023) were also significantly
different by univariate analysis.

Conclusion: Preoperative serum TC may be a predictor
of liver cirrhosis in patients with non-B non-C hepatocel-
lar carcinoma.

APHPB-0387

COMPARATIVE STUDY OF PURE
LAPAROSCOPIC VERSUS OPEN LEFT
HEMIHEPATECTOMY USING
MULTIVARIATE ANALYSIS

H. D. Cho, K. H. Kim, S. Hwang, D. B.
Moon, T. Y. Ha, G. W. Song, D. H. Jung, G. C. Park
and S. G. Lee
Division of Hepatobiliary Surgery and Liver
transplantation, Department of Surgery, Ulsan
University and Asan Medical Center, Seoul, Korea

Objectives: The objective of this study was to compare
the results of pure laparoscopic left hemihepatectomy
(LLH) versus open left hemihepatectomy (OLH) in
both benign and malignant condition with multivariate
analysis.

Methods: From October 2007 to December 2013, LLH
(n = 63) and OLH (n = 125) which were performed by
a single surgeon in Asan Medical Center, Korea were
investigated. Patient demographics, preoperative data,
clinical perioperative outcomes, and tumor characteris-
tics in patients with malignancy were compared
between both groups. Moreover, multivariate analysis
of prognostic factors associated with early discharge,
complication was executed.

Results: The mean operative time was longer in LLH
group rather than the OLH group significantly
(248.89 ± 53.50 min vs. 177.23 ± 68.13 min, p < 0.0001).
But, the LLH group had a significantly shorter post
operative hospital stay than the OLH group
(9.53 ± 3.30 days vs. 14.68 ± 11.09 days, p < 0.0001).
Multivariate analysis of prognostic factors associated
with complication revealed that OLH had nearly 3
times the risk than LLH (odd ratio = 2.876, 95% CI 1.093–7.571, p = 0.0324).

Conclusion: LLH, as laparoscopic major hepatotomy, was safe and feasible procedure in selected patients. There was no mortality and no case to be converted open surgery due to major bleeding. LLH had shorter hospital stay, less operative blood loss. In multivariate analysis, LLH had less risk of complication. The authors suggest prudentially that LLH seems to be a reasonable treatment option in selected patients.

APHPB-0389
MULTIDISCIPLINARY TREATMENT IN UNRESECTABLE BILIARY TRACT CANCER – A MULTI-CENTER RETROSPECTIVE ANALYSIS
1Department of Gastroenterological Surgery, Yokohama City University, Yokohama, Japan; 2Department of Gastroenterological Surgery, Kitasato University East Hospital, Sagamihara, Japan; 3Department of Gastroenterology, Yokohama Cancer Center, Yokohama, Japan; 4Digestive Disease Center, Showa University Northern Yokohama Hospital, Yokohama, Japan; 5Department of Gastrointestinal Surgery, School of Medicine, St. Marianna University, Kawasaki, Japan; 6Gastroenterological Center, Yokohama City University Medical Center, Yokohama, Japan; 7Department of Gastroenterology, Tokai University School of Medicine, Isehara, Japan

Objectives: There is still no established evidence about the treatment strategies for unresectable biliary tract cancer. To clarify the current situation of multidisciplinary treatment for unresectable biliary tract cancer.

Methods: 318 consecutive patients with unresectable biliary tract cancer, who had been treated at seven institutions in Kanagawa prefecture, Japan between 1999 and 2008 were reviewed retrospectively.

Results: The unresectable factor were followed; Locally advance: 102 cases (32.0%), Hematogenous metastasis: 46 cases (14.7%), Peritoneal dissemination: 30 cases (9.6%). 198 cases (63.4%) received chemotherapy. The most common regimen was gemcitabine alone followed by gemcitabine combination therapy and S-1 alone. The one-year-survival rate was 35% and median survival time (MST) was 10 months among all patients, whereas among the locally advanced patients, the 1-year-survival rate was 65% and MST was 12 months. The patients with peritoneal dissemination had the worst prognosis; the 1-year-survival rate was 7% and MST was 5 months. Among 90 cases of hilar bile duct cancer, the patients received chemoradiotherapy had a significantly better prognosis than the patients received chemotherapy alone (the 1-year-survival rate: 83% vs. 39%, MST: 19 vs. 11 months, p < 0.001).

Conclusion: Multidisciplinary treatment was effective for the patients with locally advanced biliary tract cancer. The Patients with metastatic biliary tract cancer still had a poor prognosis even with receiving multidisciplinary treatment.

APHPB-0390
PROGRESSED SYSTEMIC INFLAMMATORY RESPONSE IS A PROGNOSTIC PREDICTOR IN PANCREATIC CANCER
Department of Surgery, Tohoku University Graduate School of Medicine, Sendai, Japan

Objectives: Progressed systemic inflammatory response syndrome (SIRS) is a predictive value independent of clinical stages in advanced cancer. Recently the effect of anti-inflammatory therapy has been reported. The aim of this study is to examine influences of progressed SIRS on preoperative nutrition status and long term prognosis in pancreatic cancer.

Methods: 187 pancreatic cancer patients who underwent surgery at our institute between 2003 and 2013 were divided by preoperative CRP into two groups, normal group (NG < 1.0 mg/dL: n = 162) and elevated group (EG ≥ 1.0 mg/dL: n = 25) and were analyzed retrospectively.

Results: Age, sex, bile drainage, tumor location, serum CA19-9 value, operative procedure and stage were insignificant between both groups. Serum albumin (3.9 vs. 3.4 g/dL, p < 0.01), lymphocyte (1530 vs. 1288/μL, p = 0.02), pre-albumin (24.5 vs. 16.1 mg/dL, p < 0.01) considered as indicators of preoperative nutritional status were significantly low in EG. Severe complication (≥Clavien3b) was higher (7.5 vs. 24.0%, p = 0.02) and adjuvant therapy application was lower (83.0 vs. 58.3%, p = 0.01) in EG. Overall survival (OS) and disease free survival (DFS) were lower in EG (MST: 24.2 vs. 11.8, p = 0.01, median DFS: 12.0 vs. 6.7, p = 0.08: month). Subgroup analysis in node involvement, residual tumor status, NCCN resectability and adjuvant therapy revealed poor OS in EG.

Conclusion: CRP is a fair preoperative prognostic factor in resected pancreatic cancer. Preoperative progressed SIRS related to poor nutrition status, is likely to increase risks of infectious complications and adjuvant therapy failure. Anti-inflammatory agents might improve SIRS and nutrition status, leading to a better prognosis.

Benign HPB Diseases
APHPB-0391
INVESTIGATION AND TREATMENTS FOR BILE LEAKAGE AFTER PRIMARY CLOSURE OF LAPAROSCOPIC COMMON BILE DUCT EXPLORATION
Z. Pan, H. Hou and Z. Ji
Department of General Surgery, Zhongda Hospital Southeast University, Nanjing, China

Objectives: Laparoscopic common bile duct exploration (LCBDE) has become one of the main options for
treating cholelithiasis. Our objective was to assess the short-term outcomes of patients undergoing laparoscopic primary closure of the common bile duct (CBD).

**Methods:** We retrospectively studied 50 consecutive patients undergoing primary closure following LCBD during January 2012 and January 2014. Preoperative MRCP and intraoperative choledochoscopy were performed in all patients. All patients satisfied the following conditions: incisional length of CBD is <30 mm, the number of stones are not more than three and the diameter is <10 mm, the bilirubin? 2.0 mg/dL, the age is <70 years and basket extraction for removal of biliary tract stone. Seven patients undergoing transcystic duct exploration because of enlarged cystic duct. When closing the incision of CBD, interrupted sutures was applied by using 5-0 MONOCRYL sutures.

**Results:** No patient was converted to open surgery. Intraoperative choledochoscopy didn’t found stone in one case. The mean duration of the operation was 112.4 min and mean length of postoperative stay was 5.2 days. Postoperative bile leakage occurred in four patients (8.0%) on postoperative Day 1 to Day 3. All of the patients recovered after simple drainage without reoperation. The minimal follow-up was 6 months. There were no recurrences.

**Conclusion:** Primary closure of the CBD is safe and feasible in selected patients. Application of choledochoscopy to ensure clearance of the CBD and careful suturing are essential for primary closure. Placement of drainage sustained 3 days postoperative may aid in the prevention of bile leakage.

**Conclusion:** Our technical modification on V8 reconstruction appears to be effective to improve the patency of MHV reconstruction.

**APHPB-0393**

**COMPARISON OF TECHNICAL HANDLING AND LUMINAL PATENCY BETWEEN INTERPOSED PTFE GRAFTS WITH INTERRUPTED RINGS VERSUS CONTINUOUS SPIRAL RINGS IN LIVING DONOR LIVER TRANSPLANTATION**

**T. Lim, S. Hwang, T. Ha, G. Song, D. Jung, C. Ahn, D. Moon, G. Kim, G. Park and S. Lee**

**Division of Hepatobiliary Surgery and Liver Transplantation, Department of Surgery, Asan Medical Center, Seoul, Korea**

**Objectives:** Due to shortage of vein allograft, synthetic grafts such as polytetrafluoroethylene (PTFE) have been used for reconstruction of the middle hepatic vein (MHV) tributaries of right liver graft during living donor liver transplantation. There are two types of 10 mm-sized ringed PTFE grafts available, in which each has interrupted rings (GORETEX) or continuous spiral rings (IMPRA). This study intended to compare the technical handling and luminal patency according to different types of outer rings of interposed PTFE grafts.

**Methods:** A prospective case-controlled study was performed with randomized allocation of PTFE grafts with interrupted rings (n = 60) or continuous rings (n = 30). We have used GORETEX graft for 5 years, thus it became the control group.

**Results:** Regarding on handling feasibility, GORETEX was superior to IMPRA for bench work because it has a thinner vessel wall and thinner outer rings. In contrast, IMPRA was superior for implantation because its spiral rings permits some flexibility in length adjustment and more resistant to instrumental clamping. The 6-month luminal patency was 68.3% in GORETEX group and 70% in IMPRA group (p = 0.97). No noticeable complications including graft infection occurred, but graft migration into the stomach occurred in one case of GORETEX group.

**Conclusion:** Mid-term luminal patency rates of PTFE grafts were similar regardless of types of outer rings. GORETEX appears to be easier for handling, whereas IMPRA has advantage of longitudinal flexibility. We think that both material are worthy of clinical
application for MHV reconstruction of right liver graft during living donor liver transplantation.

**APHPB-0394**

**INFLUENCE OF HEMATOPOIETIC STEM CELL TRANSPLANTATION ON LIVER IN ALCOHOLIC CIRRHOSIS PATIENTS**

G. Burganova¹, S. Abdulkhakov¹, A. Gumerova¹, I. Gazizov¹, M. Titova¹, A. Odintcova² and A. Kiyasov¹

¹Morphology and General Pathology, Institute of Fundamental Medicine and Biology, Kazan Federal University, Kazan, Russia; ²Gastroenterology, Republican Clinical Hospital, Kazan, Russia

**Objectives:** So far there is no effective antifibrotic treatment in alcoholic liver cirrhosis (ALC). One of the novel treatment options is using of autologous hematopoietic stem cells (HSC). Sinusoids capillarization and myofibroblasts activation are key events in liver fibrogenesis. The purpose of the study was evaluation of the effect of HSC autotransplantation on these processes in patients with alcoholic cirrhosis.

**Methods:** The study was performed on liver biopsies of 12 patients with ALC taken before the injection of autologous peripheral blood HSCs mobilized by GCSF into celiac trunk, 3 and 12 months after the procedure. Biopsies were stained immunohistochemically with antibodies against CD34 and a-SMA. CD34 is absent in endothelial cells of normal liver however it appears in case of their capillarization. a-SMA is a marker of myofibroblasts.

**Results:** Before transplantation we observed the great number of CD34-positive cells predominantly in portal areas as well as some positive cells in septa and in parenchyma. a-SMA-positive myofibroblasts were mainly localized in periportal zones and portal tract infiltration areas. 3 months after transplantation the number of CD34-positive cells and myofibroblasts markedly decreased; remaining cells were located mainly around portal tracts. 12 months after transplantation the number of CD34 and a-SMA-positive cells increased again but didn’t reach initial levels. The number of cells correlated with the severity of infiltration.

**Conclusion:** We suggest that transplantation of HSCs in patients with ALC is safe and effective procedure leading to decreasing of myofibroblasts number and restoring of normal sinusoids’ structure. However this procedure should be probably repeated in a year.

**Malignant HPB Diseases**

**APHPB-0395**

**COMPARATIVE STUDY OF TOTALLY LAPAROSCOPIC LIVER RESECTION FOR HEPATOCELLULAR CARCINOMA BETWEEN ANTEROLATERAL AND POSTEROSUPERIOR LESIONS**


Surgery, Bundang Hospital, Seoul National University, Seongnam, Korea

**Objectives:** Laparoscopic liver resection is usually limited to the anterolateral segments of the liver (AL; Segments II, III, V, VI, and the inferior part of segment IV) compared with posterosuperior segments (PS; Segments I, VII, VIII, and the superior part of segment IV). We evaluated the feasibility and long term outcome of laparoscopic liver resection including PS segments.

**Methods:** We analyzed retrospectively the clinical data of 230 patients who underwent laparoscopic liver resection for hepatocellular carcinoma from September 2003 to July 2014. Patients were classified into 2 groups according to tumor location: group AL (n = 170) and group PS (n = 60).

**Results:** There was no mortality or reoperation. The predominant type of resection was a minor liver resection in group AL, and a major liver resection in group PS (p = 0.038). The mean operative time in group PS was greater than that in group AL (p < 0.001). Group PS showed higher median blood loss (p = 0.001), more frequent intraoperative transfusion (p = 0.002). There were no differences in the conversion rate (p = 0.306), rate of curative resection (p = 1.000), mean hospital stay (p = 0.112), and rate of complications (p = 0.108) between the 2 groups. There was no significant difference in 3-year overall survival (p = 0.160), and disease free survival (p = 0.876).

**Conclusion:** Laparoscopic liver resection for hepatocellular carcinoma located in PS is more difficult than in AL. However, there was no difference in short and long term outcome. The limitation according to tumor location will be overcome with accumulation of experience and technical improvement.

**APHPB-0396**

**SURGICAL RESECTION OF A SOLITARY LYMPHNODE METASTASIS FROM HEPATOCELLULAR CARCINOMA: RESECTION OR SYSTEMIC TREATMENT**

I. Y. Park and H. J. Choi

Surgery, Bucheon St. Mary’s Hospital, The Catholic University of Korea, Bucheon, Korea

**Objectives:** Hepatocellular carcinoma (HCC) is the fifth most common solid tumor in the world, but the outcomes after hepatic resection remain still unsatisfactory due to recurrence. The most frequent site of extrahepatic metastases is the lung, followed by the adrenal gland and bone. Lymph node (LN) metastases after
HCC resection are uncommon and there is currently no standard treatment. We describe the surgical resection of a solitary LN metastasis from HCC.

**Methods:** A 58-year-old male patient was performed left hepatectomy due to HCC. Intrahepatic recurrence was found 6 months after hepatectomy. He received TACE two times.

**Results:** In 4 months after the last TACE, and 13 months after hepatic resection, a single LN metastasis was found in the PET scan. He had no jaundice and Child A state. The tumor marker, AFP was 92.84 ng/mL, and PIVKA-II was 8850 mAU/mL. Because there was no other metastasis in the PET scan we decided surgical resection of the LN.

**Conclusion:** LN metastases at distant sites without metastases in the hepatoduodenal ligament are relatively rare. Patients with a solitary metastasis from a controlled intrahepatic tumor can be treated surgically, and good outcomes have been reported. However, it is still difficult to decide solitary LN metastasis from hepatocellular carcinoma whether to be resected or to be received systemic treatment.

**APHPB-0397**

**LAPAROSCOPIC DISTAL PANCREATECTOMY FOR INVASIVE PANCREATIC DUCTAL ADENOCARCINOMA**


**Gastroenterological Surgery, Chiba Cancer Center, Chiba, Japan**

**Objectives:** Minimally invasive surgery is a rapidly evolving in the field of abdominal surgery, including pancreatic region. Laparoscopic pancreatic resection for benign or low-grade malignant lesions has been recently proposed as the treatment option. However, laparoscopic pancreatic resection for invasive pancreatic ductal adenocarcinoma (PDAC) remains not universally accepted as an alternative approach for open surgery because of the difficulty of oncologic resection and a lack of consensus regarding the adequacy of this approach. We describe our experiences with laparoscopic distal pancreatectomy (LDP) for PDAC.

**Methods:** From November 2009 to June 2014, nine patients with PDAC underwent LDP at the Division of Gastroenterological Surgery, Chiba Cancer Center, Japan. Clinopathological characteristics were retrospectively reviewed.

**Results:** The average operation time was 265.9 min (range, 186–348 min), average estimated blood loss was 241.1 mL (range, 5–1010 mL). There was no conversion to open. 2 patients had developed pancreatic fistula (Grade A), which resolved spontaneously. In seven of 9 patient (77.8%), R0 resection could be achieved, but the remaining two patients showed R1 resection. The mean numbers of retrieved lymph nodes were 18.3 (range, 2–40). The average postoperative hospital stay was 15.6 days (range, 7–47 days). Median follow up was 20.8 months (range, 3–36 months). Peritoneal recurrence occurred in 3 patients, Lymph nodes recurrence occurred in 2 patients respectively. Four of them died by primary disease. The remaining 4 patients are alive without recurrence.

**Conclusion:** LDP for PDAC can be feasible, safe, and effective in highly selected patients. Clearly, a prospective, randomized study is needed to elucidate appropriate indications and effects of the present procedure.

**APHPB-0398**

**POSTOPERATIVE OUTCOMES AFTER PURE LAPAROSCOPIC MAJOR HEPATECTOMY: EXPERIENCE OF A SINGLE CENTER**

T. Nomi1, F. U. K.S. David1, G. Mehendran1, A. Kenichiro1, S. Ogiso1 and Y. Nakajima1

1Department of Digestive Disease, Institut Mutualiste Montsouris, Paris, France; 2Department of Surgery, Nara Medical University, Nara, Japan

**Objectives:** Although laparoscopic major hepatectomy (LMH) is developed in several specialized centers, data regarding outcomes are limited. The aim of this study was to evaluate the outcomes of pure LMH at a single center for the first identification of risk factors for postoperative complications.

**Methods:** Between January 1998 and March 2014, 183 patients underwent pure LMH. We analyzed demographic data, pathological variables, associated pathological conditions, preoperative, intraoperative and postoperative variables. The dependent variables studied were the occurrence of overall and major complications. Risk factors for complication were determined.

**Results:** The types of major hepatectomy included left-sided hepatectomy in 40 (21.9%) patients, right-sided hepatectomy in 135 (73.8%), and central hepatectomy in eight (4.3%). The median operating time was 255 min (range: 100–540), and the median blood loss was 280 mL (range: 10–4500). Complications occurred in 100 patients (54.6%), and the 90-day all-cause mortality rate was 2.7%. Liver-specific and general complications occurred in 62 (33.9%) and 38 (20.8%) patients, respectively. Multivariate analysis identified one independent risk factor for global postoperative complications: intraoperative associated radiofrequency ablation [Relative Risk (RR): 6.930, Confidence Interval (CI); 1.494–32.143, p = 0.013]. There were two independent risk factors for major complications: intraoperative transfusion (RR: 2.504, CI; 1.006–6.233, p = 0.049) and bilobar resection (RR: 2.469, CI; 1.004–6.060, p = 0.049).

**Conclusion:** The correction of modifiable risk factors (i.e. avoid as much as possible ablation or resection of tumors in the remnant liver and intra-operative bleeding) may reduce the incidence of complications after LMH.
APHPB-0400
ASSESSMENT OF SURGICAL OUTCOME AFTER PANCREATICODUODENECTOMY BY JUNIOR SURGEONS
Surgery, School of Medicine, Jikei University, Tokyo, Japan

Objectives: Pancreaticoduodenectomy (PD) is one of the most complicated procedures in the digestive surgery. We retrospectively assessed the therapeutic outcome after PD by junior surgeons.

Methods: This study included 252 patients, who underwent pancreaticoduodenectomy between 2001 and 2012 at Jikei University Hospital. We retrospectively analyzed surgical outcomes, complications, mortality and long-term survivals after PD by junior surgeons as operating surgeon (post graduate year is 12 years or less) and senior surgeons (post graduate year is more than 12 years).

Results: Among the study population, junior surgeon group (post graduate year: 9.0 years; median, 6–12 years; range) was 59 consisting of pancreatic cancer in 30, bile duct cancer in 12, ampullary cancer in 10, duodenal cancer in 1, and others in 7, and senior surgeon group (18.0, 13–34 years) was 193 consisting of pancreatic cancer in 76, bile duct cancer in 44, ampullary cancer in 36, duodenal cancer in 7, and others in 30. In univariate analysis, operative time was significantly shorter in senior surgeon group than that in junior surgeon group (583 vs. 512 min, p = 0.001). Intraoperative blood loss (p = 0.70), postoperative hospital stay (p = 0.64), incidence of complications (p = 0.32), mortality (p = 0.44) were comparable. Three-year disease-free and overall survival rates in pancreatic cancer were not statistical difference between junior and senior surgeon group (p = 0.25, p = 0.53), and in bile duct and ampullary cancer were also not statistical difference in two groups (p = 0.87, p = 0.95), respectively.

Conclusion: PD by junior surgeons needs more operative time, but it may be performed safely under appropriate teaching.

APHPB-0401
TREATMENT STRATEGY FOR HCC PATIENTS WITH ADVANCED AGE 80 OR MORE YEARS-OLD
K. Minami1, S. Ueno2, M. Sakoda1, S. Iino1, K. Hiwatashi3, K. Maemura1, Y. Matakai1, H. Kurahara1, H. Shinchi1 and S. Natsugoe1
1Digestive Surgery Breast and Thyroid Surgery, Graduate School of Medical and Dental Sciences, Kagoshima University, Kagoshima, Japan; 2Clinical Oncology, Graduate School of Medical and Dental Sciences, Kagoshima University, Kagoshima, Japan; 3School of Health Sciences, Kagoshima University

Objectives: In this study, results following several interventions in HCC patients with 80 or more years-old were compared with those with 65 or less years-old.

Methods: Between 1990 and 2005, total of 1797 patients with primary HCC underwent to initial treatment such as hepatic resection (HR), ablation therapy, or transarterial chemoembolization (TACE) in the Kagoshima carcinoma-of-liver study group. Retrospective comparison was made between 62 patients equal to or more than 80 years-old (Elderly group) and 851 patients equal to or <65 years-old (Youth group).

Results: Total of 225 patients (Elderly n = 10; Youth n = 215) were treated by HR, 198 patients (Elderly n = 8; Youth n = 190) by ablation, and 469 patients (Elderly n = 42; Youth n = 427) by TACE. Although patients treated by TACE showed poorer survival than those received HR or ablation in Youth group, no clear difference during the 3 treatment was seen in Elderly group. When comparing both groups according to the therapy, the elderly patients showed poorer survival than the youth in HR and ablation. Multivariate comparisons about disease-free survival (DFS) and overall survival in each group. In DFS, size and the number of tumor were prognostic factors for Youth group; liver damage for Elderly group. HR was a good prognostic factor in both groups. On the other hand, in overall survival, size and the number of tumor, liver damage, were prognostic factors for Youth group; none for Elderly group.

Conclusion: In Elderly HCC patients, Taken together with complication and performance status, it should be respected to employ treatment with lower invasiveness.

APHPB-0402
REDUCED DELAYED GASTRIC EMPTYING AND ISOLATED LOOP WITH RETROCOLIC GASTROJEJUNOSTOMY
K. Palaniappan, R. Rajalingam, A. Bharathan, S. Govil, S. Reddy and M. Rela
Institute of Liver Disease & Transplantation, Global Hospitals Chennai, Chennai, India

Objectives: Delayed gastric emptying is a frequent complication after pancreaticoduodenectomy. The incidence of DGE is lower following ante-colic Vs retrocolic gastrojejunostomy in studies published previously. The present study was done to document the incidence of DGE following a retrocolic gastroenteric reconstruction.

Methods: All patients underwent Classical pancreaticoduodenectomy with isolated Pancreaticojejunostomy and retrocolic gastroenteric anastomosis. Data were prospectively recorded. Primary outcome was incidence of DGE (ISGPS Definition). The secondary endpoint were pancreatic fistula rate, re-intervention rate, bleeding and hospital stay.

Results: Total of 94 patients underwent PD from Jan 2010–Aug 2014. Male : Female was 1.5 : 1. Age group varied from 19–73 (Median age 55.6). All patients underwent Isolated PJ with retrocolic gastroenteric anastomosis. Primary DGE (without any intra-abdominal collection) was 6.3%. Grade A was in 5 patients (83.3%), Grade B was seen in 1 patient (17.7%). No patient had Grade C DGE. Pancreatic fistula rate was
5.3%. Four patients underwent re-exploration for bleeding, leak etc. Mortality rate was 3.2% (30 Day mortality). Median lymph node retrieved was 22 nodes (9–34). On univariate analysis, only isolated loop PJ and retrocolic GJ were significant (p < 0.05).

**Conclusion:** Incidence of DGE following isolated loop Pancreateicojejunostomy with retrocolic gastroenteric reconstruction is very low. ISGPS Classification for DGE helps in grading and stratification of patients with DGE.

**Benign HPB Diseases**

**APHPB-0403**

**LIVER ABSCESS: A REVIEW OF MANAGEMENT AND CLINICAL OUTCOMES AT WESTERN HEALTH**

N. Kohli, J. Choi, S. Chan and V. Usatoff

*Upper Gastrointestinal Surgical Unit, Western Health, Footscray, Vic., Australia*

**Objectives:** To evaluate management and clinical outcomes of patients with liver abscess(s) at Western Health Footscray to improve the care of liver abscess patients.

To determine the indicators towards non-conservative management.

**Methods:** We conducted a retrospective review of patients with liver abscess(s) over the past 5 years at Western Health. ICD-10 coding was used to capture patients with pyogenic or amoebic liver abscesses. A database was formed using patient admission and clinical details. Statistical significance was considered with a p-value of < 0.05.

**Results:** Sixty-five patients (43:22 male to female) with median age 61 (50.75–72.00 Interquartile range; IQR). Fourteen (22%) were successfully managed with antibiotic treatment. Radiologically guided percutaneous drainage was performed in 41 (63%) cases with median time to drainage of 5.5 (1–11 IQR) days. It was successful in 32 of 41 cases (78%). Seven patients (11%) underwent surgery, of which 3 had failed drainage. Surgical predictive factors were found to be CRP of >100 on admission (Odds ratio 30.750, 95% CI 3.25–291.31, p = 0.003). The median length of stay was 15 (10.5–25.0 IQR) days. There were 3 deaths during this period of which 2 were due to sepsis in context of liver abscess.

**Conclusion:** This study demonstrates that management with intravenous antibiotics and radiologically guided percutaneous drainage is successful in majority of cases. There were seven cases requiring surgery and a CRP >100 was shown to be predictive for need of surgery. Future studies, ideally long term prospective, would be beneficial to further explore this area.

**Malignant HPB Diseases**

**APHPB-0404**

**SURGICAL OUTCOMES AFTER LAPAROSCOPIC MAJOR HEPATECTOMY FOR VARIOUS LIVER DISEASES**

S. H. Kang and K. H. Kim

*Division of Hepatobiliary Surgery and Liver Transplantation, Department of Surgery, Asan Medical Center, Seoul, Korea*

**Objectives:** Laparoscopic liver resection has been more frequently performed than before, but expansion of laparoscopic major hepatic resection is still limited primarily due to the technical difficulties compared to open surgery. The aim of this study was to describe our experiences of 149 patients undergoing laparoscopic major hepatectomy for various liver diseases.

**Methods:** We reviewed a clinicopathological data of 149 patients who underwent laparoscopic major hepatectomy between October 2007 and August 2014 at Asan medical center.

**Results:** The mean age of the patients was 54 years and mean BMI was 23.5. The mean operation time was 273 min and mean estimated blood loss was 325 mL. The most common indications were Hepatocellular carcinoma (n = 56, 37.6%), followed by intrahepatic duct stones (n = 50, 33.6%). We performed 96 left hepatectomies, 33 right hepatectomies, 17 right posterior sectionectomies, 2 right anterior sectionectomy and 1 central bisectionectomy. Only one patient was converted to open because of major bleeding. Postoperative complications occurred in 18 patients (12.1%) and there were no deaths. The mean postoperative hospital stay was 10 days. For patients with malignant tumors, there were no positive resection margins.

**Conclusion:** We concluded that laparoscopy can be safely and effectively applicable for major hepatectomy after candidate selection. However, prospective randomized studies with a great number of cases are needed to confirm the role of laparoscopy in major hepatic resection.

**APHPB-0405**

**CHANGING INCIDENCE AND SURVIVAL FOR BILIARY TRACT CANCERS IN KOREA, 1999–2011**

S. S. Han¹, Y. J. Won², J. Ha², S. M. Woo¹, K. W. Jung³, W. J. Lee¹ and S. J. Park¹

¹Center for Liver Cancer, National Cancer Center, Goyang, Korea; ²The Korea Central Cancer Registry, National Cancer Center, Goyang, Korea

**Objectives:** It has been reported that the incidence of biliary tract cancers (BTC) changed in the western countries. The aim of this report is to investigate the incidence, relative survival rates and their trends on biliary tract cancers in Korea.

**Methods:** The incidence of gallbladder cancer (GBC), intrahepatic bile duct cancer (IBC), and extrahepatic bile duct cancer (EBC) was estimated from cases diagnosed between 1999 and 2011 using the National Can-
cer Incidence Database in Korea. Age-standardized rates (ASR), annual percent change (APC) and male-to-female rate ratios were calculated. Five-year relative survival rates were estimated.

**Results:** Between 1999 and 2011, 70,584 patients were diagnosed with BTC in Korea (male/female = 54.7/45.3%; mean age, 68 years). The absolute incidence cases of the three cancers increased: 3556 in 1999 to 7299 in 2011. The most common site was the IBC (39.3%), followed by GBC (33.7%) and EBC (27.0%). BTC occurred in males more often than in females (male to female, 1.64:1). In IBC, the ASR increased from 2.4 per 100,000 person-years in 1999 to 4.5 in 2011, and the APC was 6.6% (p < 0.001), while in EBC and GBC, the incidence rates remained stable over time. The 5-year relative survival rate improved by year of diagnosis (1999–2004 to 2005–2009: GBC, 20.6% to 24.9%; IBC, 9.4% to 10.1%; EBC, 17.6% to 21.81%).

**Conclusion:** This study provides the first population-based analysis of biliary tract cancers in Korea. Our study showed incidence of IBC is increasing and the 5-year relative survival rate of BTC improved.

**Benign HPB Diseases**

**APHPB-0406**

**A RARE CASE OF BILE DUCT ADENOMA MIMICKING A KLATSKIN TUMOR IN UNUSUAL LOCATION**

Hepatobiliary-Pancreatic Surgery, Chonnam National University Hospital, Gwangju, Korea

**Objectives:** Adenoma of bile duct is an extremely rare benign tumor. It can be found mostly in the ampulla or in close proximity to the Vaterian system, and the common bile duct (CBD). It can mimic malignant extrahepatic tumors, because preoperative differentiation between adenomas and malignant tumors is very difficult.

**Methods:** A 75-year-old man who presented epigastric pain and indigestion for 6 months was referred to our hospital. He had no past medical history and no family history. On physical examination, there were tenderness on epigastric area. Abdominal computed tomography (CT) scan and magnetic resonance imaging (MRI) scan demonstrated 3 cm sized soft tissue tumor at bifurcation of common hepatic duct and left intrahepatic bile duct (IHBD) obstruction with marked IHBD dilatation. Based on laboratory test and imaging investigations, preoperative diagnosis was thought be hilar cholangiocarcinoma with left intrahepatic bile duct invasion.

**Results:** Extended left hepatectomy, caudate lobectomy, cholecystectomy, CBD resection was performed. At laparotomy, there was 1.5 cm sized polypoid mass at left IHBD bifurcation and there was no vascular invasion. Pathologic examination of the resected specimen showed tubulopapillary adenoma and there was no atypia and no dysplasia. The patient tolerated the procedure well and was discharge 3 weeks following surgery without any problems.

**Conclusion:** Bile duct adenoma is an rare benign tumor, especially rising at hepatic duct. It should be considered different diagnosis of hilar cholangiocarcinoma, and it is important to make an effective plan for treatment.

**APHPB-0407**

**CALCUlli REMOVAL ANd gallbladder preservation for cholecystolithiasis by endolap technique**

Z. Ji
Department of General Surgery, Zhongda Hospital Southeast University, Nanjing, China

**Objectives:** To explore a new method and the value of minimally invasive surgery for removal calculi and the preservation of gallbladder by laparoscope combined with the choledochoscope.

**Methods:** A retrospective analysis was conducted in 100 patients with cholecystolithiasis between January 2010 and September 2014, who underwent the minimally invasive surgery for removing calculi and preserving the gallbladder.

**Results:** 100 cases had gallstone taken out and the gallbladder was preserved perfectly without any complications. Yet the other 4 cases switched to the laparoscopic cholecystectomy because of tiny stones blocked in the cystic duct and submucosal stones. The success rate was 96%. Follow-up included both clinical assessment and ultrasound examination every 6 months after operation. The patients with the preoperative symptoms were symptom-free and the function of gallbladder was found to be well preserved. The overall stone recurrence rate was 4.92% at a mean follow up of 26 months (range, 6–40 months).

**Conclusion:** Using the laparoscope combined with the soft choledochoscope for gallbladder preserving cholecystolithotomy, which not only can remove stones clearly and preserve the function of gallbladder, but also effectively avoid the various complications of cholecystectomy. In our follow-up, gallbladder function was not affected and the stones recurrence rate was quite low.

**Malignant HPB Diseases**

**APHPB-0408**

**beneficial effects of perioperative chemotherapy for Pancreatic cancer**

School of Medicine, Keio University, Tokyo, Japan

**Objectives:** Aims: We retrospectively assessed the benefits of 5-fluorouracil (5-FU)- and heparin-based portal infusion chemotherapy (PI) combined with systemic administration of mitomycin C (MMC) and cisplatin (CDDP) for 4 weeks following surgery (PI4W). The goal was to determine if this treatment prevented liver metastasis and improved survival for patients with potentially curative resection of pancreatic cancer.
Methods: 263 patients who underwent pancreatectomy from January 1985 to December 2013 were treated. Of these cases, 50 patients received portal infusion with 5-FU (250 mg/day) for 2 weeks (PI2W) following surgery (1985–2001 Group A), while 94 patients received PI4W therapy (250 mg/day of 5-FU with 2000 IU/day of heparin for 4 weeks, 4 mg MMC on days 6, 13, 20, 27, and 10 mg CDDP on days 7, 14, 21, 28) (2001–2013 Group B). The remaining 119 patients (CI) without adjuvant therapy during the perioperative period divided Group A (n = 58) and Group B (n = 61).

Results: The cumulative overall survival rate in the PI2W was significantly higher than those in CI of Group A. The cumulative overall survival rate in the PI4W also was significantly higher than those in CI of Group B. Furthermore, in the PI4W group, the rate of liver metastasis was lower than CI.

Conclusion: PI therapy after surgery, especially PI4W, could become a promising adjuvant therapy in patients with potentially curative resection of pancreatic cancer.

APHPB-0409
LAPAROSCOPIC MANAGEMENT OF PRIMARY COLORECTAL CANCER AND SYNCHRONOUS COLORECTAL LIVER METASTASIS
K. M. Ho, C. K. So, K. C. Cheng and Y. P. Yeung
Surgery, Kwong Wah Hospital, Kowloon, Hong Kong, China

Objectives: The aim of the current study was to review our experience in simultaneous and staged resection of the colon and liver in patients with synchronous colorectal liver metastasis.

Methods: A review of a prospectively managed hepatobiliary pancreatic database at Kwong Wah Hospital identified 39 patients, who underwent surgery for synchronous colorectal liver metastasis from January 2004 to April 2014. The demographics, clinicopathologic, operative outcomes and complications of the simultaneous and staged resection groups were evaluated.

Results: Sixteen patients underwent simultaneous resection while 23 patients underwent staged resection. The demographics, ASA class, T staging, site of the primary tumor and the type of colectomy were comparable between the two groups. Patients in the simultaneous group had significantly fewer liver tumors and more likely to undergo laparoscopic resection (13/16 vs. 8/23, p = 0.004). More major liver resections were performed as staged operation (2/16 vs. 12/23, p = 0.011). There was no significant difference in the total blood loss, transfusion rate and complication rates between the two groups. The total hospital stay for the simultaneous and staged group was 16 days and 20 days respectively (p = 0.083). The resection margins for the liver metastasis and primary colonic tumor were comparable. There was no significant difference in the overall survival and disease free survival.

Conclusion: Simultaneous is as safe as staged resection in the management of synchronous colorectal liver metastasis, with insignificantly shorter overall hospital stay. Simultaneous laparoscopic resection of primary colon cancer and synchronous liver metastases is feasible in selected patients with limited liver disease.

APHPB-0411
ACINAR CELL CARCINOMA PRESENTED FROM PANCREASE – REPORT OF TWO RARE CASES
Y. Koh1, C. Cho1, Y. Hur1, C. Kim1, D. Park1, S. Yoon2, E. Park2, H. Kim2 and H. Kim2
1General Surgery, Chonnam National University Hwasun Hospital, Chonnam, Korea; 2General Surgery, Chonnam National University Hospital, Gwangju, Korea

Objectives: Acinar cell carcinoma is a rare pancreatic neoplasm. Because of its rarity, characteristics of this disease have not been fully investigated. Herein, we present two cases of acinar cell carcinoma of pancreas.

Methods: Case 1. A 60-year-old woman was referred to our hospital for evaluation of pancreatic mass found on CT scan. Abdominal CT and MRI showed a about 3 cm sized well marginated non-enhancing round mass with internal bleeding in pancreatic head. A preoperative diagnosis of solid pseudopapillary tumor was made, a pylorus preserving pancreatectoduodenectomy was performed.

Case 2. A 51-year-old woman visited our hospital presenting epigastric pain and poor oral intake. Abdominal CT and pancreas MRI showed lobulated enhancing soft tissue mass and multiple conglomerated amorphous cystic lesions around main duct of pancreas in body and tail. A preoperative diagnosis of intraductal papillary mucinous neoplasm was made, radical antegrade modular pancreaticosplenectomy was performed.

Results: Case 1. At laparotomy, a 3 × 3 cm sized brown soft mass was found in pancreatic head. Microscopic findings revealed invasive acinar cell carcinoma. The patient discharged 17 days following surgery without any complications. 2 months following the surgery, multiple hepatic metastases were found on follow up CT scan.

Case 2. At laparotomy, there were a 9 cm sized well marginated non-enhancing round mass with internal bleeding in pancreatic head. A preoperative diagnosis of solid pseudopapillary tumor was made, a pylorus preserving pancreatectoduodenectomy was performed.

Conclusion: Acinar cell carcinoma of pancreas is a rare neoplasm showing a poor prognosis. To understand characteristics of this disease, more large scaled study is needed.

APHPB-0413
CHEMICAL THROMBOPROPHYLAXIS DECREASE THE RISK OF PULMONARY EMBOLISM AND DID NOT INCREASE THE RISK OF MAJOR HEMORRHAGE AFTER HEPATOBILIARY-PANCREATIC SURGERY
H. Hayashi, T. Morikawa, M. Mizuma, K. Nakagawa, T. Okada, H. Yoshida, T. Naitoh, F. Motoi, Y. Katayose and M. Unno
Surgery, Tohoku University Graduate School of Medicine, Sendai, Japan

Objectives: Chemical thromboprophylaxis is thought to decrease the risk of postoperative venous thromboem-
bolism (VTE) and pulmonary embolism (PE), but some surgeons hesitate to use them because of the increased risk of postoperative hemorrhage especially after hepatobili-pancreatic (HBP) surgery. The benefit and risk of chemical thromboprophylaxis after HBP surgery is still unclear.

**Methods:** From 2008 to 2013, 766 patients with HBP malignancy underwent radical surgery in our institute. 376 (49.1%) patients received postoperative chemical thromboprophylaxis and 390 (50.9%) patients did not receive them. The rate and the risk of VTE, PE, and hemorrhage were evaluated retrospectively.

**Results:** Administration of chemical thromboprophylaxis did not decrease VTE rate compared with non-administered patients (4.8% vs. 6.8%, respectively, p = 0.2623), but PE rate was significantly high in non-administration group (0.8% vs. 2.9%, p = 0.0434). Logistic analysis showed age 70 or over significantly increased the risk of VTE (p = 0.0065) and non-administration of chemical thromboprophylaxis significantly increased the risk of PE (p = 0.0445). Postoperative hemorrhage was occurred at significantly high rate in administration group (26.9% vs. 10.5%, p = 0.0001). Logistic analysis showed surgical site infection (SSI) and male increased postoperative hemorrhage (p = 0.0037 and p = 0.0181, respectively) and major hemorrhage, which required blood transfusion or hemostasis with surgery or IVR technique (p < 0.0001 and p = 0.0055, respectively). Administration of chemical thromboprophylaxis also increased the risk of postoperative hemorrhage (p < 0.0001), whereas it did not increase the risk of major hemorrhage (p = 0.3940).

**Conclusion:** Administration of chemical thromboprophylaxis after HBP surgery is safe and beneficial because it did not increase the major hemorrhage risk and decreases the risk of PE.

**Benign HPB Diseases**

**APHPB-0414**

**SURGICALLY TREATED DIAPHRAGMATIC PERFORATION WITH/WITHOUT HERNIATION AFTER RADIOFREQUENCY FOR HEPATOCELLULAR CARCINOMA**


1Department of Surgery, Kurume University School of Medicine, Kurume, Japan; 2Department of Medicine, Kurume University School of Medicine, Kurume, Japan; 3Department of Surgery, Tobata Kyoritsu Hospital, Kitakyushu, Japan

**Objectives:** Diaphragmatic perforation and herniation after radiofrequency ablation (RFA) for hepatocellular carcinoma (HCC) have rarely been reported as thermal injury of RFA. Only 9 cases are reported previously in English literatures. However, we have experienced 5 cases of surgically treated late-onset diaphragmatic perforation with/without herniation after RFA in our institution. We reviewed our 5 cases.

**Methods:** From January 2003 to December 2013, 5 patients of diaphragmatic perforation and herniation after hepatic RFA for HCC were diagnosed and surgically treated in our institution. We investigated clinical profiles and RFA procedures.

**Results:** All of cases had an underlying liver cirrhosis and 4 of five patients showed Child-Pugh grade B or C. The majority of tumors located at S4, S6 and S8 adjacent to the diaphragm. At the time of the onset, a coronal thoracic CT image showed a right diaphragmatic defect and/or herniated viscera in the right pleural cavity. An average interval from RFA to the onset was a 12 months (5–21 m). All cases underwent laparotomy and direct suture of the diaphragm defect and the patients rapidly recovered uneventfully after surgery.

**Conclusion:** The late onset of diaphragmatic perforation with/without herniation consequent to thermal injury of RFA is never considered to be rare complication. In hepatic RFA adjacent to diaphragm clinician should consider several techniques to prevent thermal injury of the diaphragm, and be aware of integrity the diaphragm in imaging to achieve earlier diagnosis of diaphragmatic defect postoperative follow up after RFA. Immediate surgical treatment should be recommended for diaphragmatic perforation.

**Malignant HPB Diseases**

**APHPB-0415**

**OUTCOMES OF RECURRED PATIENTS AFTER CURATIVE RESECTION OF INTRAHEPATIC CHOLANGIOCARCINOMA**


1Center for Liver Cancer, National Cancer Center, Goyang, Korea; 2Department of Surgery, Busan National University Hospital, Busan, Korea

**Objectives:** The outcomes of recurred patients after resection of intrahepatic cholangiocarcinoma are not well known.

**Methods:** Between 2001 and 2013, 150 patients underwent hepatic resection for intrahepatic cholangiocarcinoma. We analyzed the recurrence pattern and its outcomes after recurrence following resection of intrahepatic cholangiocarcinoma.

**Results:** The survival rates at 1, 3, and 5 year were 73%, 54%, and 36%, respectively. Recurrences developed in the 105 of 150 patients. The median time from resection to recurrence was 7 months (range, 0–48 month). According to the first recurrence sites, 41 patients had intra-hepatic recurrence only (IH group) and 64 patients with extra-hepatic recurrence or with both intra- and extrahepatic recurrence (EH group). In the IH group, the median time to recurrence was 8 months (1–48). The median time from recurrence to death was 27 months (0–99) and 1-, 3- and 5-year survival rates after recurrence were 73%, 38%, and 33%, respectively. Seven patients of IH group have been disease-free for 8–78 months since they underwent TACE (4), surgery (2), and RFA (1). In the 64 patients of the EH group, the median time to recurrence was 6 months (0–34). Thirty-three of 64 patients had both intra- and extra-hepatic recurrences. In the EH group, the median
time from recurrence to death was 5 months (range, 0–66 months) and 1-, 3- and 5-year survival rates since recurrence were 30%, 6%, and 0%, respectively.

**Conclusion:** As compared with the EH group, the IH group had better overall survival rates after recurrences. In some patients of the IH group, aggressive local treatments gave chance for cure.

**Benign HPB Diseases**

**APHPB-0419**

**SURGICAL MANAGEMENT OF CHRONIC CALCIFIC PANCREATITIS – OPTIONS AND OUTCOMES – SINGLE CENTRE EXPERIENCE**

P. Raju, R. Rajkumar, D. Benet, A. Amudhan, D. Kannan and S. M. Chandramohan

**Surgical Gastroenterology, Madras Medical College, Chennai, India**

**Objectives:** To analyze the various indications for surgery, results of various surgical procedures in terms of symptom relief and complications and outcome after single layer pancreatico jejunal anastomosis

**Methods:** Prospective study of 102 patients from August 2010 to March 2014. Patients with suspected malignancy were excluded from the study. Clinical presentations like pain (>90%), Steatorrhea (8%), diabetes mellitus (15%) and complications like Pseudocyst (n = 8), Pancreatic ascites (n = 5), Biliary obstruction (n = 11), Portal Hypertension (n = 3) and duodenal obstruction were considered. Surgical options like Frey’s procedure (n = 80), Longitudinal Pancreatico Jejunostomy (n = 12), Izbecki procedure (n = 3) and Distal pancreatectomy with splenectomy (n = 3) and cystoenterostomy (n = 4) additional choledocho duodenostomy (n = 2) were used. Surgical reconstruction was done by Pancreatico Jejunostomy in single layer for all patients. Duration of surgery, estimated blood loss, post operative stay, complications and mortality were analysed

**Results:** Duration of surgery was 180 min (120–240 min). Median blood loss was 300 mL. Average post operative stay was 8 days. 1 patient had anastomotic leak. 10 patients had minor complications. There was nil mortality. Pain relief observed in more than 90% for a minimum follow up period of 6 months.

**Conclusion:** Frey’s procedure has become the standard of care for chronic pancreatitis. Presence of complications addressed properly will gives same outcome as CCP without complications. Single layer anastomosis is a viable technique and helps to reduce the cost and duration of surgery.

**Malignant HPB Diseases**

**APHPB-0420**

**ANALYSIS OF SURGICAL TREATMENT AND PROGNOSIS OF 91 PATIENTS WITH PERIHILAR CHOLANGIOCARCINOMA**

X. Li, C. Jiao, K. Wang, A. Yao, S. Han, D. Wang, R. Peng and X. Wang

Liver Transplantation Center, The First Affiliated Hospital of Nanjing Medical University, Nanjing, China

**Objectives:** To evaluate the surgical treatment outcomes and to determine the prognostic factors for survival in patients with resectable perihilar cholangiocarcinoma.

**Methods:** We retrospectively analyzed a total of 91 consecutive patients who underwent resection for perihilar cholangiocarcinoma. Aggressive surgical resection. For the patients underwent resection, 1, 3, 5-year survival rates were 75.4%, 33.6%, 21.7% respectively; and the median overall survival time was 22.5 months. Among the 24 (26.4%) patients with postoperative complications, only 2 patients (2.2%) died of hepatic failure and gastrointestinal hemorrhage. Univariate analysis identified the following prognostic factors: surgical margin ($\chi^2 = 62.95$, $p < 0.001$); preoperative serum Albumin ($< 35$ g/L, $\chi^2 = 25.889$, $p < 0.001$); hospital day ($\geq 30d$, $\chi^2 = 25.889$, $p < 0.001$); lymph node metastasis ($\chi^2 = 33.824$, $p < 0.001$); differentiation degrees ($\chi^2 = 31.474$, $p < 0.001$); TNM staging ($\chi^2 = 55.665$, $p < 0.001$). Multivariate analysis identified positive surgical margin (HR = 4.716, $p < 0.001$) and poorly differentiation degree (HR = 3.958, $p < 0.001$) as independent poor prognostic factors.

**Conclusion:** Radical resection (R0) is the key to improve the long-term survival rate for treatment of perihilar cholangiocarcinoma. Aggressive surgical resection can improve R0 resection rate.

**APHPB-0421**

**THE HAMMERSMITH LAPAROSCOPIC PANCREATICOGASTROSTOMY (HLPG): A NOVEL PANCREATIC ANASTOMOSIS FOLLOWING CENTRAL PANCREATECTOMY**

T. Gall, M. Sodergren, A. Frampton, N. Habib, R. Fan, M. Pai and L. Jiao

Surgery and Cancer, Imperial College London, London, UK

**Objectives:** Central pancreatectomy (CP) is preferred to distal pancreatectomy (DP) for the excision of benign tumors at the neck or body of the pancreas, in order to preserve pancreatic function and the spleen. However, the pancreaticoenterostomy is technically difficult to perform laparoscopically and the postoperative pancreatic fistula (POPF) rate is high. A novel laparoscopic reconstruction of the pancreatic stump during CP is
APHPB-0422
A EXTREMELY RARE CASE OF LARGE CELL NEUROENDOCRINE CARCINOMA IN INTRAHEPATIC BILE DUCT

H. Kim¹, E. Park¹, H. Kim¹, C. Cho², Y. Koh², Y. Hur², C. Kim², D. Park² and S. Yoon²
¹General Surgery, Chonnam National University Hospital, Gwangju, Korea; ²General Surgery, Chonnam National University Hwasun Hospital, Gwangju, Korea

Objectives: Large cell neuroendocrine carcinoma is a high grade type of neuroendocrine tumor. Neuroendocrine carcinoma of biliary system are extremely rare. Here in, we present a case of large cell neuroendocrine carcinoma of intrahepatic bile duct.

Methods: A 53-year-old man visited our hospital presenting right upper quadrant pain and jaundice. Abdomen CT and Cholangiogram MRI showed diffuse heterogenous enhancing mass including from common hepatic duct and left distal branch and dilatation of both intrahepatic bile duct. Endoscopic retrograde cholangiopancreatography showed abruptly narrowing in common hepatic duct and irregular narrowing in left intrahepatic bile duct. Biopsy from left intrahepatic bile duct showed reactive atypia. Preoperative diagnosis was thought be intrahepatic cholangiocarcinoma or klatskin tumor.

Results: We performed Left hepatectomy, caudate lobectomy, common bile duct resection and routine lymph node dissection. At laparotomy, there were 8 × 2.5 cm size friable polypoid mass from first order branch of left intrahepatic bile duct and distal left intrahepatic bile duct. Microscopic finding revealed large cell neuroendocrine carcinoma type cholangiocarcinoma. The patient discharged 23 days following surgery without any complications.

Conclusion: Here in, we report a case of large cell neuroendocrine carcinoma of intrahepatic bile duct.

APHPB-0424
IMPORTANCE OF ONCOLOGICAL NAVIGATION IN THE RADICAL OPERATION FOR THE LOCALLY ADVANCED PANCREATIC CANCER

M. Imamura, Y. Kimura, T. Ito, T. Kyuno, T. Nobuoka, M. Megurou, T. Mizuguchi and K. Hirata
Department of Surgery, Surgical Oncology and Science, School of Medicine, Sapporo Medical University, Sapporo, Japan

Objectives: We analyzed the cases that performed radical operation after chemotherapy or chemoradiation therapy (preoperative therapy) for locally advanced pancreatic cancer and considered perivascular competent abraision and importance of oncological navigation that aimed at R0 resection.

Methods:

[Surgical procedure]:

1. The extent of resection accepts local extension degree before the preoperative therapy.
2. Approach main vascular in the surgery beginning, and make the frozen section diagnosis of the vascular surrounding tissue.
3. In the case of cancer negative by frozen section diagnosis, perform en bloc resection of invasion organs, lymph nodes and nervous plexus.

Results: We performed 18 radical operations after the preoperative therapy until May, 2014. Tumor site; head/body and tail/multiple = 5/12/1 cases. Clinical stage according to the UICC; IIB/III/IV = 5/12/1. Preoperative therapy; chemoradiation therapy/chemotherapy = 17/1 cases. Combination anticancer drugs; GEM/TS1/others = 3/13/1 cases. Radical operative method; PD/DP/TP = 5/11/1 cases. By oncological navigation, one case was exploratory laparotomy. R0/R1 resection = 15/1 cases. Effect of preoperative therapy; pCR/down stage = 1/7 cases. Median survival time; after preoperative therapy/postoperation = 32.1/16.4 months.

Conclusion: The case that R0 resection was enabled is present because preoperative therapy succeeded. At present, the extent of resection in the radical operation cannot but set it depending on local advance before the preoperative therapy. In future, imaging diagnostic methods corresponding to the tissue changes of the previous treatment and the accumulation of the perioperative findings are expected. We regard oncological navigation as important in the R0 resection.

Benign HPB Diseases
APHPB-0426
MULTIMODALITY APPROACH IN PANCREATIC PSEUDOCYST MANAGEMENT

M. Thiruvarul, A. Amudhan, D. Bennet, R. Prabakaran, D. Kannan and S. M. Chandramohan
Surgical Gastroenterology, Madras Medical College, Chennai, India

Objectives: We present our treatment experience with pancreatic pseudocyst using multimodality approach over the past 3 years.
Methods: A total of 91 patients were treated for pancreatic pseudocyst with either surgery or interventions in our surgical gastroenterology Institute in Rajiv Gandhi Government General Hospital in Chennai in the past 3 years. They were retrospectively reviewed and followed up.

Results: There were 65 (63.6%) men and 26 (36.4%) women between 15 and 79-years-old (mean age 38.2 years). Among the 91 cases, 82 cases followed acute pancreatitis and 9 cases followed chronic pancreatitis. Among the cases of acute pancreatitis 14 cases followed biliary pancreatitis, 6 cases followed traumatic pancreatitis and 62 cases followed alcoholic pancreatitis. Dominating symptoms in most patients were epigastric pain, palpable mass, nausea, vomiting, fever and leukocytosis, and persistent elevation of serum amylase. Imaging studies, such as ultrasound, computed tomography scan, and endoscopic retrograde cholangiopancreatography, were helpful in establishing the diagnosis. Operative procedures done for 38 cases consisted of external drainage (ED, 2 cases), internal drainage using cystojejunostomy (CJ, 14 cases) and cystogastrostomy (CG, 12 cases) lap cystogastrostomy (LCG 2 cases), cystojejunostomy with cholecystectomy (3), cystogastrostomy with cholecystectomy (1), cystojejunostomy with frey’s (1) modified stapled cystogastrostomy 2 cases and distal pancreatectomy (1 case). Non surgical interventions (endoscopic and percutaneous drainage) done for 53 cases.

Conclusion: Surgical intervention, endoscopic drainage, and percutaneous drainage are complementary rather than competing alternatives both for simple and complicated pseudocysts.

APHPB-0427

ROLE OF SURGERY IN PANCREATIC ASCITES MANAGEMENT

M. Thiruvarul, A. Amudhan, D. Bennet, R. Prabakaran, D. Kannan and S. M. Chandramohan

Surgical Gastroenterology, Madras Medical College, Chennai, India

Objectives: Pancreatic ascites is a rare complication and should be suspected in patients with chronic alcoholism and pancreatitis presenting with ascites. The etiology is likely from a pancreatic pseudocyst leakage or due to ductal disruption. Our study is to emphasise the role of surgery in pancreatic ascites management.

Methods: A total of 13 patients were treated for pancreatic ascites by surgery in our surgical gastroenterology Institute in Rajiv Gandhi Government General Hospital in the past 3 years. They were retrospectively reviewed and followed up.

Results: Among the 13 cases, there were 9 men and 4 women between 15 and 79-years-old (mean age 38.2 years). Among the 13 cases 11 cases followed chronic pancreatitis and 2 cases followed traumatic pancreatitis. Dominating symptoms in most patients were epigastric pain and abdominal distension, and weight loss and persistent elevation of serum amylase and ascitic fluid amylase. Imaging studies, such as ultrasound, computed tomography scan, and endoscopic retrograde cholangiopancreatography, MRCP were helpful in establishing the diagnosis. Operative procedures done for 13 cases – pancreaticojejunostomy in 7 patients, distal pancreatectomy with splenectomy and pancreaticojejunostomy in 4 cases, cysto gastrostomy done for 2 cases associated with pseudocyst. All the 13 patients were referred to us after failed endotherapy by our medical gastroenterology department. Percutaneous drainage was done for 3 patients for operatively to relieve symptoms. Mortality occurred in 2 patients. Recurrence of symptoms occurred in one patient for which endotherapy was done.

Conclusion: Surgery gave good results in patients who were refractory to endotherapy.

Malignant HPB Diseases

APHPB-0431

ERAS AFTER PANCREATODUODENECTOMY


Center for Liver Cancer, National Cancer Center, Goyang, Korea

Objectives: Our institute established ERAS for pancreatoduodenectomy (PD) patients which includes conventional ERAS and best supportive care program in 2011. The aim of this study is to analyze the efficacy of ERAS program after PD.

Methods: Between 2011 and 2013, ERAS was applied to 151 patients after PD. We evaluated the success rate of each items in ERAS program and also analyzed the intaked calories by patients after PD.

Results: Median hospital stay was 17 days (9–66). The mortality was 2% and complication was in 43% (pancreas fistula 27%, delayed gastric emptying 9%, wound infection 12%, bleeding 5%, etc). More than 40% of PD patients have the preoperative or postoperative psychological problems such as anxiety, depression or insomnia. NG tube removal on postoperative day (PoD) 1 was successful in 92% but reinserter was done in 10%. Drain removal on PoD 3 was successful in 62% and successful Foley catheter removal on PoD 2 in 85%. Oral diet was successfully started in 87% on PoD 4 and for 64% of patients, no nutritional support was needed from PoD 12. However median intake calorie was 125 ± 85 Calories on PoD 4–5, 303 ± 73 Calories on PoD 6–7, 533 ± 118 Calories on PoD 8–9 days, and 880 ± 265 Calories on PoD 10–11.

Conclusion: ERAS after PD might be effective in reducing hospital stay and cost. However ERAS after PD should be set-up and applied considering the various situations of each institute.
APHPB-0434
CLINICOPATHOLOGIC DIFFERENCES IN THE GALBLADDER CANCER ACCORDING TO THE PRESENCE OF ANOMALOUS PANCREATOBILIARY DUCTAL UNION
Department of Surgery, Seoul National University College of Medicine, Seoul, Korea

Objectives: Clinical significance of anomalous pancreatobiliary ductal union (APBDU) on gallbladder cancer (GBC) was investigated.

Methods: Among 435 patients with GBC who underwent surgery at Seoul National University Hospital between 2000 and February 2014, 386 patients who had identifiable data of APBDU were included for analysis.

Results: Of the 386 patients, mean age was 64.1 years and 53.1% (n = 205) were female. APBDU was identified in 67 (17.4%) patients of which 33 (49.3%) were male and 34 (50.7%) were female. C-P, P-C, and complex type were 46.3% (n = 31), 50.7% (n = 34), 3.0% (n = 2), respectively. Only APBDU group had 17 patients with choledochal cyst (CC). For APBDU and non-APBDU group, mean age (60.3 vs. 65.0, p = 0.002) and R0 resection (73.1 vs. 58.9%, p = 0.040) showed difference, while the proportion of female, papillary morphology, well- or moderately differentiated histology, and tumor less than stage II were comparable. For CC and non-CC group with APBDU, papillary morphology (75.0 vs. 36.4%, p = 0.045) and stage I and II (68.8 vs. 39.0%, p = 0.042) showed difference. Median overall survival (OS) of APBDU and non-APBDU group was 20.6 and 22.5 months, respectively (p = .618). Median OS of CC and non-CC group was 16.8 months and 20.7 months, respectively (p = 0.089).

Conclusion: APBDU was found in 17.4% of the patients with GBC. Although APBDU is noted in younger patients, clinicopathologic characteristics and survival were comparable. For CC, papillary morphology and early stage of the disease were more frequent in CC group without survival difference. Prognostic significance of APBDU and CC on GBC is limited.

APHPB-0435
ANALYSIS OF CLINICAL SPECTRUM AND SHORT TERM OUTCOME OF OBSTRUCTIVE JAUNDICE WITH CARCINOMA GALL BLADDER
K. Chakaravarthi1, T. D. Yadav1, V. Gupta1, S. K. Sinha2, V. Singh1, A. Lat3 and A. Das5
1General Surgery, PGIMER, Chandigarh, India; 2Gastroenterology, PGIMER, Chandigarh, India; 3Hepatology, PGIMER, Chandigarh, India; 4Radio-Diagnosis, PGIMER, Chandigarh, India; 5Histopathology, PGIMER, Chandigarh, India

Objectives: Carcinoma Gallbladder (CaGB) with jaundice at presentation generally considered as advanced disease, inoperable and poor prognosis. This study was designed to analyze the spectrum of jaundice in patients with CaGB.

Methods: CaGB with jaundice patients who received treatment at the Post graduate institute of medical education and research (PGIMER), Chandigarh, India from December 2012 to May 2014 were recruited into this study. The main outcome measured was the clinical spectrum of jaundice in patients with CaGB focusing on resectability, morbidity, mortality and short-term outcome.

Results: 64 patients included in this study, in which the mean age was 51 years and male : female ratio was 1 : 1.4. Mean value of jaundice was 16.7 mg% (3.5–39.2). All the patients were had advanced diseases according to cTNM classification. [Stage III (n = 4) and Stage IV (n = 60)] Contiguous and Non-contiguous liver infiltration was seen in 98% and 36% respectively, Right hepatic artery and Main portal vein involved in 20.3% and 12.5%, Metastatic left clavicular lymph node seen in 9%. Four patients underwent staging laparoscopy in which only one underwent R0 resection (1.5%). Resected patient was survived more than 1.5 years (577 days). The mean survival of stage III and IV was 3 and 2 months respectively.

Conclusion: Jaundice at initial presentation in CaGB invariably indicates the advanced stage of disease and has dismal prognosis. However, our study indicates that radical resection is still possible in CaGB with jaundice in the absence of metastatic or locally advanced disease.

APHPB-0436
CLINICAL SIGNIFICANCE ACCORDING TO THE PRECURSOR TYPE OF AMPULLA OF VATER CANCER
J. Park, S. Youn, H. Lee, W. Kwon, J. Heo, S. Choi and D. Choi
Department of Surgery, Samsung Medical Center, Seoul, Korea

Objectives: Although ampullary cancer are rare disease, it is considered to have a better prognosis than other periampullary cancer. According to a recent study, Intra-ampullary Papillary-Tubular Neoplasm (IAPN) is mass-forming preinvasive neoplasm that occur specifically within the ampulla. The aim of this study were to identify clinical outcome according to the precursor type (IAPN and flat dysplasia) of ampullary cancer.

Methods: Patients who underwent pancreatoduodenectomy for ampullary cancer between February 2008 and August 2014. We retrospectively collected data on clinical records. 201 patients underwent curative resection. Among them, precursor type has been reported 80 cases (IAPN 33 and flat dysplasia 47).

Results: The 1-year disease free survival rates of the 80 cases were 75.8%. And only one of IAPN was expired. (DFS 22 months, OS 45 months). Univariate analysis showed that TNM stage (p = 0.001), Lymphovascular invasion (p = 0.02) and flat dysplasia (p = 0.054) significantly increased the risk of recurrence. However, multivariate analysis showed that TNM stage (p = 0.041) were significantly increased the risk of recurrence. Also, there was similar result in IAPN (p = 0.006) Further-
more, the flat dysplasia type was found to be more associated with advanced T stage ($p = 0.013$), regional lymphnode metastasis ($p = 0.0024$), poor differentiation ($p = 0.003$), lymphovascular invasion ($p < 0.001$) and perineural invasion ($p = 0.035$) than IAPN type.

**Conclusion:** Advanced TNM stage was found to be independent predictors of recurrence after curative resection IAPN type ampullary cancer. It is considered that furthermore study is needed.

**Benign HPB Diseases**

**APHPB-0438**

**ACUTE BILIARY PANCREATITIS: A PROSPECTIVE STUDY ON INCIDENCE OF COMMON BILE DUCT STONES AND ASSOCIATED CLINICAL PREDICTORS**

S. L. Jee, K. F. Lim, K. Raman and H. Singh

*HPB Surgery, Selayang Hospital, Kuala Lumpur, Malaysia*

**Objectives:** To define the incidence of common bile duct (CBD) stone in mild to moderate acute biliary pancreatitis (ABP), and identify its clinical predictors.

**Methods:** 72 patients admitted with mild to moderate ABP to Selayang Hospital from January 2013 to August 2014 were studied prospectively. CBD stones were diagnosed on either endoscopic retrograde cholangiopancreatography (ERCP) or intraoperative cholangiogram (IOC). Preoperative ERCP was performed if there was strong suspicion of CBD stones from laboratory parameters, transabdominal ultrasound (US) or endoscopic ultrasound (EUS), and CBD stones were cleared if identified. All patients underwent laparoscopic cholecystectomy with IOC. CBD stones discovered on IOC were removed via surgical exploration or postoperative ERCP.

**Results:** There were 31 male (43.06%) and 41 female (56.94%) patients with ages from 18 to 75 years. 34 (47.22%) patients underwent preoperative ERCP. CBD stones were detected in 36 patients (50%); on ERCP (33 patients) and IOC (3 patients). Significant clinical predictors are serum bilirubin ($p = 0.012$), CBD dilatation ($>8$ mm) on US ($p = 0.006$) and EUS ($p = 0.0001$). Age, gender, serum alkaline phosphatase, transaminases (ALT, AST) and gamma glutamyltransferase are not predictive. EUS is the best predictor with sensitivity and specificity of 90% and 96% respectively.

**Conclusion:** The incidence of CBD stones in mild to moderate acute biliary pancreatitis is high (50%). Serum bilirubin, CBD dilatation on US or EUS are significant clinical predictors.

**Malignant HPB Diseases**

**APHPB-0439**

**DETERMINATION OF RISK FACTORS FOR Pancreatic Fistula after Pancreaticoduodenectomy using International Study Group on Pancreatic Fistula (ISGPF) Definition**

K. W. Fong, C. N. Chong, Y. S. Cheung, J. Wong, K. F. Lee and B. S. Lai

*Surgery, The Chinese University of Hong Kong, Shatin, Hong Kong, China*

**Objectives:** Various definitions for pancreatic fistula after pancreatico-duodenectomy exist in the literature, making comparison of the risk factors difficult. We aim to determine the risk factors for pancreatic fistula under the International Study Group on Pancreatic Fistula (ISGPF) classification in patients undergoing pancreatico-duodenectomy.

**Methods:** A total of 143 pancreaticoduodenectomies were performed in the period of December 2000 to April 2014 in a tertiary referral hospital. Pancreatic fistula was evaluated by ISGPF definition. Multi-variate analysis was used to identify the risk factors for pancreatic fistula.

**Results:** Pancreatic fistula occurred in 62 patients (43%), most of the pancreatic fistula was grade A according to ISGPF definition (84%). On multivariate analysis, smoking ($p = 0.023$), soft pancreas ($p = 0.042$) and pancreatic duct size $<4$ mm ($p = 0.038$) were independent risk factors for the developing pancreatic fistula. Only 8 patients (13%) had Grade B and 2 patients (3%) had grade C pancreatic fistula after surgery. Patients with Grade B or Grade C pancreatic fistula had longer hospital stay ($p = 0.039$).

**Conclusion:** ISGPF definition and grading systems are applicable and correlate well with clinical course in patients undergoing pancreatico-duodenectomy. Smoking, soft pancreas and small duct size are risk factors for developing post-operative pancreatic fistula.

**Benign HPB Diseases**

**APHPB-0440**

**‘HEMOSUCCUS PANCREATICUS’ – DIAGNOSTIC CHALLENGES AND MANAGEMENT OPTIONS**

J. G. Johnrose, A. Amudhan, T. Perungo, R. Prabakharan, D. Bennet, D. Kannan and S. M. Chandramohan

*Institute of Surgical Gastroenterology, Madras Medical College, Rajiv Gandhi Government General Hospital, Chennai, Tamilnadu, India*

**Objectives:** ‘Hemosuccus pancreaticus’ – is a rare and life-threatening complication of pancreatitis. Patients often present with obscure bleeding and there is significant diagnostic and therapeutic dilemma. The aim of this study is to analyze the mode of presentation and to present diagnostic and therapeutic options in the management of ‘Hemosuccus pancreaticus’.
Methods: Data of patients diagnosed as Hemosuccus Pancreaticus between March 2005 and March 2014 was retrospectively reviewed from a prospectively maintained database.

Results: Twenty patients were diagnosed as Hemosuccus Pancreaticus. Seventeen patients were males and three were females (17 : 3). The presentation was with overt GI bleed in 17 patients (85%), anemia in two (10%) and epigastric pain in one patient (5%). Twelve, six and two patients had associated chronic pancreatitis, tropical pancreatitis and acute pancreatitis respectively. Bleeding through the ampulla could be identified at UGI scope in nine patients (45%). CT Angiography was performed in 11 patients (55%). The arterial feeder was splenic artery in 10(50%), GDA in 8(40%) and pancreatico-duodenal vessels in 1(5%), hepatic artery in one (5%). Coil embolisation of feeding vessels was attempted in eleven (55%) and was successful in 11 (77.8%). 9 (45%) required surgery. The rebleeding rate was 18% following embolisation which was treated by re-embolisation in one and surgery in one. The mortality was 10%.

Conclusion: In a hemodynamically stable patient Angio-embolisation offers better immediate control of bleeding and is the preferred and safe initial treatment. Surgical intervention is indicated in a patient with hemorrhagic shock, impending rupture failed embolisation or if there is associated conditions which warrant definitive surgery.

Malignant HPB Diseases
APHPB-0441
SHORT-TERM OUTCOME OF LAPAROSCOPIC RADIOFREQUENCY ABLATION FOR HEPATOCELLULAR CARCINOMA IN LIVER CIRRHOSIS: THE SAFETY AND EFFICACY
Surgery, Samsung Medical Center, Seoul, Korea

Objectives: Radiofrequency ablation (RFA) has been a legitimate treatment for primary and metastatic hepatocellular carcinoma (HCC) with liver cirrhosis. The laparoscopic RFA has replaced percutaneous RFA in HCCs that were considered to be infeasible because of poor sonic window, adjacent organ and major vessels. The aims of this study is to assess the clinical data and short-term outcome to evaluate efficacy and safety of laparoscopic RFA for HCCs with cirrhosis.

Methods: Between September 2009 to August 2014, 45 consecutive HCC patients with cirrhosis were treated by laparoscopic RFA. Most patients had hepatitis B (60%) and Child-Pugh class B status (90%). Median age was 60 years (range, 49–84). The short-term outcome was evaluated by radiologic images in 3-, 6-, and 9 months.

Results: Laparoscopic RFA was done in all patients and 49 HCC nodules were completely ablated. There was no procedure related morbidity and mortality. The HCC nodules consisted of primary (n = 22), recurred (n = 19) and metastatic lesions (n = 8). Median nodule diameter was 17 mm (range, 8–40). The 19 (45%) nodules were located in segment 8. Median time of RFA was 14 min (range, 7–28), while total operative time was 130 min (range, 63–303). The combined procedure were adhesiolysis (n = 17), cholecystectomy (n = 2), colorectal surgery (n = 1). The hospital stay was 5 days (range, 3–22). The 3-, 6-, and 9-months disease-free survival rate was 97.2%, 83.2%, and 78.6% respectively.

Conclusion: Laparoscopic RFA is a safe and effective therapeutic option for HCCs infeasible to percutaneous RFA in patients with cirrhosis. The laparoscopic RFA combines the advantage of clinical outcomes comparable to those percutaneous RFA.

APHPB-0442
CURRENT STATUS OF LAPAROSCOPIC HEPATECTOMY, AND OUR TECHNIQUE FOR SAFETY OPERATION
Department of Surgery & Science, University of Toyama, Toyama-shi, Japan

Objectives: In about 10 years laparoscopic hepatectomy is spreading in our country. Only partial resection and lateral segmentectomy has been applied to national insurance. But currently, many reports of laparoscopic anatomical resection is increasing, because technical improvement of laparoscopic hepatectomy has been achieved via the development of surgical devices. We also experienced cases of anatomical resection in recent years. So now, we report our situation of laparoscopic hepatectomy, and our technique for safety operation.

Methods: Laparoscopic hepatectomy was introduced in our department from 2010. Initially, we used hybrid approach at mobilization for right or left lobe. From 2012, pure laparoscopic approach has become possible in all cases with technical improvement. From 2013, we introduced pre-coagulation technique by the monopolar forceps using soft-coagulation with saline dripping for all parenchymal dissection line.

Results: 47 patients who have performed laparoscopic hepatectomy were identified between 2010 and 2014. The mean age was 65.9 years (range 29–87), 33 were men. There are 32 cases of HCC, nine cases of liver metastasis, two cases of cholangiocellular carcinoma, and four of the benign tumors. It was applicable for partial resection in 37, subsegmentectomy in 3, segmentectomy in 4, and lobectomy in 3. Tumor localization, S1/S2/S3/S4/S5/S6/S7/S8: 2/6/6/10/5/9/6/7. The mean tumor size was 2.4 cm diameter (range 1–4.6). The mean operation time was 267.9 min. There was no severe complication. After introduction of pre-coagulation by soft-coagulation, intraoperative blood loss significantly decreased (p = 0.0465).

Conclusion: Laparoscopic hepatectomy with pre-coagulation by soft-coagulation is safe and useful.
EXTENT OF RESECTION IN CYSTIC NEOPLASM OF PANCREAS – A SURGICAL CONUNDRUM

B. Saxena, K. Gharpure, H. Jain, H. Lokhandwala, R. Singh and R. Joshi

General Surgery, BYL Nair Charitable Hospital and T N Medical College, Mumbai, India

Objectives: Cystic neoplasms of pancreas can be benign, potentially malignant or malignant and the extent of resection remains a surgical conundrum. The objective is to determine the accuracy of the decision regarding the extent of resection.

Methods: 29 patients were analysed based on pre and intra operative characteristics.

Results: Male to female ratio was 1 : 3.8 and average age 45 years. Surgical decision was determined by gender, size and location of tumour, serum tumour markers, imaging studies and intra-operative findings. Subsequently, 17 patients underwent oncological resection and 12 patients enucleation. On histopathology, 6 patients had mucinous cystadenoma, 9 mucinous cystadenocarcinoma, 8 Gruber Frantz tumour and 6 serous cystadenoma. All patients with mucinous cystadenocarcinoma, 2 patients with mucinous cyst adenoma and 6 patients with Gruber Frantz underwent oncological resection along with enucleation in all patients with serous cystadenoma and these decisions were justified. Debatable however was enucleation in 4 patients with mucinous cystadenoma and 2 patients with Gruber Frantz tumour. On further evaluation all these 6 patients were females, had normal serum tumour marker levels, tumour size was <4.5 cms and location was in the head of pancreas.

Conclusion: In our series, the decision regarding extent of surgery was accurate in 80% of patients. In 20%, where the decision was debatable, justification is possible if suitable demographic and morphological features are considered. Literature has shown that enucleation may be justifiable in young patients, with tumour located in the head of pancreas and which are easily amenable to enucleation.

Benign HPB Diseases

APHPB-0445

SPONTANEOUS CHOLEDOCHO DUODENAL FISTULA – AN UNUSUAL CAUSE OF PNEUMOBILIA THAT NEEDS ATTENTION

T. Perungo, S. M. Chandramohan, D. Kannan, D. Benet, A. Amudhan, P. Raju, P. Selvarathinam, S. Sugapракash, S. Balakumar and J. John Grifson

Surgical Gastroenterology, Madras Medical College, Chennai, India

Objectives: Spontaneous Choledocho duodenal fistulae are infrequently reported in literature. Diagnosing and treating the underlying cause is important to prevent recurrent cholangitis. Our aim is to analyze the outcome after intervention for patients presenting with choledocho duodenal fistula.

Methods: During the time period from January 2009 to April 2014 eight patients (n = 8), 6 males and 2 females, were diagnosed to have Choledochoduodenal fistula. The age group was between 29 and 68 years. All patients presented with abdominal pain, three had jaundice and four had history of recurrent abdominal pain in the past. The average duration of symptoms was 6 months. The etiology was peptic ulcer disease in five patients, choledocholithiasis in two and incidental in one with associated chronic calcific pancreatitis. Endoscopy showed choledochoduodenal fistula in all patients which was demonstrated in either CECT abdomen or MRCP. One patient was managed medically, one endoscopically and six patients underwent surgery – vagotomy drainage, CBD exploration and drainage or Frey’s procedure according to the underlying etiology.

Results: All patients recovered well in the post op period. Orals were started on 4th POD. The average duration of hospital stay was 6 days. All patients are under regular follow up and the one treated endoscopically has recurrent symptoms.

Conclusion: Choledochoduodenal fistula per-se need not be treated. The underlying cause is to be addressed which gives good relief of symptoms.

Benign HPB Diseases

APHPB-0446

CHOLEDOCHAL CYSTS BEYOND FIRST DECADE: RARE BUT THERE!

K. V. Gharpure, B. Saxena, H. Jain, H. Lokhandwala, R. Singh and R. M. Joshi

Department of General Surgery, B.Y.L. Nair Charitable Hospital and T.N.M. College, Mumbai, India

Objectives: Nearly 25% of choledochal cysts are detected during infancy and 80% in the first decade. 20% are asymptomatic, have non-specific complaints and maybe diagnosed incidentally or otherwise, beyond the first decade. The objective is to review clinical manifestations encountered with choledochal cysts diagnosed beyond first decade and to evaluate the postsurgical outcomes.

Methods: 13 patients with age >10 years with choledochal cysts who underwent surgery, were reviewed.

Results: Mean age was 37 years (range 15–64) with male to female ratio of 1 : 3.3. Presentation varied from vague abdominal pain in 6 patients, dyspepsia in 4, cholangitis in 1 and 2 patients were diagnosed incidentally. 9 patients (69%) had cystic dilatations, 2 patients (15.3%) had fusiform dilatation and 2 patients (15.3%) had both intra and extra hepatic dilatations. All patients underwent total cyst excision with Roux-en-Y hepaticojejunostomy. Mean hospital stay was 5–7 days. The morbidity was 7.6% and mortality 0%. Histopathology revealed no malignancy. Mean follow up was 30 months.

Conclusion: Although rare beyond first decade, all choledochal cysts need surgical intervention for fear of complications like cholangitis, spontaneous rupture, secondary biliary cirrhosis and malignant transformation. Cyst excision and Roux-en-Y hepaticojejunostomy is the treatment of choice. Surgery is the mainstay for
all patients of choledochal cysts even if asymptomatic, given the potential for complications. The fact that surgery is associated with low morbidity and mortality, especially if the cyst is uncomplicated, makes it a feasible option.

**Malignant HPB Diseases**

**APHPB-0447**

**EVALUATION OF SURGICAL RESECTION OF LYMPH NODE METASTASES FROM HEPATOCELLULAR CARCINOMA**


Hepato-Biliary-Pancreatic Surgery, National Cancer Center Hospital East, Kashiwa, Japan

**Objectives:** Lymph node metastases (LNs) from hepatocellular carcinoma (HCC) seem to be rare. HCC with LNs has been regarded as a systemic disease with poor prognosis. The aim of this study is to evaluate the efficacy of surgical resection of LN from HCC.

**Methods:** From 2000 to 2013, 56 patients diagnosed as LNs from HCC without other extra-hepatic metastatic lesions were evaluated. Clinopathological data in these patients were analyzed retrospectively.

**Results:** Patients characteristic are shown as follows; median age: 69 years old, male/female: 46/10 cases (82/18%), HBV(+)/HCV(+): 8/31 cases (26.5%), Child-Pugh A/ B or C: 45/11 cases (80/20%), Pretreatment history before treatment for LNs (yes/no): 35/21 cases (63/37%), Intrahepatic lesions (yes/no): 44/12 cases (79/21%), Number of LNs (single/multiple): 30 /26 cases (54/46%), Time interval from initial treatment to treatment for LNs (<1-year/ ≥ 1-year): 32/24 cases (57/43%). Twenty-two patients (39%) underwent surgical resection for LNs, 25 patients (45%) received systemic chemotherapy, 9 patients (16%) received other treatments. Median overall survival time after treatment for LNs was 513 days. Patients with single LNs or no intrahepatic lesions were good prognostic factors.

**Conclusion:** We should allow for surgical resection for HCC patients with LNs if they had single LNs and no intrahepatic lesions.

**Transplantation**

**APHPB-0448**

**ANALYSIS AND STRATEGY FOR PORTAL VEIN THROMBOSIS IN LIVER TRANSPLANTATION**

T. Onoe1, S. Shimizu2, K. Ishiyama2, K. Ide2, M. Ohira2, H. Tahara2, Y. Saeki2, N. Taniname2, T. Abe2 and H. Ohdan2

1Institute for Clinical Research, National Hospital Organization Kurume Medical Center/Chugoku Cancer Center, Kurume, Japan; 2Department of Gastroenterological and Transplant Surgery, Institute of Biomedical and Health Sciences Hiroshima University, Hiroshima, Japan

**Objectives:** Post-operative portal vein thrombosis (PVT) could be crucial for prognosis of liver transplantation. Therefore, it is very important to prevent portal thrombosis after liver transplantation in order to secure an enough blood flow of graft. In this study, we elucidated the risk factors for post-operative portal thrombosis to establish a strategy for PVT.

**Methods:** Between 2002 and 2012, living donor or deceased donor liver transplantation were performed in 181 patients. In those patients, we elucidated the risk factors for post-operative PVT by using multivariate analysis.

**Results:** Among 181 patients, 12 patients had post-operative PVT (6.6%). One and 5 year survival rate of patient with post-operative PVT was significantly lower than those of patients without post-operative PVT (58.3%, 50.0% and 85.1%, 74.6%, respectively). A multivariate analysis of factors revealed that a presence of pre-operative PVT and high donor age (≥50) were significant risk factors for post-operative PVT (p < 0.001 and <0.01, respectively). Next, we reviewed our procedures for pre-operative PVT. We have performed thrombectomy for grade 1-2 PVT and reconstruction of portal vein for grade 3-4 PVT. Twenty-one patients had pre-operative PVT (13 patients with grade 1, 6 patients with grade 2 and 2 patients with grade 3 PVT). Among them, 4 patients had re-PVT and all of them were the patients with grade 2 PVT who underwent thrombectomy.

**Conclusion:** Pre-operative PVT and high aged donor are risk factors for post-operative PVT. An aggressive portal vein reconstruction for grade 2 pre-operative PVT might be useful for preventing re-PVT.

**Benign HPB Diseases**

**APHPB-0449**

**MANAGEMENT OF CHRONIC CALCIFIC PANCREATITIS WITH SINISTRIAL PORTAL HYPERTENSION IN A SINGLE CENTER EXPERIENCE – A RETROSPECTIVE STUDY**

R. Vellaisamy, S. Sankareswaran, R. Rajendran, A. Anbalagan, B. Duraisamy, P. Raju, C. Servarayan Murugesan and K. Devygounder

Institute of Surgical Gastroenterology, Madras Medical College, Rajiv Gandhi Government General Hospital, Chennai, India

**Objectives:** Left sided or sinistrial portal hypertension is one of the vascular complications in Chronic calcific pancreatitis patients. Combined Frey’s procedure with splenectomy can be done in specialist pancreatic centers without increasing mortality and morbidity.

**Methods:** This is retrospective study of 140 patients with Chronic calcific pancreatitis between August 2010 to May 2014. Out of 140 cases 14 (10%) (10 Males, 4 females) had sinistrial portal hypertension. The average age was 34.5 years.10 patients were alcoholics. One patient had Jaundice, one had Upper GI bleeding and 3 had steatorrhoea. All had abdominal pain radiating to back with pain score between 8–9. Two patients had small duct disease. Out of 14 patients, 10 were treated with Frey’s procedure and splenectomy, 2 were treated with Lateral pancreaticojejunostomy and splenectomy and 2 were treated with Izbiki procedure and splenec-
tomy. One patient required Choledochoduodenostomy for jaundice along with Frey’s. Average duration of surgery was 180 min with mean blood loss 216 mL. 9 patients required blood transfusion. The followup period was 3–45 months.

Results: The pain score was 1 in the immediate postop in 12 patients. 2 patients had score between 2–3. They were managed with analgesics. On the Long term follow up 2 patients required celiac plexus neurolysis for Pain relief.

Conclusion: Concomitant splenectomy should be strongly considered in patients undergoing operative treatment of symptomatic chronic pancreatitis with sinistral portal hypertension. Adding splenectomy to the pancreatic procedure did not increase morbidity or mortality.

APHPB-0450

HYPER-GIANT HEPATIC HAEMANGIOMA – LEAVE ALONE OR RESECT?

H. Jain, H. Lokhandwala, B. Saxena, K. V. Gharpure, R. Singh and R. Joshi
General Surgery, BYL Nair Charitable Hospital and T N Medical College, Mumbai, India

Objectives: Majority of hepatic haemangiomas are <4 cm and asymptomatic and do not require treatment. However, Giant (>4 cm) and hyper-giant Haemangiomas (>10 cm) are often symptomatic, with a risk of spontaneous rupture leading to haemoperitoneum or intravascular consumptive coagulopathy. Should these be left alone or resected? Is surgery a safe and viable option?

Methods: 10 patients with hepatic haemangioma having at least one lesion >10 cm were analysed. Diagnosis was made on imaging like ultrasonography and computed tomography. Indication for surgery was abdominal pain and uncertainty of diagnosis. Nature of surgery was based upon size and location of the haemangioma.

Results: Mean age of these patients was 47.7 years with female to male ratio of 4 : 1. Palpable lump in abdomen was found in 80% and dull achling pain in 60%. 6 patients had left sided lesions and 3 patients had bi-lobar involvement whereas 1 patient had a right sided lesion. The average size was 16.5 cm (range 10–35 cm). Liver resection was done in 5 patients and enucleation in 4 patients. 1 patient was kept under observation as he was asymptomatic. All the operated patients had an uneventful post-operative recovery with no evidence of recurrence over a period of 2 years.

Conclusion: Hyper-giant haemangiomas are usually symptomatic. Size is not a criterion for surgery. Surgery is indicated in symptomatic patients or in cases of diagnostic dilemma. Size and location of the lesion determine whether these lesions should be enucleated or resected with satisfactory results in both.

APHPB-0451

MANAGEMENT OF BRONCHOBILIARY FISTULA A RARE ENTITY – REPORT OF TWO CASES

Institute of Surgical Gastroenterology, Madras Medical College, Rajiv Gandhi Government General Hospital, Chennai, India

Objectives: Bronchobiliary fistula is an abnormal communication between the biliary tree and airway. It presents with cough and biliopıyisis .This article is to demonstrate the diagnostic usefulness of HIDA scan and role of ERCP in bronchobiliary fistula management.

Methods: The study was between May 2013 to May 2014.

Results:

Case 1: A 39 year male admitted with biliopıyisis and dyspnoea. He underwent percutaneous catheter drainage followed by laparotomy for liver abscess 2 years back. Within a month, relaparotomy was done with internal drainage and cholecystectomy. Since he developed external biliary fistula he was treated with fistulojejunostomy later .On evaluation Fistula was demonstrated by HIDA scan not by MRCP and ERCP. He was treated with ERCP and biliary stenting. Biliopıyisis stopped in 10 days.

Case 2: A 35 year male, a case of hilar cholangiocarcinoma with liver metastasis admitted with biliopıyisis for 20 days. He underwent palliative PTBD with stent internalisation 4 months back. Fistula was demonstrated by HIDA scan. He was treated with ERCP and Biliary stenting. The biliopıyisis has gradually reduced in 7 days.

Conclusion: Bronchobiliary fistula has to be suspected in patients with biliopıyisis who have undergone hepatobiliary intervention. Fistula can be demonstrated by HIDA scan. Before plan for major hepatectomy, ERCP biliary stenting has to be attempted. Even in metastatic disease, symptomatic relief has to be given for better quality of life to the patient.

APHPB-0452

PRIMARY HEPATIC TUBERCULOSIS MIMICKING INTRAHEPATIC CHOLANGIOCARCINOMA: REPORT OF TWO CASES

J. I. Park and Y. H. Park
Surgery, Inje University Haeundae Paik Hospital, Busan, Korea

Objectives: Primary hepatic tuberculosis (TB) is very uncommon even in countries with high prevalence of tuberculosis.

Methods: We present two cases of patients who were preoperatively misdiagnosed as intrahepatic cholangiocarcinoma (ICC), and confirmed primary hepatic TB by postoperative pathology.
Results: Case 1: A 61 year-old male complained of abdominal pain for 1 month. Abdominal CT revealed multilobulated lesion measuring in 7 cm diameter in segment 4 of the liver with focal peripheral intrahepatic duct (IHD) dilatation, as well as extrahepatic invasion to the hepatic flexure of colon. ICC was strongly suspected, so that we performed Left hemiepatectomy with segmental resection of transverse colon. Postoperative pathology confirmed chronic granulomatous inflammation with extensive necrosis. He took the anti-TB medications for 9 months.

Case 2: A 77 year-old male was referred for a liver mass on ultrasonography. CT scan showed well defined mass in 3 cm diameter, but atypical dense lesion on arterial phase in left lateral segment of the liver. MRI revealed peripheral rim like enhancement and focal peripheral IHD dilatation. We diagnosed with ICC, so that we performed left lateral sectionectomy. Postoperative pathology confirmed granulomatous inflammation with extensive central necrosis. He took the anti-TB medications for a year.

Conclusion: Primary hepatic TB is very uncommon and lack of specific clinical manifestations and imaging features, so it can be misdiagnosed. But, if the disease can be confirmed by needle biopsy preoperatively, anti-TB drug therapy can help to prevent unnecessary operation. Primary hepatic TB should be considered in the differential diagnosis of solitary liver lesions.

APHPB-0453
BONE MORPHOGENETIC PROTEIN-4 INDUCES EXPRESSION OF CONNECTIVE TISSUE GROWTH FACTOR IN HEPATIC PROGENITOR CELLS THROUGH SMAD DEPENDENT SIGNALING

Hepatic Surgery Centre, Tongji Hospital, Tongji Medical College, Huazhong University of Science & Technology, Wuhan, China

Objectives: In the present study, we sought to determine Bone Morphogenetic Protein-4 (BMP4) induces connective tissue growth factor (CTGF) expression and the signaling pathway related in Hepatic progenitor cells (HPCs).

Methods: We carried out immunohistochemistry analysis to confirm HPCs activation, BMP4 and CTGF expression. We employed recombinant human BMP4 (rhBMP4) to determine the effects of BMP4 on CTGF production in HPCs. We also designed small interfering RNA targeting Smad1/5 (siSmad1/5) and detected whether Smad1/5 knockdown affects rhBMP4-induced CTGF expression.

Results: In this study, by immunostaining of human liver sections, we confirmed that HPCs were activated in the cirrhotic liver and secreted Bone Morphogenetic Protein-4 (BMP4) and connective tissue growth factor (CTGF). CTGF was an important inducer of liver fibrosis. Besides, we used HPC cell lines LE/6 and WB-F344 as in vitro models and found that BMP4 induced secretion of CTGF in HPCs. Moreover, BMP4 signaling was intracrine activated and contributed to autonomous secretion of CTGF in HPCs. Furthermore, we found that BMP4 induced expression of CTGF was mediated by BMP4 activated Smad signaling.

Conclusion: Taken together, our results provide evidence for the role of HPCs in liver fibrosis and suggest that the production of CTGF by BMP4 activated Smad signaling in HPCs may be a therapeutic target of liver fibrosis.

Malignant HPB Diseases
APHPB-0454
SURVIVAL AFTER RESSECTION OF HEPATOCELLULAR CARCINOMA IN CIRRHOTIC PATIENTS

M. Amer1, A. Sultan2, M. Abdel Wahab2, A. Fouad2 and M. El-Shobari2
1General Surgery, Mansoura University, Students’ Hospital, Mansoura, Egypt; 2Gastroenterology Surgical Center, Mansoura University, Mansoura, Egypt

Objectives: Hepatocellular carcinoma (HCC) is one of the world’s most common malignancies. It accounts for more than 90% of all primary liver cancer. The aim of this study is to evaluate the clinical and pathological factors influencing the survival after resection of HCC in cirrhotic patients.

Methods: The study was done on 175 patients with liver cirrhosis underwent hepatic resection for HCC in gastroenterology surgical center, Mansoura University, Egypt.

Exclusion criteria:
1. Thrombosis of the main portal vein
2. Presence of extrahepatic metastatic deposits
3. Multifocal HCC involving both liver lobes
4. Child-Pugh B and C

All patients were followed up at 2 weeks interval in the first 3 months and monthly thereafter using abdominal ultrasound, alpha feto protein and abdominal computed tomography if recurrence is suspected.

Results: Patients were 131 (75%) male and 44 (25%) female with mean age of 54.8 ± 9.8 years. Major hepatic resection was done for 65 (37.1%) patients, segmentectomy for 62 (35.4%) patients and localized resection for 48 (27.4%) patients. The median survival after surgical resection was 24 months. One year survival was 72%, 3 years survival was 42% while 5 years survival was 21%.

Factors which significantly predict the survival were lymph nodes status, tumor differentiation, staging, cut margin infiltration and vascular invasion.

Conclusion: Despite the resectability of HCC in cirrhotic patients, the over all survival remains dismal due to high recurrence rate and the subsequent development of liver cell failure.
APHPB-0455
ADULT HEPATOBLASTOMA – A CASE REPORT
B. Sathyamoorthy, R. Vellaisamy, S. Sankareshwaran, A. Anbalagan, P. Raju, B. Duraisamy, K. Devygounder and C. ServarayanMurugesan
Institute of Surgical Gastroenterology, Madras Medical College, Rajiv Gandhi Government General Hospital, Chennai, India
Objectives: Adult hepatoblastoma is a rare malignant liver neoplasm. Surgery is the treatment of choice, but recurrence is common even after complete resection. No standard therapeutic strategy has been established so far.
Methods: A 14-year-old female presented with a rapidly expanding right hypochondrial mass. Pain preceded the appearance of the mass. Clinical examination revealed a 15 × 15 cm mass occupying the right hypochondrium and epigastrium. 64 slice CECT Abdomen showed 15 × 11 × 9 cm multiseptated loculated mass lesion involving right lobe of liver segment 5,6,7,8. Portal Doppler study showed Right portal vein is displaced. PET CT showed Activity noted in the liver, spleen, mediastinal nodes in the axilla and right side of neck suggestive of lymphoma. USG guided biopsy done revealed suspected Hepatic Adenoma with cholestasis. Preop AFP was more than 30,000. With the preoperative diagnosis of ? Hepatic adenoma . The tumor was completely resected off the inferior vena cava with Right hepatectomy. The histopathological diagnosis was mixed hepatoblastoma. Grossly the tumor was weighing about 2.5 kg. The postoperative course went smoothly.
Results: Hepatoblastoma is a rare malignant tumor of the liver and usually occurs in the first three years of life. Unusual that hepatoblastomas occur in adults. Hepatoblastoma is most often unifocal, responds well to neoadjuvant chemotherapy and resection is often possible. Early detection may lead to improved prognosis and survival but they are often detected late.
Conclusion: We are presenting this case due to the rarity of hepatoblastoma in adults and its preoperative diagnostic difficulty and successful surgical treatment with hepatectomy.

APHPB-0456
CYTOPLASMIC TRANSLOCATION OF HIGH MOBILITY GROUP BOX 1 (HMGB1) IN ADJACENT NONCANCEROUS TISSUE OF HUMAN HEPATOCELLULAR CARCINOMA (HCC) PROMOTES MALIGNANCY AND PREDICT POOR PROGNOSIS
W. Yanjun1, L. Hui-fang2, Z. Bi-xiang2 and C. H. E. N. Xiao-ping2
1Hepatic Surgery Center, The Second Affiliated Hospital of Fujian Medical University, Quanzhou, China; 2Hepatic Surgery Center, Tongji Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan 430030, China
Objectives: High mobility group box 1 protein (HMGB1) plays dual roles as both a nuclear protein and a cytokine. In the cases of tumor, extracellular HMGB1 plays a paradoxically dual effect, either as a tumor promoter or inhibitor. However, few studies about the role of extracellular HMGB1 in hepatocellular carcinoma (HCC) were reported. Hence, we investigate the role of HMGB1 in HCC to further understand the molecular pathogenesis of HCC.
Methods: In this study, we examined the HMGB1 expression in HCC and corresponding adjacent noncancerous specimens obtained from 155 patients by immunohistochemistry, and in patients’ serum by ELISA. HBx was transfected to a non-tumor liver cell line, LO2, and its effect on HMGB1 was evaluated.
Results: Immunohistochemical study showed increased cytoplasmic HMGB1 in 76.6% (119/155) adjacent noncancerous tissue samples compared to normal liver tissues (0/18) and HCC tissues (27.1%). Cytoplasmic HMGB1 overexpressed in adjacent noncancerous tissues was significantly correlated with high hepatitis B virus (HBV)-DNA load (p < 0.001) and high severity of liver fibrosis (p < 0.01). High cytoplasmic HMGB1 levels also predict shorter disease-free (p = 0.006) and overall survival (p = 0.016). LO2 cells transfected with HBx secreted more HMGB1 compared to control (p < 0.05). Extracellular HMGB1 treatment promoted HCC cells migration and invasion with the involvement of ERK1/2 activation.
Conclusion: This study indicated that HMGB1 cytoplasmic translocation in adjacent noncancerous tissue of HCC promotes the tumor malignancy and predicts poor prognosis, probably through activation of ERK pathway. Targeting HMGB1 would be a novel therapeutic strategy of human HCC.

Benign HPB Diseases
APHPB-0457
INCIDENCE OF PANCREATIC FISTULA AFTER DISTAL PANCREATECTOMY AND ITS CLINICAL IMPLICATIONS
S. Samsudin, K. F. Lim, K. Raman and H. Singh
HPB Surgery, Hospital Selayang, Kuala Lumpur, Malaysia
Objectives: To study the incidence of post-operative pancreatic fistula (POPF) after elective distal pancreatectomy (DP) and its impact on clinical outcomes.
Methods: A retrospective review was performed on 75 patients who underwent elective DP from 2001–2011 in the HPB Surgery Department, Selayang Hospital. Data was collected from patient records. POPF is defined and graded based on International Study Group of Pancreatic Fistula (ISGPF) criteria (drainage output after Day 3 of surgery with amylase content higher than 3 times upper normal serum limit). Clinical outcomes of length of hospital stay (LOS), readmission, intraabdominal abscess and mortality were analysed.
Results: POPF occurred in 50 pts (66.67%); Grade A fistula (46 patients, 92%) and Grade B/C fistula (4 patients, 8%). 25 patients did not have POPF (33.33%). Grade B/C fistulae resulted in significantly longer LOS (37.5 ± 17.3 days) than Grade A fistula (15.3 ± 9.4 days) or without fistula (14.3 ± 12.6 days), (p = 0.001). Intraabdominal abscess rates (100%) and
hospital readmissions (50%) were also higher in Grade B/C fistula as compared to Grade A fistula or without fistula (p = 0.0001, 0.0323). Mortality rates (1 patient with Grade B/C fistula died from a non-related cause) were not significantly different (p = 0.1379). Patients with Grade A fistula did not have significant difference in outcomes from those without fistula (p > 0.05).

Conclusion: Incidence of POPF after DP is high. Majority are Grade A fistulae which do not lead to significant clinical outcome difference while Grade B/C fistulae brings significant increase in morbidity.

Malignant HPB Diseases
APHPB-0458
OUR EXPERIENCE WITH SOLID PSEUDOPAPILLARY NEOPLASM OF PANCREAS
B. Sathyamoorthy, R. Vellaisamy, A. Anbalagan, P. Raju, D. Barram, K. Devygounder and C. ServarayanMurugesan
Institute of Surgical Gastroenterology, Madras Medical College, Rajiv Gandhi Government General Hospital, Chennai, India

Objectives: Solid-pseudopapillary tumor of the pancreas (so-called Franz tumor) is a rare neoplasm of typically benign behavior, predominantly occurring in young females. This study was designed to analyse clinicopathological characteristics of the rare disease, management strategy and outcome of this rare disease.

Methods: Total of 18 patients of solid-pseudopapillary tumors of the pancreas (SPTPs) have been treated between 1994 and 2013. Out of 18, 17 patients were female, 1 patient was male. Mean age of presentation was 39 years of age. All under went thorough clinical examinations, X Ray abdomen, CECT abdomen. Most patients presented with dyspepsia and abdominal pain and abdominal lump. Regarding location of the tumour, 8 presented as distal body and tail tumour, 6 at the head and 4 at the body. 8 patients were managed with simple excision/enucleation of the tumour and 5 with distal pancreatectomy and splenectomy and 4 with distal pancreatectomy and 1 patient managed with whipples procedure.

Results: The clinical and radiological diagnosis was confirmed by histological examination of the tumor. 2 Patients lost follow up. Neither short-term or long-term surgical complications, nor metastases have been recorded in the follow-up (mean-7 years).

Conclusion: Solid-pseudo papillary tumors of the pancreas are rare tumors. Despite rare presumptive diagnosis is possible, based on the fact that these tumors particularly affect young females and radiological findings show a tumor with solid and cystic parts. Radical tumor resection is the therapeutic method of choice. Although enucleation is discussed controversial it is a viable option in very large encapsulated tumours in the body.

APHPB-0461
SURGICAL OUTCOMES IN HEPATOCELLULAR CARCINOMA PATIENTS WITH PORTAL VEIN TUMOR THROMBOSIS
Hepatobiliary Surgery and Liver Transplantation, Asan Medical Center University of Ulsan College of Medicine, Seoul, Korea

Objectives: The role of surgical resection and thrombectomy for HCC with portal vein tumor thrombus (PVTT) is controversial. This study aimed to evaluate the effect of the extent of PVTT and curative resection on the long-term outcomes of surgical treatment for HCC.

Methods: A total of 227 patients with HCC and PVTT underwent hepatic resection. The patients were divided into 4 groups according to the level of PVTT: in PV1, PVTT was located at subsegmental PV (25 patients), in PV2, PVTT is located at sectional PV (58 patients), in PV3, PVTT is located at right or left PV (116 patients), in PV4, PVTT extended into main PV (28 patients). In addition, PVTT patients were divided into 3 groups according to marginal status of resection: in R0 (175 patients), in R1 (40 patients), in R2 (12 patients). We compared overall survival rates between the groups.

Results: The cumulative 1-, 2-, 3-, and 5 year overall survival rates were 61.3%, 45.5%, 37.3%, and 31.5%, respectively. The overall survival rates between PV1, 2, 3, and 4 groups were not different, and the 5-year overall survival rate were 38.9%, 33.8%, 31.1%, and 29.4%, respectively. Meanwhile, the overall survival rates between R0, 1, and 2 groups were significantly different, and the 5-year overall survival rates were 36.9%, 19.2%, and 0%, respectively.

Conclusion: Hepatic resection with or without thrombectomy for HCC with PVTT patients at our institution yielded relatively better outcomes compared to the previous reports.

APHPB-0462
BORDERLINE RESECTABLE PANCREATIC TUMORS: MULTIMODAL APPROACH IMPROVES OUTCOMES
A. Mitra1, N. Shetty2, S. Patkar1, V. Ostwal3, R. Engineer2, M. Goel1 and S. V. Shrikhande1
1GI and HPB Service Department of Surgical Oncology, Tata Memorial Hospital, Mumbai, India; 2Department of Radiology, Tata Memorial Hospital, Mumbai, India; 3Department of Medical Oncology, Tata Memorial Hospital, Mumbai, India

Objectives: Borderline Resectable Pancreatic Tumors pose a management challenge. We aimed to assess the impact of multimodality approach on outcomes of borderline resectable (BR) pancreatic tumors.

Methods: Prospective database (January 2007–July 2014) was analyzed retrospectively. Pancreatic tumors
were segregated into BR and locally advanced unresectable (LA) groups. The decision to operate upfront or offer neoadjuvant therapy was based on predefined radiologic criteria and on joint clinic decisions.

**Results:**
There were 104 pancreatic tumors. 84 were BR and 20 LA. In the BR group, 39 were treated with neoadjuvant therapy and 38 underwent upfront resection. 7 were lost to follow-up without the start of treatment and 3 after treatment. Amongst the neoadjuvant therapy group, 22 were subjected to exploration and 17 not explored due to various reasons. Thus, of a total 60 (38 + 22) explorations, 50 were resected and 10 were inoperable. R0 resection was achieved in 44/84 (52.4%). The median overall survival (OS) for BR group (n = 74) was 31.8 months. The mean OS (median OS was not reached) for resected patients (n = 48) was 53.2 months and for the unresected patients (n = 26) it was 14.4 months (p = 0.000). Specifically for adenocarcinomas, the median OS survival for the entire cohort of BR tumors was 19.6 months; for the resected adenocarcinomas, the median OS survival for the entire cohort of BR tumors was 19.6 months; for the resected patients while 12 (11.8%) had Juxta-papillary duodenal diverticuli and 18 (17.8%) had undergone a previous cholecystectomy.

Majority required lithotripsy to clear the CBD with 84 (83.2%) had clearance at first attempt of ERCP. Acute pancreatitis was the commonest post-ERCP complication 12 (11.8%) observed.

**Conclusion:** CBD calculi were present in half of the patients who underwent ERCP for suspected calculus disease. ERCP successfully achieved a CBD clearance in majority of patients with CBD calculi.

**Malignant HPB Diseases**

**APHPB-0465**

**VALUE OF ALPHA FETO-PROTEIN IN THE DIAGNOSIS OF HEPATOCELLULAR CARCINOMA (HCC) IN A DEVELOPING COUNTRY**

N. Karunaratne, T. Samarasinge, R. Jayawardena, T. Wijeratne and A. Pathiranahana

*Department of Surgery, Faculty of Medical Sciences, University of Sri Jayewardenepura, Colombo, Sri Lanka*

**Objectives:**
AFP (alpha-fetoprotein) is a commonly used tumour marker in the diagnosis of HCC. AFP levels >400–500 ng/mL are considered diagnostic of HCC. However the diagnosis is frequently made even with lower levels. A significant percentage with HCC will have AFP levels in the normal range. Evaluation of AFP is not available in the government-funded hospitals and is a costly investigation. Our study was conducted to find the correlation between AFP levels and the burden and possible aetiology of HCC in a cohort of Sri Lankan patients.

**Methods:**
Retrospective case note analysis of 113 consecutive patients with HCC presenting to a tertiary care centre in Sri Lanka. Statistical analysis was done using SPSS 20 software.

**Results:**
The mean age was 62.8 years (range from 25 to 82) and only 21 were females. 64.3% had features of cirrhosis on imaging: with 41% belonging to Child’s A and 53.8% to Child’s B categories. AFP levels were within normal limits in 48.8%. Twenty four percent were heavy alcohol consumers. Cryptogenic cirrhosis was the possible commonest aetiological factor and only one patient had a viral aetiology (positive for hepatitis B). There was no statistically significant correlation of AFP levels with the state of the liver (p = 0.84), tumour burden (p = 0.36) or possible aetiology (p = 0.594).

**Conclusion:**
AFP level does not appear to be useful in the diagnosis of HCC, irrespective of the aetiology of cirrhosis. A larger study would be necessary to confirm our findings.
primary or secondary liver tumors because there is high risk of post-hepatectomy liver failure. An innovative surgical technique named associating liver partition and portal vein ligation for staged heptectomy (ALPPS) has been developed recently. It is reported to increase the FLR effectively and provide the chance of liver resection for patients with initial unresectable liver tumors. Our aim is to report our preliminary experience with ALPPS procedure.

**Methods:** We performed extended right hepatectomy by ALPPS approach for 2 patients with colorectal liver metastases in July 2013 and January 2014. The liver volume, peri-operative complications and oncologic outcomes were reported.

**Results:** The ALPPS was successfully performed in these 47-year-old woman and 49-year-old man. The pre-operative FLR volumes and FLR/total liver volume were 352 mL/22.0% and 349 mL/31.4%, respectively. The intervals between two operations were 14 and 10 days. The post-operative FLR volumes were 511 and 552 mL, with a volume increase of 45% and 58%. Intra-abdominal infection, pleural effusion and bile leak developed in the distinct patients. There was not post-hepatectomy liver failure or post-operative mortality. They presented intra-hepatic tumor recurrence 3 months and 2 months after operation.

**Conclusion:** The ALPPS approach induces significant liver hypertrophy allowing major hepatectomy in our patients otherwise considered unresectable. But, it should be applied in selected case due to high morbidity rate. And the oncologic outcome is needed to be evaluated in further series.

**APHPB-0469**

**SURVIVAL ANALYSIS FOLLOWING CURATIVE RESECTION OF HEPATOCELLULAR CARCINOMA ACCORDING TO CAUSES OF BACKGROUND LIVER PATHOLOGY**

B. Jung1, S. Hwang1, S. Lee1, Y. Lee2, K. Kim1, C. Ahn1, D. Moon1, T. Ha1 and G. Song1

1Division of Liver Transplantation and Hepatobiliary Surgery, Asan Medical Center, Seoul, Korea; 2Division of Hepatobiliary Pancreatic Surgery, Asan Medical Center, Seoul, Korea

**Objectives:** HBV infection is the most common background liver pathology in patients with HCC, but the proportions of other causes are slowly increasing. This study intended to evaluate the survival outcome of HCC patients who underwent hepatectomy according to the background liver pathology.

**Methods:** A retrospective review was undertaken for 724 HCC patients who underwent hepatectomy from January 2000 to April 2012. The exclusion criteria included CTP score >5, MELD score >7, ICG-R15 >10%, not R0 resection, HBV and HCV co-infection, and pT3b and pT4 on AJCC 7th staging system, by which the background liver was regarded not cirrhotic and the primary tumor was locally controllable.

**Results:** Mean patient age was 51.5 ± 10.0 years. Background liver pathology was HBV in 611, HCV in 22 and alcoholic liver disease in 61. Preoperative treatment was performed in 138. Preoperative AFP >20 ng/mL and PIVKA-II >40 mAU/mL were 411 and 560. Anatomical and non-anatomical resection were performed in 546 and 178. Major hepatectomy was performed in 229. No patient died of perioperative mortality within 1 month. Most patients with HBV viral replication received antiviral treatment after surgery. Patients proportions were pT1 in 544, pT2 in 162, pT3a in 18. Overall 1-, 3-, 5- and 10-year survival rates were 98%, 90%, 80% and 65% in pT1; 88%, 68%, 52% and 41% in pT2 (p = 0.000). Different background liver pathology did not show any survival difference in all-stage (p = 0.19), pT1 (p = 0.45) and pT2 (p = 0.67) tumors.

**Conclusion:** This study revealed that the causes of background liver pathology did not become independent risk factor for HCC prognosis, probably due to active antiviral treatment.

**APHPB-0470**

**THE COMPARISON BETWEEN NONINVASIVE FIBROSIS INDICES AND INTRAOPERATIVE PORTAL VENOUS PRESSURE FOR PREDICTING LONG-TERM OUTCOME AFTER CURATIVE RESECTION OF HEPATOCELLULAR CARCINOMA**


Surgery, Nagasaki University Graduate School of Biomedical Sciences, Nagasaki, Japan

**Objectives:** We reported the association between high intraoperative portal venous pressure (PVP) and long-term outcome after curative resection of hepatocellular carcinoma (HCC). Although it is useful for predicting patients’ survival, it is not possible to use for preoperative evaluation. Recent studies show the efficacy of noninvasive fibrosis indices such as APRI (AST/platelet ratio index) and FIB4, those can be calculated by using combinations of general liver function tests. We aimed to examine the correlation between intraoperative PVP and these indices, and also analyzed whether these indices can predict long-term outcome.

**Methods:** One-hundred and sixty-seven patients measured intraoperative PVP at the time of curative resection of HCC between 1992 and 2009 were enrolled. Correlation between intraoperative PVP and noninvasive fibrosis indices was evaluated. All patients were divided into three groups following previously reported cut-off values; APRI: 0.5 and 1.5, FIB4: 1.45 and 3.25, respectively. Overall survival (OS) and recurrence-free survival (RFS) of each group was analyzed by Kaplan-Meier method/log-rank test.

**Results:** APRI and FIB4 were significantly correlated with intraoperative PVP (p < 0.001, respectively). Long-term outcome of low-APRI group was significantly better than that of medium-APRI group (OS: p < 0.01, RFS: p = 0.03). There was no significant difference between medium and high-APRI groups. There
was no significant difference among three groups according to FIB4.
Conclusion: APRI and FIB4 might be alternative markers of intraoperative PVP, and APRI was suggested as a useful predictive factor after curative resection of HCC.

Benign HPB Diseases
APHPB-0471
NEEDLESCOPIC GRASPER ASSISTED SINGLE INCISION LAPAROSCOPIC BILE DUCT EXPLORATION IN PATIENTS WITH FAILED ENDOSCOPIC BILE DUCT STONE REMOVAL
K. Kim, C. An and J. Kim
Surgery, Uijong-Bu St. Mary’s Hospital, Uijongbu, Korea

Objectives: Single incision laparoscopic surgery has been reported to be safe and feasible in various clinical experiences. However, there are few reports about bile duct stones so far. We present our early experience of needlescopic grasper assisted single incision laparoscopic bile duct exploration (NSILBE). We hypothesized that creating NSILBE protocol by adding a single 2 mm grasper at the level of mid-clavicular line would restore triangulation while not contributing to patient morbidity or jeopardizing the cosmetic outcome.

Methods: Between November 2011 and August 2014, 20 patients underwent NSILBE for biliary stone in single institute by one surgeon. 20 patients with a mean age 60.5 years (range 31–81) were identified. We used a SILS™ (Covidien, Tyco health Medical) single-port device for operation. Single port device was placed through umbilicus. A (2 mm) needlescopic retractor (Stryker, San Jose, CA, USA) was placed in the right flank region directly through the abdominal wall for retraction of the gallbladder infundibulum in an anterior and cephalad direction. And snake retractor was used for liver retraction.

Results: Patient all had a pathologic diagnosis of acute gangrenous and chronic cholecystitis. Operative times averaged 237.8 min (range 125–365 min). Postoperative hospital stays averaged 3.7 days. There were no instances of bile leak, soft tissue infection, abscess, hernia or bile duct injury. But two patients had a seroma which was managed by sono-guided aspiration.

Conclusion: NSILBE is safe and feasible for removal of bile duct stones. Liver retraction using a snake retractor is very useful in obtaining a critical view of safety.

Malignant HPB Diseases
APHPB-0473
FRESH FROZEN PLASMA TRANSFUSION CRITERIA IN LIVER RESECTION
S. Yamazaki, T. Takayama and M. Moriguchi
Digestive Surgery, School of Medicine, Nihon University, Tokyo, Japan

Objectives: To establish transfusion criteria for use of fresh frozen plasma (FFP) in liver resection.

Methods: Prospective study using a phase 1 dose escalation, 3 + 3 cohort expansion design, modified for FFP transfusion. We designated a serum albumin level of 3.0 g/dL (step 1) as the starting limit for no transfusion and reduced the level in 0.2 g/dL steps. Advancement to the next step was permitted when the albumin level equaled the target value for the previous step in 3 patients. The study continued until high-grade postoperative complications occurred without transfusion. If 1 of 3 patients developed Clavien-Dindo grade II or higher complications, 3 more patients were added to the same step.

Results: Of the 213 consecutive patients with liver cancer enrolled, 172 patients (80.8%) fulfilled the inclusion criteria. Step progression proceeded until step 5 (albumin level, 2.2 g/dL) without high-grade complications, but step 2 (albumin level, 2.8 g/dL) required 63 patients to complete because 1 patient developed grade II complications. Step progression was broken off at step 5 in the 172nd patient because the postoperative day 2 albumin value did not fall below the step 4 level (2.4 g/dL), defined as the goal limit. The overall operative morbidity rate was 27.9%; the mortality rate was 0%. The FFP transfusion rate was significantly reduced from 48.6% in a previous series involving 222 patients to 27.9% in the present study (p < 0.001).

Conclusion: In liver resection, FFP transfusion is not necessary in patients with serum albumin levels higher than 2.4 g/dL on postoperative day 2.

APHPB-0474
HEPATIC RESECTION FOR LARGE HEPATOCELLULAR CARCINOMA
B. Kundil and S. Padman
Surgical Gastroenterology, Pariyaram Medical College, Kannur, India

Objectives: Treatment of Hepatocellular carcinoma (HCC) remains a challenge, especially when the disease presents at an advanced stage. The aim of this retrospective study was to determine the efficacy of liver resection in patients who exceed University of California San Francisco (UCSF) criteria.

Methods: Between 2010 and 2014 may, 56 patients with HCC underwent hepatectomy. Twenty-six of these patients fulfilled UCSF criteria (group A) and 30 did not (size > 8 cm) (group B). Disease-free survival and overall survival rates were compared between the two groups after resection.

Results: In all patients major or extended hepatectomies were performed. One patient died in the postoperative period (group B). Morbidity consisted of biliary fistula (3%), pleural effusion 30% and pneumonia 3%. Mean follow up 18 months. 6 patients in the group A and 7 patients in group B developed recurrence. 3 patients in group A 4 in group B died in the follow up due to worsening of liver function. Disease free survival and overall survival are similar in both groups.

Conclusion: Surgical resection, if feasible, is suggested in patients with large HCC and can be performed with acceptable overall and disease-free survival and morbidity rates.
Benign HPB Diseases
APHPB-0475
CORRELATION OF PHYSICAL
CHARACTERISTICS OF GALLSTONES
AND BILIARY ANATOMY IN
CAUSATION OF GALLSTONE
PANCREATITIS
S. Marwah, G. Yadav, S. Pandey, P. Singla and H.
Sharma
Surgery, Pt.BDSPGIMS Rohtak, Rohtak, India
Objectives: Gallstone disease is the most common preven-
table cause of pancreatitis. Gallstone migrating into the
gallbladder leading to obstruction and bile regurgitation
into pancreatic duct is considered to be one of the
mechanisms in causation of gallstone pancreatitis. The
present study was aimed to correlate of biliary anatomy and
physical properties of gallstones in causation of gallstone
pancreatitis.
Methods: Prospective randomized study of 136 patients
of symptomatic gallstone disease undergoing elective
cholecystectomy over a period of 2 years. The study
group (106 patients) had gallstone pancreatitis and control
group (30 cases) had gallstone disease without pancreatitis. During surgery, biliary anatomy
was assessed by length, diameter, internal circumference and level of insertion of cystic duct whereas gallstone
morphology was assessed by number and type of stones
with or without sludge and size of smallest and largest
gallstone.
Results: On univariate analysis, multiple gallstones, diameter of the smallest gallstone ≤ 5 mm, irregular sur-
faced stones, sludge in gallbladder and cystic duct diameter ≥ 5 mm were significant risk factors whereas
on multivariate analysis, diameter of the smallest gall-
stone ≤ 5 mm and cystic duct diameter ≥ 5 mm were
found to be significant risk factors in causation of gall-
stone pancreatitis (p < 0.05).
Conclusion: Both stone related (Small sized stones) and
pancreatobiliary anatomy (wide cystic duct) are signifi-
cant risk factors for causation of gallstone pancreatitis.
Such patients, even asymptomatic, should be offered early surgery.

APHPB-0476
LAPAROSCOPIC HEPATECTOMY FOR
A HCC OF A PATIENT WITH ABSENCE
OF THE PORTAL BIFURCATION: A
CASE REPORT
Y. Kohira, K. Sakamoto, G. Honda, S. Kimura, M.
Honjyo, S. Kobayasi and M. Kurata
Surgery, Komagome Hospital, Tokyo, Japan
Objectives: Portal vein (PV) branches are one of the
most important anatomical landmarks during hepatec-
tomy, because anatomical variation of portal vein is
less than those of bile duct or hepatic artery. However, because there are some rare dangerous anomalies of
PV, surgeons have to be careful about them.
Methods: Patient was 60s-year old male, who had hepato-
cellular carcinoma related to chronic hepatitis C. The
164
HPB 2015, 17 (Suppl. S2), 25–266
tumor located at the caudal side of segment 4 and
compressed the hilar plate. Preoperative images revealed anomaly of the PV branches; one was absence
of the left main PV with an alternative flow between the
right PV and the umbilical portion via the caudate
branches, and another one was absence of main P8
branch connecting to the anterior PV with an alterna-
tive flow between peripheries of P7 and P8 branches.
His liver function was affected; Child-Pugh was A but
ICG test (R15) was 27.2%.
Results: Laparoscopic partial hepatectomy was selected
and performed in order to avoid injuring to the com-
municating branch to the umbilical portion in the cau-
date lobe. Operative time was 267 min and blood loss
was 50 g.
Conclusion: The PV anomalies of this case can be acquired one caused by compression by the tumor. However, because the tumor did not compress strongly and the communicating branch between segment 7 and 8 was well-developed, we believe that the PV anomalies of this case was congenital. We achieved laparoscopic
hepatectomy for this patient safely by detecting the PV
anomalies with preoperative images and considering about proper procedure carefully.

Malignant HPB Diseases
APHPB-0477
ASSOCIATING LIVER PARTITION AND
PORTAL VEIN LIGATION FOR STAGED
HEPATECTOMY (ALPPS)
B. Kundil, S. Padman and S. A. B. U. Kadavil
Surgical Gastroenterology, Pariyaram Medical College,
Kollam, India
Objectives: Associating liver partition and portal vein
ligation (PVL) has recently been described as a revolu-
tionary strategy to induce a rapid and large FLR vol-
ume increase. Aim is to describe early result of this
new approach for two patients with colorectal Bilobar
liver metastases.
Methods: Both patients were with synchronous liver
metastases. Both treated with chemotherapy before liver
resection.
Results: First patient with left colon growth with bi-
lobar liver metastases. She was treated with chemother-
apy 4 course, then taken up for laparoscopic left he-
moectomy and metastatectomy of the left lobe and
ligation of right portal vein and partition of liver. After
3 weeks taken up for rt extended hepatectomy. Postop-
erative period was uneventful except for minor bile
leak. Other patient with rectosigmoid growth presented
with obstruction underwent anterior resection. He
was treated with chemotherapy 4 courses in the postop-
erative period. He was then taken up for metastatec-
tomy in the left lobe, ligation of right portal vein and liver
partition. After 24 days he underwent right extended
hepatectomy. In the postoperative period he developed
biliary fistula, pleural effusion.
Conclusion: ALPPS is feasible and safe, with satisfac-
tory short-term results.
APHPB-0478
REFRACTORY HYPOGLYCEMIA AS A RARE CAUSE OF INITIAL PRESENTATION IN PREVIOUSLY UNDIAGNOSED HEPATOCELLULAR CARCINOMA

J. Koong, E. S. Lim, P. S. Koh and B. K. Yoong
Surgery, University of Malaya, Kuala Lumpur, Malaysia

Objectives: Hypoglycaemia presenting as the initial presentation in previously undiagnosed hepatocellular carcinoma (HCC) is extremely rare as it usually occur in late stages of the disease. Association with insulin-like growth factor 2 (IGF-2) has been a notable cause of hypoglycaemia in HCC. We report a case of probable IGF-2 induced hypoglycaemia associated with HCC presenting as an acute emergency.

Methods: Literature review was done for this rare presentation.

Results: A 29 years old male presented to us with loss of consciousness and blood glucose level was detected at 1.3 mmol/L. There was a history of abdominal discomfort with weight loss. Abdominal examination revealed a palpable mass over the left liver lobe. Contrast enhanced computed tomography demonstrated a left lateral lobe HCC measuring 17 × 11 × 18 cm. Patient was also found to be Hepatitis B positive and serum alpha feto protein was 79257 IU/mL. Hypoglycaemia persisted despite continuous dextrose infusion. A serum insulin and IGF-1 level sent was low at 0.4 μ/L and 42 ng/mL respectively. Emergency left lateral hepatectomy was performed with a segment 6 wedge resection for a lesion discovered on intra operative ultrasound. Histopathological examination revealed a moderately differentiated HCC. Post operative was uneventful and hypoglycaemia resolved.

Conclusion: IGF-2 induced hypoglycaemia in HCC are rare with only few reported in literature and even fewer treated successfully by resection. The above case illustrated that hypoglycaemia can be a presentation in HCC albeit rare. Early and appropriate management is crucial to ensure good overall outcome.

APHPB-0479
IMPROVEMENT IN CLINICAL OUTCOME OF PATIENTS WITH GALLBLADDER CANCER

Department of Surgery, Seoul National University College of Medicine, Seoul, Korea

Objectives: Chronological changes in clinicopathologic characteristics and survival outcomes of gallbladder cancer (GBC) were investigated.

Methods: A total of 686 patients who consecutively underwent surgery at Seoul National University Hospital between 1987 and 2014 were analyzed. Clinicopathologic changes were explored according to the treatment period (P), P1 (1987–2000, n = 249) and P2 (2001–2014, n = 437).

Results: Of the 686 patients, mean age was 63.3 years and 52.3% (n = 359) were female. Stage I, II, III, and IV were noted in 12.5%, 21.4%, 31.9%, and 20.7% of patients, respectively. Proportion of extended cholecystectomy (EC), cholecystectomy, pancreaticoduodenectomy, and extended right hemihepatectomy were 42.1%, 32.4%, 5.0%, and 3.9%, respectively. R0 resection rate was 63.3%. Comparing P1 and P2, mean age (61.2 vs. 64.6 years, p < 0.001), asymptomatic presentation (14.1 vs. 35.7%, p < 0.001), proportion of EC (26.5 vs. 51.3%, p < 0.001), R0 resection (49.2 vs. 72.1%, p < 0.001), tumor below stage II (33.9 vs. 42.7%, p = 0.039), and the patients receiving adjuvant chemotherapy (16.9 vs. 36.2%, p < 0.001) and radiotherapy (8.4 vs. 24.9%, p < 0.001) were higher in P2. Gender, elevated serum CA 19-9, combined gallbladder stone, and N stage were comparable between the two periods. Median survival (13.4 vs. 46.4 months, p < 0.001) was better in P2, both in curative (p = 0.021) and palliative (p = 0.013) groups. In curative resection group, older age (p < 0.001), symptomatic presentation (p < 0.001), perineural invasion (p = 0.012), and advanced stage (p = 0.001) were independent poor prognostic factors.

Conclusion: Earlier detection and optimal surgical extent could improve the outcome of GBC over the period. However, effective treatment strategy should be developed for patients with poor prognostic factors.

APHPB-0480
THE CLINICAL USEFULNESS OF 18 F-FLUORODEOXYGLUCOSE POSITRON EMISSION TOMOGRAPHY/COMPUTED TOMOGRAPHY (PET-CT) IN FOLLOW-UP OF CURATIVELY RESECTED PANCREATIC CANCER PATIENTS

Surgery, Seoul National University Hospital, Seoul, Korea

Objectives: The aim of this study was to evaluate the clinical usefulness of PET-CT in comparison with CT, and to explore the clinical potential of maximal standardized uptake value (SUVmax) in PET-CT as a metabolic biomarker.

Methods: Prospectively collected clinicopathologic features including serum tumor marker, CT and PET-CT results, recurrences and survival outcomes of 110 patients were reviewed.

Results: Overall recurrence rate was 76.4%. PET-CT showed relatively higher sensitivity (84.5% vs. 75.0%) and accuracy (84.5% vs. 74.5%) than CT. PET-CT in combination with CT improved sensitivity (97.6%) and accuracy (90.0%) than PET-CT alone. In terms of distant recurrences PET-CT showed higher sensitivity (83.8% vs. 66.2%) and accuracy (87.2% vs. 76.4%) than CT. PET-CT and CT had discordant results in 37 (33.6%) patients. There were 19 patients with false negative CT findings. Among these 19 patients, 11 had invisible lesion or suspected benign condition in CT, and the other 8 had recurrences in uncovered area by abdominal CT. Elevated SUVmax was not correlated with serum CA19-9 (p = 0.288). The SUVmax was not correlated with the survival outcome (p = 0.236). For these patients, multiple site recurrence (HR 1.992, 95% CI 7.056–5.872) was noted.
1.197–3.316, p = 0.008) and CA19-9 > 37U/mL (HR 1.806, 95% CI 1.071–3.044, p = 0.027) were independent risk factors of poor survival after multivariate analysis.

Conclusion: PET-CT in combination with CT improves detection rate of recurrence after curative operation for pancreatic cancers, especially for recurrences in uncovered area with abdominal CT. More sensitive and prognostic specific metabolic indicator other than SUVmax is needed to improve the diagnostic value of PET-CT.

APHPB-0482
SURGICAL MANAGEMENT OF EXTRA LARGE HCC
T. Lalisang
Surgery, FMUI/ Cipto Mangunkusumo Hospital, Jakarta, Indonesia

Objectives: Large HCC referred to tumor more than 5 cm in diameter or involves two or more segments of the liver, which is impact on the tumor recurrences and remaining liver function should the resection be carried out. The specificity of these extra large HCC cases referred to the diameter of the tumor, which were more than 10 cm.

As long as it is resectable and operable, the resection can be done directly, aimed to obtain the better quality of life. The strategy to have save resection is, approached by pre operative TACE,Neo adjuvant chemo-targeted therapy and preserving optimal Child-Pough A liver function.

Methods: Retrograde case series.

Results: Since 2010, at Cipto Mangunkusumo Hospital there were average 10 HCC cases were resected and 50% cases were extra large HCC during a year. This has lead to the policy to a major liver resection. Pre-operative TACE was done in all cases followed by the resection in 2–3 weeks later. Anatomical resection with optimal preservation of normal liver parenchyma and in flow control was performed; even that the blood lost were remain 1000–2000 mL. There were no operative mortality, but the liver shut down found as the major problem post-operatively. All the problems successfully managed conservatively. Re-laparotomy found in one case due to surgical bleeding. The survival was more than 12 months on the most cases.

Conclusion: Resection was save on suitable large HCC cases in order to provide a better quality of live.

Benign HPB Diseases
APHPB-0483
PANCREATIC FISTULA FOLLOWING SURGERIES FOR NONPANCREATIC PATHOLOGY
R. Vellaisamy, J. S. Jesudason, A. Anbalagan, B. Duraisamy, P. Raju, C. Servarayan Murugesan and K. Devyounder
Institute of Surgical Gastroenterology, Madras Medical College, Rajiv Gandhi Government General Hospital, Chennai, India

Objectives: To analyse the etiology, clinical presentation and management of pancreatic fistula following surgeries done for Nonpancreatic pathology.

Methods: This is retrospective study between August 2013 to August 2014. Three patients with postoperative pancreatic fistula were analysed. The surgeries they have undergone were hepaticojejunostomy for Choledochal cyst excision, Laprotomy and Excision for Retropertioneal Benign cystic teratoma and Subtotal colectomy + Distal pancreatectomy + splenectomy for Splenic flexure growth.

Results: All three patients were treated with percutaneous drainage and medical management. ERCP and pancreatic duct stenting was done in 2 patients who did not show improvement. Post ERCP the drain output decreased in 11 and 40 days in 2 patients respectively. The third patient was under treatment with percutaneous drainage with medical management.

Conclusion: Pancreatic fistula has to be kept in mind inpatients undergoing biliary, splenic flexure of colon, splenic and retroperitoneal surgeries. These Postoperative pancreatic fistulae have to be managed conservatively initially, if it fails ERCP and pancreatic duct stenting have to be done.

Malignant HPB Diseases
APHPB-0484
ASSOCIATION OF TUMOR BUDDING WITH CLINICOPATHOLOGICAL CHARACTERISTICS AND PROGNOSIS IN PANCREATIC DUCTAL ADENOCARCINOMA
Digestive and General Surgery, Niigata University Medical and Dental Hospital, Niigata, Japan

Objectives: Pancreatic ductal adenocarcinoma (PDAC) is one of the most aggressive and lethal human malignancies. Tumor budding, defined as the presence of de-differentiated single tumor cells or small cell cluster at the invasive front of carcinoma such as colorectal and oesophageal, is a prognostic factor. The aim of this study was to assess the prognostic impact of the tumor budding in PDAC.

Methods: A total of 81 resected cases of PDAC was examined. We defined tumor budding as an isolated single cancer or a cluster composed of fewer than five cancer cells. Whole-tissue sections were stained using a pancytokeratin marker (AE1/AE3). Tumor budding
was assessed in a microscopic field of ×200 and counted. Cutoff points of the budding were determined using χ² scores calculated with the Cox proportional hazards regression model.

**Results:** Cutoff points of the budding were 13 or more (χ² = 23.123, p < 0.001) in hematoxylin-eosin (H&E) stained sections and 15 or more (χ² = 9.236, p = 0.002) in sections with AE1/AE3 immunohistochemistry. High grade budding evaluated with both standard H&E (11.1% cases) and AE1/AE3 staining (43.2% cases) correlated significantly with poor overall survival and the histological grade. The cumulative 2-year survival rates were 43.1% for patients with low grade budding and 0% for patients with high grade budding stained with standard H&E (p < 0.001). Multivariate analysis revealed that the high grade budding, the histological grade and the margin status were independent prognostic factors.

**Conclusion:** The high grade budding is a strong and independent prognostic factor.

**Benign HPB Diseases**

APHPB-0485

RUPTURED, LARGE INTRAHEPATIC SUBCAPSULAR HEMATOMA AFTER LAPAROSCOPIC CHOLECYSTECTOMY

J. Ryu, C. W. Chu, K. H. Yang, Y. M. Park and H. Y. Lee

Surgery, Pusan National University Yangsan Hospital, Yangsan-si, Gyeongnam, Korea

**Objectives:** The development of large subcapsular hematoma after laparoscopic cholecystectomy (LC) an infrequent complication and rarely reported. Fourteen cases have been published with different etiologies including use of NSAID’s like Ketololac during and after surgery, hemangiomias or small iatrogenic lesions aggravated by administration of ketorolac.

**Methods:** We report the case of a patient undergoing LC developed the complication of a ruptured, large intrahepatic subcapsular hematoma. A 35 years old woman was admitted because of symptomatic gall stones with obstructive jaundice. MRCP showed papillitis due to passed stones, multiple gallstones. Medical history was insignificant.

**Results:** She underwent LC. There was no complication. She was administered ketorolac 30 mg every 8 h for 24 h. After 48 h, the patient had an episode of RUQ pain. Blood test showed Hb of 6.6 g/dL. A CT was checked and showed subcapsular hematoma of Rt. liver and moderate amount of hemoperitoneum. She underwent exploratory laparotomy and we found a massive subcapsular hematoma of right liver and hemoperitoneum. No iatrogenic lesions were found. The hematoma was drained and we performed bleeding control of hepatic surface. She recovered uneventfully. Follow-up CT was performed 7 days after surgery and it revealed no evidence of active bleeding. She was discharged after 22 days.

**Conclusion:** The presence of an subcapsular liver hematoma after a LC is a rare complication few studied. About the management: if the patient is stable the hematoma can be observed or drained percutaneously with ultrasound guidance, and if instable laparotomy is mandatory.

**Transplantation**

APHPB-0486

INDONESIA FIRST ADULT LIVING DONOR LIVER TRANSPLANTATION IN CIPTO MANGUNKUSUMO HOSPITAL JAKARTA

T. Lalisang

Surgery, FMUI/Cipto Mangunkusumo Hospital, Jakarta, Indonesia

**Objectives:** Nowadays, the liver transplantation becomes the standard treatment of choice in end liver diseases.

**Methods:** Preliminary report.

**Results:** There were seven living donor LT were carried out in 4 pediatric (male) and 2 adults (male). The program commenced in December 2010, the team was supported by first affiliated Hospital Zhejiang University LT team, Hangzhou China. In the last 3 pediatric cases, the team was supported by NUSH Singapore LT team. Management of LT in adult cases was the first LT done in Indonesia. Indication of LT for pediatric includes biliary atresia (2) and autoimmune liver disease (2), whileas in adults is HCC and hepatitis B. All donors were genetically related and there was no operative complication found; as they live healthy back to their routines and works following 2 weeks hospitalized. There were also no post-operative mortality, all the children. The first adult case survived with a good quality of life, but the other one died a year later due to rejection. Prolonged ascetic and hyperspleenism were noted as the most complication, which were successfully managed, conservatively. All the pediatric recipients received the left lateral lobe from adult donors, and the adult received adult liver segment 5,6,7,8 with preservation of the medial hepatic vein. The graft to recipient ratio was 0.9% and 1%.

**Conclusion:** LDLT can be carried out with a good result and more adult cases are required to pass the learning curve.

**Malignant HPB Diseases**

APHPB-0489

MANAGEMENT OF COLORECTAL CANCER WITH SYNCHRONOUS LIVER METASTASIS – EFFECT OF CLINICAL RISK SCORE AND DIFFERENT TREATMENT STRATEGY


Department of Surgery, The Chinese University of Hong Kong, Hong Kong, China

**Objectives:** To evaluate the impact of different surgical strategy and clinical risk score on outcome of colorectal cancer with synchronous liver metastasis.
Methods: We performed a retrospective review for all colorectal cancer with synchronous liver metastasis receiving liver surgery in a teaching hospital from 2008 to 2013. Type of surgical treatment, timing of colorectal and liver surgery and the tumor related factors were reviewed. Memorial Sloan-Kettering Cancer Centre Clinical Risk Score was used to stratify the severity of liver metastasis with risk score 3 or above classified as advanced metastasis. Survival analysis was performed by log-rank test and Cox-regression in univariate and multivariate analysis. Effect of staged versus combined colorectal and liver resection on post-operative complications was evaluated with Chi-square test.

Results: Forty-two patients with synchronous liver metastasis were included, of which 19 patients had advanced metastasis. There was no significant prognostic factor identified for overall survival. MSKCC clinical risk score (p = 0.005) and type of liver surgery were independent prognostic factors for disease-free survival. Patients treated with radiofrequency ablation (p = 0.025) were associated with a higher risk of local recurrence as compared to hepatectomy alone. Staged colorectal resection and liver surgery was associated with lower post-operative complication (p = 0.026) as compared to combined resection.

Conclusion: Use of radiofrequency ablation was associated with poorer disease-free survival in synchronous liver metastasis. Staged resection had a comparable survival results and a lower post-operative complication rate and thus should be considered in patients with high operative risk or complex colorectal and liver surgery.

Benign HPB Diseases
APHPB-0490

SURGERY FOR CHRONIC PANCREATITIS IN CHILDREN OFFERS CONSIDERABLE PAIN RELIEF: A TERTIARY CENTER EXPERIENCE

V. Sivasubramaniyan, M. Govindan, R. Palaniappan, J. Sathyansan, S. Perumal, R. Ramasamy, A. Pitchaimuthu, K. Rajendran and K. Balaraman
Surgical Gastroenterology, Government Stanley Medical College, Chennai, India

Objectives: Pain from chronic pancreatitis in children and adolescents can lead to failure to thrive, malnutrition, depression and disability. Surgical intervention that improves pancreatic ductal drainage is a reasonable treatment strategy for chronic pancreatitis in children. The objective of this study is to document considerable pain relief with surgery in children and adolescents with chronic pancreatitis.

Methods: In our institution we treated 48 children and adolescents with chronic pancreatitis from 2009 to 2013 over 4 years, almost all of them are idiopathic or tropical.

Results: Internal pancreatic fistulae were identified in 7 patients (ascites in 4 and pleural effusion in 3), pseudocyst were observed in 4 patients. We observed endocrine (DM) and exocrine (steatorrhea) in 5 and 6 children respectively, splenic artery pseudo aneurysm with bleed in 1 child, portal hypertension in 2 children and biliary stricture in 1 child. 28 children were managed conservatively, 14 of them developed recurrent pain attacks and hence were subjected to surgery. Totally 34 patients underwent surgery (Frey = 22, LPJ = 10, distal pancreatectomy with LPI = 1, Berne = 1). IOUS was used for duct identification in 6 patients. Postoperative complications occurred in 7 patients (wound infection = 4, LRI = 1, Bleeding requiring relaparotomy = 1, pancreatic leak = 1). There was no mortality. Postoperative pain relief was observed in all patients, 3 patients had readmissions for pain attacks all of them had pain relief with oral analgesics.

Conclusion: Surgery in children with chronic pancreatitis can be safe and feasible and offers symptomatic pain relief in majority of patients.

Malignant HPB Diseases
APHPB-0492

DIFFUSE TYPE HEPATOMA IN A COHORT OF ALCOHOLIC AND CRYPTOGENIC CIRRHOTICS

Surgery, North Colombo Liver Unit Faculty of Medicine, Colombo, Sri Lanka

Objectives: Data on diffuse type hepatocellular carcinoma (HCC) are rare. Incidence of HCC in Sri Lanka is rising and majority are related to non alcoholic fatty liver disease. The study was planned to compare nodular and diffuse type HCC.

Methods: Prospectively collected data of 227 patients with HCC from July 2011 to July 2014 were analyzed. Diffuse type cancer was defined as a tumour without convex margin, diffusely infiltrating the hepatic parenchyma. There were 45 (20%) cases. The baseline liver functions, etiology, treatment and the outcome were compared with nodular type cancers.

Results: All cases except one were negative for infective hepatitis. There was no difference in the age (63 vs. 62 years, p = 0.937) and gender. Low body mass index (24 vs. 22, p = 0.009) and history of significant alcohol intake (39% vs. 67%, p = 0.001) was associated with diffuse type cancers. The baseline liver functions and the clinical indicators of cirrhosis were similar in two groups. Diffuse cancers had higher alpha feto protein levels and higher incidence of major vascular invasion (14% vs. 80%, p < 0.001). Large proportion (27% vs. 77%, p < 0.001) of diffuse cancers were not candidates for active treatment. Overall survival was poor in diffuse type (4.7 vs. 25 months, p < 0.001). None of the prognostic factors or treatment had a significant impact in the outcome of diffuse HCC.

Conclusion: Diffuse HCC are common in our cohort. Alcohol consumption is a risk factor. These tumours have a grave outcome irrespective of treatment.
**Benign HPB Diseases**

**APHPB-0493**

**INTERNAL PANCREATIC FISTULAS – AN ANALYSIS OF ALGORITHMIC APPROACH AND COMPARISON OF TREATMENT OPTIONS: EXPERIENCE FROM A TERTIARY CARE CENTER**

*Department of Surgical Gastroenterology, Stanley Medical College, Chennai, India*

**Objectives:** To assess optimal management strategies and outcome, this study reviews and analyses the pattern of presentation, management of internal pancreatic fistula from a single tertiary care centre. This study also aims at comparing the outcome of surgical treatment with other treatment options and developing an algorithmic approach.

**Methods:** Patients and Materials: An analysis of patients who underwent treatment between March 2010 to March 2014 based on an institutional protocol was performed. The end point was resolution of pancreatic fistula, relief of symptoms and recurrence.

**Results:** Out of 38 patients, 22 had ascites 10 pleural effusions and 6 presented with both conditions. Diagnosis was based on high amylase levels and albumin content of exudates. Outcomes were analysed for demographic variables, clinical variables. 36 patients underwent initial conservative management. 17 patients responded. Failure of conservative therapy was the indication for endoscopic/surgical treatment in most patients. 11 internal pancreatic drainage, 3 pancreatic resection. 6 patients underwent Pseudocyst drainage and 4 patients underwent endoscopic pancreatic duct drainage. All these patients had relief of symptoms. None had recurrence of ascites/effusion and none required reoperation. One patient died of other cause. Average time to resolution and morbidity were higher with conservative approach. Nutritional status at admission, background etiology, status of MPD were significant factors in deciding treatment approach.

**Conclusion:** Despite Initial conservative approach, selective early surgical approach is warranted to treat pancreatic ascites and effusion in patients with severe malnutrition and chronic pancreatitis. Internal pancreatic drainage was the ideal surgical treatment for patients who did not respond to medical treatment.

**Malignant HPB Diseases**

**APHPB-0494**

**ADJUSTABLE LAPAROSCOPIC RADIOFREQUENCY SURGICAL DEVICE – LARA-K1: A NEW ATTITUDE TO POSTERIOR SEGMENT LIVER RESECTIONS**

P. Vavra 1, L. Karnik 2, M. Skrobankova 3, J. Palecek 3, P. Zonca 1, J. Jurcikova 4 and V. Prochazka 4  
1Department of Surgery, University Hospital Ostrava, Ostrava, Czech Republic; 2Department of Robotic, Faculty of Mechanical Engineering VSB – Technical University of Ostrava, Ostrava, Czech Republic; 3Department of Surgery, Faculty of Medicine University of Ostrava, Ostrava, Czech Republic; 4Department of Vice-President for Science and Research, University Hospital Ostrava, Ostrava, Czech Republic

**Objectives:** We have developed a new device, LARA-K1, which after introduction into the abdominal cavity can bend its long axis, allowing the application of radiofrequency energy in areas that are currently inaccessible for laparoscopic surgery, such as posterior liver segments (IV, VII and VII).

**Methods:** The device is equipped with four telescopic needle electrodes that coagulate tissue after delivery of radiofrequency energy. Ex vivo testing was performed in years 2012 and 2013 at the University Hospital Ostrava on porcine liver tissue. The main goal of the testing was to figure out, if the newly proposed electrode layout is suitable for sufficient tissue coagulation and creating a safety zone around tumors. We used a laparoscopic simulator to evaluate the accuracy of the device. We also monitored settings of power delivery, time required for coagulation and adhesiveness of needle electrodes.

**Results:** During the ex vivo testing, material of needle electrodes was improved to structural steel with special coating which significantly decreased the adhesiveness. We adjusted the power supply from 20W to 120W and monitored the ablation time which varied from 110 to 10 s. Subsequently, optimal power delivery and time for coagulation was determined.

**Conclusion:** This experimental study demonstrated the feasibility and safety of the newly developed device. Based on the ex vivo testing, LARA-K1 can create a safety zone of coagulation. For further assessment of the new device, we should perform an in vivo test.
**APHPB-0495**

**DIAGNOSTIC UTILITY OF PET-CT FOR DIAGNOSIS OF PANCREATIC ADENOCARCINOMA AND EARLY INTRAEPITHELIAL NEOPLASIA (PANIN). CASE–CONTROL STUDY OF 139 PATIENTS**

F. Sanchez-Bueno¹, R. Garcia¹, J. De la Peña², G. Torres¹, M. A. Claver³, L. Frutos³, E. Ortiz³, P. Gil¹ and P. Parrilla¹

¹Surgery, Hospital Universitario Virgen de la Arrixaca, Murcia, Spain; ²Pathology, Hospital Universitario Virgen de la Arrixaca, Murcia, Spain; ³Nuclear Medicine, Hospital Universitario Virgen de la Arrixaca, Murcia, Spain

**Objectives:** Pancreatic ductal adenocarcinoma (PDA) is a lethal disease with a 5-year survival rate of less 5%. Surgical resection is the only curative treatment, but due to its late clinical presentation very few patients (15–25%) are candidates for curative resection. Thus, early detection of non-invasive lesion (pancreatic intra-epithelial neoplasia – panIN) and define early diagnostic criteria of malignancy should be essential for early treatment of this disease. The aim of this paper is to determine the diagnostic utility of preoperative PET-CT for early detection of ADP and early panIN lesions.

**Methods:** Material and Methods: We studied the histopathological features of ADP and different panIN lesions (1, 2 and 3) in 139 surgical samples from patients undergoing pancreatic resection in the period from 2009 to 2012 in our hospital, comparing these results with preoperative PET-CT and MDCT study.

**Results:** Histopathological analysis revealed that 71.2% of patients with ADP had additional panIN lesions at different stages. For tumor diagnosis in PET_TAC maximum standard SUV 2.5 was used. Using this criteria, the sensitivity of PET-CT for tumor diagnosis was 78% against 68% of MDCT. When we combine this maximum tumor SUV with maximum normal pancreatic tissue from each patient SUV, the sensitivity of PET-CT diagnosis for ADP increases to 92%. The sensitivity of PET-CT using the same criteria for the diagnosis of lesions panIN was 96%.

**Conclusion:** A combination of studies of PET-CT in tumor and non-tumor tissue of each patient can be a very useful diagnostic tool not only for preoperative diagnosis of ADP, but also for early panIN (1, 2 and 3) lesions.

---

**APHPB-0496**

**PRE-OPERATIVE USE OF ANTIVIRAL THERAPY IMPROVES PERIOPERATIVE SURGICAL OUTCOMES IN PATIENTS WITH HEPATITIS B VIRUS (HBV)-RELATED HEPATOCELULAR CARCINOMA (HCC) UNDERGOING MAJOR AND MINOR HEPATECTOMY**

C. Chong¹, G. Wong², A. Fong¹, S. Cheung¹, J. Wong¹, K. Lee¹, V. Wong², H. Chan² and P. Lai¹

¹Department of Surgery, The Chinese University of Hong Kong, Shatin, Hong Kong, China; ²Department of Medicine & Therapeutics, The Chinese University of Hong Kong, Shatin, Hong Kong, China

**Objectives:** This study aims at evaluating the role of pre-operative use of antiviral therapy in the improvement of peri-operative surgical outcomes in patients with HBV-related HCC undergoing hepatectomy.

**Methods:** Baseline characteristics, peri-operative parameters and the use of antiviral therapy for all patients with HBV-related HCC underwent major and minor hepatectomy in an academic hospital were prospectively collected from hepatectomy cohort and reviewed.

**Results:** From 1999 to 2013, a total of 266 patients received hepatectomy for HBV-related HCC and 149 of them were on antiviral therapy before operation. Patients’ demographics and tumor characteristics are comparable between 2 groups. For the 105 patients received major hepatectomy, the pre-operative antiviral group was associated with a significantly lower overall complication rate (p = 0.004), shorter total hospital stay (p = 0.029) and less operative blood loss (p = 0.009), despite a higher proportion of patients with background cirrhosis (p = 0.026). There was no significant difference in overall post-hepatectomy liver failure rate (PHLF) between 2 groups (p = 0.757). For the 161 patients received minor hepatectomy, there was no significant difference in the overall complication rate. However, the pre-operative antiviral group was associated with a significantly lower incidence of pleural effusion (p = 0.024) and ascites (p = 0.015), lower PHLF rate (p = 0.031) and shorter total hospital stay (p = 0.002).

**Conclusion:** Pre-operative use of antiviral therapy improves peri-operative surgical outcomes in patients with HBV-related HCC underwent major hepatectomy and minor hepatectomy and should be considered before subjecting this group of patients to hepatectomy.
Benign HPB Diseases
APHPB-0498

LAPAROSCOPIC SPLEEN-PRESERVING DISTAL PANCREATECTOMY WITH AND WITHOUT SPLENIC VESSEL PRESERVATION – A COMPARATIVE STUDY

S. Raveendran and B. Senadhipsan
Department of Surgical Gastroenterology, Trivandrum Institute of Digestive Diseases and Minimal Access Surgery, Thiruvananthapuram, India

Objectives: This study is to compare the clinical outcomes and potential spleen related morbidities of laparoscopic spleen-preserving distal pancreatectomy (LSPDP) with and without splenic vessel preservation in patients with benign pancreatic lesions.

Methods: This is a retrospective analysis of all patients who had undergone LSPDP in our institution during the period Jan 2009- Jun 2014. Patients who underwent LSPDP with Splenic Vessel Preservation (LSPDP-SVP) were compared with those who underwent LSPDP with Splenic Vessel Resection (LSPDP-SVR). The clinical outcomes in terms of intra-operative parameters and perioperative morbidities were compared.

Results: Of the 13 patients who underwent LSPDP, SVP was done in 5 patients and SVR in 8 patients. The mean operating time (210 vs. 180 min) and mean intra-operative blood loss (250 vs. 160 mL) were significantly lower in SVR group. No procedure was converted to open, but one patient with attempted SVP was converted to SVR because of accidental injury to splenic vein. Mean postoperative hospital stay (7 vs. 8 days) and general postoperative morbidities were similar in both groups. But spleen related morbidities in the form of significant splenic infarction was present in 2 (25%) patients in SVR group and no patients in SVP group. On a median follow up of 28 months (12–58 months) 2 patients in SVR group developed asymptomatic gastric varices with no progression.

Conclusion: On comparison, LSDP-SVR is technically easier but spleen related complications are more. The short term benefits associated with the preservation of the splenic vessels should lead to an increased preference for LSPDP-SVP.

Malignant HPB Diseases
APHPB-0499

PERIOPERATIVE SINGLE DOSE ERTAPENEM PREVENTING SURGICAL SITE INFECTION IN PATIENTS WITH HEPATOCELLULAR CARCINOMA: A RETROSPECTIVE STUDY

F. Xu1, C. Dai1, X. Bu1, C. Jia1 and S. Peng1
1Hepatobiliary and Spleenic surgery, Shengjing Hospital Of China Medical University, Shenyang, China

Objectives: Perioperative antibiotic prophylaxis is commonly believed to be effective in preventing postoperative surgical site infection, but very few studies have evaluated the usefulness of ertapenem prophylaxis after liver resection. A retrospective study was conducted to evaluate the role of ertapenem versus other standard antibiotic prophylaxis in patients with hepatocellular carcinoma undergoing hepatectomy.

Methods: This study was retrospectively analyzed the clinical data of 118 patients with hepatocellular carcinoma who underwent liver resection at our single center between January 2012 and December 2013. The patients were divided into ertapenem group (n = 54) and nonertapenem group (n = 64). The ertapenem group was only given a single dose ertapenem preoperative half an hour as perioperative prophylaxis. The nonertapenem group was given other antibiotics from the preoperative half an hour until the temperature back to normal for 3 days. Results and outcomes in the two groups were compared.

Results: Groups were similar with respect to age (54.3 vs. 54.9, p > 0.05), gender and type of liver resection. There were no significant differences between the two groups in the incidence of surgical site infection (7.4% vs 9.3%, p > 0.05), systemic inflammatory response syndrome (12.1% vs 10.7%, p > 0.05), C-reactive protein on 3 days after surgery (64.9 mg/L vs. 58.3 mg/L, p > 0.05) and the duration of postoperative hospital stays (11.6 days vs. 12.4 days).

Conclusion: Postoperative antibiotic prophylaxis cannot prevent surgical site infection after hepatectomy. The patients with hepatocellular carcinoma given single dose of ertapenem for perioperative prophylaxis suffered low rates of surgical site infection, and needn’t unnecessary and costly antibiotic prophylaxia postoperatively.

APHPB-0501

GROOVE PANCREATITIS VERSUS PANCREAS CANCER: SEVEN CASES

F. Sanchez-Bueno1, G. Torres1, J. De la Peña2, M. Fuster2, E. Ortiz2, R. García1, P. Gil1, M. A. Claver4, L. Frutos4 and P. Parrilla1
1Surgery, Hospital Universitario Virgen de la Arrixaca, Murcia, Spain; 2Pathology, Hospital Universitario Virgen de la Arrixaca, Murcia, Spain; 3Radiology, Hospital Universitario Virgen de la Arrixaca, Murcia, Spain; 4Nuclear Medicine, Hospital Universitario Virgen de la Arrixaca, Murcia, Spain

Objectives: The Groove pancreatitis (PS) is an uncommon clinical situation and radiologically can mimic carcinoma of the peripancreatic area. The objective of this paper is to study a series of seven patients who underwent surgery by pancreaticoduodenectomy (DPC), with the diagnosis of pancreatic mass and subsequent anatomicopathological diagnosis of Groove.

Materials and Methods: During the last ten years, seven patients who were operated on with the diagnosis of pancreatic mass with high probability of pancreatic ductal adenocarcinoma were resected by DPC. Postoperative histological confirmation was PS.

Results: Of the seven patients, six were male, with a mean age of 51 years (range 39–70). Prior to surgery, six patients had abdominal epigastric pain, two patients had associated weight loss of more than 10 kilos in one month, one for intractable vomiting and in another jaundice was accompanied by progressive 12–15 mg/dL.
CEA and Ca 19.9 were normal in all patients. Imaging studies showed intrapancreaticas solid lesions in 5 of the 7 patients, and in the remaining two one papillary mass of 5 and 6 cm, respectively, that caused stenotic in the duodenal lumen. EUS neoplastic cells were negative for all patients. Following the completion of the CPD, the postoperative course was satisfactory in all seven patients., Although one patient had frequent episodes of recurrent acute pancreatitis with pseudocysts at five years after the intervention.

Conclusions: The PS must be included in the differential diagnosis of pancreatic lesions, which may include carcinoma of the peripancreatic area and other causes of chronic pancreatitis.

Transplantation
APHPB-0502

THE IMPACT OF SPLENECTOMY ON THE POSTOPERATIVE DEVELOPMENT OF LABORATORY PARAMETERS IN PATIENTS WITH LIVER TRANSPLANT
S. Hrušovská1 and P. Hegyi1
1Internal Medicine Clinic, Slovak Medical University, Bratislava, Slovakia

Objectives: Since 2008, our clinic, in cooperation with the transplant surgical team, has performed fifty transplant procedures on patients, out which seven patients also underwent splenectomy. In order for us to achieve some results in the given topic, we grouped together patients who underwent both liver transplant and splenectomy and those transplant patients who did not undergo splenectomy. Since 2008, our clinic, in cooperation with the transplant surgical team, has performed fifty transplant procedures on patients, out which seven patients also underwent splenectomy. In order for us to achieve some results in the given topic, we grouped together patients who underwent both liver transplant and splenectomy and those transplant patients who did not undergo splenectomy. The observation period: first week, first three months and a year after liver transplant. The aim of our work was to assess the development of blood parameters in patients, who underwent splenectomy at the same time as liver transplant procedure.

Methods: Retrospective analysis.

Results: We found out that splenectomy significantly prolonged the hospitalization of patients in the postoperative period in the surgical clinic.

Conclusion: The level of leukocytes and neutrophils significantly increased from the second day until the third month of liver transplant. Statistically, two weeks after the liver transplantation the number of thrombocytes significantly increased in the blood picture.

Malignant HPB Diseases
APHPB-0503

TECHNICAL DEVELOPMENT OF A NEW SEMI-SPHERICAL RADIOFREQUENCY BIPOLAR DEVICE (RONJA): EX VIVO AND IN VIVO STUDY
P. Vavra1, M. Penhaker2, J. Jurcikova3, M. Skrobanka4, J. Palecek4, M. Chrá5, P. Delongova6, N. Habib7, P. Ihnat1 and P. Zonca1
1Department of Surgery, University Hospital Ostrava, Ostrava, Czech Republic; 2Department of Cybernetics and Biomedical Engineering, Faculty of Electrical Engineering and Computer Science VSB – Technical University of Ostrava, Ostrava, Czech Republic; 3Department of Vice-President for Science and Research, University Hospital Ostrava, Ostrava, Czech Republic; 4Department of Surgery, Faculty of Medicine University of Ostrava, Ostrava, Czech Republic; 5CEITEC VFU, University of Veterinary and Pharmaceutical Sciences Brno, Brno, Czech Republic; 6Institute of Pathology, University Hospital Ostrava, Ostrava, Czech Republic; 7Liver and Pancreas Surgery, Hammersmith Hospital Imperial College London, London, United Kingdom

Objectives: Our aim was to develop a new semispherical surgical instrument for the bipolar multi-electrode radiofrequency liver ablation. We tried to eliminate the disadvantages of currently used instruments such as ablation of healthy tissue, numerous needle punctures, and therefore, longer operating procedure. We conducted an ex vivo study on porcine liver tissue and an in vivo study in order to assess its safety and feasibility on a set of 12 domestic pigs. The main objective of the testing was to find out if the newly constructed device is suitable for sufficient tissue coagulation and for creating a safety zone around a tumor.

Methods: We created a model of the instrument by 3D printing for the production of a prototype. Stainless steel was used to produce the needle electrodes. The new instrument RONJA has an asymmetrical electrode layout, circle-shaped base, two wings with attached needle electrodes and two connecting power wires which power each wing separately. The ex vivo test was then performed at the University Hospital Ostrava using a standard radiofrequency generator. The in vivo test was performed on a set of 12 pigs randomly divided into two groups.

Results: Statistical analysis indicated that there were not any significant differences between the groups of pigs. The tested instrument RONJA performed the operation with shorter ablation time in both liver lobes and reduced the total operating time.

Conclusion: Further experimental studies are needed to confirm these results before clinical application of the method in the treatment of human liver malignancies.
APHPB-0504

THE THERAPEUTIC EFFECTS OF TRANSCATHETER ARTERIAL CHEMOEMBOLIZATION AND LOCAL REGIONAL THERAPY FOR RECURRENT HEPATOCELLULAR CARCINOMA

T. Zhen xiao1 and Z. H. Zhi wei1
1Hepatic surgery, Tongji Hospital Tongji Medical College Hua Zhong University of Science and Tec, Wuhan, China

Objectives: To compare the therapeutic effects of local reginal therapy combined with or without transcatheter arterial chemoembolization (TACE) for recurrent hepatocellular carcinoma.

Methods: The study retrospectively collects 137 patients with recurrent hepatocellular carcinoma (RHCC) from Jan 2008 to Dec 2010. They were divided into three groups according to the different treatments they received: TACE group (n = 52), local reginal therapy (LRT) group (n = 31) and the combination group (n = 54). The overall survival (OS), time to progression (TTP), length of hospital stay were analyzed.

Results: The average length of the hospital stay are 6.96 days, 5.81 days, and 9.44 days (p = 0.003) respectively in TACE group, LRT group and combination group. There is no mortality in 3 groups. 252 TACE therapies and 165 LRT therapies have been carried out in 137 patients. There are 2 (0.8%) patients who received TACE treatment suffered hypoalbuminemia and 2 (0.8%) suffered ascites, and for LRT therapy there are 2 (1.2%) patients suffered infection and 1 (0.6%) suffered hypoalbuminemia. The 1-,3-, and 5-year overall survival for the TACE group, LRT group and combination group were 65%, 39%, 17%, and 80%, 50%, 27%, and 85%, 55%, 33% respectively. The TTP of TACE group, LRT group and combination group are 5.1 months, 7.3 months and 9.44 months (p = 0.003). The OS and TTP of RHCC, and could better prolong the OS and TTP.

Conclusion: The combination of TACE and LRT was safe and effective for RHCC, and could better prolong the OS and TTP.

Benign HPB Diseases
APHPB-0505

TUBERCULOSIS MASQUERADING AS BILIARY TRACT MALIGNANCY

N. Swamygowda1, V. K. Gunasekaran1, V. Nanjegowda1, T. Gutti1 and V. Giriyappa1
1Surgical Gastroenterology, bangalore medical collegeVictoria hospital, Bangalore, India

Objectives: Malignancy is considered to be the most common cause of biliary strictures or mass in western countries. It is prudent to differentiate benign lesions from malignant ones so as to avoid unnecessary major resections, that patient would undergo otherwise, to reduce the morbidity. Even advanced imaging fails to identify the nature of the lesion. We present our experience with tuberculosis (TB) of biliary tract which is rare.

Methods: The records of patients operated for biliary tract malignancy between 2008 and 2014 were retrospectively analysed from prospective database. In this period 128 patients were operated with preoperative diagnosis of biliary tract malignancy. Five patients (5/128) had TB as their postoperative histopathology diagnosis. Four patients had ceseating granulomas and acid fast bacilli were demonstrated in a patient.

Results: Of 5 patients (4 men), 4 had biliary tract tuberculosis and 1 had duodenal TB. The mean age of presentation was 42 years (range 33–52). The most common symptoms were abdominal pain (80%; 4/5) and jaundice (80%; 4/5) followed by anorexia and weight loss. Extrabiliary biliary obstruction was seen in all patients. One (1/5; 20%) had evidence of old pulmonary TB. All patients were diagnosed after surgery and were started on ATT. One (1/5; 20%) patient developed Grade A pancreatic leak which was managed conservatively. No mortality seen. The median period of follow up was 36 months (4–84 months).

Conclusion: In patients with atypical signs, TB should be considered as a differential diagnosis, particularly in endemic regions, and Intraoperative frozen section may be considered to avoid unnecessary major resections.

Malignant HPB Diseases
APHPB-0506


F. Sanchez-Bueno1, R. Garcia1, A. Bas2, G. Torres1, M. G. Lopez2, P. Gil1 and P. Parrilla1
1Surgery, Hospital Universitario Virgen de la Arrixaca, Murcia, Spain; 2Pathology, Hospital Universitario Virgen de la Arrixaca, Murcia, Spain

Objectives: Follicular dendritic cell sarcoma (FDCS) of the liver is an uncommon pathologic entity, and only 16 cases have been reported previously. The aim of this paper is to report a new case of primary FDCS of the liver with a review the relevant medical literature.

Methods: We report the case of a 47-year-old woman with a painful mass located in the epigastrium. The abdominal ultrasound showed a mass that was confirmed by a CT scan as a large tumor mass in the left liver lobe. Given the findings, the patient underwent left hepatectomy.

Results: The surgical specimen measured 19 cm in diameter, and the histology showed a well-circumscribed solid tumor composed of spindle cells and numerous inflammatory cells, predominantly lymphocytes and plasma cells in a diffuse growth pattern. An immunohistochemical study revealed a high proportion of T-phenotype lymphocytes and a lower proportion of B-cell phenotype lymphocytes. The tumor population showed positivity for CD45, CD68, CD23 and EBER. The result for CD21 was negative.

Conclusion: In conclusion, the inflammatory pseudotumour (IPT)-like variant of FDCS of the liver is considered a separate entity, with different clinical,
pathological and immunophenotypic features than those of the classic FDCS. Therefore, it is crucial to successfully integrate clinical, histological and immunophenotypic data for the correct diagnosis of this rare tumor.

APHPB-0507
RELATIONSHIP OF SERUM ALPHA FETO-PROTEIN AND VIRAL HEPATITIS WITH HEPATOCELLULAR CARCINOMA IN A MULTI-ETHNIC POPULATION: A SINGLE INSTITUTION REVIEW

A. Zambri1, J. Koong1, P. Koh1 and B. Yoong1
1Hepato-pancreato-biliary Unit, University Malaya Medical Centre, Kuala Lumpur, Malaysia

Objectives: The use of alpha feto-protein (AFP) measurement is still widely practised in the management of patient with HCC in this region although not recommended as a diagnostic and screening tool due to its low specificity and sensitivity in recent literature. This study aim to look into the relationship between AFP and viral hepatitis with HCC treated in a single institution practice on a multi-ethnic population.

Methods: A retrospective analysis of patients with HCC from 2011 to 2013 was reviewed. Their demographics and clinicopathological data were obtained. The viral hepatitis status and serum alpha feto-protein in patients with HCC were analyzed.

Results: 81 patients with hepatocellular carcinoma were identified during study period. It is most common in the ethnic Chinese group (58%) followed by the Malays and Indians with a median age of 61.9 years. The incidence of viral hepatitis was 43.2% (n = 35) where majority were Hepatitis B (85.7%, n = 30). Our study also showed that only 42% (n = 34) of HCC patients showed significantly raised AFP levels (>200 ng/mL). Of these raised AFP levels only 12 had positive Hepatitis B with the rest (n = 22) being negative for Hepatitis B which was found to be not significant (p = 0.782). Patient with Hepatitis C and HCC did not show raised AFP levels interestingly.

Conclusion: Serum AFP level was comparable in both HCC patients with known viral and non-viral hepatitis as it did not show any significant difference in a multi-ethnic population, which conforms to most literatures.

Benign HPB Diseases
APHPB-0508
BILE REFLUX AND DELAYED GASTRIC EMPTYING AFTER RETROGASTRIC RETROCOLOIC GASTROJEJUNOSTOMY IN WHIPPLE PROCEDURE

R. C. Siriwardana1, A. Rajapaksha1, S. K. Liyanage2 and S. J. S. Hewavibenthia2
1Department of Surgery, Faculty of Medicine University of Kelaniya, Colombo, Sri Lanka; 2Department of Pathology, Faculty of Medicine University of Kelaniya, Colombo, Sri Lanka

Objectives: With increasing survival following Whipple surgery, quality of life in long term surviving patients has been an important issue. Delayed gastric emptying and bile reflux are important long term complications.

Objectives: As the standard practice we perform retrogastric retrocolic gastrojejunostomy. Study was designed to assess the microscopic features and clinical symptoms following Whipple procedure.

Methodology: All patients who have undergone Whipple procedure in a tertiary care surgical unit from 1/6/2012 to 1/6/2014 who were off any adjuvant therapy for last 3 months were selected. Patients underwent orogastrodudenoscopy and multiple biopsies were taken. Specimens were fixed and stained in Haemotoxylin-Eosin and Giemsa stains. Two pathologists individually reported histological findings using a standard visual scale (‘The Sydney system’). Bile reflux index was calculated using the standard formula.

Results: Fifteen patients, 5 males and 10 females were included in the study. Median age was 48 years (range 21–66 years)

Conclusion: Fifteen patients, 5 males and 10 females were included in the study. Median age was 48 years (range 21–66 years).

Malignant HPB Diseases
APHPB-0509
OUTCOMES OF EMERGENCY LIVER RESECTION FOR SPONTANEOUSLY RUPTURED HEPATOCELLULAR CARCINOMA: SINGLE CENTRE EXPERIENCE

H. Lok1, K. F. Lee1, P. Lai1, J. O. H. N. Wong1, S. Cheung1 and C. Chong1
1Surgery, Prince of Wales Hospital, Hong Kong, Hong Kong China

Objectives: Spontaneous rupture is a life threatening complication of hepatocellular carcinoma (HCC) and is associated with poor prognosis. Transarterial embolization (TAE) is effective in achieving hemostasis in cases of ruptured HCC. However, emergency liver resection has important role as salvage procedure when TAE failed or contra-indicated and as staged procedure after initial hemostasis achieved.

Method: Patients underwent emergency liver resection, either as one stage or staged procedure, were reviewed in terms of patient demographics, pre-rupture HCC status, operative details, complication profiles and survival.

Results: From 2006 – 2014, 9 patients (9 male, median age 57, range 30 – 82) underwent emergency liver resection for spontaneous ruptured HCC. 5 (56%) patients had liver cirrhosis (Child’s A). 8 patients did not have known diagnosis of HCC before presentation as rup-
tured HCC and the remaining patient has newly diagnosed, treatment-naïve HCC. Three patients had emergency liver resection without preceding angiogram. 3 patients had emergency salvage liver resection after failed hemostasis by TAE. 3 patients had staged liver resection after hemostasis achieved with TAE. Median operative time was 218 min (range: 90 – 295) and median blood loss was 2042 mL (range: 650 – 6074).

Median follow-up duration was 20 months. There was no 30-days mortality. Two cases of morbidities were recorded (1 pleural effusion, 1 post-op haemorrhage necessitate re-laparotomy on day 0). Estimated median survival by Kaplan-Meier analysis was 28 months. Conclusion: Emergency liver resection for ruptured HCC has acceptable outcome in selected patients.

Benign HPB Diseases

APHPB-0510

CHANGING TRENDS IN OUTCOME OF BILIARY VERSUS NON-BILIARY PANCREATITIS: DO WE NEED TO CHANGE OUR MANAGEMENT? AN AUDIT AT A TERTIARY CARE HOSPITAL FROM SOUTH ASIA

A. Jiwani 1 and M. Khan 1

1Department of Surgery, Aga Khan University Hospital, Karachi, Pakistan

Objectives: The objective of our study was to audit our experience at Aga Khan University Hospital with a view to summarize the difference between clinical outcomes of biliary vs. non-biliary acute pancreatitis.

Methods: Of 351 adult patients who presented to AKUH between Jan 2009 and Dec 2013 with acute pancreatitis were included in the study. The data were retrospectively collected on a designed performa. Depending on the underlying etiology, the patients with biliary pancreatitis were compared with non-biliary type in terms of age, gender, co-morbid conditions, severity of the disease, need for intervention (s), need for ICU, length of hospital stay, morbidity, and mortality. Mean and standard deviation were used for continuous variables and chi square test was used for statistical analysis of categorical data.

Results: The proportion of biliary vs. non-biliary pancreatitis was similar in our study. Non-biliary acute pancreatitis was more common in younger age (62.4%; p = 0.003) and males (60.7%; p = 0.001), as compared to biliary group. The proportion of patients with severe pancreatitis (p = 0.052), organ failure (p = 0.076), infected pancreatic necrosis (0.067), and need for surgical intervention (p = 0.06) was comparable in the two groups. The need for ICU stay (p = 0.042), and overall mortality rate (1.73% vs. 9.8%, p = 0.002) was higher in the non-biliary group

Conclusion: Non-biliary acute pancreatitis was as common as biliary pancreatitis in our population, but seems to have higher mortality. The work up for non-biliary pancreatitis needs to be standardized.

APHPB-0512

LONG TERM RESULTS AND QUALITY OF LIFE AFTER BILARY RECONSTRUCTION FOR BILE DUCT INJURIES

A. Sultan 1 and M. Shobary 1

1Digestive surgery, gastro-enterology surgical center, Mansoura, Egypt

Objectives: Biliary enteric anastomotic stricture (BEAS) is reported to range from 2 to 25%. This is the most important complication with serious consequences as recurrent cholangitis and secondary biliary cirrhosis.

Methods: A retrospective study of patients who underwent biliary enteric anastomosis (BEA) for the treatment of bile duct injuries (BDI) in the Gastroenterology surgical center, Mansoura University, Egypt, between January 1992 and December 2007. The primary outcome was the development of BEAS as classified by Terblanche et al, 1990. MRCP was the method of choice for evaluating the anastomosis when required.

Results: 171 patients were eligible for the study. 156 (91.2%) followed open cholecystectomy while 15 (8.8%) followed laparoscopic cholecystectomy. Radiological or surgical interventions preceded biliary reconstruction in 107 (62.6%) patients. 119 (69.6%) patients underwent hepaticojejunostomy, while 52 (30.4%) patients underwent Hepp Couinaud operation. Long term follow up was obtained in 120 (70.2%) patients with a mean follow up period of 137±47 months. Anastomotic stricture was detected in 14 (11.6%) patients. 4 patients were managed surgically, 2 patients improved on percutaneous dilatation while conservative treatment was employed in 8 patients. One patient (0.8%) reported cholangitis with no evidence of anastomotic stricture on MRCP. The outcome was excellent in 74 (61.7%), good in 31 (25.8%), fair in 8 (6.7%) and 7 (5.8%) patients.

Conclusion: Hepaticojejunostomy for BDI is safe with good overall long term results.

Malignant HPB Diseases

APHPB-0513

PANCREATICO-DUODENECTOMY IN MANAGEMENT OF PERIAMPULAR TUMOR: SURVIVAL, MORBIDITY AND MORTALITY. A SINGLE TEAM INDONESIAN EXPERIENCE

T. Lalisang 1 and T. Lalisang 1

1Surgery, FMUI/ Cipto Mangunkusumo hospital, Jakarta, Indonesia

Objectives: Report the first and largest series of pancreatico-duodenectomy (PD) on periampulary (PT) in Indonesia.

Methods: Case series, retrograde.

Results: Hundred forty four malignant PT, 7 benignm and 1 recurrent colon cancer were resected, on 84 male, mean age 51 years. The location were 40% pancreatic head, 38% Vateri, 14% duodenum. 4% benign tumor, mostly indicated adenocarcinomas, with addition signet
ring cell, LM, GIST, and adenosquamouscarcinoma. Pathology staging 21.5% stage I, 49.5% stage II, and 25.7% stage III.

Preoperative average of albumin 3.42 mg/dL and total bilirubin 7.13 mg/dL. Preoperative biliary decompression were performed in 93 cases and mostly using endoscopic stent or open cholecystostomy

PPPD, classic Whipple and total pancreatectomy, were carried out 63.8% (98/155), 34% (54/155) and 1.9% (3/155) consecutively. The mean operative time were 439.1 min, blood lost, 777.4 mL and relaparotomy in 14.3%.

The resection load were 10–15 cases/yearly with operative overall death 18.35 which decrease to 13.8% from 33% when started. COD 58.6% due to were sepsis with MOF and ARDS, postoperative bleeding in 6 cases. One case died following aspiration. Overall morbidity were 48.7%, consist of post-operative bleeding 14.4% and 16.1% pancreatic/bile leak.

There were 126 survivors, and the overall survival was 14, 4 months, there are a couple survive till now (96 months). Lost of follow up 21 cases.

Conclusion: Selection is important, survival become better, due to resection rate increase more than 10 cases per annually.

Benign HPB Diseases
APHPB-0514
PERCUTANEOUS DRAINAGE OF NECROTIZING PANCREATITIS. A CASE SERIES AND LITERATURE REVIEW

V. Leow1, K. Mannierajah2, C. Tee2, V. Letchumanan2 and M. K Subramaniam2
1HPB Unit Division of Surgery Department of General Surgery, Advanced Medical and Dental Institute AMDI Science University of Malaysia USM and Sultanah Bahiyah Hospital, Penang, Malaysia; 2HPB Unit Division of Surgery Department of General Surgery, Advanced Medical and Dental Institute (AMDI) Science University of Malaysia (USM) and Sultanah Bahiyah Hospital, Kedah, Malaysia

Objectives: The management of necrotizing pancreatitis has changed over the years. More and more institutions have advocated a less invasive method in managing this disease entity. This case series aimed to support the use of interventional radiological method in the treatment of pancreatic necrotic collection.

Methods: This was a case series involving 17 patients diagnosed with necrotizing pancreatitis from the year 2013 to 2014. The study subjects were in house patients and some referral from nearby hospitals. Study parameters such as patient demographic profiles, clinical findings, laboratory results, imaging and treatment modalities have been recorded. The patients were still being follow up. Descriptive statistical analysis was performed.

Results: The age of the study subjects were ranged between 17 and 72 years old. Majority of them were male. More than 80% of the necrotizing pancreatitis was secondary to gallstone pancreatitis. The commonest clinical findings were tender upper abdomen and vomiting. Deranged ALP and ALT were seen as well.

A total of 17 cases were collected during this study period. All patients underwent abdominal ultrasonography and computed tomography of the hepatobiliary system. Six cases underwent percutaneous drainage successfully and all were later discharged well.

Conclusion: We believe majority of necrotizing pancreatitis can be managed with percutaneous drainage. Necrosectomy should be reserved for cases where drainage failed.
FEASIBILITY TO PANCREATICOJEJUNOSTOMY FOR CHRONIC PANCREATITIS

T. Saito¹, M. Watanabe¹, K. Asai¹, H. Matsukiyo¹, T. Niitsuma¹, M. Kujiraoka¹, Y. Saida¹ and S. Kusachi¹
¹Surgery, Toho University Ohashi Medical Center, Tokyo, Japan

Objective: To evaluate the feasibility of pancreaticojejunostomy for chronic pancreatitis complicating pancreaticolithiasis.

Methods: Patients who underwent pancreaticojejunostomy for pancreaticolithiasis to decompress the pancreatic duct from 2008 to 2014 were included. We analyzed the short-term outcomes after pancreaticojejunostomy in these patients.

Results: Thirteen patients underwent pancreaticojejunostomy for chronic pancreatitis; 4 underwent cholangioduodenostomy for biliary stricture at the lower biliary duct and 1 underwent distal pancreatectomy and splenectomy for a retention cyst. Eleven patients were men, and 2 were woman. The cause of chronic pancreatitis was alcohol-related in 11 and idiopathic in 2 patients. The median follow-up period was 328 days (range: 17–2190 days). The mortality rate was 0%. The rate of Clavian 3 and 4 complications was 0%. Long-term postoperative pain control was good in twelve patients but one patient underwent endoscopic pancreatic stenting for abdominal pain due to delayed stricture of pancreaticojejunostomy. The International Study Group on Pancreatic Fistula grade B and C fistula rate was 0%. The median operative time was 320 min (range: 219–488 min). The median volume of bleeding was 185 mL (range: 15–615 mL).

Conclusion: It is feasible and available that pancreaticojejunostomy is few perioperative complications and pain control is good for chronic pancreatitis complicating pancreaticolithiasis.

Benign HPB Diseases

APHPB-0521

BILE REFLUX AND QUALITY OF LIFE AFTER RETROGASTRIC RETROCOLIC GASTROJEJUNOSTOMY IN WHIPPLE PROCEDURE

R. C. Siriwardana¹, R. Rajapaksha¹, S. K. Liyanage² and S. J. S. Hewavisenthí²
¹Department of Surgery, Faculty of Medicine University of Kelaniya, Colombo, Sri Lanka; ²Department of Pathology, Faculty of Medicine University of Kelaniya, Colombo, Sri Lanka

Objectives: With increasing survival following Whipple surgery, quality of life in long-term survivors has become an important issue. Delayed gastric emptying and bile reflux are common long-term complications. As the standard practice, we perform retrogastric retrocolic gastrojejunostomy. Study was designed to assess the macro and microscopic bile reflux and clinical symptoms of dyspepsia following Whipple procedure.

Methods: All patients who had undergone Whipple procedure from June 2012 to June 2014 were included (N = 21). Patients with recurrence and ones who had chemotherapy within last three months were excluded. Included patients (n = 15) underwent orogastrodudeno-scopy and multiple biopsies were taken. Specimens were reported using ‘The Sydney system’. Bile reflux index was calculated using a standard formula. Nepean Dyspepsia Index-short form (NDI-SF) was used to clinically assess the severity of functional dyspepsia.

Results: There were 5 males and 10 females with a median age of 48 years (range 21–66). Endoscopically, 12/15(80%) had macroscopic bile reflux (66.7% yellowish bile lake, 13.3% greenish bile lakes). None had stomal ulcers or macroscopic inflammation. Mean NDI score was 23.9 (SD ± 2.27) and 12 had NDI score of 15 or more. Males had a mean score of 25.6 and females had a mean score of 23 (p = 0.605). Mean Bile reflux index was 10.87. Duration after surgery was not...
significantly associated with NDI score (p = 0.92). There was no significant relationship in NDI with macroscopic appearance of reflux (p = 0.233) or bile reflux index (p = 0.285).

**Conclusion:** 80% of patients had significant dyspeptic symptoms even with retrocolic retrogastric anastomosis. Though there was macroscopic bile reflux, there were minimal microscopic changes in them.

**APHPB-0522**

**HEPATIC INFLAMMOSOME ACTIVATION PLAYS A DOMINANT ROLE IN THE HEPATOTOXIC EFFECT OF BILE ACIDS**

R. Tao¹, X. Q. Liu¹ and T. R. Billiar²

¹Hepatobiliary-Pancreatic Surgery, Zhejiang Provincial People’s Hospital, Hangzhou, China; ²Surgery, University of Pittsburgh Medical Center, Pittsburgh, USA

**Objectives:** Cholestasis is commonly resulted from choledocholithiasis, hepatobiliary-pancreatic (HBP) malignancies, certain liver diseases amongst other etiologies. It can cause significant hepatic injury and substantially increases morbidity and mortality. Although earlier studies indicated bile acid (BA)-induced apoptosis as the main mechanism of cholestatic liver injury (CLI), recent work have shed light on BA-induced sterile inflammation in the pathogenesis of CLI. We hereby explore the role of inflammasome activation in BA-induced hepatic injury and evaluate its value as a potential therapeutic target.

**Methods:** WT mice and mice with deficiency of the key participants in inflammasome activation were subjected to bile duct ligation (BDL); isolated hepatocytes and Kupffer cells were subjected to various BA stimulation; inflammasome activation within the liver tissue or certain types of cells as well as liver injury were examined.

**Results:** In both in vivo and in vitro models, western blot and immunohistochemical staining showed a time-dependent increase in the NACHT, LRR and PYD domains-containing protein 3 (NALP3) expression and Caspase 1 cleavage, along with increased expression of the pro-inflammatory cytokines IL-1β, IL-18 and IL-33. Both NALP3−/− and Caspase 1−/− mice as well as mice with hepatocyte-specific deficiency of the high-mobility group box-1 (HMGB-1) showed markedly ameliorated cholestasis-induced hepatic injury compared to wild type controls 3 and 5 days after BDL.

**Conclusion:** Our preliminary data support a central role of inflammation in the pathogenesis of CLI. Targeting the key components of the inflammasome or inhibition of inflammasome activation (eg, omega-3 fatty acids) may be considered as novel therapeutic means in the management of cholestasis.

**APHPB-0523**

**BILE DUCT INJURY WITH SECONDARY BILIARY CIRRHOSIS: SHORT TERM OUTCOME OF BILIOENTERIC ANASTOMOSIS**

N. Agrawal¹, A. Kidambi Seshadri¹, A. Arora¹, K. G S Bharathy¹, S. Kumar¹ and T. K. Chattopadhyay¹

¹HPB Surgery, Institute of Liver and Biliary Sciences, New Delhi, India

**Objectives:** To analyze short term outcome of bile duct repair in patients of bile duct injury with secondary biliary cirrhosis.

**Methods:** Data was collected retrospectively from a prospectively maintained database from Jan 2010 till May 2014. Patients with confirmed diagnosis of postcholecystectomy bile duct injury with secondary biliary cirrhosis were included.

**Results:** There were five patients. The median age was 46 years. Three patients were Child Turcot Pugh (CTP) A and two were CTP B. The median MELD score was 10 (6–10). All patients had cholangitis, four had jaundice and two had ascites preoperatively. All patients underwent a Roux-en-Y Hepaticojejunostomy of which one was a re-do procedure. Mean duration of surgery was 272 (240–420) min and mean blood loss was 274 (70–550) mL. One patient required blood transfusion. Major morbidity (Clavien Dindo grade ≥ 3) occurred in two patients. Transient worsening of hepatic function occurred in two patients; both were CTP B. There was no mortality. Mean hospital stay was 11.4 days overall and 14.5 days in those who decompenated.

**Conclusion:** Bilio-enteric anastomosis in patients of postcholecystectomy bile duct injury with secondary biliary cirrhosis (CTP A and B) can be done safely with acceptable morbidity.

**Malignant HPB Diseases**

**APHPB-0524**

**ADJUSTABLE LAPAROSCOPIC RADIOFREQUENCY SURGICAL DEVICE – LARA-K1: A NEW ATTITUDE TO POSTERIOR SEGMENT LIVER RESECTIONS**

P. Vavra¹, L. Karník², M. Skrobotkova¹, J. Palecek³, J. Jurcikova³, V. Prochazka³, P. Ihnat¹ and P. Zona³

¹Department of Surgery, University Hospital Ostrava, Ostrava, Czech Republic; ²Department of Robotic, Faculty of Mechanical Engineering VSB – Technical University of Ostrava, Ostrava, Czech Republic; ³Department of Surgery, Faculty of Medicine of the University of Ostrava, Ostrava, Czech Republic;

¹Department of Surgery, University Hospital Ostrava, Ostrava, Czech Republic; ²Department of Vice-President for Science and Research, University Hospital Ostrava, Ostrava, Czech Republic

**Objectives:** We have developed a new device, LARA-K1, which after introduction into the abdominal cavity can bend its long axis, allowing the application of radiofrequency energy in areas that are currently inaccessible for laparoscopic surgery, such as posterior liver segments (IV, VII and VIII).
**Methods:** The device is equipped with four telescopic needle electrodes that coagulate tissue after delivery of radiofrequency energy. Ex vivo testing was performed in years 2012 and 2013 at the University Hospital Ostrava on porcine liver tissue. The main goal of the testing was to figure out, if the newly proposed electrode layout is suitable for sufficient tissue coagulation and creating a safety zone around tumors. We used a laparoscopic simulator to evaluate the accuracy of the device. We also monitored settings of power delivery, time required for coagulation and adhesiveness of needle electrodes.

**Results:** During the ex vivo testing, material of needle electrodes was improved to structural steel with special coating which significantly decreased the adhesiveness. We adjusted the power supply from 20 W to 120 W and monitored the ablation time which varied from 110 to 10 s. Subsequently, optimal power delivery and time for coagulation was determined.

**Conclusion:** This experimental study demonstrated the feasibility and safety of the newly developed device. Based on the ex vivo testing, LARA-K1 can create a safety zone of coagulation. For further assessment of the new device, we should perform an in vivo test.

**APHPB-0525**

**TECHNICAL DEVELOPMENT OF A NEW SEMI-SPERICAL RADIOFREQUENCY BIPOLAR DEVICE (RONJA): EX VIVO AND IN VIVO STUDY**

P. Vavra¹, M. Penhaker², J. Grepl², M. Skrobankova³, J. Palecek³, M. Crha⁴, P. Ihnat¹, J. Jurcikova⁵, N. Habib⁶ and P. Zonca¹

¹Department of Surgery, University Hospital Ostrava, Ostrava, Czech Republic; ²Department of Cybernetics and Biomedical Engineering, Faculty of Electrical Engineering and Computer Science VSB – Technical University of Ostrava, Ostrava, Czech Republic; ³Department of Surgery, Faculty of Medicine of the University of Ostrava, Ostrava, Czech Republic; ⁴CEITEC VFU, University of Veterinary and Pharmaceutical Sciences Brno, Brno, Czech Republic; ⁵Department of Vice-President for Science and Research, University Hospital Ostrava, Ostrava, Czech Republic; ⁶Liver and Pancreas Surgery, Hammersmith Hospital Imperial College London, London, United Kingdom

**Objectives:** Our aim was to develop a new semi-spherical surgical instrument for the bipolar multi-electrode radiofrequency liver ablation. We tried to eliminate the disadvantages of currently used instruments such as ablation of healthy tissue, numerous needle punctures, and therefore, longer operating procedure. The main objective of the in vivo testing was to find out if the newly constructed device is suitable for sufficient tissue coagulation and for creating a safety zone around a tumor.

**Methods:** We created a model of the instrument by 3D printing for the production of a prototype. The new instrument RONJA has an asymmetrical electrode layout, circle-shaped base, two wings with attached needle electrodes and two connecting power wires which power each wing separately. The ex vivo test was then performed at the University Hospital Ostrava using a standard radiofrequency generator. The in vivo test was performed on a set of 12 pigs randomly divided into two groups. Study was approved by the expert committee on animal welfare of the Veterinary and Pharmaceutical University Brno according to the law on the protection of animals.

**Results:** Statistical analysis indicated that there were not any significant differences between the groups of pigs. The tested instrument RONJA performed the operation with shorter ablation time in both liver lobes and reduced the total operating time. The depth of the tissue coagulation was on average 4 mm larger using the newly tested instrument.

**Conclusion:** Further experimental studies are needed to confirm these results before clinical application of the method in the treatment of human liver malignancies.

**Transplantation**

**APHPB-0526**

**TREATMENT OF EARLY DUCT TO DUCT STRICTURES IN LIVER TRANSPLANT RECIPIENTS**

K. Kobryn¹, W. Patkowski¹, S. Koziel¹, M. Grat¹ and M. Krawczyk¹

¹General Transplant and Liver Surgery, Warsaw Medical University, Warsaw, Poland

**Objectives:** One of the potential early complications of liver transplantation are strictures of end to end anastomosis of the bile duct. In this retrospective cohort study we analyzed endoscopic treatment of bile duct strictures in liver transplant recipients.

**Methods:** From January 2011 to December 2013 507 patients underwent liver transplants (LT) at our Center. 51 ERCP with implantation of bile stents in 34 patients were carried out due to end to end bile duct anastomosis strictures. Methods of balloon dilation (BD) and use of plastic stents (PS) and covered self-expandable metal stents (SEMS) were applied. As an early period of biliary complications we established a cut-off point of 0–3 months post transplantation.

**Results:** BD was conducted in 10 patients, followed by implantation of PS, with re-stenting after 3–4 months. SEMS was applied in 9 patients during this period overall. The remaining group of 15 patients was treated with PS. 2 patients died from reasons unrelated to the analyzed complications. 7 patients after 8–12 months didn’t require further stenting.

**Conclusion:** Biliary complications accompany every transplant center (ranging from 5–40%). For early biliary duct to duct anastomosis strictures endoscopic retrograde cholangiopancreatography is the primary treatment. Often the need of repetitive covered self-expandable metal stent implantation is inevitable, thus reduces the number of surgical interventions, prolongs graft survival and shortens hospitalization.
Benign HPB Diseases
APHPB-0528

SYSTEMATIC REVIEW AND META-ANALYSIS OF SURGICAL TREATMENT FOR LIVER HEMANGIOMA
T. Yang\(^1\), X. Huang\(^1\), H. Zhang\(^1\), J. H. Lu\(^1\), M. C. Wu\(^1\) and F. Shen\(^1\)
\(^1\)Department of Hepatic Surgery, Eastern Hepatobiliary Surgery Hospital, Shanghai, China

Objectives: Consensus on the management of liver hemangioma, especially on surgical indication and operating method, is controversial. The aim of the study is to provide a systematic review and meta-analysis on surgical treatment for liver hemangioma, regarding its surgical indications and approaches.

Methods: A systematic review was performed with all studies published from 2000 to 2013 using MEDLINE, Embase, and the Cochrane Library. All data regarding surgical indications, approaches, morbidity, mortality and follow-up were analyzed.

Results: Twenty-four studies were analyzed and a total of 977 patients with liver hemangioma in these studies underwent surgical treatment. Tumor size ranged from 0.2 to 46 cm. Reported surgical indications mainly include presence of symptoms, uncertain diagnosis, rapid enlargement, patient request, prophylactic surgery for giant lesions and occurrence of life-threatening complications like Kasabach-Merritt syndrome. Enucleation was adopted by 13 studies with 519 patients, while open hepatic resections, either anatomical or non-anatomical ones, were adopted by 21 studies with 458 patients. Detailed comparisons of the two approaches were conducted in only 4 studies. Overall postoperative morbidity and mortality was 14.1% and 0.2%, respectively.

Conclusion: Surgical Indication for liver hemangioma far from well defined by now, a worldwide consensus is mandatory. Surgical treatment, either enucleation or hepatic resection, was reserved as a safe and effective option for severe liver hemangioma. Minimally invasive approaches may be optimal alternatives, pending further studies and supportive evidence.

Malignant HPB Diseases
APHPB-0530

MINIMALLY-INVASIVE PANCREATICODUODENECTOMY IN PERI-AMPULLARY MALIGNANCY: THE INITIAL NATIONAL UNIVERSITY HOSPITAL OF SINGAPORE EXPERIENCE
C. W. B. Tay\(^1\), S. K. Y. Chang\(^1\), A. W. C. Kow\(^1\), S. G. Iyer\(^1\) and K. Madhavan\(^1\)
\(^1\)Department of Surgery, Nation University Healthy System, Singapore, Singapore

Objectives: Minimally-invasive pancreaticoduodenectomy (MIPD) is a highly complex surgical procedure. Latest evidence has shown it has many advantages over open pancreaticoduodenectomy, such as post-operative complication rates, less intra-operative blood loss, shorter hospital stays, higher number of harvested lymph nodes. However, the procedure requires advance laparoscopic skills, hence only few centers in the world offer it as treatment for peri-ampullary malignancy.

We report the initial experience of MIPD performed for peri-ampullary malignancy in National University Hospital of Singapore.

Methods: We analyzed all laparoscopic-assisted pancreaticoduodenectomy performed from year 2011 – 2014. Patient characteristics, pre-, intra-, and post-operative data, as well as oncological information were studied.

Results: 11 cases of laparoscopic-assisted pancreaticoduodenectomy were studied. 6 (55%) were females, median age and BMI were 51 (range: 37–77) and 24 (range: 20 – 30) respectively. Indications for surgery were: ampullary cancer (n = 8, 73%), head of pancreas cancer (n = 2, 18%), distal cholangiocarcinoma (n = 1, 9%). Median preoperative computed tomography (CT) tumour, bile duct and pancreatic duct sizes were 18 mm (range: 1–31), 10 mm (range: 1–20) and 4 mm (range: 1–15), respectively.

Conclusion: In our experience, MIPD is feasible and safe in selected patients. Larger number, randomized controlled trial will help to further evaluate the advantages of MIPD.

Benign HPB Diseases
APHPB-0531

COMBINED-LAPAROSCOPIC VERSUS OPEN SPLENECTOMY AND ESOPHAGEAL DAVASCULARIZATION FOR PORTAL HYPERTENSION DUE TO LIVER CIRRHOSIS
L. E. I. Zhang\(^1\), W. Zhang\(^1\) and X. Chen\(^1\)
\(^1\)Hepatic Surgery Center, Tongji Hospital Tongji Medical College Huazhong University of Science and Tech, Wuhan, China

Objectives: This study was conducted to compare the feasibility, safety and effectiveness of the combined-laparoscopic splenectomy and esophageal devascularization (C-LSED) with those of open surgery (OSED) in patients with portal hypertension due to liver cirrhosis.

Methods: From February 2011 to February 2014, 68 patients with portal hypertension were diagnosed with serious gastroesophageal varices and/or hypersplenism in our center. 30 patients underwent C-LSED and 38 patients received OSED. Results and outcomes were compared retrospectively.

Results: No patients of C-LSED group required an intraoperative conversion to open surgery. Compared
with OSED group, significantly shorter operating time, less blood loss, lower transfusion rates, shorter postoperative hospital stay, lower rates of complications were found in C-LSED group (p < 0.05). No death and rebleeding were documented in both groups during the follow-up periods of six months. Postoperative endoscopy revealed that the patients with varices in both groups improved significantly from severe to mild, and in a part of cases, the varices disappeared.

**Conclusion:** The final results suggest that the C-LSED technique is superior to open procedure, which brings about slightly invasive, simplified operative procedure, significantly shorter operating time, less intraoperative bleeding and lower complication rates. And C-LSED offers comparable medium-term effects to OSED approaches.

### Malignant HPB Diseases

**APHPB-0532**

**ACCURATE PREOPERATIVE DISCRIMINATION OF SMALL INTRAHEPATIC CHOLANGIOCARCINOMA AND HEPATOCELLULAR CARCINOMA IN CIRRHOTIC LIVERS WITH MULTIPHASE DYNAMIC MAGNETIC RESONANCE IMAGING: A PROSPECTIVE COHORT STUDY**

L. Wu1, B. I. N. Huang1 and H. Cheng1

1Interventional radiology, Eastern hepatobiliary surgery hospital, Shanghai, China

**Objectives:** The discrimination of hepatocellular carcinoma (HCC) and ICC remains a critical and also challenging issue because the prognosis and treatment of both entities differ markedly. The aim of this study was to validate prospectively the accuracy of magnetic resonance (MR) in a cohort of patients with focal liver lesions (FLLs) in the existence of cirrhosis.

**Methods:** Between January 2009 and January 2013, a prospective cohort of 704 patients carrying FLLs underwent partial hepatectomy and results of pathologic examinations were obtained for all of them. The clinico-radiologic-pathologic results were comprehensively analyzed.

**Results:** The preoperative diagnoses of 563 of the 704 lesions (80.0%) were confirmed. Nine lesions of ICCs (12.7%) and 484 lesions of HCCs (79.1%) displayed contrast washout at delayed phases (p < 0.001).

**Conclusion:** The accurate discrimination of small ICCs from HCCs in the setting of hepatitis B virus (HBV) related cirrhosis by MR imaging still needs improvement. The non-invasive diagnostic criteria of HCCs may need to be reevaluated in small FLLs no more than 30 mm in diameter in the setting of HBV-related cirrhosis.

### Benign HPB Diseases

**APHPB-0533**

**LAPAROSCOPIC CHOLECYSTECTOMY TO TORSION OF THE GALLBLADDER, COMPARISON TO OPEN CHOLECYSTECTOMY: A SINGLE-INSTITUTION EXPERIENCE**

T. Noda1, H. Hatano1, J. Shimizu2 and K. Dono1

1Surgery, Toyonaka Municipal Hospital, Toyonaka, Japan; 2Surgery, Osaka Rosai Hospital, Sakai, Japan

**Objectives:** The gallbladder torsion is one subtype of acute cholecystitis and preoperative diagnosis was difficult. However, there are few reports of a series of the torsion due to the low incidence. The objectives of this paper are to identify the important finding for preoperative diagnosis, and to investigate the differences between the clinical outcome of laparoscopic and open cholecystectomy.

**Methods:** Between 2005 and 2011, a total of 172 patients were diagnosed as acute cholecystitis in our surgical department. Six patients were diagnosed as gallbladder torsion and treated an emergency cholecystectomy, laparoscopic cholecystectomy in four and open in two. We retrospectively analyzed the clinical and radiological finding of the patients and investigate the surgical outcome.

**Results:** The rotation of the gallbladder fundus was shown in four cases. In only one case, a twisting of the cystic artery was observed as a ‘whirl sign’. The length of hospital stay in the patients receiving laparoscopic cholecystectomy was shorter than that in the patients with open cholecystectomy.

**Conclusion:** The presence of excessive gallbladder swelling and rotation of the fundus was important key to suspect the gallbladder torsion. The laparoscopic cholecystectomy should be considered as the first choice for the patients of gallbladder torsion.

### Malignant HPB Diseases

**APHPB-0534**

**TRANSCRIPTION FACTOR MAML3 CAN BE A NEW THERAPEUTIC TARGET FOR PANCREATIC CANCER THROUGH HEDGEHOG SIGNALING PATHWAY**

A. Yamasaki1, H. Onishi1 and M. Katano1

1Cancer therapy and research, Kyushu University, Fukuoka, Japan

**Objectives:** We have reported that the Hedgehog (Hh) signal which is one of the morphogenetic signal systems is activated in a pancreatic cancer with a hypoxic environment, and participates in cancer malignant alteration. Goal of this study is to find a new target and develop a new remedy for pancreatic cancer.

**Methods:**
1) Hypoxic condition in pancreatic cancer tissues were analyzed by Immunohistochemistry (CA9) of the pancreatic cancer resected specimen.
2) We cultured pancreatic cancer cell lines under Normoxic and Hypoxic condition. We analyzed the influence of Hypoxic condition on pancreatic cancer
cells about proliferation, invasion and mRNA expression.

3) We silenced Mastermind-like 3 (MAML3) gene, transcription factor of Notch signal, by the low molecule interference RNA method.

Results: Cancer cells in pancreatic cancer tissue had high CA-9 intensity compared with the adjacent tissue. In hypoxic condition, Invasion ability of pancreatic cancer cell lines were accelerated, and Smo (SMO) and MAML3 mRNA expressions were also accelerated. Silenced MAML3 intentionally reduced the proliferation and invasion ability and SMO mRNA expression of pancreatic cancer cells.

Conclusion: MAML3 was involved malignant alteration and Hh signal of pancreatic cancer in hypoxic environment, and was suggested to be a new therapeutic target.

Benign HPB Diseases
APHPB-0536
SURGICAL OUTCOME OF LAPAROSCOPIC CHOLECYSTECTOMY FOR ACUTE CHOLECYSTITIS PROGRESSING MORE THAN 72 H AFTER THE ONSET
G. Shinke1, T. Noda1, H. Hisanori1, J. Shimizu2, A. Takata3, M. Hirota1, T. Tanida1, T. Komori1, S. Morita3, H. Imamura1, T. Iwazawa1 and K. Dono1
1Department of Surgery, Toyonaka Municipal Hospital, Osaka, Japan; 2Department of Surgery, Osaka Rosai Hospital, Osaka, Japan

Objectives: Early cholecystectomy is recommended for patients with acute cholecystitis within 72 h after the onset on Tokyo Guidelines 2013. Cholecystectomy for acute cholecystitis progressing more than 72 h is supposed to be difficult, and the guidelines state that the gallbladder drainage is recommended. We retrospectively analyzed the surgical outcome of laparoscopic cholecystectomy for acute cholecystitis progressing more than 72 h after the onset.

Methods: From May 2005 to July 2013, 220 patients underwent laparoscopic cholecystectomy in Toyonaka Municipal Hospital. We compared the clinical features and surgical outcomes of 29 patients progressed more than 72 h after onset with 191 patients within 72 h after onset.

Results: Of the 29 patients, 10 patients received cholecystectomy from 72 h to 96 h. 13 patients from 96 h to one week and 6 patients after one week. There was no statistical significance between two groups about genders, years and severity of acute cholecystitis. Conversion to open surgery occurred more frequently in group after 72 h (17.2% to 2.6%). In that group, blood loss and operation time significantly increased. However, postoperative complications and hospital stay were not different between two groups. In patients from 72 to 96 h, laparoscopic cholecystectomy was performed in all ten patients and conversion to open surgery was not observed.

Conclusion: Laparoscopic cholecystectomy for acute cholecystitis progressing more than 72 h was more difficult and conversion rate was high. The data indicates that laparoscopic cholecystectomy within 96 h in patient progressing more than 72 h might be safe and feasible.

Malignant HPB Diseases
APHPB-0540
CASE CONTROLLED STUDY ON SIMULTANEOUS HEPATECTOMY AND SPLENECTOMY OR HEPATECTOMY ALONE IN PATIENTS WITH CHRONIC HEPATITIS B-RELATED HEPATOCELLULAR CARCINOMA AND PORTAL HYPERTENSION
Q. Wang1, H. P. Luo1 and B. X. Zhang1
1Hepatic Surgery Centre, Tongji Hospital, Wuhan, China

Objectives: We investigated the outcomes of simultaneous splenectomy and hepatectomy (SPH) or hepatectomy alone (HA) in patients with hepatitis B-related hepatocellular carcinoma and portal hypertension (HBV-HCC/PH), aiming to evaluate whether splenectomy could improve outcomes of these patients.

Methods: We carried out a retrospective case control study on 171 HBV-HCC/PH patients. Cases that fulfilled the following criteria were enrolled in the study: ? platelet counts ranging from 50 × 10^9/L to 80 × 10^9/L, white blood cell count >2.0 × 10^9/L; ?without esophageal varices or the varices being ≤ F2; ?receiving SPH or HA. There were 57 cases in SPH group and 114 cases in HA group.

Results: The perioperative clinical characteristics of the 2 groups were not statistically different. Compared to the HA group, the SPH group patients had transiently improved postoperative liver function and long-term ameliorated thrombocytopenia, but suffered from higher rates of major postoperative complication. Splenectomy had no effect on tumor free or overall survival.

Conclusion: In patients with HBV-HCC/PH, splenectomy was associated with transiently improved liver function and increased major postoperative complications. It was not necessary in those with mild pancytopenia and less than F2 esophageal varices.

Malignant HPB Diseases
APHPB-0541
THE CHANGE OF MAIN PANCREATIC DUCT ON PREOPERATIVE IMAGING IS AN INDEPENDENT PREDICTOR OF LYMPH NODE METASTASES OF PANCREATIC NEUROENDOCRINE TUMORS
Y. Nanno1, I. Matsumoto2, A. Ueta1, J. Ishida1, T. Goto3, S. Asari1, H. Toyama1, T. Ajiki1, T. Fukumoto1 and Y. Ku1
1HBP surgery, Kobe University Graduate School of Medicine, Kobe, Japan; 2HBP surgery, Kinki University Faculty of Medicine, Osaka, Japan

Objectives: Pancreatic neuroendocrine tumors (PNETs) are potentially malignant, and presence of lymph node
(LN) metastases is a major concern when considering the management of tumor. The size of tumor has been believed as a predictor of LN metastases, however, other preoperative parameters are still not understood. In this study, we designed a single center retrospective study to investigate whether a stenosis or obstruction of main pancreatic duct (MPD) was a preoperative predictor for LN metastases.

Methods: Consecutive patients with PNET between 2003 and 2013 at Kobe University Hospital were retrospectively reviewed. A presence or absence of the change of MPD was evaluated with clinical data (including gender, age, tumor size, number of mass, location, and a type of tumor) by uni- and multivariate analysis to determine clinical relevance with LN metastases.

Results: Fifty-four patients were enrolled in the analysis. A median tumor size was 20 mm (range: 0.8–156), and there were 37 non-functioning tumors, 12 insulinomas, 4 gastrinomas, and 1 glucagonomas. LN metastases were positive in 20 (37%) patients, and the change of MPD was present in 24 (44%) patients, respectively. At multivariate analysis, the change of MPD remained as an independent risk factor of LN metastases \( (p = 0.037) \) as well as tumor size \( (\geq 15 \text{ mm}, p = 0.048) \), and type of hormonal production (non-insulinomas, \( p = 0.020 \)).

Conclusion: The change of MPD on preoperative imaging was identified as an independent predictive factor of LN metastases in PNETs.

APHPB-0542
REDEFINING THE GUIDELINES FOR RESECTION OF HEPATOCELLULAR CARCINOMA
Y. X. Koh\(^1\), P. K. H. Chow\(^2\), W. K. Lye\(^3\) and J. C. Allen\(^3\)
\(^1\)Department of General Surgery, Singapore General Hospital, Singapore, Singapore; \(^2\)Department of Surgical Oncology, National Cancer Centre, Singapore, Singapore; \(^3\)Department of Biostatistics, Duke-NUS Graduate Medical School, Singapore, Singapore

Objectives: Large solitary lesions and multifocal lesions present a significant disease burden, accounting for over 40% of resected HCC. The long term outcomes of resection for such intermediate or advanced HCC remain unclear. There is no current data that defines the optimal size of solitary HCC and the number of nodules of multifocal HCC that might benefit from surgical resection.

We hypothesize that the long term survival of resection for HCC is associated with size (especially in solitary lesions) and the number of lesions (in multifocal HCC). The aim of our study was to determine the overall survival (OS) and disease free survival (DFS) in stratified by size in single lesion HCC and by number of lesions in multi-focal HCC and define the size and number at which outcomes are similar to that of lower morbidity loco-regional therapy.

Methods: This is a retrospective analysis of the long term outcomes of surgical resection for hepatocellular carcinomas carried out by the combined services of the Singapore General Hospital and the National Cancer Centre Singapore from 2000 – 2014.

Exclusion criteria: Patients who at the time of with macrovascular invasion, lymph node metastases and extrahepatic metastatic disease will be excluded. The remaining patients will be divided into 2 groups namely those with solitary lesions and those multifocal lesions. The 5 year overall survival and disease free survival will be analyzed according to the size of solitary lesions and the number of nodules for multifocal lesions.

Results: Pending.

Conclusion: Pending.

APHPB-0545
AN INITIAL EXPERIENCE OF THE UPPER MIDLINE INCISION FOR VARIOUS LIVER RESECTIONS IN A LOW VOLUME CENTER
Kim\(^1\) and K. Her\(^1\)
\(^1\)Surgery, JNUH, Jeju, Korea

Objectives: The upper midline incision (UMI) for various liver resections has been recently introduced. This study is to report an initial experience of the UMI in a low volume center (annual number of a total liver resection in an institution \( \leq 10 \)) above the umbilicus for various liver resections using a conventional open-surgery technique.

Methods: A retrospective study based on a prospectively collected database of 6 liver resections performed by a single surgeon was conducted to report initial clinical outcomes of the UMI.

Results: From March to July 2014, this incision was used successfully in 6 liver resections (66.7%) in 9 patients who underwent liver resection irrespective of their previous history of abdominal operations. 3 cases were major resection (2 right hemihepatectomies and 1 left hemihepatectomy). The median operating time was 174 min (range: 91–244 min). The median postoperative hospital stay was 9.5 days (range: 8–10 days). All 6 patients fully recovered and returned to their previous level of activity. Over a median follow-up of 4.3 months (range: 1.8–6.1 months), 3 complications (50%) developed; 1 seroma, 1 bile leak and 1 wound infection.

Conclusion: The UMI can be used in conventional open surgery in various liver resections with acceptable complications in a low volume center.

Transplantation
APHPB-0546
SUPPLY OF PROBIOTICS REDUCES POSTTRANSPLANT EARLY INFECTION RATES AFTER LIVER TRANSPLANTATION: A SINGLE CENTER OBSERVATIONAL CROSS-SECTONAL STUDY
Kim\(^1\), S. D. Lee\(^2\) and S. H. Kim\(^2\)
\(^1\)Surgery, JNUH, Jeju, Korea; \(^2\)Center for Liver Cancer, National Cancer Center, Goyang, Korea

Objectives: Bacterial infections frequently occur early (within on months) after liver transplantation (LT) and
main cause of posttransplant death. Recently, there are several reports about that probiotics can reduce postoperative infections in patients undergoing colorectal resection for cancer. Now, our aim is to investigate whether the posttransplant outcomes can be better in patients receive supply of probiotics following LT.

Methods: An observational cross-sectional study was undertaken in 381 LT recipients. Comparison was made between one group (A) receiving a probiotics and another group (B) did not. One hundred thirty patients belonged to group A and 251 patients belonged to group B. Probiotics was given in group A on the postoperative day 1 and continued until the first day of a clinic visit. Early infection rate (within one month), duration of antibiotic therapy, noninfectious complications and one year mortality rate were recorded.

Results: The incidence of posttransplant bacterial infections within 30 days was significantly reduced [group A (2.3%) versus group B (7.2%); p = 0.049]. However, there was no significant difference in 1 year mortality rate. Posttransplant supply of probiotics reduces bacterial infection rates following LT. Multicenter randomized prospective study is required to confirm our findings

Conclusion: Posttransplant supply of probiotics reduces early bacterial infection rates following LT. Multicenter randomized prospective study is required to confirm our findings.

Benign HPB Diseases
APHPB-0548

FEASIBILITY AND OUTCOMES OF LAPAROSCOPIC ENUCLEATION FOR Pancreatic NEOPLASMS
J. Chung1, S. Jang1, K. Kim1, O. Lee1 and H. Kim1
1Surgery, Soonchunhyang University, Bucheon, Korea

Objectives: With the advancement of laparoscopic techniques and instruments, laparoscopic approach for the pancreatic lesions has become an increasingly used procedure. But, there are few limited studies about laparoscopic enucleation (LE) for the pancreatic lesions. Therefore, the purpose of this study was to present our experience and to evaluate the clinical outcome of LE for pancreatic benign or borderline malignant tumors.

Methods: Between May 2005 and December 2011, 11 patients who underwent LE were analyzed. Candidates for LE had following criteria: (1) benign or borderline malignant pancreatic tumor, (2) no involvement of main pancreatic duct, and (3) outwardly growing tumor with small tumor bed.

Results: All 11 patients (10 women and 1 man with a mean age of 43.1 ± 11.9 years) who underwent LE were completed laparoscopically without conversion. The mean diameter of tumor was 4.0 ± 3.3 cm and all cases had benign tumors at the final pathologic diagnosis. One patient (9%) developed pancreatic fistula and mean postoperative hospital stay was 5.5 ± 1.7 days. During follow-up period (mean; 44.3 ± 23.9 months), all patients were alive with no recurrence or new onset of diabetes.

Conclusion: LE is a safe and effective procedure, and should be considered as a treatment option for pancreatic lesions which do not involve the main pancreatic duct and have an outgrowing aspect with small tumor bed.

APHPB-0549

FEASIBILITY AND OUTCOMES OF LAPAROSCOPIC LIVER LEFT LATERAL SECTIONECTOMY: COMPARISON WITH OPEN LIVER LEFT LATERAL SECTIONECTOMY
J. Chung1, K. Kim1, O. Lee1, S. Jang1 and H. Kim1
1Surgery, Soonchunhyang University, Bucheon, Korea

Objectives: With the advancement of laparoscopic techniques and instruments, laparoscopic approach for the hepatic lesions has become an increasingly used procedure. Laparoscopic left lateral sectionectomy (LLS) for the left liver lesions is increasingly performed. But, there are few limited studies about the outcomes of the laparoscopic surgery compared with open surgery. The aim of this study was to evaluate the clinical outcomes of laparoscopic LLS and compare it to that of open LLS.

Methods: From November 2008 to November 2013, 46 consecutive patients (24 laparoscopic LLS patients and 22 open LLS patients) who underwent elective left lateral sectionectomy were recruited into the current study.

Results: There were no significant differences in operation time, transfusion, blood loss, mortality, and recurrence between the two groups. Compared to open LLS, laparoscopic LLS had earlier time to oral intake (1.8 ± 0.9 vs. 3.0 ± 1.3 days; p = 0.001) and shorter postoperative hospital stay (10.5 ± 7.2 vs. 14.9 ± 5.7 days; p = 0.027).

Conclusion: Laparoscopic LLS is a safe procedure and should be considered as an alternative treatment option for conventional open LLS in liver disease.
**Results:** CCR7 expression was positive in 50 (79.4%) hilar cholangiocarcinoma, only 2 (10%) of normal bile duct. Vm was positively expressed in 25(39.7%) hilar cholangiocarcinoma specimens, and zero in normal specimens; CCR7 and Vm had a positive correlation \( r = 0.810, \ p < 0.05 \). Expression of CCR7 and Vasculogenic mimicry were relevant to lymph node metastasis and differentiation \( p < 0.05 \), but not to age, gender, tumor size, histological types and liver resection \( p > 0.05 \). univariate analysis showed CCR7/Vm/lymph node metastasis/differentiation were related with survival rate; whereas in multivariate analysis showed that CCR7 expression was an independent prognostic factor.

**Conclusion:** CCR7 expression obviously correlates with Vm expression, and were relevant to lymph node metastasis and differentiation, but just CCR7 are a valuable prognostic factor for hilar cholangiocarcinoma.

**Benign HPB Diseases**

**APHPB-0551**

**CAN EARLY ESTIMATION OF DRAIN FLUID AMYLASE PREDICT POSTOPERATIVE PANCREATIC FISTULA IN PATIENTS WITH CHRONIC PANCREATITIS? A PILOT STUDY**

K. Raja1, B. Pottakkat1, K. Gaurav1 and V. Kate1

1Surgical Gastroenterology, Jipmer, Pondicherry, India

**Objectives:** Pancreatic fistula (PF), a major cause of morbidity is less common after surgery for chronic pancreatitis compared to pancreatic malignancies. Hence, early prediction of post-operative PF can facilitate early drain removal and its related morbidity in patients with low risk of PF. This pilot study was conducted to determine whether early estimation of drain fluid amylase on post-operative day 1 (DFA1) can predict pancreatic fistula following surgery for chronic pancreatitis

**Methods:** All patients who underwent Frey’s procedure for chronic pancreatitis from September 2013 to August 2014 were included. Abdominal drain was routinely placed near the pancreatico-jejunostomy, serum and drain fluid amylase (DFA) was estimated on post-operative day 1 (DFA1) can predict pancreatic fistula following surgery for chronic pancreatitis

**Results:** Twenty one patients were included in this pilot study. Majority were males (M: F = 19:2) and alcohol ingestion was the most common etiology. Clinical endocrine and exocrine deficiency was present in seven and three patients respectively. Of the nine patients who had elevated DFA1, five patients had PF (Grade A-4, Grade B-1; Positive predictive value-55.6%). Of the remaining 12 patients who had normal DFA1, none had PF (Negative predictive value- 100%). Sensitivity, specificity and accuracy of DFA1 to predict PF were 100%, 75.0% and 81.0% respectively.

**Conclusion:** Results of this pilot study suggest that elevated DFA1 is highly sensitive in predicting PF in patients with chronic pancreatitis. A prospective study with large sample size is required to substantiate these findings.

**Malignant HPB Diseases**

**APHPB-0553**

**USEFULNESS OF MULTI-THREE DIMENSIONAL COMPUTED TOMOGRAMS FUSED WITH MULTI-PLANAR PRECONSTRUCTION IMAGES AND PERORAL CHOLANGIOSCOPIC FINDINGS IN CHOLANGIOSCOPIC FINDINGS IN HILAR CHOLANGIOCARCINOMA**

C. Takishita1, Y. Nagakawa1, Y. Hosokawa1, Y. Sahara1, T. Nakajima1, Y. Hijiikata1, H. Osakabe1, B. Kyo1, K. Kasuya1 and T. Akihiko1

1Gastrointestinal and Pediatric Surgery, Tokyo medical university hospital, Tokyo, Japan

**Objectives:** Multi-planar reconstruction (MPR)images are useful for assessing the degrees of horizontal and vertical extension of cholangiocarcinoma; but it’s difficult to ascertain the range of extensive superficial ductal spread. However peroral cholangioscopy (POCS) is used for diagnosing superficial ductal spread and mapping biopsy. Therefore, we’ve developed a novel technique to fuse conventional 3D-CT images with MPRimages and POCS findings.

**Methods:** MPRimages were created using the Synapse Vincent volume analyzer (Fujifilm). The range of cancer extension was assessed on MPRimages, plotted, and fused onto cholangiographic CTimages to create multi-3DCTimages. The results of biopsy performed under POCS for assessment of the range of superficial extension of cancer were compared with virtual endoscopic findings and the obtained findings were marked on the multi-3DCTimages. A bile duct resection line was designed based on these images.

**Results:** Multi-3DCTimages were created for 13 patients with hilar cholangiocarcinoma. Of 10 patients underwent POCS, superficial spread was observed in two. Resection was performed in 12 patients. In 2 cases, the margin of the intrahepatic bile duct was positive, resulting in 83.3% diagnostic accuracy for horizontal spread. In all patients, the estimated number of bile ducts was the same of the actual resections. R0 was achieved in 10 patients (83.3%).

**Conclusion:** The bile duct resection line for hilar cholangiocarcinoma should be designed based on the degree of cancer extension and an understanding of the branching pattern of the bile duct and three-dimensional relationship between the portal vein and arteries. This novel technique using multi-3D CTimages was useful for not only understanding three-dimensional relationship but diagnosing extension of hilar cholangiocarcinoma.
Benign HPB Diseases

APHPB-0554

IS CHOLEDOCHODUODENOSTOMY THE IDEAL BILIARY-ENTERIC DRAINAGE PROCEDURE FOR BENIGN BILIARY TRACT DISEASES WHEN COMPARED WITH CHOLEDOCHOJEJUNOSTOMY? A COMPARATIVE ANALYSIS OF UTILITY AND OUTCOMES

R. Mohan¹, S. A. Naik¹, S. B. Mashal¹ and M. Achar¹
¹Department of Surgery, SDM College of Medical Sciences & Hospital, Dharwad, India

Objectives: To assess the utility and outcomes following Choledochoduodenostomy as biliary-enteric drainage procedure for benign biliary tract disease in comparison with Choledochojejunostomy.

Methods: We retrospectively analysed and compared outcomes of 28 Choledochoduodenostomy procedures [25 side-to-side Choledochoduodenostomy, 2 side-to-side Hepaticoduodenostomy, 1 end-to-side Choledochoduodenostomy], with outcomes of 21 Roux-en-Y Choledochojejunostomy procedures done during January 2004 to December 2013, for benign biliary tract diseases. The indications for Choledochoduodenostomy were CBD stones [n = 11], retained CBD stones [n = 9], recurrent CBD stones [n = 5], and benign terminal CBD stricture [n = 3]. In all patients there was prior history of ERCP and procedure [n = 17] or attempt at ERCP [n = 11]. The operative steps were exposure of the entire length of extra-hepatic biliary system, complete mobilisation of duodenum, longitudinal cholechochotomy of 20 mm, bile duct exploration, intra-operative cholangiography, longitudinal duodenotomy of 20 mm and single layer Choledochoduodenal anastomosis using 3–0 Polygalactin, pre-placed interrupted sutures. All patients underwent follow-up liver function tests, abdominal ultra-sonography and endoscopy.

Results: Mean age was 57 [range 29–81 years] with median age of 59. 2 patients had anastomotic leak with intra-abdominal abscess formation which was managed conservatively, with subsequent stricture formation, managed endoscopically. There was no mortality. No patient developed features of cholangitis or hepatic abscesses attributable to the ‘Sump syndrome’.

Conclusion: Choledochoduodenostomy has low procedure related morbidity with outcomes similar to Roux-en-y Choledochojejunostomy, and does not result in ‘Sump syndrome’. It is simpler to construct, maintains good long term patency and is accessible endoscopically. It is a safe and effective procedure for biliary-enteric drainage in benign biliary tract disease.

Malignant HPB Diseases

APHPB-0555

A CASE OF DOUBLE CANCERS (INTRABILIARY BILE DUCT CARCINOMA AND HEPATOCELLULAR CARCINOMA), DEVELOPED AFTER SVR OF HCV CHRONIC HEPATITIS TREATED INTERFERON

K. Tazawa¹, S. Kawai¹, Y. Tsuchiya¹, F. Yamagishi¹ and K. Tsukada²
¹Department of Surgery, Itoigawa General Hospital, Itoigawa, Japan; ²2nd Department of Surgery, Toyama University Hospital, Toyama, Japan

Objectives: The patient was a 81-year-old man. SVR was obtained after interferon therapy of chronic hepatitis C. In one year later, he underwent a partial resection of the caudal lobe. Pathologically, moderately differentiated hepatocellular carcinoma (HCC, 21 mm), T1N0M0, stage I. Background liver showed mild chronic inflammation with fibrosis. In eight years later from the resection, a echography revealed a new nodular lesion measuring 22 mm, with mosaic figure, was located in the right lobe (S5/S8). The lesion was suspected recurrence of HCC.

Methods: Blood examinations were within normal limits. A serum level of AFP was 4.4. According to CT, the tumor showed poor contrast effect in the portal vein phase and late phase, because of central necrosis of the tumor. Neither ascites nor varicosed vein was noted. Preoperative diagnosis of the tumor was recurrence of HCC and he underwent a partial resection (S5/S8). The postoperative course was good.

Results: In the tumor, microscopically, atypical epithelial cells were located in the liver with papillary and cubic-like figures. The atypical nuclear pleomorphism, mitotic figures were noted and plasma cells, and neutrophils infiltrated in the portal triads. Immunohistochemistry, the tumor cells are negative for, CD10, AFP hepatocyte, and positive for CK7, CK19, CK20, EMA and EpCAM. The tumor was recognized as an extrahepatic tumor, was clinically diagnosed with intrahepatic bile duct carcinoma. Background liver tissue was mild fibrosis and expansion of the portal area.

Conclusion: HCC and Intrahepatic carcinoma arising from chronic hepatitis after SVR of interferon therapy were very rare and additional discussion followed by the literature was reported.

Transplantation

APHPB-0556

BONE MESENCHYMAL STEM CELLS WITH HEPATOCYTE GROWTH FACTOR LOADED COLLAGEN-CHITOSAN SCAFFOLD AS A MODEL FOR HEPATIC TISSUE ENGINEERING

S. Zheng¹, X. Xu¹ and C. Zhong¹
¹Department of Surgery First Affiliated Hospital School of Medicine Zhejiang University, Division of Hepatobiliary and Pancreatic Surgery, Hangzhou, China

Objectives: Bone marrow stromal cells (BMSCs) are particularly attractive candidates for future clinical...
applications of stem cell-based therapy for liver disease. This study was undertaken to evaluate the therapeutic potential and mechanism of BMSCs on hepatocyte growth factor (HGF) loaded Collagen-Chitosan scaffold (CCs) in liver tissue engineering.

**Methods:** Alkaline phosphatase and glucogen staining, 7-alpha hydroxylase and albumin concentration were used to evaluate cell differentiation. Using *in vitro* release tests and *in vivo* implantation tests, the effectiveness of liver tissue regeneration was appraised. Additionally, gene expression profiles, transcription and translation levels of the key proteins such as retinol binding protein 2 (RBP2) were examined.

**Results:** Based on the above analysis, we found BMSCs-HGF-CCs was effective to stimulate hepatic regeneration. RBP2 as a key protein has changed significantly after differentiation. In the *in vivo* results of hematoxylin eosin staining, liver regeneration is obvious.

**Conclusion:** Together, these results suggest that HGF composed of CCs could provide a suitable support for BMSCs growth and differentiation, which is a promising method for the development of a tissue-engineered liver.

**Benign HPB Diseases**

**APHPB-0559**

**EVALUATION OF THE EFFICACY AND SAFETY OF LAPAROSCOPIC SPLENECTOMY PLUS PERICARDIAL DEVASCULARIZATION ON PATIENTS WITH PORTAL HYPERTENSION**

W. Wenjing1, T. Yong1, Z. Yu1, C. Qing1 and W. Chidan1

1Hepatobiliary surgery, Union Hospital Tongji Medical College Huazhong University of Science and Techn, Wuhan, China

**Objectives:** To evaluate the efficacy and safety of laparoscopic splenectomy plus pericardial devascularization (LS) on patients with liver cirrhosis and portal hypertention by comparing the clinical effects of LS with open splenectomy plus pericardial devascularization (OS).

**Methods:** Retrospectively analyse the clinical data of 103 cases of LS and 110 cases of OS on patients with portal hypertension from January 2010 to May 2014 in our medical center.

**Results:** The operations of the two groups were successfully fullfilled with no perioperative deaths, and all patients recovered and were discharged from hospital with no complications in the six months of postoperative follow-up. In the LS group, 2 cases converted to laparotomy (conversion rate 1.9%). The average time for an LS operation was longer than that needed for an OS operation (344.16 min vs. 241.73 min, p = 0.027). In terms of blood loss (793.25 mL vs. 914.54 mL, p = 0.009) and total abdominal drainage (834.1 mL vs. 1008.1 mL, p = 0.016), the LS operation also outperforms the OS operation. The average time of bowel function recovery (42.66 h vs. 56.25 h, p = 0.011) and postoperative hospitalization (7.5 days vs. 8.93 days, p = 0.043) is much less in the LS group than in the OS group. There are no significant differences between the two groups in terms of liver function, incidence of complications and average weight of excised spleen (p > 0.05). And the incidence of postoperative complications (p > 0.05) has no statistical significance.

**Conclusion:** Clinical effects of LS are better than OS. It is a safe and feasible procedure for portal hypertension.

**APHPB-0560**

**LAPAROSCOPIC VERSUS OPEN SURGERY FOR MIRIZZI’S SYNDROME: A COMPARATIVE STUDY**

H. Nag1, V. Bg2 and A. M. I. T. Dangi2

1G I Surgery, G B Pant Hospital, Delhi, India; 2G I Surgery, G B Pant Hospital, Delhi, India

**Objectives:** To compare outcomes of laparoscopic and open surgery for Mirizzi’s syndrome (MS).

**Methods:** Retrospective analysis of prospectively collected data of patients with MS who were treated by a single surgical team from December 2009 to August 2014. On intention to treat basis, patients were divided into laparoscopic group (LG) and open group (OG). Both the groups were compared by using appropriate
Malignant HPB Diseases

APHPB-0561

CONVENTIONAL D1P (N1) AND EXTENDED D2P (N2) LIMPHADENECTOMY IN WIPPLE PROCEDURE – COMPARATIVE ANALYSIS

M. Zagriichuk, A. Usenko, M. Nychytaylo, A. Lytvyn, A. Goman, and V. Prysyagnyuk

1Laparoscopic surgery, National Institute of Surgery and Transplantology NAMS named after A.A.Shalimov, Kiev, Ukraine

Objectives: Compare outcomes after pancreatoduodenectomy in patients with N1 (D1p) and N2 D2p lymphadenectomy. N1 (D1p) lymphadenectomy include: 13a,13b,17a,17b,5,6,8a,12b,14a,14b lymph nodes. N2 (D2p) lymphadenectomy include: N1 (D1p)+6,8a,8p,12a1,12a2,12b1,12b2,12p1,12p2,12 h,12 c,14a,14b,14c,14d,14v limph nodes.

Methods: From 2010 to 2014 56 patients on ductal adenocarcinoma were treated. Age – 53 ± 1.8 years. 21 (37.5%) undergone standart Wipple procedure with D1p limphadenectomy (N1 region) – group I. 35 (62.5%) D2p limphadenectomy was added (N2 region) – II group. In group I 12 (57.1%) were stage I pancreatic cancer (T1aN0M0) and 9 (42.9%) – stage II. Among them 7 (33.3%) were T1aN1M0 grade and 2 (9.5%) T1bN1M0 grade. From II group 18 (51.4%) have stage II – T1aN1M0, 9 (25.7%) stage II T1bN1M0 and 8 (22.9%) stage III with – T2 (T3S1IRP0PV0AD0U1CH2)N1M0.

Results: In group I operative time was 280.4 ± 22.5 min. Blood loss 320.4 ± 48.5 mL, mortality rate 6.4%. Bleeding in 2 (9.5%), partial failure of pancreaticojejunostomy in 4 (19%), hepaticojejunostomy in 1 (4.8%), 1-year survival rate 80.9%, 2-year 38.1%, tree year 4.8%. In group II operative time was 338.4 ± 33.9 min. Blood loss 428.4 ± 29.9 mL, intraoperative mortality 7.9%. Bleeding in 4 (11.4%), partial failure of pancreaticojejunostomy in 5 (14.2%) hepaticojejunostomy in 3 (8.5%). 1-year survival rate 89.6%, 2-year 67.3%, tree year 25.8%. Lethality 0%.

Conclusion: D2p (N2 region) limphadenectomy didn’t significantly affect main operative criteria’s compare to traditional Wipple procedure. However, steady increasing in long term survival rate were admitted. Obviously, bigger number of observation is needed to perform deep statistically appropriate research. D2p (N2) regional limphadenectomy is feasible and safe in carefully selected patients.
portion of the duodenum. On pathology of a biopsy specimen, a diagnosis of adenocarcinoma was made, and the patient was admitted to our hospital.

**Methods:** Computed tomography showed an irregular mass in the pancreatic head and dilatation of the main pancreatic duct and bile duct. Pancreatic head carcinoma with infiltration of the duodenum was diagnosed, and pylorus-preserving pancreaticoduodenectomy was performed.

**Results:** A histopathological examination of the resected specimen showed moderately differentiated adenocarcinoma in the minor duodenal papilla and chronic pancreatitis in the pancreatic head. Therefore, primary adenocarcinoma of the minor duodenal papilla with mass-forming chronic pancreatitis was diagnosed. Currently, the patient is alive without recurrence 17 months after the surgery.

**Conclusion:** Primary adenocarcinoma of the minor duodenal papilla is extremely rare. We herein report this case with a review of the literature.

**Benign HPB Diseases**

**APHPB-0564**

**CLINICAL AVAILABILITY OF PREOPERATIVE PTGBD IN ACUTE CHOLECYSTITIS**

K. Kwon and S. Bae

*Surgery, NHIC Ilsan hospital, Goyang, Korea*

**Objectives:** Definite treatment of acute cholecystitis is cholecystectomy, especially laparoscopically in recent. But there were still high complication and mortality rates especially in old and critically ill patients. So PTGBD (percutaneous transhepatic gallbladder drainage) can be a bridge procedure to reduce postoperative complication and mortality and increase the chance of laparoscopic cholecystectomy.

**Methods:** We had 21 PTGBD cases in acute cholecystitis from 2012.01.01. to 2012.12.31. General characteristics, preoperative diagnostic criteria, severity assessment, treatment and its results, postoperative complication and mortality rate were analyzed.

**Results:** According to T13 diagnostic criteria, all 21 cases were definite acute cholecystitis. According to T13 severity assessment, Grade I was 3(14.3%), Grade II 13(61.9%) and Grade III 5(23.8%). Cholecystectomy was performed in 16 cases (76.2%) including total laparoscopically in 11 cases, open converted in 3 cases and initially operated in 2 cases. 3 cases (18.8%) were not improved by PTGBD and received emergent operation.

5 cases (23.8%) were improved by conservative treatment only, in that 4 cases refused operation and 1 case was follow up loss. The average interval between PTGBD and operation was 5.3 days and mean hospital stay was 7.1 days. There were no differences of hospital stay between Grades of acute cholecystitis in laparoscopic cholecystectomy. Postoperative complication rate was 18.8% and mortality rate was 4.8% but there were no mortality and complications related PTGBD.

**Conclusion:** PTGBD can be a bridge procedure for acute cholecystitis especially in old and critically ill patients to reduce postoperative complication and mortality rates and increase the chance of laparoscopic cholecystectomy.

**Transplantation**

**APHPB-0565**

**RECENT ADVANCEMENTS AND PERSPECTIVES OF DONOR OPERATION IN LIVING DONOR LIVER TRANSPLANTATION: SINGLE-CENTER EXPERIENCE OF 886 PATIENTS IN 13 YEARS**


*Surgery, Seoul National University College of Medicine, Seoul, Korea*

**Objectives:** To address the past, present, and future of donor surgery for living donor liver transplantation (LDLT).

**Methods:** A total of 886 donor hepatectomies between January 1999 and December 2012 at a single center were investigated. Three groups were divided: the initial period (1999–2004, n = 239); the primary usage of right liver with middle hepatic vein reconstruction (2005–2010, n = 422); and the exclusively using right liver with standardized protocol, preoperative donor diet program, steatosis evaluation by magnetic resonance spectroscopy, no systemic heparin administration and central venous pressure monitoring, exact mid-plane dissection, and incremental application of minimal incisions (2011–2012, n = 225). The selection of donors and clinical outcomes were compared.

**Results:** The proportion of patients older than 50 years increased (2.5% vs. 4.7% vs. 8.9%), whereas a remnant liver volume ≥ 30% (6.5% vs. 13.9% vs. 6.3%) and macrosteatosis ≥ 10% (7.9% vs. 11.1% vs. 4.4%) decreased in recent period. Operative time (292.7 vs. 290.0 vs. 272.8, mins), hospital stay (12.4 vs. 11.2 vs. 8.5, days), and overall morbidity rate (26.4% vs. 13.3% vs. 5.8%) including major complications, more than grade III (1.7% vs. 1.9% vs. 0.9%) and biliary complications (7.9% vs. 5.0% vs. 0.9%) were markedly reduced recently. No intraoperative transfusion required. There was no case of irreversible disability or mortality.

**Conclusion:** Recently, donor surgery has been standardized with a large volume of experience, and it has a minimal risk. However, a constant evaluation of our experience is critical to our preparedness for any unavoidable crisis.

**APHPB-0566**

**SYNERGISTIC EFFECTS OF METFORMIN IN COMBINATION WITH RAPAMYCIN ON HEPATOCELLULAR CARCINOMA CELL LINES**

K. W. Lee, S. W. Suh, J. Jeong, H. Kim, N. J. Yi and K. S. Suh

*Surgery, Seoul National University College of Medicine, Seoul, Korea*

**Objectives:** Several studies have shown that metformin had an anti-tumor effect on several cancers, including...
hepatocellular carcinoma (HCC). After liver transplantation (LT), immunosuppression is needed to avoid rejection and graft loss, however, it can stimulate HCC recurrence and progression. The aim of this study was to evaluate interactions between metformin and immunosuppressive agents for antitumor activity.

Methods: Antiproliferative effects were assessed using HCC cell line as HepG2, Hep3B, Huh7. Metformin (10 mM/L) and several immunosuppressive agents such as Sirolimus (5 ng/mL), Tacrolimus (5 ng/mL), and MMF (500 ng/mL) were evaluated. Cell viability was determined using a standard colorimetric 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay after 48 h. Western blot analysis were performed to investigate protein levels in HCC cells.

Results: Metformin and Sirolimus itself had antitumor effect in all of the HCC cell lines (73% and 66%, HepG2; 84% and 73%, Hep3B; 77% and 66%, Huh7). They also had significant synergistic antiproliferative effect in all of the HCC cell lines (68%, HepG2; 57%, Hep3B; 63%, Huh7); however, there was no synergistic effect with other immunosuppressive agents. In addition, combination of metformin, sirolimus and MMF showed some synergistic antiproliferative effect in Hep3B and Huh7 HCC cell lines (53%, Hep3b; 53%, Huh7).

Conclusion: Metformin had synergistic interactions with Sirolimus in terms of antitumor effects for HCC cell lines. These results may provide a foundation for further studies to evaluate combination therapies for patients with HCC who underwent LT in clinical era.

Malignant HPB Diseases

APHPB-0567

SERUM BILIRUBIN AND CA 19-9 LEVELS AS PREDICTORS OF MALIGNANCY IN OBSTRUCTIVE JAUNDICE

L. Hozefâ1, J. A. I. N. Hitesh1, J. Saurabh1, H. Hunaïd1, S. Rajinder1 and J. Rajeev1
1GENERAL SURGERY, B.Y.L Nair Charitable Hospital and T.N.M. Collge, Mumbai, India

Objectives: Obstructive jaundice due to malignant pathology is associated with high bilirubin levels. However, malignant pathologies can present with low bilirubin levels in the early stages and benign pathologies with high levels, if associated with cholangitis. CA 19-9 is also an inaccurate predictor of malignancy. This study examined the accuracy of bilirubin levels and CA 19-9, in order to predict malignancy as a cause of obstructive jaundice.

Methods: Bilirubin levels in a total of 900 patients with obstructive jaundice and CA 19-9 levels in 649 of these patients suspected to have malignancy on clinical evaluation or imaging, were analyzed. Values of bilirubin in isolation and in combination with CA19-9 were used for co relation.

Results: Bilirubin levels at cut off values of 3, 7, 11, 15 and 19 mg% were evaluated for sensitivity and specificity to establish the diagnosis of malignancy. Level >7 mg% provided the optimum sensitivity and specific-
ity for malignancy (71.9% and 84.9%, respectively) while a level >19 mg% achieved specificity of 99.1%. Sensitivity and specificity of CA 19-9 in isolation was 70.9% and 78.3% respectively, at a cut-off value of 37 U/mL. When both levels were combined, sensitivity and specificity increased to 87.9% and 91.3% respectively.

Conclusion: In patients with obstructive jaundice, bilirubin levels and CA 19-9 are not always specific or sensitive for diagnosis of malignancy. Our study shows that if bilirubin levels exceed 7 mg% the diagnosis is more likely to be malignancy and the diagnostic yield improves significantly if serum bilirubin and CA 19-9 are used in combination.

Transplantation

APHPB-0568

ANIMAL MODEL OF LIVING DONOR LIVER TRANSPLANT IN SWINE WITHOUT USING VENOVENOUS BYPASS

Y. Wu1, M. Hung1, S. Huang1, H. Wong1, H. Wu1 and M. Huang1
1Surgery, Show Chwan Memorial Hospital, Changhua, Taiwan

Objectives: A model of living donor liver transplant (LDLT) was developed to investigate the home-made internal shunt (IS), which could be useful in the liver transplantation.

Methods: Two swines were prepared around 25 kg, including one for donor and the other for recipient. The donor liver was dissected and the right partial graft was taken for the recipient. The upper end of inferior vena cava (IVC) was anastomosed first with artificial vessel, 15 mm in diameter. Home-made IS was used for reducing the portal occlusion time less than 30 min during anhepatic phase. Then anastomosed the low end of IVC with distal end of artificial vessel. The 3rd arm of IS was inserted to the artificial vessel for draining venous flow of low body. The hepatic vein of partial liver graft was anastomosed the artificial vessel. Thereafter, the portal vein anastomosis was completed. Finally completion of hepatic artery and bile duct was done.

Results: The vital sign of both swines were stable without blood transfusion after LDLT.

Conclusion: Home-made IS without VV bypass could be designed for reducing portal occlusion time. Then the swine would be survived after operation. This animal model of LDLT is feasible in swine.

Malignant HPB Diseases

APHPB-0569

LAPAROSCOPIC PANCREATIC SURGERY: A SINGLE SINGAPOREAN INSTITUTION EXPERIENCE

P. Toonson1 and W. Woon1
1General Surgery, Tan Tock Seng Hospital, Singapore, Singapore

Objectives: We sought to firstly determine whether laparoscopic pancreatic surgery is being carried out...
efficaciously in our hospital, and secondly to identify barriers preventing totally laparoscopic pancreaticoduodenectomy (LPD).

**Methods:** Utilising our institution’s pancreatic database, all pancreatoduodenectomies between 2008 and 2014 that were attempted laparoscopically were analysed. Specifically assessed were resection margin, blood loss, operative time, conversion rate, length of stay and pancreatic fistula.

**Results:** 52 pancreatic resections were attempted laparoscopically. 10 patients had advanced disease preventing resection. 28 DP and 12 PD were performed either totally laparoscopic or lap-assisted. 2 enucleations were performed. Of the 28 LDP, 5 (18%) were converted to open due to bleeding or difficulty with dissection. 5 (18%) were for malignancies. The incidence of fistula (Grade B and C) was 14%; the median blood loss was 150 mL; median operation time was 295 min; and mean length of stay was 6 days. Of the 12 LPD, 8 were completed hybrid and 4 were converted to open due to bleeding or difficulty with the dissection. Mean blood loss for LPD was 300 mL, median operation time was 677 min and median length of stay was 9 days. 2 positive resection margins were encountered for both procedures; 1 during DP for IPMN; and another during PD for cholangiocarcinoma.

**Conclusion:** LDP is performed safely in our institution for both benign and malignant disease. LPD however remains challenging. The major limitations encountered were difficulty with resection associated with bleeding or concern regarding an R0 resection, or with the reconstruction phase, particularly the pancreatic anastomosis.

**Benign HPB Diseases**

**RESEARCH OF RADIO FREQUENCY ABLATION ASSISTED SPLEEN-PRESERVATION TECHNIQUE FOR SPLENIC INJURY**

W. Zhang\(^1\)

\(^1\)Department of Hepatobiliary Surgery, Yue Bei people’s Hospital, Shao Guan, China

**Objectives:** To investigate the value of the research of radio frequency ablation assisted spleen-preservation technique for splenic injury.

**Methods:** From Oct 2008 to June 2014, we collected 152 cases of splenic traumatic rupture that were implemented the spleen-preserving surgery using radiofrequency ablation. Conventional open celiac and exploration, then use a radiofrequency electrode to stop the bleeding of ruptured spleen or Splenic partly resection.

**Results:** 147 in 152 cases radio frequency ablation assisted spleen-preserving splenorrhaphy operation were successful. Protect spleen and success rate of 96.7%

Operation time is 124.2 ± 44.3 min, hospital stays was 11.2 ± 3.6 day. Celiac drainage tube drained out 10–120 mL light red liquid in the first day after operation, 5–25 mL in the next two days and all were removed in the third day. No case of subphrenic abscess or postoperative hemorrhage etc complications appeared. There weren’t effusion around the spleens, no necrosis of the spleens exist, and immune examinations showed normal splenic function after 6 month.

**Conclusion:** Radiofrequency ablation assisted spleen-preserving splenorrhaphy operation was simple, easy to popularize, reduced the difficulty of preserving spleen surgery. We predict it will become the future gold standard technique of spleen-preserving surgery.

**Malignant HPB Diseases**

**APHPB-0573**

**EXPRESSION AND SIGNIFICANCE OF B7-H4 AND HBX IN HBV RELATED HEPATOCELULAR CARCINOMA**

H. P. Yao\(^1\), S. S. Li\(^1\), Y. Qian\(^1\), Z. G. Wu\(^1\) and N. P. Wu\(^1\)

\(^1\)State Key Laboratory for Diagnosis & Treatment of Infectious Diseases, the First Affiliated Hospital College of Medicine Zhejiang University, Hangzhou, China

**Objectives:** Hepatitis B virus (HBV) is a major public health problem, and Hepatitis B virus-related hepatocellular carcinoma (HBV-HCC) has an extremely poor prognosis due to a lack of effective treatments. B7-H4 is a novel member of the B7 superfamily that are actively involved in regulating the pathogenesis of tumors. However, the intrahepatic expression of B7-H4 in HBV-HCC patients has not been described. In this study, we investigated the expression and clinical significance of B7-H4 and Hepatitis B Virus X (HBx) protein in HBV-HCC.

**Methods:** The expression of B7-H4 in the human HCC cell lines HepG2 and HepG2215 was detected by western blotting, flow cytometry and immunofluorescence analysis. The expression of B7-H4 and HBx in 83 HBV-HCC was detected by immunohistochemistry, and the relationship with clinicopathological features was analyzed.

**Results:** B7-H4 was significantly up regulated in HepG2215 cells than in HepG2 cells. The positive rates of B7-H4 and HBx in 83 HBV-HCC tissues were 68.67%(57/83) and 59.04%(49/83) respectively. The expression of HBx was correlated with TNM staging. The expression of B7-H4 was positive correlated with HBx (r = 0.388, p < 0.01). The expression level of B7-H4 in HBx-positive HBV-HCC tissues was substantially higher than that in HBx-negative HBV-HCC tissues, which was negative related to tumor TNM stage.

**Conclusion:** The higher expression of HBx and B7-H4 were correlated with tumor progression of HBV related hepatocellular carcinoma. B7-H4 may be an effect molecule in HBV related hepatocarcinogenesis.
APHPB-0574
ASSOCIATING LIVER PARTITION AND PORTAL VEIN LIGATION FOR STAGED HEPATECTOMY FOR HCC —SIX CASES REPORT
K. Ma1, S. Zheng1, X. feng1, J. I. A. N. Chen1, J. U. N. Yan1, Z. Yan1 and P. I. N. G. Bie1
1Hepatobiliary surgery, Southwest HospitalThird Military Medical University, Chongqing, China
Objectives: To study the safety and efficacy of associating liver partition and portal vein ligation for staged hepatectomy (ALPPS) for HCC patients.
Methods: The clinic datas of 6 HCC patients who underwent associating liver partition and portal vein ligation for staged hepatectomy (ALPPS) from October 2013 to July 2014 was analyzed respectively. Operative process can be divided into two steps, the first operation is liver split and portal vein ligation with the conventional methods, then second operation will be done at least 2 weeks after first operation and the remaining volume of liver is greater than 40%, the liver that need resected will be moved out. Surgical techniques and treatment response were retrospectively reviewed. 4 male and 2 Famle of patients and aging from 28 to 66 years with a mean of (49.5 ± 13.9) years. 4 of the 6 patients were infected with hepatitis B virus and had liver cirrhosis. Residual liver volume ratio after first hepatic resection less than 30%.
Results: The first surgical time and second surgical time was 195–385 min and 210–485 min, with a mean of 297.7 ± 67.7 min and 331.2 ± 100.8 min respectively. The bleeding in first surgical and second surgical was 200–600 mL and 100–1200 mL, with a mean of 376.7 ± 141.7 mL and 683.3 ± 444.6 mL respectively. The hospital stay was 32–77 days, with a mean of (55.2 ± 18.6) days. 4 medical complications and no postoperative death happened. 5 patients were cure and discharged, 1 patient still in the hospital.
Conclusion: Associating liver partition and portal vein ligation for staged hepatectomy (ALPPS) for HCC patients is safe and effective.

APHPB-0575
CLINICAL APPLICATION OF NAVIGATION SURGERY USING AUGMENTED REALITY IN HEPATOBILARY PANCREATIC SURGERY
T. Okamoto1, J. Yasuda1, F. Suzuki1, N. Funamizu1, S. Fujioka1, S. Onda2, K. Yanaga2, N. Suzuki3 and M. Hattori3
1Surgery, The Jikei University Daisan Hospital, Tokyo, Japan; 2Surgery, The Jikei University Shool of Medicine, Tokyo, Japan; 3High Dimensional Medical Imaging, The Jikei University Shool of Medicine, Tokyo, Japan
Objectives: We have developed a system of augmented reality-based navigation surgery (AR-based NS) for hepatobiliary and pancreatic surgery (HBP-S) for better comprehension of anatomy, sharing information and education. This paper presents our outcomes and current problems.
Methods: Three-D reconstructed images from CT were created by segmentation. In the operating room, initial registration was performed by using the optical location sensor. Reconstructed images were superimposed onto the real organs in the monitor display. Twenty-four patients underwent HBP-S using the AR-based NS. The purposes for the use of this system were to determine the location of lesions and resection line in 13 (including 5 L with aparoscopic procedures), early ligation of the inferior pancreaticoduodenal artery (IPDA) in 10, and prevention of injuries of vessels or organs in one patient. The feasibility, safety and useful-ness was assessed.
Results: The position of each organ in reconstructed image almost corresponded with that of the actual organ. The mean registration error was approximately 5 mm. Intraoperative information provided us with useful navigation. In particular, the early identification and ligation of the IPDA were made easier. However, AR-based NS for the liver remained a problem due to organ deformity. As to laparoscopic operations, there seemed several obstacles such as organ shifting by pneumoperitoneum or position changes to achieve accurate navigation as in an open surgery.
Conclusion: In spite of some problems to implement these in routine surgery, AR-based NS has features that offer surgeons visually vivid and easily comprehensible images. This technology might contribute to improve surgical quality, training, and education.

APHPB-0576
INCIDENCE OF PYOGENIC LIVER ABSCESS ASSOCIATED WITH MALIGNANCY
P. J. Toonson1, Z. J. Lo1, S. P. Junnarka1, J. K. Low1 and W. W. Woon1
1General Surgery, Tan Tock Seng Hospital, Singapore, Singapore
Objectives: To assess the incidence of underlying malignancy associated with liver abscess and to determine which unrecognised cancers are most likely to cause pyogenic liver abscess.
Methods: Our hospital’s retrospective pyogenic liver abscess (PLA) database was utilised to provide subgroup analysis of liver abscesses associated with malignancy.
Results: Over the past 10 years, there were 741 PLA with an incidence of 86/100,000 admissions. While 462 (62%) were cryptogenic, 55 (7%) were associated with synchronous malignancies. Of these, 30 were hepatopancreaticobiliary (HPB) cancers (9 pancreatic, 5 hepatocellular carcinoma, 5 cholangiocarcinoma, 6 gallbladder, 5 ampulla) and 16 were colorectal cancers. Of the 55 PLA patients with synchronous malignancies, 27 (49%) were subsequently found to have cancer following their admission with PLA. 8 previously unknown colorectal cancers were determined by colono-scopy either during index admission or as an outpa-tient. 11 HPB cancers were subsequently diagnosed during index admission or by serial imaging.
Conclusion: The incidence of PLA is high in our Singaporean institution. 7% of PLA were associated with an underlying malignancy. HPB and colorectal cancers were more likely to result in PLA. Serial imaging and tumour markers for HPB malignancies is recommended for cryptogenic PLA. As only 8 of 741 PLA resulted from previously unknown colorectal cancer, routine screening colonoscopy is not recommended for cryptogenic PLA without other risk factors for colorectal cancer.

APHPB-0577

PRIMARY SQUAMOUS CELL CARCINOMA OF LIVER: REPORT OF 4 CASES AND REVIEW OF THE LITERATURES

X. F. Zhang, K. Wang, X. M. Liu and Y. Lv

1Department of Hepatobiliary Surgery, First Affiliated Hospital of Medical College Xi’an Jiaotong University, Xi’an, China; 2Department of Clinical Pathology, First Affiliated Hospital of Medical College Xi’an Jiaotong University, Xi’an, China

Objectives: Primary squamous cell carcinoma (SCC) of liver is rare, and its prognosis is extremely poor. This study aims at reviewing the clinical data of all pathologically proved liver cancer in our institute, and to discuss the clinical presentation, diagnosis, treatment and prognosis of our cases of SCC and the literatures reported previously.

Methods: All the patients undergoing surgery or biopsy of liver from 2002 to 2013 in our hospital were reviewed, and all the liver tissues were examined pathologically.

Results: From January 2002 to October 2013, 2210 cases of liver cancer were diagnosed pathologically in our hospital. Amongst, four cases (0.2%) were diagnosed as primary SCC of liver. All were negative for HBV infection, but present with liver cyst and/or hepatolithiasis. Two patients underwent radical resection, but died of tumor recurrence 18 and 9 months postoperatively. One patient received laparotomy and alcohol and fluorouracil injection, but died 4 months postoperatively. The last patient received only biopsy and chemotherapy, and finally died of tumor metastasis 6 months later. From 1970 to 2014, 30 case reports have been published in English, and amongst, 18 patients presented with liver cyst, 6 with hepatolithiasis, 1 with both combined and 3 without any apparent liver disease. Radical hepatectomy remains the optimal treatment for the patients, with the median survival time of 17 months (2–84 months).

Conclusion: Primary SCC seems to be mostly originated from liver cyst or hepatolithiasis. Radical surgery should be firstly recommended, although the prognosis might be unfavorable.

APHPB-0579

CIGARETTE SMOKING INCREASES RISK OF EARLY MORBIDITY AFTER HEPATIC RESECTION IN PATIENTS WITH HEPATOCELLULAR CARCINOMA

X. F. Zhang, C. Liu and Y. Lv

1Department of Hepatobiliary Surgery, First Affiliated Hospital of Medical College Xi’an Jiaotong University, Xi’an, China

Objectives: Cigarette smoking is an important risk factor for the development of postoperative pulmonary complications after major surgical procedures. The objective of this prospective study was to investigate whether preoperative smoking has any impact on early morbidity after liver resection for hepatocellular carcinoma (HCC).

Methods: We enrolled 425 consecutive patients undergoing partial hepatectomy for HCC, recording smoking and drinking habits, biochemical tests, tumor status, operation data, and any postoperative complications occurring before discharge from the hospital. The risk factors promoting postoperative complications were analysed by univariate and multivariate methods.

Results: The overall morbidity rate was 40% (170 of 425). There were 166 smokers (39%). There were 12 potential risk factors increasing postoperative overall morbidity by univariate analysis (all p < 0.05). Only liver cirrhosis (Risk Ratio (RR) 4.5, 95% confidence interval (CI) 2.2–9.1), smoking status (RR 3.0, 95% CI 1.7–5.1), PY of smoking (RR 2.1, 95% CI 1.1–3.9) and preoperative platelet count (RR 1.5, 95% CI 1.3–1.9) were identified as independent risk factor promoting postoperative morbidity by multivariate analysis (all p < 0.05). When analysed by each complication, liver failure, bile leakage, intractable ascites, chest infection and wound infection were more frequently occurred in smokers than non-smokers.

Conclusion: Cigarette smoking is an independent risk factor for the development of liver-related and infectious complications in patients undergoing partial hepatectomy for HCC.

APHPB-0580

BILATERAL OVARIAN METASTASIS FROM COMMON BILE DUCT CARCINOMA WITH CHOLEDOCHAL CYST MASQUERADE AS A PRIMARY OVARIAN NEOPLASM

S. Lee, S. Suh and Y. Choi

1Department of Surgery, Chung-Ang University, Seoul, Korea

Objectives: We present an unusual case of metastatic carcinoma of the common bile duct (CBD) cancer originated from choledochal cyst. 60-year-old woman was admitted for the investigation of abdominal distension which had lasted for 1 week.

Methods: One and half year ago, the patient had undergone operations for choledochal cyst that included choledochal cyst excision, Roux-en Y hepato-
Malignant HPB Diseases

**APHPB-0581**

**RISK OF DEVELOPMENT OF BILIARY MALIGNANCY AFTER CYST EXCISION FOR CHOLEDODCHAL CYST**

S. Lee1, Y. Choi1 and S. Suh1

1Department of Surgery, Chung-Ang University, Seoul, Korea

Objectives: The aim of this study was to elucidate the risk of subsequent biliary malignancy in patients undergoing cyst excision for congenital choledochal cysts.

Methods: Electronic searches of the MEDLINE (PubMed) database between 1970 and 2011 were performed to identify relevant articles. searched both English and Japanese language literature.

Results: Of 58 cases were identified and among them, data of site of malignancy can be available in 54 cases. According to Todani’s classification, 24 of 41 patients (59%) were classified into type IVa and 17 (42%) were into type I. The most common site of involvement in 54 cases was the hepatic duct, at or near the choledocho-enteric anastomosis (43%) followed by the intrahepatic duct (41%) and distal choledochus (17%). The time between cyst excision and cancer detection ranged from 1 to 32 years (mean, 10.4 years). 20 patients (37.4%) gave a medical history of cholangitis or hepatitis B related HCC. CT volumetry 7 days after ALPPS revealed the increase in FLR to 524 cm³ (FLR/eTLV = 38.7%); ie: 93% increase in FLR. Right hepatectomy was performed on POD 9 without complication. Pathology showed bridging fibrosis (Ishak’s stage 3/6). 2. 69 years old woman suffered from hepatitis B related HCC. CT volumetry showed the FLR was 310 cm³ (FLR/eTLV = 24.7%). CT volumetry 7 days after ALPPS revealed the increase in FLR to 480 cm³ (FLR/eTLV = 38.2%); ie: 54.8% increase in FLR. Right hepatectomy was performed on POD 10 without mortality. Pathology showed bridging fibrosis (Ishak’s stage 4/6).

Conclusion: ALPPS could induce a rapid increase in the FLR even in HCC patients with background liver disease.

Benign HPB Diseases

**APHPB-0583**

**THE ‘CRITICAL VIEW OF SAFETY’ IN LAPAROSCOPIC CHOLECYSTECTOMY: A COMPASS FOR NAVIGATING THROUGH TROUBLED WATERS**

D. K. Manatakis1, N. Stamos1, C. Agalianos1, I. Terzis1, I. D. Kyriazanos1 and D. Davides1

11st Surgical Department, Athens Naval and Veterans Hospital, Athens, Greece

Objectives: Bile duct injuries during laparoscopic cholecystectomy still remain a major source of post-operative morbidity and mortality, severely affecting quality of life. We present our experience with the critical view of safety (CVS) technique and an analysis of iatrogenic bile duct injuries.

APHPB-0582

**EXPERIENCE ON ALPPS (ASSOCIATING LIVER PARTITION AND PORTAL LIGATION FOR STAGED HEPATECTOMY) IN HCC PATIENTS – CASE SERIES**

J. Wong1, S. Y. Kok1, C. F. Lau1, T. L. Tam1, T. P. Fung1 and S. H. Lam1

1Surgery, United Christian Hospital, Hong Kong, Hong Kong China

Objectives: ALPPS could induce a rapid future liver remnant (FLR) hypertrophy. However, the effect in HCC patients with diseased liver was unclear.

Methods: Three HCC patients underwent ALPPS in our center. Operations included the ligation of right portal vein together with liver partition along the Cantlie line with anterior approach.

Results: 1. 64 years old man suffered from hepatitis B related HCC. CT volumetry showed the FLR was 396 cm³ and FLR/ estimated total liver volume (eTLV) was 24.7%. CT volumetry 6 days after ALPPS revealed the increase in FLR to 596 cm³ (FLR/eTLV = 37.1%); ie: 50.5% increase in FLR. Right hepatectomy was performed on POD 7 without mortality. Pathology confirmed cirrhosis (Ishak’s stage 6/6). 2. 69 years old woman suffered from hepatitis B related HCC. CT volumetry showed the FLR was 310 cm³ (FLR/eTLV = 24.7%). CT volumetry 7 days after ALPPS revealed the increase in FLR to 480 cm³ (FLR/eTLV = 38.2%); ie: 54.8% increase in FLR. Right hepatectomy was performed on POD 10 without mortality. Pathology showed bridging fibrosis (Ishak’s stage 4/6). 3. 70 years old man suffered from alcoholic liver disease and HCC. CT volumetry showed the FLR after right hepatectomy was 271 cm³ (FLR/eTLV = 20%). CT volumetry 7 days after ALPPS revealed the increase in FLR to 524 cm³ (FLR/eTLV = 38.7%); ie: 93% increase in FLR. Right hepatectomy was performed on POD 9 without complication. Pathology showed bridging fibrosis (Ishak’s stage 3/6).

Conclusion: ALPPS could induce a rapid increase in the FLR even in HCC patients with background liver disease.
Methods: After Research Ethics Committee approval, a retrospective analysis of prospectively collected data, between January 2012 and September 2014, was performed, on elective laparoscopic cholecystectomies, reasons for conversion to the open approach, number and type of bile duct injuries and their management.

Results: Of 304 elective laparoscopic cholecystectomies, 14 (4.6%) were converted to the open approach, due to difficulty in positive identification of anatomical structures in the triangle of Calot. The critical view of safety was feasible in 284 (93.4%) patients, while in 2 (0.7%) cases a partial cholecystectomy was performed and in 4 (1.3%) cases the operation was completed after retrograde dissection of the gallbladder. No major bile duct injuries (Strasberg types B-E) were observed. Two patients (0.7%) were admitted post-operatively due to biloma and bile leakage from the cystic duct stump (Strasberg type A), which was successfully treated with ERCP and stenting.

Conclusion: Although the CVS technique does not eliminate technical skills errors, it does contribute to avoid anatomic errors. In those cases where this technique is not possible, the alternatives of retrograde cholecystectomy, partial cholecystectomy or intraoperative cholecystostomy should be examined, or the operation should be converted to the open approach. The CVS technique is safe and feasible, easily reproducible and time-sparing.

Malignant HPB Diseases

IMPLEMENTATION OF AN ENHANCED RECOVERY PROTOCOL IN PANCREATIC SURGERY – PRELIMINARY RESULTS

D. K. Manatakis1, N. Moustakis1, C. Agalianos1, I. Terzi2, I. D. Kyriazanos1 and D. Davides1

1Ist Surgical Department, Athens Naval and Veterans Hospital, Athens, Greece

Objectives: Enhanced recovery (ERAS) protocols have been shown to reduce the systemic inflammatory response to surgical trauma, thus improving perioperative care and accelerating postoperative recovery. We present our initial experience of an ERAS protocol in pancreatic surgery.

Methods: Between October 2012 and July 2014, 20 patients undergoing pancreatic resection for malignant neoplasms (9 pancreaticoduodenectomies, 9 distal and 2 total pancreatectomies) consented and were enrolled in an ERAS protocol, which included preoperative (patient counseling, minimal fasting, no anxiolytic premedication), intraoperative (thoracic epidural analgesia, active prevention of hypothermia) and postoperative (antimicrobial chemoprophylaxis, thromboprophylaxis, antiemetics, early mobilization and pulmonary toilet) interventions.

Results: Perioperative mortality was 0%, while total morbidity was 65% (medical 10%, surgical 55%), with major morbidity (Clavien-Dindo category ≥III) being 15%. Thirty-day readmission rate and reoperation rate were 10% and 5% respectively. Ten patients (50%) were discharged within 8 days (median 8.5 days, range 7–32 days).

Conclusion: Despite a relatively high morbidity rate, most complications were mild and managed conservatively. Mortality, readmission and reoperation rate, as well as total hospital length of stay are comparable to larger series from specialized pancreatic surgery centers. Fast-track protocols in pancreatic surgery are promising and require in-depth evaluation with randomized trials.

Benign HPB Diseases

APHPB-0586

INTRADUCTAL PAPILLARY MUCINOUS NEOPLASM (IPMN) MIMICKING CHRONIC PANCREATITIS: A CASE DISCUSSION

C. Tay1, S. K. Y. Chang1, S. G. Iyer1, A. W. C. Kow1 and K. Madhavan1

1Surgery, NUHS, Singapore, Singapore

Objectives: We report a case of intraductal papillary mucinous neoplasm (IPMN) mimicking chronic pancreatitis in a South East Asian gentleman.

Methods: -

Results: Mr. D is a 51 year old man, who first presented with acute pancreatitis in year 2006, which was thought to be gallstone-related, and underwent laparoscopic cholecystectomy subsequently. He is a hepatitis B carrier, ex-smoker and non-alcohol consumer. His mother had pancreatic tail cancer. He then represented himself with steatorrhoea in year 2014, he denied abdominal pain or weight loss. Laboratory tests revealed elevated serum lipase and amylase. Magnetic resonance imaging (MRI) of the pancreas revealed irregularly dilated main pancreatic duct, especially in the proximal body region and some of the side branches. A tubular filling defect was noted in the proximal pancreatic body. No calcification or parenchymal masses in the pancreas was seen.

He was planned for Puestow’s pancreaticojejunostomy in view of the above finding to relieve his symptoms and prevent malignant transformation in the pancreas. Intraoperatively, the pancreas felt to be firm with no mass. Upon opening of the main pancreatic duct, we discovered mucinous material and a small intraductal polypoidal lesion in the pancreatic body, frozen section showed mucinous epithelium with papillary architecture.

In view of the high possibility of IPMN, we performed distal pancreatectomy. Histology report revealed IPMN with intermediate grade dysplasia, with tumour involves the main pancreatic duct and its branches. The surrounding pancreatic parenchyma shows features of chronic pancreatitis. He had uneventful recovery after surgery.

Conclusion: This interesting case highlights the rare manifestation of IPMN.
Malignant HPB Diseases
APHPB-0587

THERAPEUTIC MANAGEMENT AND OUTCOME OF PATIENTS WITH POSTPANCREATECTOMY HEMORRHAGE: A SINGLE-CENTER EXPERIENCE IN 35 PATIENTS
S. Asari¹, H. Toyama¹, I. Matsumoto², T. Goto¹, T. Ajiki², M. Kido¹, T. Fukumoto¹ and Y. Ku¹
¹Surgery, Kobe University Graduate School of Medicine, Kobe, Japan; ²Surgery, Kinki University Faculty of Medicine, Osaka, Japan

Objectives: The aims of this study were to analyze the incidence and outcome of PPH, and to study the efficacy of endovascular procedure as well as endoscopic and surgical procedures as a treatment.

Methods: All patients undergoing standard pancreatic resection for pancreatic, distal biliary duct, periampullary or duodenal tumors performed at Kobe University Hospital between January 2003 and December 2013 were included.

Results: The overall incidence of PPH was 6% (35 of 553 patients). Early hemorrhage was extraluminal in 6 (17%) of the 35 patients. Late hemorrhage was intraluminal and extraluminal in 5 (17%) and 24 (83%) of the 29 patients, respectively. Of the 28 patients excluding a dead patient by hemorrhage shock, 17 (57%), 3 (10%), 3 (10%) and 5 (17%) patients underwent interventional radiology (IR), surgery, endoscopy and observational monitoring, respectively. Pancreatic fistula of grade B/C predominantly occurred in the late group compared with the early group (57% vs. 6%, p = 0.106). PPH occurred a total of 44 times in the 28 patients excluding 7 patients without any intervention. The mortality rate among those with PPH was 20% (7 of 35): IR, 16% (3 of 19); surgery, 33% (2 of 6); endoscopy, 0% (0 of 3).

Conclusion: IR resulted in a higher rate of emergent hemostasis and survival in the PPH patients. To manage the patients with lower mortality, it is important to continually monitor the patients, especially those with severe pancreatic fistula, in the hospital after successful hemostasis because multiple bleedings occasionally occur in the patients.

APHPB-0590

EXPRESSION ANALYSIS OF IPS CELL-INDUCITIVE GENES IN HEPATOCELLULAR CARCINOMA BY TISSUE MICROARRAY
K. Matsui¹, K. Shibuya¹, I. Yoshioka¹, S. Sekine¹, T. Okumura¹, T. Nagata¹ and K. Tsukada¹
¹Surgery and Science, Toyama University, Toyama, Japan

Objectives: The transcription factor NANOG, which play an important role in ES cells and Octamer-binding transcription factor 4 (OCT4), Kruppel-like factor 4 (KLF4), c-MYC are iPS cell-inductive genes to be associated with malignant transformation and tumor growth in various cancers. The purpose of this study was to determine the significance of NANOG, KLF4, OCT4, c-MYC in hepatocellular carcinoma.

Methods: Between 1999 and 2011, 100 patients with hepatocellular carcinoma patients receiving operation were selected. We examined the immunohistochemical expression levels of the four genes by using tissue microarray (TMA) in 100 hepatocellular carcinoma patients.

Results: There was no relationship between the expression of the four genes and TNM factors of the patients. Patients with high expression of KLF4 had poor disease-free survival (DFS) rates than those with low expression of KLF4 (p = 0.04). In contrast, patients with high expression of NANOG had better overall survival rates than those with weak expression of NANOG (p = 0.09). There was no obvious correlation to prognosis and expression for OCT4 and c-MYC.

Conclusion: High expression of KLF4 is an indicator of a poor prognosis for hepatocellular carcinoma, whereas NANOG is a favorable prognostic indicator. Our data suggest that KLF4 and NANOG may be a useful of prognostic marker in patients with hepatocellular carcinoma.

APHPB-0592

INCIDENCE, MANAGEMENT AND RISK FACTORS OF BILE LEAKAGE AFTER HEPATECTOMY FOR HEPATOCELLULAR CARCINOMA
S. Hai¹, Y. Imuro¹, T. Hirano¹, T. Okada¹, Y. Asano², N. Uyama¹, K. Suzumura¹, I. Nakamura¹, Y. Kondo¹, H. Kosaka¹, H. Sueoka¹, A. Yada¹, K. Ohashi¹, T. Okamoto¹, A. Kurimoto¹ and J. Fujimoto¹
¹Department of Surgery, Hyogo College of Medicine, Nishinomiya, Japan

Objectives: Despite of advances in surgical techniques and perioperative management, the postoperative morbidity rate is still high; especially bile leakage is a clinically problematical.

Methods: Clinical data from 538 patients who underwent hepatectomy for hepatocellular carcinoma without biliary anastomoses in our department were reviewed retrospectively. Management and risk factors for bile leakage were investigated.

Results: Postoperative bile leakage occurred in 25 of 538 patients (4.6%). Two of these patients died due to hepatic failure after operation, but no patients died of postoperative bile leakage. Bile leakage healed spontaneously in 12 of 25 patients (48.0%), but the remaining 13 patients required some form of additional treatment such as percutaneous drainage in 8 patients, and endoscopic nasobiliary biliary drainage (ENBD) in 10 patients. Reoperation was performed in one patient, in whom intractable biliary fistula and bronchobiliary fistula occurred after limited hepatic resection under thoracoabdominal approach, because the bile leakage failed to heal by continuous abdominal drainage, ENBD, or ethanol injection therapy to ablate the biliary fistula. Patients with bile leakage needed significantly longer postoperative hospital care than the patients without bile leakage (median: 53 vs. 22 days) (p < 0.0001). By multivariate analysis, operation time
(480 m≤), left medial sectionectomy and right anterior sectionectomy were shown significantly as risks for postoperative bile leakage after hepatectomy for hepatocellular carcinoma.

**Conclusion:** Bile leakage develops most commonly after left medial sectionectomy or right anterior sectionectomy and often results in intractable. Therefore, we should perform an appropriate treatment such as interventional procedures and surgical treatment for postoperative bile leakage.

**APHPB-0593**

**DIFFERENCES IN OUTCOMES BETWEEN HEPATITIS B AND C PATIENTS AFTER SURGICAL RESECTION FOR HEPATOCELLULAR CARCINOMA IN AN ASIAN CENTRE**


¹Department of General Surgery, Singapore General Hospital, Singapore, Singapore; ²Centre for Quantitative Medicine, Duke-NUS Graduate Medical School, Singapore, Singapore; ³Department of Hepato-Pancreato-Biliary and Transplant Surgery, Singapore General Hospital, Singapore, Singapore; ⁴Department of Surgical Oncology, National Cancer Centre, Singapore, Singapore

**Objectives:** Curative treatment for Hepatocellular Carcinoma (HCC) has been largely surgical, with resections more common than transplantation due to donor organ shortages. Reported resection outcomes appear to differ globally. We hypothesize that differences in etiology give rise to different molecular mechanisms and result in different clinical outcomes after resection, and aim to compare Disease-Free Survival (DFS) and Overall Survival (OS) for Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV) HCC after potentially curative resection.

**Methods:** We retrospectively analysed 712 patients who underwent surgical resection for HCC at our centre between January 2000 to September 2013. Excluded were patients who were either both positive or negative for Hep B and C, and those where surgery was for palliation (e.g. ruptured HCC, invasion of adjacent organs). 437 resected patients met the study criteria, of which 352 had single nodule HCC. Approval was obtained from the Centralized Institutional Review Board.

**Results:** DFS was shorter in HCV patients than HBV (15.4 months vs. 25.4 months, p = 0.007) in the overall cohort (n = 437) as well as in those with single nodule HCC (n = 352) (15.8 months vs. 31.2 months, p = 0.006). OS was shorter in HCV patients in the entire cohort (78.1 months vs. 93.1 months, p = 0.253) as well as in patients with single nodule HCC (91.6 months vs. 101.9 months, p = 0.44).

**Conclusion:** DFS and OS between HBV- and HCV-associated HCC were significantly different, with poor survival demonstrated in patients with HCV. This suggests that the etiology of HCC is an important consideration in the approach to the management of HCC.

**APHPB-0594**

**HEPATIC METASTASES SECONDARY TO COLORECTAL CARCINOMA IN THE ASIAN POPULATION IS NOT AS COMMON AS WE THINK!**

N. Wee¹, S. P. Junnarkar¹ and W. L. W. Woon¹

¹General Surgery, Tan Tock Seng Hospital, Singapore, Singapore

**Objectives:** Colorectal cancer is the world’s commonest malignancy, with more than 500,000 deaths internationally every year. Without treatment, life expectancy for patients with metastatic disease is less than a year. Today, as clinical technology improves, we can offer more surgical options for liver metastases. There is a paucity of data on the incidence of hepatic metastases in colorectal cancer patients locally. This study looks at the incidence of hepatic metastases in Asian patients undergoing treatment in a tertiary hospital.

**Methods:** A retrospective study of 736 patients, diagnosed over 3 years with colorectal cancer in our institution was reviewed. Data was collected on the incidence, severity of comorbidities and length of time from diagnosis to intervention, and correlated with surgical and conservative treatment methods, postoperative complications and length of stay. Data obtained was analyzed using the IBM Statistical Product and Service Solutions (SPSS) method.

**Results:** Of 736 patients were recruited, ranging from 33 to 98 years old. Our study showed approximately 13.04% of patients with colorectal cancer developed metastases, 93.74% involving the liver. Among those who developed liver metastases, 45.83% were synchronous and 54.17% were metachronous. Our study shows only 15.63% of liver metastases were resectable. The remaining patients were treated with systemic chemotherapy and locoregional therapy.

**Conclusion:** Our study showed the incidence of hepatic metastases in colorectal cancer is not as common in Asia as compared to western figures, even though metastases was most often to the liver. Being Asian may have certain ‘protective factors’ in reducing incidence of liver metastases in colorectal cancer.

**Benign HPB Diseases**

**APHPB-0597**

**REAPPRAISAL OF PERCUTANEOUS APPROACH FOR ENDOSCOPIC INACCESSIBLE COMMON BILE DUCT STONES/ REPORT OF A CASE**

M. Watanabe¹, Y. Ichimura¹, T. Takagaki¹ and S. Iitsu²

¹Department of Surgery, Moriya Daiichi General Hospital, Moriya, Japan

**Objectives:** For the treatment of CBD stones, endoscopic sphincterotomy has become the major procedure these days. In the case of endoscopy inaccessible papilla such as post-gastrectomy, surgical treatment may be a standard treatment. Besides with advances of laparoscopic surgery technique, laparoscopic cholecystolithotomy is increasing for the treatment of CBD stones. However, patients with critical condition for surgery...
and anesthesia should be considered another treatment further more. Percutaneous papillary balloon dilation for bile duct stone removal (PPBD) should be considered as alternative treatment of such case.

Methods: A 57 years old male had a history of subtotal gastrectomy (Roux en Y reconstruction) 3 years previously. He visited our hospital with right upper quadrant pain and nausea. Abdominal ultrasonography and CT showed CBD stone of 10 mm in diameter. He was admitted with the diagnosis of cholangitis and had antibiotics therapy. Operation was considered the case with difficulty due to severe intraperitoneal adhesion. In addition since the patient did not hope to have operation, we decided to have PPBD treatment to this case.

Results: A percutaneous transhepatic cholangiodrainage (PTCD) was placed for CBD obstruction initially. He was discharged 4 days later, and readmitted to hospital for CBD stone removal. Percutaneous transhepatic route was dilated with 10Fr dilator, then wire-guided balloon dilation to the papilla was performed. After dilation of papilla, CBD stone was pushed out to the duodenum by retrieval balloon. PTCD was removed 7 days later, and he was discharged at 9 hospital days.

Conclusion: In the case of CBD stones with endoscopic inaccessible papilla, PPBD treatment can be an alternative treatment to surgery.

Malignant HPB Diseases

©2015 The Authors
HPB © 2015 Americas Hepato-Pancreatico-Biliary Association

176 LIVER RESECTIONS: EXPERIENCE FROM TATA MEMORIAL CENTRE

M. Goel1, A. Mitra1, S. Patkar1 and S. V. Shrikhande1
1GI & HPB Service Department of Surgical Oncology, Tata Memorial Hospital, MUMBAI, India

Objectives: Analyze evolution of liver resections in HPB oncology unit.

Methods: Retrospective analysis of prospective database (February 2009 – August 2014). All cases were imaged by triphasic CT scan or MRI. Future liver remnant was calculated using Myrian software. HCCs were staged with Child’s score and BCLC. Hypotensive anaesthesia and vascular occlusive techniques were not used. Hanging manoeuvre and focus clysis with waterjet dissection was employed.

Results: Of 192, 176 (92%) (M = 108, F = 68, median age 54 years) were resected. Anatomical resections were 127 (72%) and major (≥3 segments) were 93 (52.8%). Indications were HCC (71), colorectal metastasis (CRLM) (38), cholangiocarcinomas (14) and others (53). Cirrhotic resections were 51(28.9%). Median tumour size was 6 cm (0.7–30). Median loss was 1000 mL overall and 1500 mL for major hepatectomy. Median hospital stay was 8 days (3–44). Postoperative morbidity and mortality was 28.9% and 5.1% respectively. Postoperative liver insufficiency and bile leaks occurred in 5.1% and 6.2% respectively. Haemorrhage requiring packing / re-exploration was in 4 patients. Major hepatectomy for tumors >10 cm (n = 34) vs. ≤10 (n = 59) resulted in higher median blood loss (2000 mL vs. 1300 mL; p = 0.02) but did not result in increased morbidity (32.4% vs. 37%; p = 0.63).

Conclusion: Main indication for liver resection was HCC and not CRLM as in the West. Despite increased blood loss following major hepatectomy, there was no added morbidity irrespective of tumour size. This possibly represents the largest series of liver resections (excluding gall bladder cancer) to be presented from India till date.

Benign HPB Diseases

APHPB-0600

SAFE ALTERNATIVES TO ‘CRITICAL VIEW OF SAFETY’ TECHNIQUE IN LAPAROSCOPIC CHOLECYSTECTOMY

D. K. Manatakis1, G. Sotropoulos1, C. Agalianos1, I. Terzis2, I. D. Kyriazanos1 and D. Davides1
11st Surgical Department, Athens Naval and Veterans Hospital, Athens, Greece

Objectives: Since January 2012, we have been routinely applying the critical view of safety (CVS) technique in all laparoscopic cholecystectomies. The aim of the present study is to explore equally safe alternative options, when the CVS can not be obtained, in order to avoid bile duct injuries.

Methods: After Research Ethics Committee approval, a retrospective analysis of laparoscopic cholecystectomies, between January 2012 and September 2014, was performed, emphasizing on those cases where the CVS could not be achieved, their intraoperative management and the alternatives used.

Results: Of 304 laparoscopic cholecystectomies performed, the CVS technique was feasible in 284 (93.4%) cases. In 2 (0.7%) patients, a partial cholecystectomy was performed, 4 (1.3%) cases were performed with retrograde dissection of the gallbladder and 14 (4.6%) were converted to the open technique. No vasculobiliary injuries were observed. Two patients (0.7%) were readmitted postoperatively due to bile leakage from the cystic duct stump (Strasberg type A) and were managed successfully by ERCP and stenting.

Conclusion: To minimize biliary injuries, laparoscopic cholecystectomy technique should be standardized and the CVS should be obtained in every patient, regardless of difficulty. In those cases where this is impossible, the surgeon must consider equally safe alternative options, i.e. partial cholecystectomy, retrograde cholecystectomy, cholecystostomy, intraoperative cholangiography or finally to convert the operation to the open approach. Ligating and transecting any structures without prior positive identification should be absolutely discouraged.
APHPB-0601
A RETROSPECTIVE STUDY ON THE ASSOCIATION OF THE SEVERITY OF ACUTE CHOLECYSTITIS AND POST OPERATIVE MORBIDITIES AFTER CHOLECYSTECTOMY AT THE NATIONAL KIDNEY AND TRANSPLANT INSTITUTE
M. Tulaylay 1, J. Merced 1, E. Ragaza 1 and C. Teh 1
1Department of Surgery, National Kidney and Transplant Institute, Quezon City, Philippines

Objectives: The purpose of this study was to determine the severity of acute cholecystitis and subsequently associating it with the post cholecystectomy morbidities.

Methods: The study was able to gather 171 patients diagnosed with acute cholecystitis, ICD code K81.0, from January 1, 2007 to December 31, 2012 using the inclusion and exclusion criteria. Using Tokyo Guidelines 2013, the severity of the acute cholecystitis was determined. The severity of the acute cholecystitis compared with the postoperative morbidities and the operation performed were tabulated. All data were analyzed using SPSS software version 22.0

Results: The age group with the most number of patients who underwent cholecystectomy was greater than 60 years old, under the BMI classification of obese type 1, corresponding to about a third of the population, with equal distribution between both sexes. Nonrenal cases corresponded to 94.7%, while the remaining 5.3% corresponded to renal cases. Based on the criteria set forth by the Tokyo Guidelines 2013, grade 2 or moderate severity of acute cholecystitis corresponds to 90.6% of cases. Grades 1 and 3 severities corresponded to 2.9% and 6.4%, respectively. Postoperative morbidities encountered were bleeding, bloatedness, fever, headache, pain and wound infection. Pain had the highest rate postoperative complication, which was 12.1%. The rest were less than 5%. The rate of conversion from laparoscopic to open cholecystectomy was 7.6%.

Conclusion: Low rates of postoperative complications we observed even at different grades of severity. Laparoscopic cholecystectomy yielded slightly less complications than open cholecystectomy, making it the procedure of choice for the management of acute cholecystitis in our institution.

Malignant HPB Diseases
APHPB-0602
PHASE I/II STUDY OF SORAFENIB IN COMBINATION WITH INTERMITTENT HEPATIC ARTERIAL INFUSION CHEMOTHERAPY USING CISPLATIN FOR UNRESECTABLE ADVANCED HEPATOCELULAR CARCINOMA WITH PORTAL VEIN TUMOR THROMBUS
M. Ishizaki 1, M. Kaibori 1, K. Matsui 1, H. Iida 1, T. Sakaguchi 1, H. Matsushima 1, R. Nakatake 1 and M. Kon 1
1Surgery, Kansai Medical University, Hirakata, Japan

Objectives: Our purpose in the study was to ascertain the feasibility of a combination therapy with sorafenib and hepatic arterial infusion therapy (HAIC) using cisplatin (CDDP) for unresectable advanced HCC included portal vein tumor thrombus.

Methods: Phase I study: Sorafenib was administered continuously, whereas CDDP was given on day 1, 8, and 15. The dose of sorafenib was escalated in two steps from 400 to 800 mg/body, whereas the dose of CDDP was escalated in three steps from 20 to 25 and 30mg/m2. We estimate the dose-limiting toxicity (DLT) and the maximum tolerated dose (MTD) of this therapy, to determine the recommended dose (RD). Phase II study: Thirty-five patients with unresectable HCC received this therapy under RD, and the efficacy and safety were assessed.

Results: Phase I study: 15 patients with unresectable advanced HCC have been enrolled. None of the patients treated with sorafenib 400 mg and CDDP 20?mg/m2 experienced DLT. Three of three patients treated with sorafenib 800 mg and CDDP 25?mg/m2 experienced DLTs. None of the patients treated with sorafenib 400 mg and CDDP 25?mg/m2 experienced DLT. One of six patients treated with sorafenib 400 mg and CDDP 30?mg/m2 experienced thrombocytopenia. Phase II study: 35 patients with unresectable advanced HCC have been enrolled. The clinical response were rated as 9 partial response (PR), 18 stable disease (SD), and 8 progressive disease (PD).

Conclusion: In this study, RD of this therapy was sorafenib 400 mg/body and CDDP 30?mg/m2. Sorafenib in combination with intermittent HAIC using CDDP for unresectable advanced HCC was expected to be safe and effective treatment.
APHPB-0603

ROLE OF GADOXETIC ACID-ENHANCED MRI IN THE MANAGEMENT OF HCC PATIENTS – THE SURGEONS PERSPECTIVE

C. F. Lau¹, J. Wong¹, S. Y. Kok¹, T. L. Tam¹, T. P. Fung², S. H. Lam¹, T. Loke² and C. S. Chan²
¹Surgery, United Christian Hospital, Hong Kong, Hong Kong China; ²Radiology, United Christian Hospital, Hong Kong, Hong Kong China

Objectives: Gadoxetic acid-enhanced MRI has shown to be accurate in the diagnosis of early HCC. The objectives of this study is to evaluate the clinical impact of Gadoxetic acid-enhanced MRI on the management of HCC patients.

Methods: From January 2011 to July 2014, total 73 patients suffered from HCC with doubtful findings on the CT scans were subjected to Gadoxetic acid-enhanced MRI. The median interval between two scans was 7 weeks. The clinical outcome on these patients was analyzed.

Results: Total 73 patients (M:F = 10:63) were included for analysis. The mean age was 62 years old and 71% of patients were hepatitis B carrier. 29 patients suffered from recurrent HCC and the mean AFP level was 353 ng/mL. The CT findings from all these patients were either indeterminate on the diagnosis of HCC or inconclusive on the actual number of HCC. The additional Gadoxetic acid-enhanced MRI has changed the clinical management in 54 (73.9%) patients. It confirmed the diagnosis of HCC in 37 patients and exclude other indeterminate lesions in 3 patients. Besides, a total number of 79 additional HCC was found in 21 patients. Among the 79 lesions, 37 (46.8%) lesions were small than 1 cm in size and 22 (27.8%) lesions were between 1 and 2 cm in size. As a result, 17 patients required change of management to TACE or systematic therapy.

Conclusion: Gadoxetic acid-enhanced MRI was useful in the management of HCC patients with doubtful CT finding. It could change the clinical management in 73.9% of patients.

APHPB-0604

CLINICOPATHOLOGICAL PREDICTORS OF OUTCOME FOLLOWING LIVER RESECTIONS FOR HEPATOCELLULAR CARCINOMA; A SOUTH EAST ASIAN EXPERIENCE

G. Bonney¹, D. Mirza¹, A. Kow², S. Iyer², S. Chang² and K. K. Madhavan²
¹Hepatobiliary and Liver Transplantation Surgery, Queen Elizabeth Hospital, Birmingham, United Kingdom; ²Hepatobiliary and Liver Transplantation Surgery, National University Hospital, Singapore, Singapore

Objectives: The surgical management of Hepatocellular Carcinoma (HCC) remains challenging; with resections frequently difficult in cirrhotics and transplants requiring the use of a scarce resource. In a European series, we have previously described a biological marker (Alpha fetoprotein to total tumour volume; AFP:TTV) to predict disease recurrence following resections. The aim of this study was to analyse clinicopathological predictors of outcomes following liver resection for HCC in a South East Asian series and validate this prognostic biomarker.

Methods: A retrospective analysis of all patients undergoing liver resections between Jan 1998 and Dec 2013 in a Singaporean centre was undertaken. Patient demographics, biochemical variables as well as pre-operative alpha-fetoprotein (AFP) was collated. Pathological data including no of tumours, tumour size (s), vascular invasion and resection margins were analysed. Clinicopathological predictors of disease free and overall survival were analysed.

Results: In the study period, a total of 149 patients underwent resections for HCC with complete follow-up data. With a median age of 62 years, 58% of resections were performed on cirrhotics with 65% of patient having viral hepatitis. Resection margin positivity and vascular invasion were the only significant predictors of overall survival (p = 0.03 and 0.04 respectively). Tumour grade, resection margins, vascular invasion and a AFP:TTV ratio>0.3 predicted disease free survival (p = 0.04, 0.03, 0.03 and 0.04 respectively).

Conclusion: We present here clinicopathological predictors of overall and disease free survival for patients undergoing resections for HCC. This data validates, in a transcontinental series, the predictive utility of the AFP:TTV ratio previously described.

APHPB-0605

WHERE ARE THE ‘MISSING’ METASTASES? – ROLE OF GADOXETIC ACID-ENHANCED MRI IN THE MANAGEMENT OF COLORECTAL LIVER METASTASIS

S. Y. Kok¹, J. Wong¹, C. F. Lau¹, T. L. Tam¹, T. P. Fung¹, S. H. Lam¹, T. Loke² and C. S. Chan²
¹Surgery, United Christian Hospital, Hong Kong, Hong Kong China; ²Radiology, United Christian Hospital, Hong Kong, Hong Kong China

Objectives: Gadoxetic acid-enhanced MRI has shown to be accurate in the diagnosis of early colorectal liver metastasis. The objective of this study is to evaluate the clinical impact of Gadoxetic acid-enhanced MRI on the management of patients with colorectal liver metastasis.

Methods: From August 2011 to July 2014, a total 10 patients suffered from colorectal liver metastasis were subjected to both PET/CT scan and Gadoxetic acid-enhanced MRI assessment. The median interval between the scans was 6 weeks. The clinical outcome on these patients were analyzed.

Results: Total 10 patients (M:F = 7:3) were included for analysis. The mean age was 64 years old and the mean CEA level was 16.8 mg/L. PET/CT scan showed solitary liver metastasis in 5 patients and one patients with two liver metastases. Indeterminate lesions were present in 6 patients. The additional Gadoxetic acid-enhanced MRI has changed the clinical management in 7(70%) patients. It confirmed the diagnosis of colorec-
tal liver metastasis in one patient and additional metastases were found in 8 patients. Total 37 additional metastases were detected by MRI and 31(83.8%) of these lesions were smaller than 1 cm in size. As a result, 4 patients switched to systemic chemotherapy, 1 patient switched to right hepatectomy and 1 patient switched to open radiofrequency ablations.

Conclusion: Gadoxetic acid-enhanced MRI was useful in the management of patients with colorectal liver metastasis. It could detect the small metastasis which was not detected on the PET/CT scan, and hence changed the clinical management.

Benign HPB Diseases

APHPB-0606

FACTORS AFFECTING THE OUTCOMES OF SURGICAL MANAGEMENT OF POST CHOLECYSTECTOMY BILE DUCT STRICTURES

V. Sivasubramaniam¹, K. Balaraman¹, A. Pitchaimuthu², S. Perumal¹, K. Rajendran¹, R. A. V. I. Ramasamy¹, J. Sathyanesan¹, R. Palaniappan¹ and M. Govindan¹
¹Surgical gastroenterology, Government stanley medical college, Chennai, India

Objectives: 1. To evaluate the clinicopathological factors influencing surgical outcomes following biliojunostomy for bile duct injury following cholecystectomy 2. To evaluate the factors affecting the perioperative outcomes following hepatojjunostomy for various types of post cholecystectomy bile duct injury

Methods: Collection of clinicopathological data of post cholecystectomy bile duct injury, demographic details, presenting symptoms and signs, investigations, operative details, salvage procedures, complications and follow-up of the concerned cases at our institute. Factors were analysed by using SPSS 16

Results: Of the 46 patients analysed, patients with larger bile duct dilatation had better outcomes than with smaller duct size (p = 0.0398). No associations identified between short-term postoperative complications and any of the perioperative variables examined: sex (p = 0.76), age (p = 0.13), bile leak (p = 0.13), hospital of origin (p = 0.63), jaundice (0.793).

Conclusion: Of the 46 patients studied by univariate and multivariate analysis only bile duct dilatation is the factor which affects the outcome of post cholecystectomy bile duct strictures. Other factors were not statistically significant

APHPB-0607

XANTHOGRAVULOMATOUS CHOLECystitis MASqueraDERD AS GALLBLADDER CANCER: CAN IT BE DIAGNOSED PREOPERATIVELY?

S. Murugesan¹, S. Jeswanth¹, P. Senthil Kumar¹, R. Ravi¹, R. Kamalakannan¹, P. Anbalagan¹, B. Kesavan¹, P. Ravichandran¹ and G. Manoharan¹
¹Surgical Gastroenterology, Stanley medical college, Chennai, India

Objectives: To determine the preoperative characteristics of Xanthogranulomatous cholecystitis (XGC) that could potentially aid in an accurate diagnosis of XGC masquerading as gallbladder cancer (GBC)

Methods: An analysis of prospectively collected database of patients operated with a preoperative diagnosis of GBC between Jan 2008 and Dec 2012 was conducted to determine the clinical and radiological features which could assist in the preoperative diagnosis of XGC.

Results: Out of 77 patients with resectable disease who underwent radical cholecystectomy, 16 were reported as XGC on final histopathology (Group A), while 60 were GBC (Group B). One patient had GBC associated with XGC and was excluded from the analysis. The incidence of abdominal pain and acute cholecystitis were significantly higher in Group A, anorexia and weight loss was higher in Group B (p < 0.001). Cholelithiasis, cholechocholithiasis was more common in Group A. On CT of the abdomen, diffuse gallbladder wall thickening, continuous & homogenous mucosal line enhancement and submucosal hypoattenuated nodules or bands (p < 0.001) were the significant findings in Group A (p < 0.001). CT findings on retrospect, revealed atleast one of these findings in 68.7% (11/16) cases

Conclusion: Differentiating XGC from GBC is a diagnostic conundrum. Making this distinction preoperatively or intraoperatively is difficult and a definitive diagnosis still necessitates a histopathological examination. An accurate preoperative diagnosis requires an integrated review of clinical and characteristic radiological features, the presence of which may help avoid radical resection and avoidable morbidity in selected cases.

Malignant HPB Diseases

APHPB-0609

INCIDENTAL GALL BLADDER CANCERS: ARE THEY TRULY INCIDENTAL?

S. Murugesan¹, S. Jeswanth¹, P. Senthil Kumar¹, R. Ravi¹, R. Kamalakannan¹, P. Anbalagan¹, B. Kesavan¹, P. Ravichandran¹ and G. Manoharan¹
¹Surgical Gastroenterology, Stanley medical college, Chennai, India

Objectives: To ascertain the true incidence of Incidental Gallbladder cancer (IGBC), we aimed to seek and analyse features suggestive of GBC on preoperative imaging and intraoperative findings in patients diagnosed as having IGBC.

Methods: The study was conducted on 79 patients of IGBC managed in our department over a ten year per-
iod (2003–2012). Review of clinical findings, preoperative imaging and operative notes were done to ascertain any suspicion of malignancy-in-retrospect. Results: Of the 79 patients, ultrasound abdomen showed diffuse thickening, not suspicious of malignancy in 5 patients, and diffuse suspicious thickening was seen in 4 patients. Focal thickening suspicious of malignancy was present in 24 patients. Preoperative CT/MRI was done in 9 patients for suspicion of malignancy. In 5 patients, difficult Cholecystectomy was encountered due to dense / inflammatory adhesions. Intraoperative findings showed focal thickening of the gallbladder and a gallbladder mass in 9 and 17 patients respectively. On overall analysis, 37 patients had preoperative imaging or intraoperative findings suggestive of malignancy, which was either a missed GBC or an unsuspected/unexpected GBC. In 42 (53.2%) patients, there was no evidence suggestive of malignancy and was an unanticipated diagnosis.

Conclusion: Conclusion: Our study highlights a potential and not-so-rare pitfall of Laparoscopic Cholecystectomy. A greater awareness of this clinical entity along with a high index of suspicion and a low threshold for conversion to open procedure, especially in endemic areas may avert avoidable patient morbidity and mortality.

APHPB-0610
FEASIBILITY OF IMPLEMENTING FAST-TRACK SURGERY IN PANCREATICODUODENECTOMY WITH PANCREATICOGASTROSTOMY FOR RECONSTRUCTION – A PROSPECTIVE COHORT STUDY WITH HISTORICAL CONTROL
S. Murugesan1, S. Jeswanth1, P. Senthil Kumar1, R. Ravi1, R. Kamalakannan1, P. Anbalagan1, B. Kesavan1, P. Ravichandran1 and G. Manoharan1
1Surgical Gastroenterology, Stanley medical college, Chennai, India

Objectives: To analyse the feasibility of implementing fast track rehabilitation protocol in pancreaticoduodenectomy (PD) with pancreaticogastrostomy, using historical control for comparison.

Methods: Between April 2012 and December 2012, twenty patients who underwent PD (with pancreaticogastrostomy) were managed by a fast-track rehabilitation protocol. These patients were compared with an equal number of historical controls treated according to the traditional protocol.

Results: Patients in the fast track group were able to tolerate liquid \( (p = 0.0005) \) and solid diet \( (p = 0.0001) \) earlier, and they passed stools earlier \( (p = 0.02) \). Delayed gastric emptying (DGE) was significantly reduced in the fast track group \( (p = 0.02) \). There was no difference in the rates of pancreatic fistula (PF), post pancreatectomy haemorrhage (PPH) and mortality between the two groups. Length of hospital stay was reduced in the fast track group (median 14 vs. 18.5, \( p = 0.007 \)).

Conclusion: Fast track programme appears to be feasible in PD, even with pancreatico-gastric anastomosis. It is associated with early recovery, reduced DGE and reduced hospital stay.

APHPB-0611
DEFERASIROX SHOWS IN VITRO AND IN VIVO ANTICANCER EFFECTS ON HUMAN PANCREATIC CANCER CELL LINES
H. Harima1, S. Kaino1, S. Shinoda1, M. Kawano1, S. Suenaga1, K. Fujisawa1, N. Yamamoto1, T. Yamasaki2 and I. Sakaida1
1Gastroenterology & Hepatology, Yamaguchi University School of Medicine, Ube, Japan; 2Oncology and Laboratory Medicine, Yamaguchi University School of Medicine, Ube, Japan

Objectives: Iron is essential for cell proliferation and viability. Therefore, iron depletion by a chelator can be used as a new strategy for cancer therapy. Deferasirox is a new oral iron chelator, and no reports have described its effects on pancreatic cancer cells. This study aimed to elucidate the in vitro and in vivo activity of DFX against pancreatic cancer cells.

Methods: In vitro, three human pancreatic cancer cell lines (BxPC-3, Capan-2, SW 1990) were treated with DFX. The cell proliferation was evaluated by the MTT assay, and the cell cycle progression and apoptosis were analyzed by flow cytometry. The role of caspases in the DFX-induced apoptosis was investigated using a luminescent assay. In vivo, a BxPC-3 xenograft pancreatic cancer model in mice was established. The mice were gavaged with DFX or vehicle alone for treatment.

Results: The MTT assay showed that DFX had concentration-dependent cytotoxic effects. The cell cycle analysis showed that a low concentration of DFX increased the S phase fraction, while a high concentration of DFX increased the sub-G1 fraction. The induction of apoptosis was also confirmed by Annexin V and PI staining. The caspase 3/7 activities were increased in a concentration-dependent manner by DFX. When DFX was orally administered to mice on alternate days at 80 mg/kg for three weeks, significant tumor growth suppression was observed compared with that in mice gavaged with the vehicle alone \( (p < 0.05) \).

Conclusion: We demonstrated that DFX is an orally effective agent that had activity against pancreatic cancer cells.

APHPB-0612
PURE LAPAROSCOPIC ANATOMICAL LIVER RESECTION WITH UPFRONT TRANSECTION OF THE TUMOR-BEARING PORTAL PEDICLE
S. Ei1, O. Itano1, Y. Abe1, M. Shinoda1, M. Kitago1, T. Hibi1, H. Yagi1 and Y. Kitagawa1
1Surgery, Keio University, Tokyo, Japan

Objectives: Preoperative simulation using 3D imaging provides accurate information required for pure laparoscopic anatomical liver resection, to isolate and divide
the tumor-bearing portal pedicle before liver parenchymal dissection. The aim of this study was to validate the safety and feasibility of our surgical approach.

**Methods:** From March 2013 to May 2014, 68 patients underwent laparoscopic liver resection at our institution. Of these, anatomical hepatectomy with upfront tumor-bearing glissonean transection was performed in 11 cases. Their short-term outcomes were retrospectively collected and analyzed.

**Results:** Male: female = 9: 2, age 63 (54–73). Median operative time, 577 min; estimated blood loss, 433 mL. The tumor was located in left lateral sector in 2, Couinaud’s S5 in 3, S6 in 1, S7 in 1, S8 in 3, and caudate lobe in 1. In all cases, the tumor-bearing portal pedicle was identified by preoperative 3D imaging and was transected safely preceding liver parenchymal dissection using pure laparoscopic approach. <Case presentation> A 3.5 cm-colorectal liver metastasis was found in S8 in a 58-year-old man with history of partial liver resection for prior metastases. Pure laparoscopic right anterior sectionectomy was safely performed as planned by meticulous preoperative simulation, paying extreme caution to the displacement of portal pedicles by previous surgery and growth of the tumor in close proximity.

**Conclusion:** Pure laparoscopic anatomical liver resection with upfront tumor-bearing glissonean transection is safe and feasible with the use of detailed preoperative simulation using 3D imaging.

**APHPB-0613**

**SURGICAL STRATEGY FOR PT2 GALLBLADDER CANCER**

R. Matsuyama¹, R. Mori¹, T. Kumamoto², K. Takeda¹ and I. Endo²

¹Gastroenterological Surgery, Yokohama City University, Yokohama, Japan

**Objectives:** Advanced gallbladder cancer (GBC) is still a lethal disease in all over the world. The aim of this study is to clarify the therapeutic efficacy of anatomical hepatectomy and EBDR for pt2 GBC.

**Methods:** Of 108 patients with GBC who underwent surgical resection from 1992 to 2012, 41 patients were identified as having histologically proven pt2 GBC. Relationship between clinico-pathological factors and long-term outcome were retrospectively analyzed.

**Results:** The 5-year survival rate for pt2 GBC was 70.4%. Absence of lymph node metastasis, lymphatic invasion and venous invasion and curative resection were significantly favorable factors by univariate analysis. The 5-year survival rate was 85.6% for the pN0 patients, 64.2% for the patients with 1 or 2 metastatic lymph nodes and 33.3% for the patients with more than 3 metastatic lymph nodes. The 5-year survival rate was 72.2% for the 15 patients with anatomical hepatectomy, and 72.2% for the 23 patients without anatomical hepatectomy. When restricting the patients without lymph node metastasis, The 5-year survival rate was 85.6% for the pN0 patients, 64.2% for the patients with 1 or 2 metastatic lymph nodes and 33.3% for the patients with more than 3 metastatic lymph nodes.

**Conclusion:** There is no positive therapeutic effect in an anatomical hepatectomy and an EBDR in the surgical treatment of pt2 GBC. The number of lymph node metastasis is powerful predicting factor for the survival. In the treatment of pt2 GBC patients, radical resection to achieve curative resection including surgical margin and lymph nodes contributes to a better prognosis.

**APHPB-0615**

**CLINICAL VALUE OF BILE ACID RECEPTOR TGR 5 OVER EXPRESSION IN GALLBLADDER CANCER**

K. Kim¹, J. Han¹, C. An¹ and J. Kim¹

¹Surgery, Uijong-Bu St. Mary’s Hospital, Uijongbu, Korea

**Objectives:** TGR 5 is a plasma membrane bound, G-protein coupled receptor for bile acids. It has been detected in a various tissues, especially in biliary tree. There have been some reports that TGR 5 expression is related with the development of cancer however, almost all of it was for knockout mice. In this study, we determined the relationship between the strength of TGR 5 expression and gallbladder cancer.

**Methods:** We retrospectively reviewed the medical records and immunohistochemistry assessment of 30 patients who underwent radical cholecystectomy for gallbladder cancer at our hospital between July 2004 and April 2013. And then, we compared it to the patients who underwent cholecystectomy for benign gallbladder disease, such as gallbladder stone or benign polyps. We analyzed the staining pattern and strength for TGR 5 as intensity and extent, then we categorized it as three groups: weak, moderate and strong staining.

**Results:** The overall strength of TGR 5 staining was significantly higher in the gallbladder cancer group (p = 0.001). In gallbladder cancer group, strong TGR 5 staining was present in 50% and weak staining was only in 6.7%. However, in benign gallbladder disease group, weak TGR 5 staining was observed in 25.9% and strong staining was only in 18.5% (p = 0.002). There was no significant differentiation between the strength of TGR 5 expression and cancer cell differentiation (p = 0.309).

**Conclusion:** We concluded that TGR 5 is much more expressed in gallbladder cancer than normal gallbladder mucosa. Further study is needed about the role of TGR 5 in gallbladder cancer.

**Transplantation**

**APHPB-0617**

**INDOCYANINE GREEN CLEARANCE IS A USEFUL TOOL FOR ASSESSING BRAIN DEAD DONOR LIVER FUNCTION**

L. F. Lau¹, R. Jones¹, G. Riddough¹, G. Starkey¹, M. A. Fink¹, B. Z. Wang¹, C. Christophi¹, J. Lokun¹, K. Asadi² and V. Muralidharan¹

¹Surgery, Austin Health, Heidelberg, Australia; ²Pathology, Austin Health, Heidelberg, Australia

**Objectives:** Donor liver quality is a critical factor which determines outcome following liver transplantation. Current assessment is largely subjective. This
study aims to assess the feasibility and use of indocyanine green clearance (ICG) in the objective quantification of donor liver function for transplantation.

**Methods:** Potential brain-dead liver donors were recruited. ICG clearance was performed prior to organ retrieval and compared to histopathology, surgeon assessment of macrosteatosis and donor risk index (DRI). Primary outcome parameters were early allograft dysfunction and post-operative mortality.

**Results:** Fifteen brain dead donors were recruited for this study. There were three patients with early allograft dysfunction and one post-operative mortality following a prolonged 70 day ICU stay. In the patient that died, the ICG clearance of the donor liver at the time of organ retrieval was significantly lower compared to the other donor livers (9 vs. median 28.5, range 17.1–46.3%/min). Correspondingly, the DRI was also the lowest in this donor (2.1 vs. median 1.53, range 1.1–2.0). Surgeon assessment and degree of macrosteatosis on histopathological examination did not predict to outcome.

**Conclusion:** ICG assessment of donor liver function is feasible and practical. It may be incorporated with little interruption into the current organ retrieval process and provides an objective quantification of donor liver function. There is early evidence that this is better than surgeon macroscopic or histological assessment and may be a useful adjunct to the DRI. Further studies are required to establish an ideal cut-off level for its use in donor liver assessment for transplantation.

**Malignant HPB Diseases**

**APHPB-0618**

**SURVIVAL RATES AND RISKS OF COMPLICATIONS OF HEPATOCELLULAR CARCINOMA FOLLOWING TRANS ARTERIAL CHEMOEMBOLIZATION- A SINGLE CENTRE EXPERIENCE**

I. Maduka\(^1\), S. Junnarkar\(^1\), V. Shelat\(^1\), W. Woon\(^1\) and J. K. Low\(^1\)

\(^1\)General Surgery, Tan Tock Seng Hospital, Singapore, Singapore

**Objectives:** For operable hepatocellular carcinomas (HCC); resection, transplantation and thermo ablation (for <3 cm lesions) are curative options. For inoperable lesions, which do not satisfy, transplant criteria, trans arterial chemoembolization (TACE) or selective internal radiation therapy (SIRT) remains the primary mode of treatment. TACE is shown to improve survival. TACE is not free from morbidity and ‘post TACE syndrome’ is a common complication. Our aim of the study was to analyse survival rates and risk factors for side effects in patients undergoing TACE for HCCs.

**Methods:** A retrospective study was carried out and 306 TACE sessions in 149 patients done from 2001 to 2013 were included in the study.

**Results:** Out of the complications reported post TACE fever was the commonest documented complication noted with 83(27.12%) reported cases post procedure. Tumour size (<5 cm) had a lower risk of complications compared to larger tumours (p < 0.05). Unifocal disease compared to multifocal disease and Child’s A status compared to Child’s B status and patients undergoing <2 TACE sessions compared to >2 sessions had a lower risk of complications (p < 0.05). The analyzed survival rates at 12 months, 24 months and 36 months were 61%, 35% and 24%.

**Conclusion:** Smaller tumour size, unifocal disease and absence of liver failure were associated with a lower risk of side effects following the procedure. The relative risk of side effects increases with each session of TACE in a single patient.

Primary tumour size and Child-Pugh classification were found to be significant factors, which influence the survival.

**APHPB-0619**

**SHORT AND MIDDLE TERM OUTCOMES AFTER LAPAROSCOPIC VERSUS OPEN LIVER RESECTION FOR HEPATOCELLULAR CARCINOMA**

S. Nakahira\(^1\), Y. Takeda\(^2\), Y. Katsura\(^2\), T. Kato\(^2\), N. Hatanaka\(^1\) and S. Tamura\(^2\)

\(^1\)Department of Digestive Surgery, National Hospital Organization Kure Medical Center, Kure, Japan; \(^2\)Department of Digestive Surgery, Kansai Rosai Hospital, Amagasaki, Japan

**Objectives:** The aim of this study was to analyze the perioperative results and survival outcomes of LLR versus open liver resection (OLR).

**Methods:** Between June 2010 and May 2013, 104 patients underwent pure laparoscopic liver resection (PLLR) for HCC at our hospital. Historical control patients (n = 82) who received OLR for HCC between January 2004 and March 2010 were included for comparison.

**Results:** The patient age was elder in the PLLR group than the OLR group (71.6 vs. 68.6). No significant differences were noted between the PLLR and OLR groups with respect to patient gender or liver damage. The intraoperative blood loss was lower in the PLLR group than the OLR group (143.9 mL vs. 1226.6 mL). With the PLLR compared with the OLR group, operation time was 295.4 min vs. 203.0 min (p < 0.0001) and hospital stay was 14.4 days vs. 15.5 days (p = 0.5992). AST on the POD1 was 467.0 IU/L versus 396.9 IU/L (p = 0.2558), ALT was 336.9 IU/L versus 304.4 IU/L (p = 0.5223), total bilirubin was 0.89 mg/dL vs. 1.18 mg/dL (p = 0.0002), WBC was 9151/l versus 9264/l (p = 0.5992), and CRP was 0.97 mg/dL vs. 1.18 mg/dL (p = 0.0002). The surgical margins were similar in the two groups. The 1 year disease-free survival rate at 1 year of stage I, II, III HCC were 83.1% versus 78.9% (p = 0.6899), 73.7% versus 79.2% (p = 0.6114), and 67.9% versus 43.5% (p = 0.2181) for PLLR and OLR, respectively.

**Conclusion:** Compared with OLR, LLR for HCC is associated with less blood loss and lower systemic influence with no compromise in survival.
Transplantation
APHPB-0620
THE MANAGEMENT OF FAILURE OF RADIOLOGICAL INTERVENTIONAL IN PATIENTS WITH PORTAL VEIN THROMBOSIS AFTER LIVING DONOR LIVER TRANSPLANTATION- CASE REPORT AND LITERATURE REVIEW
1General Surgery, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung, Taiwan

Objectives: Portal vein thrombosis (PVT) after living donor liver transplantation (LDLT) was a rare complication. It would cause clinical complications of variceal bleeding, ascites, and graft dysfunction. Managements of PVT include thrombectomy of portal vein (PV) with stent and splenic artery embolization (SAE). Shunt between portal branch and systemic circulation is an alternative procedure after failure of radiological intervention failed. We report two cases with frequent hematemesis and tarry stool due to total occlusion of PV treated by porto-systemic shunt.

Methods: Two cases of PVT after LDLT were treated meso-femoral shunt in Kaohsiung Chang Gung Memorial Hospital. The clinical course and complications were reviewed.

Results: Thirty-three year old male patient developed variceal bleeding due to PVT after LDLT. The SAE were performed but failed. Repeated esophageal variceal bleeding was still noted. He received meso-femoral shunt with Gortex graft (0.8 cm) between inferior mesenteric vein and femoral vein. The second patient, 12 year-old boy; has PVT due to occlusion of PV treated with SAE. Repeated bleeding was noted and treated with meso-femoral shunt. The shunt was occluded on post-operative day 3. He received splenectomy with proximal spleno-renal shunt. Both patients recover smoothly and do not have variceal bleeding at present follow-up.

Conclusion: Porto-systemic shunt is the alternative procedure to failure of PV stent for PVT after LDLT.

Benign HPB Diseases
APHPB-0622
SPONTANEOUS BILE PERITONITIS IN PANCREATIC HEAD TUMOR: REPORT OF A CASE
K. Her

1Surgery, University of Jeju College of Medicine, Jeju, Korea

Objectives: Bile peritonitis without trauma is rare even in adults. Most common underlying diseases of these rare conditions were CBD stones and/or intrahepatic duct stones. Pancreatic tumor as a cause of spontaneous bile peritonitis is very rare. Here we report the bile peritonitis secondary to pancreatic head tumor.

Methods: A 82-year-old male patient presented with general weakness and chilling. Initially the patient was jaundiced, body temperature was 38.5° and SBP was 60 mmHg checked. Anti-shock resuscitation and empirical antibiotics were started without delay. A poorly enhancing mass (2.3 cm) in uncinate process of pancreas with distal CBD obstruction was shown on following abdominal CT. PET-CT suggested the lesion as a malignant tumor.

Results: On 4th admission day, abdominal distension developed and progressed with tenderness. Chemistry showed extremely high level of bilirubin in aspirated ascites. Percutaneous ascites drainage was done for two days and drainage amount reached up to 4 L. Endoscopic retrograde cholangio-pancreatography showed no definite leakage of contrast both in intra- and extrahepatic biliary system. A double pigtail stent was inserted into bile duct for the biliary drainage. Percutaneous ascites drainage was removed without problems. No further surgery was allowed because of patient refused it.

Conclusion: Although extremely rare, it is possible that bile duct can be perforated spontaneously in the patients of obstructing peripancreatic tumor. High suspicion of spontaneous biliary leakage is essential when ascites is progressing in peripancreatic tumor patients. This report shows extraordinary case that bile leaked spontaneously and sealed by itself in pancreatic tumor.
were performed. After had that, septic shock was recovered immediately.

Conclusion: OPSI the present case had been merged acute cholangitis and sepsis, liver abscess. I want to report a discussion of the literature of slightly fewer reported cases of OPSI after liver transplantation by Japan.

APHPB-0625
EMERGENCY ADULT LIVING DONOR LIVER TRANSPLANTATION USING ABO-INCOMPATIBLE DONOR FOR ACUTE LIVER FAILURE
M. Shinoda1, O. Itano1, H. Obara1, M. Kitago1, T. Hibi1, Y. Abe1, H. Yagi1, K. Matsubara1, Y. Yamada1, A. Fujino1, K. Hoshino1, T. Kuroda1, M. Tanabe2 and Y. Kitagawa1
1Surgery, Keio University School of Medicine, Tokyo, Japan; 2Hepato-Biliary-Pancreatic Surgery, Tokyo Medical and Dental University, Tokyo, Japan

Objectives: Outcomes of emergency adult ABO blood type incompatible (ABOI)-living donor liver transplantation (LDLT) for acute liver failure (ALF) have not been well reported so far. We assessed the outcome of emergency ABOI-LDLTs for ALF in our hospital.

Methods: We have performed 130 cases of adult LDLT since 1998. There have been 3 cases of emergency adult ABOI-LDLT after introduction of rituximab (cases 1, 2, and 3). Our current protocol for elective ABOI-LDLT is as follow: 1) systemic immunosuppression, 2) PE and splenectomy, 3) rituximab 1–3 weeks prior to surgery, and 4) postoperative portal infusion. In emergent cases, we attempted to employ the protocol above as much as possible.

Results: There was no significant difference of 5-year survival rate between the groups of non-ABOI (n = 101) and ABOI (n = 29). In the emergent ABOI cases, blood type of fresh frozen plasma used for PE was preoperatively converted to type AB, resulting on the successful reduction of anti-donor blood type antibodies. Rituximab was administered on 0 and 1 POD, 2 and 1 POD, and 1 POD in case 1, 2, and 3, respectively. Rates of CD19 and CD20 positive lymphocytes in spleen were higher in the emergent ABOI-LDLT than those in elective ABOI-LDLT on the operation day. No antibody mediated rejection occurred in the 3 cases of ABOI-LDLT. The 3 cases are alive for 8, 7, and 2 years, respectively.

Conclusion: Although timing of rituximab administration was modified, emergency adult ABOI-LDLTs for ALF were successfully performed employing our current protocol.

Malignant HPB Diseases
APHPB-0626
IMPACT OF CHEWING GUM ON DELAYED GASTRIC EMPTYING FOLLOWING PANCREATICODUODENECTOMY
U. M. Muthuswamy1, S. Jeswanth1, P. Senthil Kumar1, R. Ravi2, R. Kamalakannan3, P. Anbalagan1, B. Kesavan1, P. Ravichandran1 and G. Manoharan1
1Department of Surgical Gastroenterology, Stanley medical college, Chennai, India

Objectives: Gum chewing is known to accelerate gastric emptying. The aim of this prospective study was to analyse the feasibility of implementing chewing gum protocol in patients undergoing Pancreaticoduodenectomy (PD), using historical control as comparison.

Methods: Between April 2014 and August 2014, 20 patients who underwent PD were managed by chewing gum protocol. Patients chew sugarless gum for 30 min three times a day from the 1st POD. These patients were compared with an equal number of matched historical controls treated according to the traditional protocol. Overall time to pass flatus, time to first bowel movement, delayed gastric emptying (DGE), length of hospital stay were compared. We also investigated the physiologic effect of chewing gum on gastric motility using an ElectroGastroGram (EGG) analysis in the study group.

Results: DGE was significantly reduced in the chewing gum group (7 vs. 15, p = 0.02). Patients in the chewing gum group were able to tolerate liquid (p = 0.0005) and solid diet (p = 0.0001) earlier, and they passed stools earlier (p = 0.02). Length of hospital stay was also reduced (median 14 days vs. 18.5 days, p = 0.007). There were no differences in the morbidity and mortality between the two groups. EGG analysis also showed an increase in gastric motility during gum chewing in the study group.

Conclusion: Chewing gum protocol is associated with early recovery of bowel function, reduced DGE and reduced hospital stay in PD, even with pancreatico-gastric anastomosis. This protocol can be introduced easily with no increase in costs, adverse events. Further research would clarify this effect.

APHPB-0627
THE EVOLUTION OF TWO-STAGED LIVER RESECTION
J. T. Li1, S. Y. Peng1, D. F. Hong2, Y. B. Liu3, H. O. N. G. Yu4 and X. J. Cai1
1Surgery, Second Affiliated Hospital Zhejiang University School of Medicine, Hangzhou, China; 2Surgery, the people’s hospital of Zhejiang Province, Hangzhou, China; 3Surgery, Xinhua Hospital of Shanghai Jiaotong University, Shanghai, China; 4Surgery, Sir Run Run Shaw Hospital, Hangzhou, China

Objectives: This study reports different ways we used to increase the volume and function of the potential liver remnant and the results.

Methods: A serious of different ways was used as the first stage. TAE was used since 1987; PVE since 1998,
PVE+HAE was used for HCC with PVTT in 2005 (case 1). RHAL+chemotherapy through RHA catheter was used for a patient with a huge HCC situated at segment VIII in 1987 (case 2). PVE was used for a patient with a huge HCC situated at the caudate lobe (case 3) in 2014 we adopt ALPPS with an interesting modification — using liver hanging tape as a tourniquet to replace liver parenchyma transection. Both stage were carried out under laparoscopy.

**Results:** Case 1 has been surviving for 9 years. Case 2 for 27 years. Case 3 for 14 years. Regarding ALPPS, the patient recovered uneventfully without bile leakage. He was up and about on day 1 both after the two-stage operations.

**Conclusion:** The evolution of two-staged liver resection reflects the gradual progress in liver surgery. Currently there have been a great variety ways of two-staged liver resection that a surgeon can choose to treat different patients. In situ splitting of the liver was supposed to be the major cause of the high occurrence rate of biliary leakage. Using liver hanging tape as a tourniquet that we call it round-the-liver ligation to replace liver splitting is good for avoiding the complication. Round-the-liver ligation to replace liver splitting is conducive to ALPPS.

**APHPB-0628**

**FAVORABLE PROGNOSTIC FACTORS AFTER RESECTION OF PANCREATIC CANCER**

T. Takahashi, R. Matsuyama, R. Mori, Y. Homma, Y. Ota, T. Kumamoto, K. Takeda and I. Endo

**Gastroenterological Surgery, Yokohama City University Graduate School of Medicine, Yokohama, Japan**

**Objectives:** The purpose of this study was to identify prognostic factors related to long-term survival after resection of pancreatic ductal adenocarcinoma (PDAC).

**Methods:** Between September 1991 and December 2012, 271 patients underwent a pancreatic resection for invasive ductal carcinoma. Clinicopathological factors of the patients with 5-year disease free survival (15 patients) were compared with that of the patients who died of cancer within 3 years (142 patients).

**Results:** Univariate analyses revealed that a tumor size <3 cm (p = 0.018), a negative venous invasion (p = 0.007), a preoperative CA19-9 concentration?37 U/mL (p = 0.042), a preoperative SPAN1 concentration?30 U/mL (p = 0.002), a preoperative peripheral lymphocyte counts?1300 (p = 0.004), and a peripheral lymphocyte counts on 1 postoperative month?1300 (p = 0.02) were significant favorable factors. Using these significant factors identified by univariate analysis, multivariate analysis revealed that a preoperative peripheral lymphocyte counts?1300 (95% CI: 1.197–189.409, p = 0.036, HR = 15.06), a preoperative CA19-9 concentration?37 U/mL (95% CI: 2.674–408.163, p = 0.008, HR = 4.17) and a negative venous invasion (95% CI: 1.314–194.334, p = 0.03, HR = 16.13) were the independent favorable prognostic factors.

**Conclusion:** Preoperative higher lymphocyte counts, lower CA19-9 level and without venous invasion related to the long-term survival for patients with PDAC. It is suggested that the survival outcome might be improved by modification of peripheral lymphocyte counts in preoperative period.

**APHPB-0629**

**SARCOMATOID CARCINOMA OF GALLBLADDER: A RARE CLINICAL ENTITY**

D. R. Kulkarni, S. Mistry, R. Hegde, V. Yadav and S. Borade

1General Surgery, Dr. R.N. Cooper Hospital, Mumbai, India

**Objectives:** Sarcomatoid carcinoma of Gallbladder is a very rare malignancy of the gall bladder with reported incidence of less than 1%. We report this case for its rarity and review the literature to highlight 1) the limitations of advanced imaging techniques to diagnose this pathology preoperatively, 2) the importance of immunohistochemistry in final diagnosis, 3) the need of a radical R0 resection and 4) poor overall prognosis.

**Methods:** We report a 75-year-old gentleman, who presented to us with pain in right hypochondrium. Imaging studies (USG, CT scan, MRI, EUS) suspected gallbladder cancer versus chronic calculus cholecystitis. A radical cholecystectomy, S4b, 5 liver resection, extrahepatic bile duct resection and Roux-en-Y hepaticojejunostomy was done based on intraoperative findings & R0 resection was achieved.

**Results:** Histopathology revealed epithelial & mesenchymal components and IHC was positive for cytokeratin, confirming diagnosis of sarcomatoid cancer. All margins were negative & none of the lymph nodes were positive.

**Conclusion:** Sarcomatoid cancer is very rare malignancy of gall bladder. It is nearly impossible to suspect it preoperatively with available imaging techniques. A diligent histopathological examination and immunohistochemistry is vital for a correct diagnosis. A radical R0 resection is the only chance to long-term survival. However even with R0 resection the results are dismal. So far there is no role for chemo or radiotherapy.

**APHPB-0630**

**SIGNIFICANCE OF ENDOSCOPIC TRANSGASTRIC DRAINAGE FOR POSTOPERATIVE PANCREATIC FISTULA**


1Gastroenterological Surgery, Yokohama City University, Yokohama, Japan; 2Gastroenterology and Hepatology, Yokohama City University, Yokohama, Japan

**Objectives:** Endoscopic transgastric drainage (ETGD) has been a useful modality to decompress pancreatic pseudocysts. However, it is unclear whether ETGD is
effective for postoperative pancreatic fistula (POPF) after pancreatic surgery. We reported our experience of ETGD for POPF.

**Methods:** 154 patients who underwent pancreatectomy in April 2009 to March 2014 were analyzed retrospectively in our department. EUS-guided ETGD was performed. Nasal drainage tube is used for first drainage, and nasal tube is exchanged to internal drainage tube, if prolonged drainage is expected.

**Results:** Of 44 patients (28.6%) were suffered from POPF of Grade B/C. In 16 patients of them, puncture to fluid collection was performed after removal of the drainage catheter. 4 patients of them (25%) underwent ETGD because percutaneous puncture route could not be found out. All 4 patients underwent distal pancreatectomy for pancreatic cancer. ETGD was performed at a median time of 19th postoperative day and started meal at a median time of 16 days after ETGD. One patient required additional drainage because decompression of fluid collection could not be achieved by the initial drainage. There was no ETGD-related complication. The patients discharged from our hospital at a median time of 36 days after ETGD and the drainage tubes were removed at a mean time of 49 days after ETGD.

**Conclusion:** ETGD for POPF after distal pancreatectomy can be performed safely. This treatment seems useful for POPF, especially in the patients with difficult percutaneous drainage.

**APHPB-0631**

**SURGICAL OUTCOMES AFTER HEPATOPANCREATODUODENECTOY ACCORDING TO THE EXTENT OF HEPATECTOMY**

H. Lee1, J. S. Heo1, J. Y. Park1, S. Youn1, W. Kwon1, S. H. Choi1 and D. W. Choi1

**1Surgery, Samsung Medical Center Sungkyunkwan University School of Medicine, Seoul, Korea**

**Objectives:** The aim of this study is to analyze the surgical outcomes after hepatopancreatoduodenectomy according to the extent of hepatectomy and diagnosis.

**Methods:** From January 2000 to December 2013, we reviewed medical records of 45 patients who underwent hepatopancreatoduodenectomy. The patients were divided according to the extent of surgery and diagnosis. Hemihepatectomy and trisectionectomy were defined as the major hepatectomy. The patients were divided into cholangiocarcinoma group and other malignancy group.

**Results:** The 35 patients underwent major hepatectomy with pancreatoduodenectomy and ten patients underwent minor hepatectomy. There were four cases (11.4%) of in-hospital mortality in major hepatectomy group although no mortality in minor hepatectomy group. The 24 of 25 patients with cholangiocarcinoma and 11 of 20 patients with other malignancy underwent major hepatectomy ($p = 0.001$). After median follow-up of 18 months, the survival of cholangiocarcinoma group was better than other malignancy group after hepatopancreatoduodenectomy ($p = 0.002$). The median survival time was 45 months in cholangiocarcinoma group although 21 months in other malignancy group.

**Conclusion:** Major hepatectomy with pancreatoduodenectomy is associated with high mortality rate. However, hepatopancreatoduodenectomy enables long term survival in the patients with cholangiocarcinoma.

**APHPB-0632**

**THE GLASGOW PROGNOSTIC SCORE TO PREDICT THE LONG TERM SURVIVAL AND PROGNOSIS IS A MORE PREDICTABLE FACTOR IN LOCALLY ADVANCED PANCREAS CANCER**

E. Jun1, S. Kim1, K. Song1, J. Lee1, D. Hwang1, J. Hwang2, D. Lee1, J. Lee1, S. Shin1, H. Kim1, K. Park1 and Y. Lee1

1Division of Hepatobiliary and Pancreatic Surgery, Asan Medical Center, Seoul, Korea; 2Department of Surgery, Hallym University Medical Center, Seoul, Korea

**Objectives:** Pancreatic ductal adenocarcinoma (PDAC) is one of the most lethal and aggressive malignancies. Prognosis prediction after curative resection for PDAC is crucial but remains a challenge. The Glasgow Prognostic Score (GPS) was composed of both CRP and albumin had independent prognostic value in various cancers. Our aim was to retrospectively evaluate the prognostic value of the GPS in resected PDAC.

**Methods:** From Jan 2005 to Dec 2012, the medical records of 872 patients who underwent pancreaticoduodenectomy and distal pancreatectomy for PDAC in a single center were retrospectively reviewed. To clarify the value of GPS, various factors among patients was compared. Kaplan–Meier methodology was used to evaluate the potential prognostic effects.

**Results:** In patients with low and high GPS, a significant difference in overall survival (OS) was detected. First, GPS $\geq 1$ predicted poorer overall survival (OS) compared with GPS $< 1$, in all stage. (median OS, 17 and 22, respectively; $p = 0.001$). Second, we compared the value of GPS by TNM stage. In stage 1, there are no differences between GPS score. ($p = 0.117$) However, more than stage 2, the OS was more dependent on GPS. GPS $\geq 1$ and GPS $< 1$ represented the OS (respectively 17.3 and 20.5; $p = 0.009$)

**Conclusion:** To predict the prognosis for PDAC patients, we have retrospectively validated the significance of preoperative GPS. Preoperative GPS could be one of the important determinants of overall survival in PDAC patients with a variety of clinical scenarios.
APHPB-0633
ENLIGHTENMENT OF SLENDER
(NEEDLE TYPE) FLEXIBLE DEVICE TO
CONTROL ORGANS ESPECIALLY FOR
A LAPAROSCOPIC HEPATECTOMY
H. Ikoma1, R. M. Morimura1, T. K. Kosuga1, H. K. Konishi2, Y. M. Murayama1, S. K. Komatsu1, A. S. Shiozaki1, Y. K. Kuriu1, M. N. Nakanishi1, E. O. Otsuji1, D. I. Ichikawa1, H. F. Fujiwara1, K. O. Okamoto1 and T. O. Ochiai1
1Surgery, Kyoto Prefectural University of Medicine, Kyoto, Japan

Objectives: In a laparoscopic surgery, it is important to secure an operating field. Various handiworks were made at the tip of devices to control organs more easily and safety. However, since the size at the tip of a device is limited by the diameter of the lumen of the trocar which approaches an intraabdominal, no device with sufficient effect has been made yet. Then, I enlightened a new device to control organs especially liver.

Methods: The product made from a stainless with the flexible tip coated with the silicon and slender body such as needle (1.5–3.5 mm). (Patent pending in Japan). The tip can be transformed suited to organ control freely with maniphalanaxes, and can hold the form. So the transformation of the tip is performed in manual in the state where I derived outside of the abdomen from an umbilicus wound. Then the tip was taken back to the intrabdomen via the umbilicus wound.

Results: Making up the tip to adjust it freely by the preference of the operator by hand was easy. The performance of this new device for retracting organs was good and safety as a result of the use in the animal laboratory and the living body.

Conclusion: This device gained atraumatic shape by the flexibility in opposition to the fine body like a needle. Since it is furthermore slender body, and there is little parietal destruction, a supplemental of a device is easy. A new suggestion is made as for this device to an development of the laparoscopic surgery in hepato-biliary-pancreatic surgery.

APHPB-0635
MOST ACCURATE POST OPERATIVE
DAY DRAIN AMYLASE LEVEL IN
PREDICTING POST OPERATIVE
PANCREATIC FISTULAS
E. L. S. Tang1, C. W. T. Huey1, S. P. Junnarkar1, J. K. Low1 and W. L. W. Woon1
1Hepato-Pancreato-biliary Surgery Service Department of General Surgery, Tan Tock Seng Hospital, Singapore, Singapore

Objectives: To establish which post operative day drain amylase level is most predictive in identifying post operative pancreatic fistulas.

Methods: A retrospective study of 186 consecutive patients who underwent pancreatic resection in a single institution from 2006 to 2013 was performed. Drain amylase levels were routinely measured for all pancreatic resections. The International Study Group of Pancreatic Fistula (ISGPF) definition of post operative pancreatic fistula (POPF) of drain amylase levels on or after post operative day (POD) 3, greater than 3 times the serum amylase activity, was employed. The ISGPF grading of clinical severity was also used in grading the pancreatic fistulas.

Results: 43.4% (82 out of 189) of patients who underwent pancreatic resection had a biochemical POPF. 38.6% had clinically insignificant pancreatic fistulas (Grade A), 4.23% required percutaneous drainage (Grade B), while 0.53% had severe clinical sequelae from the pancreatic fistula (Grade C).

Conclusion: Drain amylase from post operative day 1 was the most accurate in picking up pancreatic fistulas (61.0%), followed by POD day 3, which picked up 51.2% of pancreatic fistulas. Subgroup analysis of the drain amylase levels according to the ISGPF classification revealed POD 1 drain amylase to be most accurate for Grade A fistulas, POD 1 and 3 to be just as accurate for Grade B fistulas, and POD 3 to be most accurate for Grade C fistulas.

Conclusion: Drain amylase levels from POD 1 was most predictive in identifying post operative pancreatic fistulas.

APHPB-0636
HILAR CHOLANGIOCARCINOMA:
RESULTS OF SURGERY IN 126
PATIENTS
G. M. Sebastian1, A. Yadav1, A. Venugopal1, M. Subramaniyier1 and H. Ramesh1
1Surgical Gastroenterology & Liver transplantation, Lakeshore hospital and research centre, Cochin, India

Objectives: To compare outcomes of resection in hilar cholangiocarcinomas and specifically study the survival among patients who underwent direct surgery versus those who underwent biliary drainage preoperatively.

Methods: There were 136 patients (75 male, 51 female) with age range 25–81 years (median 57). Sixty nine patients had significant comorbid illness, and bilirubin levels ranged from 1.6 to 21.6 mgs%. 23 patients had significant comorbid illness, and bilirubin levels ranged from 1.6 to 21.6 mgs%. 23 patients had significant comorbid illness, and bilirubin levels ranged from 1.6 to 21.6 mgs%.

Results: Mortality occurred in 7 cases. Factors affecting mortality included bleeding, intraoperative hypertension, and vascular resection. Bilirubin levels did not influence mortality. 1 year survival was 81%, 3 year survival 63% and 5 year survival 32%. Survival was significantly improved in the RO resection group. 36 patients had R1 resection. Survival was poorer among patients who had preoperative biliary drainage.

Conclusion: Most hilar cholangiocarcinomas present with Stage 3 disease, and early surgery may represent
the only chance for prolonging survival and improving quality of life.

APHPB-0637
THE IMPACT OF FDG-PET WITH CONCURRENT NON-CONTRAST CT SCANNING (PET/CT) ON THE MANAGEMENT OF OPERABLE PANCREATIC, AMPULLARY OR DISTAL BILE DUCT CANCER
D. Kilburn¹, M. Burge², N. O’Rourke¹, R. Bryant¹, A. Francesconii, K. Houston², D. Wyld², M. Eastgate², R. Finch¹, L. Nathanson¹, G. Hopkins¹, P. Thomas² and D. Macfarlane²
¹General Surgery, Royal Brisbane and Women’s Hospital, Brisbane, Australia; ²Radiology, Royal Brisbane and Women’s Hospital, Brisbane, Australia

Objectives: The role of Fluorodeoxyglucose (FDG) Positron Emission Tomography (PET/CT) scanning in operable pancreas cancer is unclear. We therefore wanted to investigate the impact of PET/CT on management, by incorporating it into routine work-up.

Methods: This was a single institution prospective study. Patients with suspected and potentially operable pancreas, distal bile duct or ampullary carcinomas underwent PET/CT in addition to routine work-up. The frequency that PET/CT changed the treatment plan or prompted other investigations was determined. The distribution of standard uptake values (SUV) among primary tumours, and adjacent to biliary stents was characterised.

Results: Fifty six patients were recruited. The surgical plan was abandoned in 9 (16%) because PET/CT identified metastases, but in 4 other patients metastases were missed. 7 patients were inoperable at surgery which was not predicted by PET/CT. In 10 patients, there was unexpected FDG uptake resulting in 7 additional investigations, of which 2 were deemed useful. Primary tumour FDG uptake is frequently normal or only mildly elevated and may be highest around the biliary stent. PET/CT detected metastases in 5 patients whose primary tumours demonstrated only mild to moderate avidity (SUV < 5).

Conclusion: PET/CT in potentially operable pancreas cancer has limitations. However, due to its ability to detect metastases, PET/CT scanning is a useful tool in the selection of such patients for surgery.

APHPB-0641
SURVIVAL OUTCOMES AFTER LAPAROSCOPIC TWO-STAGE HEPATECTOMY FOR BILOBAR COLORECTAL LIVER METASTASES
D. Kilburn¹, A. Chiow¹, J. Lewin¹, D. Cavallucci¹, L. Nathanson¹, R. Bryant¹ and N. O’Rourke¹
¹General Surgery, Royal Brisbane and Women’s Hospital, Brisbane, Australia

Objectives: This report describes the technical aspects and outcomes of a laparoscopic approach in planned two-stage liver resections for patients with bilobar colorectal cancer (CRC) liver-only metastases.

Methods: This is a retrospective review of our database examining consecutive patients who underwent an initial first-stage laparoscopic liver resection for CRC metastases, with a planned second-stage resection from 2007 to 2013.

Results: Seven patients underwent an initial laparoscopic first-stage with concurrent right portal vein ligation (RPVL) in two patients. Median operating time was 100 (60–170) min with a median blood loss of 100 (50–400) mL. Median length of stay was 3 (2–5) days. The remaining five patients required post-operative right portal vein embolization (RPVE). All patients had significant hypertrophy of the future liver remnant (FLR) (future liver remnant volume (FLRV) >25%) and six patients subsequently had a successful open
right hepatectomy with one attempted laparoscopically converted to open. Two patients had prolonged bile leaks after the second procedure. Three patients remained disease free, with median follow-up of 34 (13–80) months. One patient had disease progression following RPVE precluding performance of second stage.

**Conclusion:** Laparoscopic first-stage resection of tumours in the left liver can be safely combined with RPVL/RPVE to achieve adequate hypertrophy of the FLR, allowing subsequent right hepatectomy.

**APHPB-0642**

**LAPAROSCOPIC RESECTION OF HEPATOCELLULAR CARCINOMA: THE BRISBANE EXPERIENCE**

D. Kilburn¹, A. Chiow¹, D. Cavallucci¹, L. Nathanson¹, R. Bryant¹ and N. O’Rourke¹

¹General Surgery, Royal Brisbane and Women’s Hospital, Brisbane, Australia

**Objectives:** This series was designed to report the technical aspects and outcomes of laparoscopic liver resection for hepatocellular carcinoma (HCC).

**Methods:** This is a retrospective and prospective review of consecutive patients who underwent laparoscopic liver resection for HCC from 1999 to 2014. We analysed the surgical techniques based on the site of tumour, looking at pre-operative details, pathology, and 1, 3 and 5-year survival/disease free survival.

**Results:** 29 patients underwent a total of 32 operations and 43 HCCs were resected. Of these 32 operations, 31 were pure laparoscopic and 1 was hand-assisted laparoscopy (HALS). 19 patients had cirrhosis (18 Child’s A). There were 5 major anatomic, 19 minor anatomical, and 8 minor non-anatomical resections. Of these, about 35% were left lateral sectionectomies. There were 8 dome lesions in the series that were resected in 5 laparoscopic +/- transthoracic procedures. Mean blood loss was 350 mL and mean operative time was 145 min. The mean length of stay was 5 days. There were 2 postoperative complications (Clavien-Dindo grade 1) and 1 post-operative death. R0 rate was 94%. Actuarial rates of overall survival at 1, 3 and 5 years were 95%, 80% and 76% respectively. 5-year disease free survival was 61%.

**Conclusion:** Laparoscopic liver resection of HCC is feasible in selected patients, including patients with cirrhosis. Good survival rates can be achieved with the use of various surgical techniques. We suggest a combined laparoscopic/transthoracic approach for lesions in segment 7 and 8.

**Transplantation**

**APHPB-0643**

**MULTI-MODALITY APPROACH TO PORTAL VEIN THROMBOSIS AFTER LIVER TRANSPLANT IN A YOUNG PATIENT WITH EXTENSIVE PORTOSYSTEMIC SHUNT**

C. W. Tay¹, S. K. Y. Chang¹, S. G. Iyer¹, A. W. C. Kow¹ and K. Madhavan¹

¹Surgery, NUHS, Singapore, Singapore

**Objectives:** We report a case of portal vein thrombosis after cadaveric liver transplant managed successfully with the combination of surgery, catheter-directed thrombolysis and medical treatment.

**Methods:**

**Results:** Miss Z is a 15 year old lady who suffered from autoimmune liver cirrhosis, with severe portal hypertension and portosystemic shunt on CT scan. She received a cadaveric liver transplant; unfortunately she developed portal vein thrombosis (PVT) during the transplant and required thrombectomy and ligation of a large coronary vein. Doppler ultrasound of the transplanted liver showed extensive reformation of thrombus in the portal vein, she was brought back for relook laparotomy, thrombectomy and shunt ligation. She was started on intravenous heparin infusion. A repeat Doppler ultrasound on post op day 2 again revealed thrombus in the portal vein. A relook laparotomy was performed and angiography catheter was inserted via inferior mesenteric vein and catheter-directed thrombolysis with recombinant tissue plasminogen activator infusion was commenced. Her abdomen was temporarily closed and rTPA infusion was continued for 8 h. A check portovenogram was performed showed significant improvement of portal blood flow and thrombus.

On POD 3, on-table portovenogram showed good portal blood flow and a new splenorenal shunt was opened up. The splenorenal shunt was ligated, and abdomen was closed definitely after confirmation of good portal blood flow. She was given anticoagulant for 4 weeks, check CT liver showed complete resolution of thrombus after 20 days.

**Conclusion:** Our case highlighted PVT can be easily developed in patient with extensive portosystemic shunts and this should be managed with multi-modality approach.
Malignant HPB Diseases
APHPB-0644

THE PROGNOSTIC FACTORS FOR RECURRENT AFTER RESECTION OF INTRAHEPATIC CHOLANGIOCARCINOMA
H. Sueoka1, T. Hirano1, Y. Imuro1, T. Okada1, Y. Asano1, N. Uyama1, K. Suzumura1, S. Hani1, I. Nakamura1, Y. Kondo1, H. Kosaka1 and J. Fujimoto1
1Surgery, Hyogo College of Medicine, Nishinomiya, Japan

Objectives: Intrahepatic cholangiocarcinoma (ICC) is a fatal disease because of early invasion and widespread metastasis. Complete surgical resection is the only treatment to cure the patients however, prognosis is extremely poor. We investigated the outcomes of surgical treatment of ICC in our institution, and analyzed the prognostic factors affecting recurrence of ICC using statistical analysis.

Methods: We totally treated 55 patients in the period January 2004 to December 2013. We performed operations for 49 patients, and 42 cases were achieved curative resection. We considered prognostic factors of recurrence with significant difference in univariate and multivariate analysis.

Results: 1-year, 3-years and 5-years overall survival rate were 85%, 38% and 33% in the patients with curative operation. The median survival time of patients underwent curative resection was 26 months, while that of patients received non-curative operation was only 5 months. After curative resection, 32 patients suffered recurrence at a median time of 10 months and most (70%) of recurrences were seen within 12 months after operations. Univariate and multivariate analysis showed that tumor number and regional lymph node metastasis were prognostic factors for recurrence ($p < 0.01$). Portal vein (PV) invasion, tumor number and regional lymph node metastasis were significantly higher in the recurrent group within 6 months after operation.

Conclusion: Multiple tumor and regional lymph node metastasis were predictive factors for recurrence in ICC. However, vascular invasion was not shown as a predictive factor for recurrence in our study, the patients with PV invasion suffered early recurrence after operation.

Benign HPB Diseases
APHPB-0645

PREDICTING THE NEED FOR OPERATIVE COMMON BILE DUCT EXPLORATION (CBDE) DESPITE ATTEMPTED ENDOSCOPIC RETROGRADE CHOLANGIOPANcreatography (ERCP) WITH REMOVAL OF STONES
S. H. J. Wong1, C. J. Simon2 and Y. L. Cheah2
1General Surgery, National Healthcare Group-Alexandra Health Pte Ltd Residency, Singapore, Singapore; 2Department of Surgery, Khoo Teck Puat Hospital, Singapore, Singapore

Objectives: Unsuccessful ERCP stone clearance occurs in a significant minority of patients with choledocho-

lithiasis. The aim of this study is to identify risk factors associated with the need for CBDE despite attempted endoscopic clearance.

Methods: 602 patients who underwent ERCP for chole-
dochocholithiasis in a single institution from 2010 to 2014 were analyzed. Patients who had subsequent surgery confirming successful ERCP clearance (control) were compared against 2 groups; patients with documented ERCP clearance but found to have choledochocholithiasis during surgery (Group A), and patients with failed ERCPs necessitating CBDE (Group B). Mean follow-up period was 20 months. Clinical, endoscopic, and operative data were reviewed.

Results: Of 223 patients were included in the study (118 female; mean age 56 years). Thirty-eight (17%) patients (16 in Group A, 22 in Group B) required operative CBDE despite attempted endoscopic clearance. For patients in Group A, only the presence of Mirizzi’s syndrome (25 vs 4.3%; $p < 0.05$) significantly predicted the need for operative CBDE. Notable factors which did not predict need for CBDE in this group included GGT levels, stone size, and duration between ERCP and surgery. Group B patients underwent 2.2 (average) ERCPs prior to surgery. Factors significantly associated with failed ERCP clearance (Group B) were Mirizzi’s syndrome (27.3 vs. 4.3%), post-gastrectomy anatomy (13.6 vs. 0%), presence of large (>10 mm) CBD stones (50 vs. 14.6%) and dilated CBD (95.5 vs. 73.5%).

Conclusion: Patients with Mirizzi’s syndrome require CBDE despite the outcome of ERCP. Earlier CBDE should be considered in fit patients with multiple risk factors for ERCP failure.

APHPB-0646

MANAGEMENT FLOWCHARTS AND CARE BUNDLES OF ACUTE CHOLANGITIS AND CHOLECYSTITIS: TOKYO GUIDELINES 2013
M. Yoshida1, T. Takada2, F. Mijura2, K. Okamoto2, T. Mayumi1, M. Yokoe2, H. Gomi6 and S. Kiriyama7
1Surgery and Hemodialysis, International University of Health and Welfare Kaken hospital, Chiba, Japan; 2Surgery, Teikyo University School of Medicine, Tokyo, Japan; 3Surgery, Kitakyushu Municipal Yahata Hospital, Kitakyushu, Japan; 4Emergency Medicine, University of Occupational and Environmental Health, Kitakyushu, Japan; 5General Internal Medicine, Nagoya Daini Red Cross Hospital, Nagoya, Japan; 6Center for Clinical Infectious Diseases, Jichi Medical University, Tochigi, Japan; 7Gastroenterology, Ogaki Municipal Hospital, Ogaki, Japan

Objectives: Tokyo Guidelines 2007 for the management of acute cholangitis and cholecystitis was published, but clinical medical treatments have been marked developed all over the world. Management flowcharts of guidelines are proposed to allow clinicians to grasp, at a glance, the outline of the management strategy of the disease. The care bundles are designed to be easily achievable and sustainable both to implement and to audit.
**Malignant HPB Diseases**  
APHPB-0647

**RUPTURED HEPATOCELLULAR CARCINOMA (HCC) – OUTCOMES OF A MULTIDISCIPLINARY APPROACH IN AN INDIAN TERTIARY CENTER**

M. Govindhan1, M. Uma Maheshwaran1, R. Ravi1, P. Senthilkumar2, R. Kamalakannan1, B. Kesavan1, P. Anbalagani1, S. Jeswanth1 and P. Ravichandran1  
1Surgical gastroenterology & liver transplantation, Government Stanley medical college, Chennai, India

**Objectives:** The aim of this study is to report a single center experience of patients with ruptured HCC and To analyze the outcome of ruptured HCC and the role of non-operative and operative interventions.

**Methods:** Between 2004–2013 total of 30 Patients presented with Spontaneous rupture of HCC. We analyzed the Variables like clinical presentation, treatment strategies and survival outcome.

**Results:** Out of 30 patients, 22 were males and 8 females with median age of 48 years. Median tumor size was 7.5 cm (range 4–14). Liver was cirrhotic in 13(43.4%), non-cirrhotic in 17 (56.6%) and HCC was multifocal in 8 (26.6%) patients. Procedures like Definitive resection was performed in 18 (60%) and hemostatic interventions in 12 (40%), angiographic embolization in 8 and surgical hemostasis in 4 patients. Procedures like Definitive resection were liver resection (n=3), left hemiyectomy (n=4), lateral segmentectomy (n=5), non-anatomical resection (n=6). Mean hospital stay was 14 days. Incidence of complications – morbidity 8 (26.6%), mortality in 10 (33.3%). Patients were followed up for upto 10 years and was observed that patients with cirrhosis had Less than 3 year survival. Non-cirrhotic patients had improved survival.

**Conclusion:** Rupture of HCC is a life threatening event and requires a multidisciplinary approach. Primary hemostasis, followed by emergency or staged hepatic resection, is the treatment of choice. Angioembolization is useful for non-resectable tumors and resectable tumors with poor performance status. Definitive resection is the primary modality for preserved patients with resectable lesions. Patients who had no underlying liver disease had better prognosis.

**Benign HPB Diseases**  
APHPB-0649

**T2N0M0 PERI-AMPULLARY CANCERS, DO THEY NEED ADJUVANT CHEMOTHERAPY?**

V. Ostwal1, C. Harris1, M. Goel1 and S. Shrikhande1  
1Medical oncology GI, TATA Memorial Hospital, Mumbai, India

**Objectives:** Surgery is the only modality that offers cure for periampullary adenocarcinoma. However, surgery alone results in failure in 60% of patients. Prospective trials have shown survival benefit with adjuvant chemotherapy, especially in patients with nodal positivity and higher tumor stage. We sought to determine the role of adjuvant chemotherapy in early stage tumours with uninvolved nodes.

**Methods:** A retrospective analysis of the prospectively maintained database of patients operated upon for periampullary tumours at a tertiary referral centre from 2007 to 2014 was performed. Patients with T2N0
tumors (AJCC 2010) were studied for adverse risk factors, adjuvant therapy received, if any, and the survival. Adjuvant chemotherapy was considered as per the discretion of treating physician.

**Results:** A total of 392 pancreateoduodenectomies were performed during the study period, of which 112 patients had T2N0 disease. Follow up data was available for 99 patients, with a median follow up of over 22 months (1–90). 23 patients received adjuvant chemotherapy (Gemcitabine or capcitabine based), while 85 were observed. The overall 5-year survival was 63% in the observed group and 67% in the group which received chemotherapy (0.76), with the 5-year disease free survival being 64% and 68% respectively (p = 0.86)

**Conclusion:** Adjuvant Chemotherapy does not have clear benefit in T2N0 peri-ampullary adenocarcinoma. However, this needs further confirmation in prospective trials with careful patient selection.

**APHPB-0650**

**THERAPEUTIC STRATEGY FOR HEPATOBILIARY AND PANCREATIC DISEASE COMORBID CARDIOVASCULAR DISEASE REQUIRING ANTITHROMBOTIC THERAPY**

Y. Ota1, R. Mori1, R. Matsuyama1, K. Miyake1, F. Asano1, Y. Sawada1, Y. Honma1, T. Kumamoto1, K. Takeda1 and I. Endo1

1Gastroenterological Surgery, Yokohama City University Graduate School of Medicine, Yokohama, Japan

**Objectives:** The patients receiving hepatobiliary and pancreatic (HPB) surgery with cardiovascular disease requiring antithrombotic therapy is increasing. In this study, perioperative factors and complications of HPB surgery were evaluated for patients requiring antithrombotic therapy.

**Methods:** From January 2009 to June 2014, patients underwent HPB surgery were retrospectively investigated.

**Results:** Forty-two of 928 (4.5%) cases had comorbid cardiovascular disease. There were 38 male and 4 female an average age of 72 year-old. HPB disease were biliary tract (n = 18), liver (n = 17), pancreas (n = 7). Medication includes anti-platelet drug (n = 34), anti-coagulating drug (n = 2), both (n = 4).

Patients were divided according to postoperative heparkinization (H group; n = 26 vs. Non-H group; n = 16).

Preoperative drug holiday was shorter in H group (p < 0.001). On the other hand, there were no difference in operating time, amount of bleeding, blood transfusion, interruption period of antithrombotic therapy, Clavien-Dindo grade >IIIa postoperative morbidity, postoperative hospital stay. There were two cases of bleeding incidence in H group and one thromboembolism in Non-H group meanwhile there were no difference and no hospital mortality.

One case diagnosed as having HCC and angina simultaneouly, underwent cardiac stent placement before surgery. Two cases required continuous anti-platelet drug administration due to a short-period after placement of drug eluting stents at the time of diagnosis. Both cases underwent surgery at 6 months after stent placement. Neither thrombotic nor bleeding complications were occurred in these cases.

**Conclusion:** HBP surgery which comorbid cardiovascular disease could be enforced relatively safe. However, timing of surgery should be carefully considered in case shortly after coronary stent placement.

**APHPB-0651**

**INVESTIGATION OF PROGNOSTIC FACTORS AND MANAGEMENT STRATEGY OF NON-FUNCTIONING PANCREATIC NEUROENDOCRINE TUMORS**

S. Youn1, H. Lee1, J. Y. Park1, J. S. Heo1, S. H. Choi1, D. W. Choi1 and W. Kwon1

1Surgery, Samsung Medical Center Sungkyunkwan University School of Medicine, Seoul, Korea

**Objectives:** Various factors have been reported as prognostic factors of non-functioning pancreas neuroendocrine tumors (NF-pNETs) but controversies persist. Furthermore, consensus on management strategy have not been reached. We aimed to further investigate the prognostic factors using a large single-center cohort to help determine the management strategy of NF-pNET.

**Methods:** 172 consecutive NF-pNET patients who underwent surgery between 1995 and 2014 were identified. These patients were retrospectively analyzed for clinical characteristics and outcomes.

**Results:** The 5-year overall survival (OS) and disease-free survival rates were 85.6% and 75.4%, respectively. In univariate analysis, Age < 40 (p = 0.047), asymptomatic tumor (p < 0.001), T1/2 (p < 0.001), no lymph node (LN) metastasis (p < 0.001), no distant metastasis (p < 0.001), size < 2 cm (p < 0.001), lower WHO grade (p < 0.001) were significantly associated with better OS. Through multivariate analysis, asymptomatic (HR 4.11 (1.38–12.28), p = 0.011) and lower WHO grade (G2, HR 11.06(1.44–84.99), p = 0.021; G3, HR 125.09 (14.42–1085.43), p < 0.001) were identified as independent prognostic factors for OS. Lower WHO grade was significantly associated with age < 40 (p = 0.003), distally located tumor (p = 0.016), lower T stage (p < 0.001), no LN metastasis (p < 0.001), no distant metastasis (p = 0.003), and size < 2 cm (p < 0.001).

**Conclusion:** Asymptomatic tumor and lower WHO grade were found to be independent prognostic factors for OS in NF-pNET. But because WHO grade can be determined through pathologic examination, other factors associated with lower WHO grade may be used to predict lower grade. Therefore, young (age < 40) asymptomatic patients with small NET (size < 2 cm) and without evidence of LN or distant metastasis on image study may be considered for observation rather than immediate surgical resection.
APHPB-0653

THE SIGNIFICANCE OF 2 CM AND THE VALUE OF IMAGING STUDIES IN DETERMINING THE MANAGEMENT OF NON-FUNCTIONING Pancreatic Neuroendocrine Tumor

S. Youn1, H. Lee1, J. Y. Park1, J. S. Heo1, S. H. Choi1, D. W. Choi1 and W. Kwon1
1Surgery, Samsung Medical Center Sungkyunkwan University School of Medicine, Seoul, Korea

Objectives: The enhanced accessibility of diagnostic imaging studies have led to an increase in the incidental detection of small non-functioning pancreatic neuroendocrine tumors (NF-pNETs). Currently, 2 cm is a widely used reference in determining the need for more aggressive treatment. We aimed to re-analyze the implication of 2 cm as reference and the value of imaging studies in determining the management plan of NF-pNET.

Methods: 172 consecutive NF-pNET patients who underwent surgery between 1995 and 2014 were identified. Clinical characteristics, imaging study results and outcome of these patients were retrospectively analyzed.

Results: Tumors with size≥2 cm in preoperative imaging were associated with T3 (HR 9.5 (3.21~14.95), p = 0.001), and lymph node metastasis (HR 4.94 (1.63~14.95), p = 0.002). The distributions of WHO grade in tumors < 2 cm were 79.7%, 20.3%, 0% for G1, G2, G3, respectively. In contrast, the distributions in tumors ≥2 cm were 34.4%, 53.4%, 12.6% for G1, G2, G3, respectively. The 5-year overall survival and disease free survival rates of NF-pNET < 2 cm were 94.0% and 89.3%, respectively. They were significantly higher than those with ≥2 cm (80.7% and 68.4%, respectively; p < 0.001). In particular, there were no mortality or recurrence in 16 patients with tumors <1 cm. The grossly measured size and the size evaluated by the imaging modalities (CT, MRI, EUS) showed excellent correlation (R = 0.958, p < 0.001).

Conclusion: Of 2 cm remains to discriminate NF-pNETs with benign and malignant behavior fairly well. And the current imaging modalities seem to accurate in determining the size of NF-pNETs. Therefore, ‘Wait and See strategy’ with short term follow up with imaging study may be applicable in well-selected patients, especially in patients with tumor <1 cm.

APHPB-0654

LAPAROSCOPIC LIVER RESECTION, INITIAL EXPERIENCE FROM A SINGLE TEAM IN JAKARTA

M. Mayasari1 and T. J. M. Lalisan1
1Surgery, Cipto Mangunkusumo Hospital, Jakarta Pusat, Indonesia

Objectives: To report a case series of initial experience in laparoscopic liver resection from a single team in Jakarta.

Methods: From 2012 to 2014, data on all laparoscopic liver resection were collected. The team consist of academic surgeons, practicing in the local university hospital as well as private hospital. Data on indication, length of surgery, tumor diameter, blood loss, post operative hospital stay, and long term follow up were collected and analyzed.

Results: From 2012 to 2014 there were 4 cases of laparoscopic liver resection performed. All were done for malignancies, 3 for HCC and 1 for metastatic breast cancer. All tumor diameter were under 5 cm. Types of resection were either segmentectomy or wedge, all turned out to be of free margin. All cases recovers uneventfully. Follow up were done from 1 month to 1 year post operatively. No recurrence were found during the follow up.

Conclusion: Although laparoscopic liver resection was not yet a standard care in Jakarta, the initial report showed promising result, even for malignant lesion. Expanding the indication to a larger size tumor and wider resection could include more cases in the future.

Benign HPB Diseases

APHPB-0655

DIAGNOSTIC VALUE OF DOUBLE MICROTRANSUDER MANOMETRY ON SPHINCTER OF ODDI DYSFUNCTION

S. Takahata1, T. Othsuka1 and M. Tanaka1
1Department of Surgery and Oncology, Kyushu University Hospital, Fukuoka, Japan

Objectives: Sphincter of Oddi dysfunction (SOD) is a functional disorder of sphincter of Oddi (SO) has repeated upper abdominal pain after cholecystectomy without any organic abnormality. Endoscopic sphincter of Oddi manometry (SOM) is a standard diagnostic tool for SOD. Patients with high basal pressure are diagnosed as SO stenosis, and with other manometric abnormal findings as SO dyskinesia. As a treatment of SOD, endoscopic sphincterotomy (ES) is effective for SO stenosis, however, efficacy of ES on SO dyskinesia is controversial. We have developed double microtransducer manometry (DMM) enables long term pressure measurement in bile duct and duodenum and repot its efficacy for diagnosis of SOD.

Methods: Consequent 20 patients suspected for SOD were enrolled. Standard SOM and DMM were performed. Diagnostic value of DMM was evaluated and compared with those of SOM

Results: One patient was diagnosed as non-SOD with negative results by SOM and DMM. Six patients were diagnosed as SO stenosis with high basal pressure revealed with SOM. ES was effective in 4 out of 6 patients. Other 13 patients diagnosed as SOD by SOM and/or DMM underwent ES. ES was effective in 10 patients (77%). Comparing diagnostic value, DMM showed high accuracy (70%vs. 50%) and sensitivity (93 vs. 50%), but low specificity (17 vs. 50%) compared with SOM.

Conclusion: Long term pressure measurement by DMM is effective diagnostic tool for SOD.
Malignant HPB Diseases
APHPB-0657

THE ENHANCED RECOVERY PROGRAMME DOES NOT INFLUENCE FITNESS FOR ADJUVANT CHEMOTHERAPY OR COMPLETION OF CYCLES IN PATIENTS WITH PANCREATIC CANCER
S. Kotecha1, A. Khan1, A. Chan1, E. Atkinson1, J. Thomas1, C. Harris1, D. Chang1, A. Kausar1 and D. Subar1
1General Surgery-Department of HPB surgery, East Lancashire Hospital Trust, Blackburn, United Kingdom

Objectives: The enhanced recovery programme (ERP) for pancreaticoduodenectomy (PD) has been reported to decrease length of hospital stay without affecting morbidity or mortality while improving quality of life. Survival is improved by adjuvant chemotherapy. The aim of this study was to assess the effect of ERP on ability to have chemotherapy and the completion of six cycles of chemotherapy in patients having pancreaticoduodenectomy for pancreatic adenocarcinoma.

Methods: This is a retrospective study of patients who had whipple’s procedure for adenocarcinoma of the head of the pancreas. Demographic and clinical data including age, sex, number of comorbidities, BMI, weight change from pre-operatively to pre chemotherapy were assessed.

Results: The mean age was 64.6 years. The male to female ratio was 63:52. 42 patients had ERP and 78 did not. ERP did not influence the number of patients proceeding to chemotherapy (p = 0.137) or those who had 6 or more cycles (p = 0.422). LOS (p = 0.035) and more than 1 comorbidity (p = 0.015) affected those who progressed to chemotherapy. Time to chemotherapy affected the completion of 6 or more cycles of chemotherapy (p = 0.024).

Conclusion: ERP does not affect patients’ suitability for chemotherapy nor their ability to complete 6 or more cycles.

APHPB-0658

LOCOREGIONAL THERAPIES FOR COLORECTAL LIVER METASTASES: EXPERIENCE FROM REGION OF LOW ENDEMICITY
S. Patil1, S. Kulkarni1, N. Shetty1, A. Polnaya1, S. Shikhande2, M. Goel2, V. Bakare1, A. Sakkami2, S. Mehta1 and V. Ostwal1
1Interventional Radiology Department of Radiodiagnosis, TATA Memorial Hospital, Mumbai, India; 2Surgical Oncology, TATA Memorial Hospital, Mumbai, India

Objectives: To evaluate role of various interventional radiological procedures in treatment of colorectal liver metastases.

Methods: 72 consecutive patients of colorectal liver metastasis which underwent locoregional interventional therapies including radiofrequency ablation, transarterial chemo & radioembolisation and Portal vein embolisation between January 2010 till August 2014.

Results: Of 54 patients underwent 76 sessions of RFA & 15 patients underwent Transarterial chemoembolisation using drug eluting beads either prior or after the RFA. Median follow up was 476 days. 7 patients had synchronous primary at the time of RFA. 11/54 patients with extrahepatic disease & 22 patients of liver limited disease received post RFA chemotherapy. Mean DFI was 176 days with Median DFI = 167 days (Range 43–581 days).

Conclusion: Liver-directed interventional modalities of treatment are effective in management of unresectable colorectal liver metastasis by prolonging survival & providing good palliation.

APHPB-0659

LIVER DIRECTED THERAPIES IN MANAGEMENT OF COLORECTAL LIVER METASTASIS (CRLM): EXPERIENCE FROM TATA MEMORIAL CENTRE
S. Patkar1, M. Goel1, S. Patil2, A. Polnaya2, N. Shetty2, S. Kulkarni2 and S. V. Shrikhande3
1Surgical Oncology, Tata Memorial Centre, Mumbai, India; 2Radiology, Tata Memorial Centre, Mumbai, India

Objectives: Data from Asia Pacific region on liver directed therapies in management of CRLM is sparse.

Methods: Retrospective analysis of prospective database (November 2009–August 2014). Patients offered liver directed therapy i.e. surgery, radiofrequency ablation (RFA), transarterial chemo (TACE)/radioembolisation and Portal vein embolisation (TARE) were included.

Results: Of 98 patients, surgery alone was performed in 30 patients, Surgery + RFA in 4, Surgery + TACE in 3 and Surgery + RFA and TACE in 3. RFA was performed in 47 (along with TACE in 15 and TARE in 2) and only TARE in 11 patients. Synchronous resection of the primary and liver lesion was performed in 1 patient. Systemic chemotherapy was administered to 17 patients prior to surgery. One patient required portal vein embolisation. 4 patients were inoperable (2 each of peritoneal and bilobardisease). Median loss was 1405 mL. Median hospital stay was 8 days (3–20). Postoperative morbidity was 10%with no mortality.
Postoperative liver insufficiency and bile leaks occurred in 2.5% and 5% respectively. 1 patient required packing for haemorrhage control.

40/47 (85.1%) patients who underwent RFA had complete ablation while 7 underwent either TACE or repeat RFA for residual lesion. 29 patients had complete response after 6 weeks treatment while 4/54 patients (7.8%) had lesion recurrence. 2 underwent TARE for disease progression. Overall response (CR+PR) rate was 82.3% at 3 months follow up.

Conclusion: CRLM are increasingly diagnosed in the Indian subcontinent. Our series highlights the crucial role of multidisciplinary care in management of CRLM.

APHPB-0660
THE IMPACT OF TRANSARTERIAL CHEMOEMBOLIZATION FOR ADVANCED STAGE HEPATOCELULAR CARCINOMA: A SINGLE CENTER EXPERIENCE

N. Tongsiri1 and S. Sabwongcharoen1
1Surgery, Rajavithi Hospital, Bangkok, Thailand

Objectives: 1. To study survival of hepatocellular carcinoma (HCC) patients with Barcelona Clinic Liver Cancer (BCLC) stage C who received Transarterial Chemoembolization (TACE) in Rajavithi Hospital, Thailand
2. To study complication of TACE in BCLC stage C patients.

Methods: Descriptive retrospective study, the data from patient record since 2008 to 2012 was collected. The general information of the patients, procedural-related complications, and cause of death were presented with descriptive statistics. Survival was analysed with Kaplan-Meier method.

Results: In 5-year period, there were 396 patients who were performed TACE in Rajavithi Hospital, 57 cases were classified as BCLC stage C, however only 44 cases had complete patient records. The mean age of the patients is 56.3 year (range from 30 to 75 year), 36 cases (81.8%) are male, 26 cases (59.1%) have hepatitis B infection, and 35 cases (79.5%) are Child-Pugh A. The median survival is 7.1 months and procedural-related complications are found in 40 cases (90.9%), but these complications were controllable with medication and conservative management. The most common complication is post-embolization syndrome which occurred in 39 patients (88.6%). Liver failure occurred in 8 cases (18.2%) and responsible for 3 deaths (6.8%).

Conclusion: TACE in HCC with BCLC stage C in Rajavithi Hospital is effective and safe in comparison with previous studies, and it may be suitable for patients who cannot access to Sorafenib.

APHPB-0661
IMPACT OF POSTOPERATIVE COMPLICATIONS ON RECURRENCE IN LIVER RESECTION FOR COLORECTAL METASTASES

M. Levy1, V. Visokai1, L. Lipska1, M. Mracek1 and J. Sims1
1Surgical Department, Charles University and Thomayer Hospital, Prague 4, Czech Republic

Objectives: Liver metastases will appear approximately in 40% of patients with colorectal carcinoma. Surgery remains the only option for curative radical treatment for liver metastases for colorectal carcinoma. Aim of our study was to evaluate the impact of postoperative complications following radical surgery for colorectal cancer metastases on disease free interval.

Methods: There were 185 liver resections in 155 patients operated for CRLM between 1996 and 2012 at our surgery. Fifty two patients were operated for metachronous, 103 patients for synchronous liver metastases, 80 of these operated simultaneously with colon or rectum resection. Postoperative complications occurs in 37 operations.

We identified minor complications (Clavien-Dindo classification I, II): wound abscess, pneumonia, postoperative bowel obstruction and other in 22 patients (59.5%), moderate complications (Clavien-Dindo III): intraabdominal abscess, colon anastomotic leakage, severe bleeding in 8 patients (21.6%), and severe septic complications: sepsis, peritonitis, liver failure in 7 patients (18.9%).

Results: Median follow up was 2.1 year. Significantly worse disease-free interval was found in patients with severe septic complications. Other, less serious complications also increase the risk of recurrence, but not statistically significantly. In all patients, in contrary to similar study in colon cancer resection, there is no statistical significance in recurrence in liver between patients with and without postoperative complications.

Conclusion: Severe septic complications has an adverse effect on the further course of the disease in terms of relapse. In addition, serious complications increases postoperative mortality, prolong hospitalization, increase the cost of treatment.
APHPB-0662
SURGICAL RESECTABILITY AFTER NEO-ADJUVANT FOLFIRINOX FOR BORDERLINE OR LOCALLY ADVANCED PANCREATIC ADENOCARCINOMA
M. Alline1, P. E. Colombo1, F. Quenet1, M. Jarlier2, F. Portales2, C. Llacer1, J. M. Fabre3, M. Ychou6 and P. Rouanet1
1Surgical Oncology, Montpellier Cancer Institute, Montpellier, France; 2Biostatistics, Montpellier Cancer Institute, Montpellier, France; 3Oncology, Montpellier Cancer Institute, Montpellier, France; 4Radiotherapy, Montpellier Cancer Institute, Montpellier, France; 5Surgery, Montpellier University Hospital, Montpellier, France; 6Surgery, Montpellier Cancer Institute, Montpellier, France

Objectives: FOLFIRINOX has already demonstrated its efficiency in metastatic pancreatic cancer (PC). This combination need to be assessed in a neoadjuvant situation for locally advanced non metastatic PC.

Methods: From 2009 to 2013, 31 patients with borderline or locally advanced PC received a neoadjuvant treatment with FOLFIRINOX (so as to get them to a resectable situation). According to the tumoral response, chemoradiotherapy with gemcitabine was done. The primary analysis endpoint was the resectability rate. Pathologic response, chemotherapy's toxicity and surgical morbidity were also evaluated.

Results: Among the 31 PC, 17 were borderline resectable and 14 locally advanced according to NCCN classification. 16 (52%) received complete chemotherapy with a median of 4 cycles. Toxicity lead to treatment modification or interruption for 9 patients (29%). Grade 3–4 toxicity occurred in 7 patients (24%). 22 patients (71%) underwent chemoradiotherapy after FOLFIRINOX chemotherapy. 13 patients (42%) had disease progression under treatment whereas 18 patients with objective radiologic response or at least stable disease were surgically explored with a resection completed in 13 cases (42%). Surgical morbidity was controlled with grade 1–2 complications for 9 patients (69%) and no mortality. 11 patients (35%) demonstrated a significant pathologic response. Resected patients had a global survival median of 36 months.

Conclusion: FOLFIRINOX in a neoadjuvant setting seems feasible with limited morbidity in locally advanced PC with encouraging resectability and pathologic response rates. Resected patients' survival is promising but need to be confirmed in larger series.

APHPB-0663
SIMULTANEOUS LAPAROSCOPIC RESECTION OF COLORECTAL CANCER AND LIVER METASTASES-INITIAL EXPERIENCE
N. Belev1, M. Slavchev1, N. Shopov1, P. Rusev1, S. Popov1 and P. Krastev1
1Surgical Department, MPHAT-Eurohospital, Plovdiv, Bulgaria

Objectives: Synchronous liver metastases (SLMs) are found in 15–25% of patients at the time the presentation with colorectal cancer, which is limited to the liver in 30%. Surgical resection is the most effective and potential curative therapy for metastatic colorectal carcinoma (CRC) to the liver. Simultaneous resection of primary CRC and synchronous liver metastases is subject of debate with respect to morbidity in comparison to staged resection. Minimally invasive laparoscopic surgery improves postoperative recovery, diminishes postoperative pain, reduces wound infections, shortens hospitalization, and yields superior cosmetic results, without compromising oncological outcome. The aim of this study is therefore to evaluate our initial experiences of simultaneous laparoscopic resection of primary CRC and SLM.

Methods: Currently, laparoscopic resection of primary CRC is performed in more than 53% of all patients in our surgical department. 18 patients with primary CRC and a clinical diagnosis of SLM underwent combined laparoscopic colorectal and liver surgery. 6 of them underwent laparoscopic colorectal resection combine by major laparoscopic liver resection.

Results: Surgical approach was total laparoscopic (17 patients) or hand-assisted laparoscopic (1 patients). The incision created for the extraction of the specimen varied between 5 and 8 cm. Median operation time was 245 (range 150–320) min with a total blood loss of 600 (range 200–750) mL. Postoperative hospital stay was 7 day (5–12). An R0 resection was achieved in all patients.

Conclusion: Simultaneous laparoscopic colorectal and liver resection appears to be safe and feasible in selected patients with CRC and SLM, with satisfying short-term results.

APHPB-0664
HEREDITARY HEPATOBLASTOMA-SURGICAL VIEW OF THE TREATMENT
N. Belev1, V. Tashev2, D. Mitkovsky2, P. Tashev3, E. Moshecov2 and P. Stefanova2
1Surgical Department, MPHAT-Eurohospital, Plovdiv, Bulgaria; 2Clinic of Child Surgery, University Hospital ‘S.George’, Plovdiv, Bulgaria; 3Clinic of Child Surgical Department, University Hospital-‘S.George’, Plovdiv, Bulgaria

Objectives: Hepatoblastomas (HB) are rare pediatric neoplasms, comprising 1% of pediatric malignancies. Till 1970s, surgery was the primary modality of treatment of HB. 60% of the patients present in an unresectable stage. Surgical resection after neoadjuvant chemotherapy (NCh) could be done in 87% of the cases.
whereas historically only 30% of the cases were operable upfront. Orthotopic Liver transplant is an effective treatment for unresectable HB with survival rates of 82%.

**Methods:** Seven children were operating between 2008 and 2014s, in our department. The clinical presentations, chemotherapy tolerance and response, surgical procedure undertaken, and complications were analysed retrospectively. All the patients had elevated AFP levels and pathological confirmation was done. Median age of the population was 12 months (6–18 months).

**Results:** Five patients were treated with NCh incorporating cisplatin and adriamycin. Patients were routinely reassessed after three cycles for surgical resection. If the tumor was found to be inoperable, patient was given one more cycle of chemotherapy. Postoperatively, two to three cycles of chemotherapy were given to a total of six cycle. Chemotherapy was well tolerated without morbidity or mortality. Primary surgery was done in two patients. Major hepatic resection were performing in four children. Morbidity rate was 14% (1 patients with low debit biliary fistula). 3 years survival was 86%.

**Conclusion:** Treatment of HB with multidisciplinary approach was well tolerated. Surgical morbidity was also less if resection was performed after neoadjuvant chemotherapy. Combined modality treatment is now the standard of care in HB.

**Benign HPB Diseases**

**APHPB-0666**

**LAPAROSCOPIC APPROACH OF SURGICAL TREATMENT FOR HEPATOLITHIASIS**

S. Huang<sup>1</sup>, M. Hung<sup>1</sup>, H. Wong<sup>1</sup>, H. Wong<sup>1</sup>, H. Wu<sup>1</sup> and Y. Wu<sup>1</sup>

<sup>1</sup>Surgery, Showchwan Memorial Hospital, Taichung, Taiwan

**Objectives:** The aim of the current study was to evaluate our experiences with laparoscopic surgery for treating hepatolithiasis.

**Methods:** The patients who underwent a laparoscopic surgical approach for the hepatolithiasis were collected since 2 years ago. Data were collected and analyzed retrospectively.

**Results:** Five patients underwent laparoscopic surgery by left hepatectomy (LLH) and common bile duct exploration (LCBDE). Two of them underwent CBD excision with Roux-en Y anastomosis in addition to the LLH. The mean operative time for LLH and LCBDE was 240.2 ± 58.1. The postoperative hospital stay was from 5 to 14 days. Neither patient needed conversion to open surgery, nor operative mortality was shown.

**Conclusion:** In selected patients with hepatolithiasis, laparoscopic approach could be an effective and feasible option.

**Transplantation**

**APHPB-0667**

**RECENT SELECTION CRITERIA OF PATIENTS FOR LIVING DONOR LIVER TRANSPLANTATION – THE IMPACT OF DONOR AGE ON RECIPIENT SURVIVAL**

F. Yusuke<sup>1</sup>, Y. Fujita<sup>1</sup>, M. Shinoda<sup>1</sup>, O. Itano<sup>1</sup>, H. Ohara<sup>1</sup>, T. Hibi<sup>1</sup>, K. E. N. Hoshino<sup>1</sup>, T. Kuroda<sup>1</sup> and Y. U. K. O. Kitagawa<sup>1</sup>

<sup>1</sup>Department of Surgery, Keio University School of Medicine, Tokyo, Japan

**Objectives:** Selecting appropriate recipient and donor is important for better recipient outcome in living donor liver transplantation (LDLT). Older donors are sometimes considered to be marginal. In this study, we analyzed risk factors for recipient’s survival focusing on donor age.

**Methods:** We have performed 125 cases of adult LDLT since 1998. We analyzed if there is a difference of recipient survival between older and younger donors to define the age of ‘old donor’. In the analysis, older donor was defined as above 40, 45, 50, 55, and 60 years old. Then, we assessed if the following variables are risk factors for recipient’s survival; recipient age, gender, and diseases, donor age, graft-to-recipient weight ratio (GW/RW), ABO blood type incompatibility, biliary reconstruction, and MELD score.

**Results:** In donor age-specific analysis, survival rate of the group in donor age<45 was significantly lower than donor age<45 (5-year survival rate 66% vs 82%, p < 0.05). A multivariate analysis showed that donor age<45, HCV positive recipient, GW/RW < 0.8, hepaticojejunostomy are risk factors for recipient survival (p < 0.05). Recipients with multiple risk factors showed worse 5-year survival than those with no factor (100%, 85%, 58%, and 33% in 0, 1, 2, and 3 factors, respectively).

**Conclusion:** Donor age is a significant risk factor for recipient survival. Since the donor source are limited in LDLT, we should carefully select donor and recipient avoiding overlap of the risk factors.

**Malignant HPB Diseases**

**APHPB-0668**

**A CASE REPORT OF LIVER METASTASIS OF THE COLON WITH HIGH SERUM ALPHA-FETOPROTEIN AND PIVKA-II LEVEL**

J. D. Yang<sup>1</sup>, S. I. Bae<sup>1</sup>, S. E. Hwang<sup>1</sup>, J. H. Lee<sup>1</sup>, H. C. Yu<sup>1</sup> and B. H. Cho<sup>1</sup>

<sup>1</sup>Surgery, Chonbuk National University, Jeonju, Korea

**Objectives:** We report a case of 63-year-old man in whom liver metastasis of sigmoid colon cancer was presented with a marked elevation of serum alpha-fetoprotein (AFP) and PIVKA-II.

**Methods:** He was transferred to our hospital for sigmoid colon cancer with multiple liver masses. Abdominal computed tomogram revealed two low-density masses in the liver. Preoperative CEA and AFP levels...
were normal range. We performed combined operation of colon and liver - anterior resection, wedge resection.

**Results:** The biopsies revealed moderately differentiated adenocarcinoma. After six cycle FOLFOX chemotherapy during 4 months, multiple liver metastasis by abdominal CT and high serum AFP (3599 ng/mL) and PIVKA-II (1570 mAU/mL) level were detected. However, the possibility of combined hepatocellular carcinoma could not be ruled out due to serum AFP and PIVKA-II elevation. The liver biopsies revealed adenocarcinoma with neuroendocrine differentiation using an immunohistochemical staining.

**Conclusion:** This case represents a very rare case of colon cancer with a marked elevation of serum AFP and PIVKA-II.

**Transplantation**

**APHPB-0670**

**USEFULNESS OF CIRCULATING BLOOD VOLUME EVALUATION AFTER LIVER TRANSPLANTATION BY USING STROKE VOLUME VARIATION (SVV)**

K. Takeda¹, T. Kumamoto¹, G. Nakayama¹, F. Asano², Y. U. Sawada¹, Y. U. K. I. Honma¹, Y. Ohta¹, R. Mori¹, R. Matsuyama¹ and I. Endo¹

¹Gastroenterological Surgery, Yokohama City University, Yokohama, Japan

**Objectives:** Perioperative aggressive fluid loading and dehydration are harmful in patients undergoing liver transplantation (LT). Stroke volume variation (SVV) is a sensitive functional preload index for evaluating responsiveness to volume loading in patients during major surgery. However, there were few papers that reported the use experience of SVV after LT recipients.

**Methods:** Patients and method: Sixty patients underwent LDLT in our institute. Of these, in the former 52 cases, only central vein pressure (CVP) was used to guide fluid management (Conventional group). In the recent 8 patients, SVV was also monitored as circulating blood volume on addition to CVP (SVV group). The boundary of fluid management of CVP and SVV was 10 mmHg and 10%, respectively. In SVV group, the transient of SVV and CVP was compared. The postoperative change of PaO2/FiO2 ratio between SVV group and the conventional group was also compared.

**Results:** In SVV group at the diuretic phase, SVV was <10% in all cases (100%). However, CVP was more than 10 mmHg in only 4 cases (50.0%). Between SVV and conventional group, the minimum degree of PaO2/FiO2 ratio in SVV group was higher than that of the Conventional group significantly (SVV and Conventional group = 296.2 ± 106.0 and 205.6 ± 98.9 days, respectively, p = 0.019).

**Conclusion:** Postoperative fluid management using SVV is useful especially after in LT.

**Malignant HPB Diseases**

**APHPB-0671**

**DIAGNOSTIC ADVANTAGE OF EOB-MRI OVER CT FOR DETECTION OF LIVER METASTASIS IN PATIENTS WITH POTENTIALLY RESECTABLE PANCREATIC CANCER**

T. Ito¹, T. Sugiura¹, Y. Okamura¹, Y. Yamamoto¹, R. Ashida¹, S. Uemura¹, T. Miyata¹ and K. Uesaka¹

¹Division of Hepato-Biliary-Pancreatic Surgery, Shizuoka Cancer Center Hospital, Sinto-Nagaizumi, Japan

**Objectives:** To evaluate the diagnostic value of gadolinium ethoxybenzyl diethylenetriamine pentaacetic acid enhanced magnetic resonance imaging (EOB-MRI) for the detection of liver metastasis in patients with potentially resectable pancreatic cancer (PC) assessed by multidetector CT (MDCT) and ultrasonography.

**Methods:** Between 2008 and 2013, potentially resectable PC was diagnosed in 258 patients on the basis of the MDCT and ultrasonography findings. Among them, 144 patients in whom EOB-MRI was subsequently performed were enrolled. Even if possible lesions (PLs) for liver metastases were detected by EOB-MRI, all patients underwent laparotomy and PLs were investigated during surgery.

**Results:** A total of 23 PLs were detected by EOB-MRI in 11 patients. Of these lesions, 15 were confirmed as liver metastases during surgery, three were occult metastases which were not detected during surgery but postoperatively confirmed as liver metastases by CT within four months after surgery, and 5 were false positive lesions (2 hemangiomas and 3 abscesses). During surgery, 7 metastatic lesions of the liver were newly found which were not detected by EOB-MRI (false negative lesions).

**Conclusion:** EOB-MRI could detect 15 metastatic and three occult metastatic lesions of the liver in 144 potentially resectable pancreatic cancer patients. Thus, EOB-MRI is more useful for detecting liver metastasis from pancreatic cancer than MDCT, but caution should be paid for false positive lesions such as minute hemangiomas and abscesses.
Benign HPB Diseases  
APHPB-0672  
YTTRIUM-90 SELECTIVE INTERNAL RADIATION THERAPY CONFRS SIMILAR AND POTENTIALLY BETTER SURVIVAL OUTCOMES TO LIVER RESECTION (LR) IN HEPATOCELULAR CARCINOMA (HCC) WITH PORTAL VEIN TUMOR THROMBOSIS (PVTT)  
Y. Y. B. Chin¹, C. F. S. Teo¹, P. K. H. Chow², Y. X. Koh², K. C. Lim³ and J. C. Allen⁴  
¹Yong Loo Lin School of Medicine, National University of Singapore, Singapore, Singapore; ²General Surgery, Singapore General Hospital, Singapore, Singapore; ³Diagnostic Radiology, Singapore General Hospital, Singapore, Singapore; ⁴Centre for Quantitative Medicine, Duke-NUS, Singapore, Singapore  
Objectives: Liver Resection (LR) remains controversial for HCC with PVTT due to poor outcomes but is often carried out on the basis of no viable alternative therapy. Recently, Yttrium-90 Selective Internal-radiation (Y90) has been shown to prolong survival in PVTT. Hence, this study aims to compare the survival outcomes of Y90 Versus LR for HCC with PVTT.  
Methods: A retrospective matched study to analyze the overall-survival of HCC patients with macroscopic PVTT who have undergone LR compared to Y90 based on the intention-to-treat principle. Stratification was done according to the PVTT-classification proposed by Jie Shi et al (2010). Each PVTT type was then matched and compared according to tumor burden (solitary or multifocal lesions). Excluded were metastatic-HCC or isolated microscopically vascular invasion.  
Results: Between October 2000 to August 2013, 115 patients underwent Y90 and 785 underwent LR of which 79 patients in total fulfilled the above criteria. Patient profiles between the two groups (LR V Y90) were significantly different; the Y90 group had greater tumor burden (solitary HCC 6 vs. 26 (Y90,LR), multifocal 31 vs. 16 (Y90,LR)) and more advanced PVTT—vascular invasion.  
When comparing tumor burden, Y90 showed better survival (21.7 months vs. 13.1 months) in PVTT—vascular lesion (p=0.6947) and (24.4 months vs. 17.9 months) in PVTT—multifocal lesion (p=0.7571), although p-values did not reach statistical significance. When comparing tumor burden, Y90 showed better median survival in solitary lesions (Y90-21.7 months vs. LR-20.5 months, p-value 0.4269).  
Conclusion: Y90 is a viable alternative to LR in HCC patients with PVTT; conferring similar and potentially better survival-outcomes. A prospective study is warranted.

Benign HPB Diseases  
APHPB-0675  
INTRA-OPERATIVE INDOCYANINE GREEN VISUALISATION IN LAPAROSCOPIC CHOLECYSTECTOMY – EARLY EXPERIENCE IN A TEACHING HOSPITAL  
A. Chia¹, S. Z. Lim¹ and P. K. Chow²  
¹General Surgery, Singapore General Hospital, Singapore, Singapore; ²Hepato-Pancreato-Biliary and Transplant Surgery, Singapore General Hospital, Singapore, Singapore  
Objectives: Laparoscopic cholecystectomy (LC) is one of the most commonly performed surgical procedures, carried out through either multiple ports or a single port. It is a surgical procedure taught to all surgical residents. Bile duct injury remains a potentially serious complication, most frequently caused by failure to clearly delineate the anatomy of the extrahaepatic bile ducts. Indocyanine green (ICG) can be used to visualize of the biliary tree to enhance safety through fluorescence of the structures by near infra-red (NIR) wavelength of 700–900 nm. This study aims to determine the feasibility of using ICG to visualize the extra-hepatic biliary tree during LC.  
Methods: This was a single-institution prospective observational study. ICG was injected intravenously at induction of anaesthesia. A NIR laparoscopic camera was used intermittently during the operation to identify the fluorescing extra-hepatic ducts upon reaching the Calot’s triangle. Successful recognition of the cystic and common bile ducts under the fluorescence mode of the laparoscopic camera was recorded.  
Results: Twelve consecutive patients undergoing LC were studied. The use of ICG coupled with a laparoscopic camera capable of fluorescence mode allowed clear identification of the cystic duct and CBD in all patients. None of the patients suffered adverse effects as a consequence of ICG use.  
Conclusion: Intra-operative use of ICG in LC offers an effective means of enhancing safety. Routine use of intra-operative ICG can reduce the risk of bile duct injury arising from misidentification of the critical structures and is useful in the training of surgical residents and in single port LC.

Malignant HPB Diseases  
APHPB-0676  
PTPN11 PROMOTES LIVER CANCER PROGRESSION AND PREDICTS POOR PROGNOSIS OF PATIENTS  
J. Ding¹, T. Han¹, D. Xiang¹, W. Sun¹, G. Feng² and H. Wang¹  
¹International Cooperation Laboratory on Signal Transduction, Eastern Hepatobiliary Surgery Hospital, Shanghai, China; ²Department of Pathology, University of California San Diego, Shanghai, China  
Objectives: The complexity of hepatocarcinogenesis is underscored by the recent revelation of tumor-suppressing effect for a number of classical tumor-promoting
molecules. In particular, we have shown that PTPN11, a tyrosine phosphatase previously shown to be pro-leukemogenic, suppresses the initiation of hepatocellular carcinoma (HCC). However, role of PTPN11 in HCC progression remains obscure.

**Methods:** PTPN11 expression was determined in human HCC using real-time PCR, immunoblotting and immunohistochemistry. Clinical significance of PTPN11 expression was analyzed in 301 HCC tissues with clinicopathological characteristics and follow-up information. Short hairpin RNA was utilized to investigate the function of PTPN11 in hepatoma cell behavior. Role of PTPN11 in HCC progression was monitored through nude mice xenograft assay. Kinase activity assay and co-immunoprecipitation were used for mechanistic analysis.

**Results:** Elevated expression of PTPN11 was detected in 65.9% (394/598) of human HCCs, and its levels were even higher in metastasized foci. Overexpression of PTPN11 correlated well with the malignant clinicopathological characteristics of HCC and predicted the poor prognosis of patients. Interference of PTPN11 expression suppressed the proliferation of hepatoma cells in vitro and inhibited the growth of HCC xenografts in vivo. Downregulation of PTPN11 attenuated the adhesion and migration of hepatoma cells and diminished metastasized HCC formation in mice. Our data demonstrated that PTPN11 promotes HCC growth and metastasis by coordinately activating Ras/Raf/Erk pathway and PI3-K/Akt/mTOR cascade.

**Conclusion:** PTPN11 has dual roles in liver cancer, either suppressing HCC initiation or promoting HCC progression. This notion could be extended to other key HCC-associated molecules.

**Malignant HPB Diseases**

APHPB-0682

**TOTALLY LAPAROSCOPIC ASSOCIATING LIVER TOURNIQUET AND PORTAL LIGATION FOR STAGED HEPATECTOMY USING THE ANTERIOR APPROACH TECHNIQUE FOR HEPATOCELLULAR CARCINOMA WITH HEPATITIS B CIRRHOSIS**

Y. Zhang1, H. Yang1, Y. Chen1 and T. A. O. Lu1

1Department of Hepatobiliary-Pancreatic Surgery, Sichuan Academy of Medical Sciences (Sichuan Provincial People’s Hospital), Chengdu, China

**Objectives:** To investigate the application value of totally laparoscopic associating liver tourniquet and portal ligation for staged hepatectomy (ALTPS) using the anterior approach technique for hepatocellular carcinoma (HCC) with hepatitis B cirrhosis.

**Methods:** In September, 2014, a patient, whose body weight (BW), total liver volume (TLV) and standard liver volume (SLV) were 61 kg, 1330.31 mL and 1036.01 mL respectively, suffered cirrhotic hepatocellular carcinoma in the right liver scheduled for two-stage liver resection, in whom the future liver remnant (FLR) was considered too small (FLR/TLV: 22.7%, FLR/SLV: 29.1%, FLR/BW: 0.49%). In the first stage, using laparoscopic technique, a tourniquet was placed around the parenchymal transection line on the Cantlie’s line via an anterior approach through retrohepatic tunnel for staged right hepatectomy, and the right portal vein was ligated. In the second stage, laparoscopic right hemihepatectomy was carried out 10 days after the first-stage operation.

**Results:** The FLR on postoperative day (POD) 4 of the first stage increased from 301.48 to 496.45 mL (FLR/TLV: 37.9%, FLR/SLV: 47.9%, FLR/BW: 0.81%), with a 64.67% hypertrophy. And the FLR on POD 8 of the first stage increased to 510.96 mL (FLR/TLV: 38.9%, FLR/SLV: 49.3%, FLR/BW: 0.84%), with a 69.48% hypertrophy. No serious complication happened. The patient was discharged 7 days after the second stage. Until follow-up on POD 60, no tumor recurred.

**Conclusion:** As an effective, safe, simple and ‘non-touch’ technique, which could provide a less aggressive modification of the ALPPS procedure with more oncological efficacy, the laparoscopic anterior approach ALTPS could achieve sufficient hypertrophy of the FLR in several days. A proper expansion of the indications for the procedure is safe and feasible in HCC patients with cirrhosis.

**Benign HPB Diseases**

APHPB-0683

**INCREASED PREVALENCE OF GALLBLADDER & PANCREAS AND LOWER GI TRACT ABNORMALITIES IN PATIENTS WITH PRIMARY BILIARY CIRRHOSIS**

M. Basaranoglu1, M. Yuksel1, M. Ozdemir2, A. A. Erbag3, G. Nessar4, N. Turhan5, O. Coskun6, A. Aksoy6 and Z. Bilge6

1Gastroenterology, Baskiladem University, Istanbul, Turkey; 2Radiology, Turkiye Yuksek Ihtisas Hospital, Istanbul, Turkey; 3Surgical Oncology, Turkiye Yuksek Ihtisas Hospital, Ankara, Turkey; 4Gastrointestinal Surgery, Turkiye Yuksek Ihtisas Hospital, Ankara, Turkey; 5Pathology, Turkiye Yuksek Ihtisas Hospital, Ankara, Turkey; 6Gastroenterology, Turkiye Yuksek Ihtisas Hospital, Ankara, Turkey

**Objectives:** It was reported that involvement of the gallbladder (GB) & pancreas and lower gastrointestinal (GI) tract is rare in patients with primary biliary cirrhosis (PBC). Our aim was to find the prevalence of these involvements.

**Methods:** We evaluated our PBC clinic’s records. We used US to show GB and pancreas abnormalities. Lower GI tract abnormalities were evaluated by colonscopy and rectoscopy. Patients with recent onset dyspepsia were used as a control group.

**Results:** Of the 82 patients with PBC, 62 had documented US results. There were 61 patients as a control group. 8.1% in PBC vs. 8.1% in controls (p > 0.05). All gallbladder abnormalities (p > 0.05); gallbladder polip, 1.6% in PBC vs. 4.9% in controls (p > 0.05); gallbladder sludge & stone, 14.5% in PBC vs. 22.6% in PBC vs. 9.8% in controls (p > 0.05); gallbladder sludge & stone, 14.5% in PBC vs. 22.6% in controls (p > 0.05); gallbladder wall thickening, 6.5% in PBC vs. 10.4% in controls (p > 0.05); gallbladder abnormalities 43.5%
Malignant HPB Diseases

APHPB-0684

EMPLOYMENT OF DIGITAL GENE EXPRESSION PROFILING TO IDENTIFY POTENTIAL PATHOGENIC AND THERAPEUTIC TARGETS OF FULMINANT HPB HEPATIC FAILURE

E. Chen1, H. Tang1, D. Y. Gong1 and L. Bai1
2Center of Infectious Diseases, West China Hospital of Sichuan University, Chengdu, China

Objectives: To investigate the precise gene expression profile and their interactions association with FHF.

Methods: We detected the digital gene expression profile (DGEP) by high-throughput sequencing in normal and FHF mouse liver, and the candidate genes and potential targets for FHF therapy were verified. And the FHF mouse model was induced by D-Galactosamine (GalN)/lipopolysaccharide (LPS).

Results: Totally 12,727 genes were detected, and 3551 differentially expressed genes (DEGs) were obtained in FHF mouse liver. In FHF mouse liver, many of those DEGs were identified as differentially expressed in metabolic process, biosynthetic process, response to stimulus and response to stress, etc. Similarly, pathway enrichment analysis in FHF mouse liver showed that many significantly DEGs were also enriched in metabolic pathways, apoptosis, chemokine signaling pathways, etc. Considering the important role of nuclear factor-kappa B (NF-κB) in metabolic regulation and 16 delicate balance between cell survival and death, several DEGs involved in NF-κB pathway were selected for experimental validation. As compared to normal control, NF-κBp65 and its inhibitory protein IκBz were both significantly increased, and NF-κB targeted genes including tumor necrosis factor α (TNFα), inducible nitric oxide synthase (iNOS), interleukin-1β, chemokines CCL3 and CCL4 were also increased in hepatic tissues of FHF. In addition, after NF-κB was successfully pre-blocked, there were significant alteration of hepatic pathological damage and mortality of FHF mouse model.

Conclusion: This study provides the globe gene expression profile of FHF mouse liver, and demonstrates the possibility of NF-κB gene as a potential therapeutic target for FHF.

Transplantation

APHPB-0685

CD47 BLOCKADE REDUCES ISCHEMIA REPERFUSION INJURY AND IMPROVES SURVIVAL IN A RAT LIVER TRANSPLANTATION MODEL

Z. Xiao1 and W. Chapman2
1Hepatic Surgical Center, Tongji Hospital, Wuhan, China; 2Transplantation Department, Washington University, Saint Louis, USA

Objectives: Orthotopic liver transplantation (OLT) remains the standard treatment option for non-responsive liver failure. Given that ischemia reperfusion injury (IRI) is an important impediment to the success of OLT, new therapeutic strategies are needed to reduce IRI. We try to investigate whether blocking the CD47/TSP-1 inhibitory action on NO signaling using a monoclonal antibody specific to CD47 (CD47mAb400) reduces IRI in liver grafts.

Methods: Syngeneic OLT was performed using Lewis rats. Control IgG or CD47mAb400 was administered to the donor organ at procurement or to both the organ and the recipient at the time of transplant. Serum transaminases, histological changes of the liver and animal survival were assessed. Oxidative stress, inflammatory responses and hepatocellular damage were also quantified.

Results: A significant survival benefit was not achieved when CD47mAb400 was administered to the donor alone. However, CD47mAb400 administration to both the donor and recipient increased animal survival after. The CD47mAb400 treated group showed lower serum transaminases, bilirubin, oxidative stress, TUNEL staining, caspase-3 activity and proinflammatory cytokine expression of TNF-α, IL-1β and IL-6.

Conclusion: CD47 blockade with CD47mAb400 administered both to the donor and the recipient reduced liver graft IRI in a rat liver transplantation model. This may translate to decreased liver dysfunction and increased survival of liver transplant recipients.

Benign HPB Diseases

APHPB-0686

A PROSPECTIVE EVALUATION OF LAPAROSCOPIC CHOLECYSTECTOMY AS DAY-CASE SURGERY (DCLC) IN QUEEN ELIZABETH HOSPITAL SABAH – A FEASIBILITY STUDY

W. Ooi1, S. Sharifuddin2 and R. Jarmin3
1General Surgery, Hospital Queen Elizabeth 1, Kota Kinabalu, Malaysia; 2Hepatobiliary Unit, Hospital Queen Elizabeth 1, Kota Kinabalu, Malaysia; 3Hepatobiliary Unit, Universiti Kebangsaan Malaysia, Kota Kinabalu, Malaysia

Objectives: This study aimed to examine the feasibility of introducing Laparoscopic Cholecystectomy as day-case surgery in our centre by measuring successful same day discharges, conversion rate, readmission rate and analyzing factors leading to overnight admission rate; hemorrhage, bile leak, pain, post-op nausea/vomiting,
social-economic and technical factor; Education level and Number of surgical ports and patient satisfaction.

**Methods:** This is a prospective observational cohort study conducted over 1 year. Surgery was performed by single surgeon. Upon discharge they were reviewed in clinic in 1 week and 6 weeks time. Patient satisfaction survey was conducted and all data recorded from case notes. Analysis was done using SPSS software.

**Results:** Thirty patients were recruited with inclusion rate of 20%. Female accounted for 63% and median age was 40. 18 of patient were from within Kota Kinabalu while the remaining from district. 90% had secondary or lower education level. Symptomatic cholelithiasis make up 76% of the diagnosis. Conversion rate was 10%. The mean operating time for all patients was 52.3 min (SD ±22.71) meanwhile the operating time for successful LC surgery was 48.3 min (SD ±14.57). There were no readmissions for complications nor operative complications during the study. Total of 12 patients had pain & vomiting post-operatively and 1 patient had acute urinary retention. There were no post-operative complications such as bleeding, bile leak or SSI. 83% of the patient was successfully discharge on the same day.

**Conclusion:** DCLC is a safe, highly successful surgery and it is feasible to be performed in our institution in Sabah state.

## Benign HPB Diseases

**APHPB-0687**

### MOST LIVER RELATED DEATHS IN INDIA ARE CAUSED BY ALCOHOL: AN AUDIT OF LIVER MORTALITY FROM TERTIARY CARE CENTER IN NORTH INDIA

A. Kumar¹, V. Gupta¹, P. Sharma¹ and A. Arora¹

**Gastroenterology, Sir Ganga Ram Hospital, New Delhi, India**

**Objectives:** Alcohol, hepatotropic viruses, and non-alcoholic steatohepatitis (NASH) are the most important causes of liver related deaths. The distribution of these causes among Indian patients dying of liver disease is unknown. This information will help in prioritizing healthcare efforts in preventing liver related deaths in India.

**Methods:** Records of all consecutive patients who had surgery for malignant obstructive jaundice secondary to perianpillary or pancreatic head tumors from August 2002 to November 2012. Data compared between patients who had PBD (Drainage-group) and surgery alone (Surgery-group). The effect of Duration of PBD on the POC and incidence of bacteriobilia was studied. Receiver operating characteristic (ROC) curve analysis was used to delineate an optimal duration for PBD.

**Results:** The Drainage-group showed a significantly high incidence of positive intra-operative bile-cultures (p = 0.0001) and Biliary-sepsis (p = 0.0001) compared to Surgery-group. The ‘Duration of Drainage’ affects the incidence of positive intra-operative bile-cultures (p = 0.024) and Biliary-sepsis (p = 0.025). The ROC curve analysis for the predictive value of ‘Duration of Drainage’ on the incidence of positive intra-operative bile-cultures showed the area under the curve was 0.758 (95% CI 0.596 – 0.920), for biliary-sepsis it was 0.745 (95% CI 0.590 – 0.900). Drainage beyond 26 days is associated with higher incidence of positive intra-operative bile cultures (Sensitivity 51.6%, Specificity 88.9%) and biliary sepsis (Sensitivity 51.9%, Specificity 92.3%).

**Conclusion:** PBD is associated with a significantly higher incidence of bacteriobilia and biliary sepsis. Hence, it should be used with caution only in selected cases. We recommend limiting the duration of PBD to 26 days in such cases.

---

© 2015 The Authors

HPB © 2015 Americas Hepato-Pancreato-Biliary Association

HPB 2015, 17 (Suppl. S2), 25–266
Benign HPB Diseases
APHPB-0689

PANCREATICODUODENECTOMY FOR BENIGN AND PREMALIGNANT CONDITIONS: THE IMPACT ON QUALITY OF LIFE AND LONG TERM OUTCOMES

S. I. Wijerathne1, N. C. H. Tan1, A. W. C. Kow1, K. K. Madhavan1, S. K. Y. Chang1 and S. G. Iyer1
1Division of Hepatobiliary and Pancreatic Surgery, National University Hospital, Singapore, Singapore

Objectives: The incidence of pancreaticoduodenectomy (PD) performed for benign and premalignant conditions is increasing. Our aim was to identify the long term outcomes and quality of life (QoL) for patients who undergo PD for benign or premalignant conditions.

Methods: Retrospective case series in a single institution. Patients underwent open PD from 2002 to 2012 for benign and premalignant conditions included. Clinical records assessed to identify patients who required long-term dietary, pancreatic enzyme, vitamin and iron supplements. Patient’s weight-gain, development of anaemia, Diabetes-mellitus and other complications during the follow-up were recorded. Phone interview with patients was done using the EORTC QLQ-C30 version 3.0 questionnaire to assess their QoL.

Results: 16 patients (12.1% out-of total 132 patients who underwent PD) with 7-males and 9-females with mean age of 56 years (range 38–80) included. Common histology findings were IPMN (5), ampullary adenoma (3), solid-pseudopapillary neoplasm (2) and serous-cystadenoma (2). One patient had PD for trauma related injury. 5(31.2%) patients required pancreatic-enzyme supplements, 3(18.7%) patients developed anaemia, 2 (12.5%) of them required iron and 1(6.2%) required VitaminB12 supplements. 5(31.2%) patients had weight-loss ≥7 kg during 6–24 months post-operatively and 4 of them required dietary supplements. All patients were alive at 3-years follow-up and none of them developed Diabetes mellitus. The results for global health, emotional and social functioning scales were superior to the reference values available in literature for ‘all cancers’.

Conclusion: Patients who undergo PD for benign or premalignant conditions can have nutritional, enzyme or hormonal deficiencies which require attention thus may benefit from a multi-disciplinary approach to their follow-up which may further improve QoL.

Transplantation
APHPB-0692

HUMAN MESENCHYMAL STEM CELL STIMULATED BY TUMOR NECROSIS FACTOR-ALPHA PRODUCE GROWTH FACTOR RECEPOTRS

M. Ayatollahi1, Z. Sahraeen2, R. Yaghobi1, M. Kaviani2 and B. Geramizadeh1
1Transplant Research Center, Shiraz University of Medical Sciences, Shiraz, Iran; 2Department of biology, Zanjan Islamic Azad University, Zanjan, Iran

Objectives: Acute hepatic failure, despite recent therapeutic advances, remains associated with significant morbidity and mortality. Recent evidence indicated that insulin-like growth factor 1 receptor (IGF-I R) is involved in liver regeneration upon activated by insulin-like growth factor1 (IGF-I). We hypothesized that inflammatory cytokines activate liver progenitor cells to induce IGF-I/ IGF-I R signaling pathway.

Methods: Bone marrow of healthy donors was aspirated from the iliac crest. The adherent cells expanded rapidly and maintained with periodic passages until a relatively homogeneous population was established. The identification of these cells was carried out by differentiation potential into osteocyte and adipocyte. The MSCs were treated by 1 ng/mL, and 10 ng/mL of tumor necrosis factor-α (TNF-α) for 2, 10, 24, and 48 h. Untreated MSCs were used as control. Real time polymerase chain reaction (RT-PCR) was used to evaluate the expression of IGF-I R in all cell-groups.

Results: Flow cytometric analysis, and the differentiation potential into osteoblast and adipocytes showed that more than 90% of human MSCs which were isolated and expanded were positive by specific markers and functional tests. RT-PCR analysis indicated increase IGF-I R expression in MSCs treated by 1 ng/mL of TNF-α after 10 h incubation.

Conclusion: The data presented in this study, reflects increase expression pattern of IGF-I R in the human MSC upon in vitro-TNF-α stimulation, may be used for clinical stem cell therapy and liver regeneration.

Malignant HPB Diseases
APHPB-0693

LAPAROSCOPIC HEPATECTOMY USING A NEW DEVICE WITH SOFT COAGULATION

M. Yasunaga1, T. Shirahama1, Y. Nomura1, Y. Goto1, Y. Maruyama1, H. Sakai1, R. Kawahara1, H. Horiuchi1 and K. Okuda1
1Surgery, Kurume University School of Medicine, Kurume, Japan

Objectives: Liver resection has dramatically evolved over the years. Laparoscopic Hepatectomy (LH) is gradually a recognized alternative to open surgery. However, because of difficulties in techniques and control of bleeding, Laparoscopic Hepatectomy was not widely accepted as standard therapy, especially in Pure Laparoscopic Hepatectomy (PLH). This study was conducted to evaluate the efficacy of the new devices and our surgical outcomes in Laparoscopic Hepatectomy.
Methods: Between April 2005 and May 2014 at Kur-ume University Hospital, 102 patients underwent laparoscopic hepatectomy for HCC, including 40 patients with Pure laparoscopic surgery, 62 patients with laparoscope assisted surgery (Hybrid).

Results: Liver resection was carried out with the SonosurgX (brade type) or CUSA using a new suction with soft coagulation. Forty patients underwent PLH. The median size of tumor was 21.4 mm, median operation time and blood loss was 286.4 min and 204.2 g. The median duration of hospitalization was 9.8 days. One, three, five year disease free survival rate: 97.8%, 31.4%, 23.6%. Three, five years survival rate: 94.0%, 81.0%. Postoperative complications occurred in 7 patients including PV thrombus in 5, ileus in 1, liver infarction (S3) in 1.

Conclusion: Laparoscopic hepatectomy with these effective devices could be done safely toward standardization of PLH.

Benign HPB Diseases
APHPB-0694
SINGLE-INCISION LAPAROSCOPIC CHOLECYSTECTOMY IN ACUTE CHOLECYSTITIS: WHAT IS THE CONVERSION RATE?
C. Tay1, S. G. Iyer2, A. Kow2, K. Madhavan2 and S. K. Y. Chang2
1Surgery, NUHS, Singapore, Singapore; 2Department of Surgery, NUHS, Singapore, Singapore

Objectives: Acute cholecystitis is a relative contraindication to single-incision laparoscopic cholecystectomy (SILC). With the more matured development in SILC technique in recent years, we report our experience of managing acute cholecystitis with SILC.

Methods: 232 benign gallbladder cases managed by SILC were retrospectively studied. Cases with clinical and histological features of acute cholecystitis were identified. Patient’s demographics, biochemical and radiological findings, operating time, degree of inflammation observed intraoperatively, conversion rate and complication during follow up were recorded and analysed. We further compared the operating time of SILC and conventional laparoscopic cholecystectomy (CLC) in acute cholecystitis cases and identify the minimal cases required to achieve similar operating time as CLC.

Results: 30 cases with acute cholecystitis were identified. 15, 3 and 12 cases with mild, moderate and severe inflammation to the gallbladder respectively. No significant difference in patient’s demographics, pre-operative biochemical and radiological results are found between the 3 groups. Operating time (91 min) and conversion rate (25%) are significantly higher in severe inflammation group. 3 (10%) cases required conversion to CLC, no open conversion required. 13 cases of SILC were required to achieve similar operating time as CLC in acute cholecystitis. No bile duct injuries, port-site hernia or wound infections were observed.

Conclusion: SILC for acute cholecystitis is safe and feasible in experienced hands with acceptable operating time, conversion rate (10% to CLC) and morbidity rate. A randomized controlled trial is needed to further evaluate the surgical outcomes of SILC for acute cholecystitis.

Malignant HPB Diseases
APHPB-0695
LONG-TERM ONCOLOGICAL SAFETY OF MINIMALLY INVASIVE HEPATECTOMY IN CIRRhotIC PATIENTS WITH HEPATOCELLULAR CARCINOMA: A CASE-CONTROL STUDY
C. Tay1, S. G. Iyer2, A. W. C. Kow2, K. Madhavan2 and S. K. Y. Chang2
1Surgery, NUHS, Singapore, Singapore; 2Department of Surgery, NUHS, Singapore, Singapore

Objectives: Minimally invasive hepatectomies (MIH) for patients with hepatocellular carcinoma (HCC) is technically challenging, especially with large posteriorly located tumours or a background of liver cirrhosis. This is a case-control study of patients with HCC who have either undergone minimally invasive (MIH) or open hepatectomies (OH). Most of these patients have a background of liver cirrhosis compared to other studies.

Methods: 60 patients were divided into 2 groups, 30 underwent MIH and 30 underwent OH for HCC resection. The patients in both groups were matched for extent of tumour resection, age and cirrhosis status. Patient bio data, risk factors of HCC and all oncological data were studied

Results: Negative resection margins were achieved in 97% of patients in both groups. The mean blood loss during surgery was significantly lower in the MIH group compared to the OH group (361 vs. 740 mL, p = 0.04). Hospitalization is significantly shorter in MIH group (7 vs. 11 days, p = 0.04). 8 patients (27%) in the MIH group and 13 patients (43%) in the OH group developed HCC recurrence (p = 0.17). No statistically significant difference demonstrated in 5 years disease-free survival, 3 year and 5 year overall survival.

Conclusion: MIH is a feasible curative treatment for patients with HCC and liver cirrhosis. Patients undergone MIH had less intraoperative blood loss and shorter length of stay. MIH has been successfully performed for large posteriorly located tumours up to 12 cm in size.

APHPB-0696
SYNCHRONOUS VERSUS METACHRONOUS RESECTION IN PATIENTS WITH COLORECTAL CANCER AND SYNCHRONOUS LIVER METASTASIS
C. Tay1, S. G. Iyer2, A. W. C. Kow2, S. K. Y. Chang2 and K. Madhavan2
1Surgery, NUHS, Singapore, Singapore; 2Department of Surgery, NUHS, Singapore, Singapore

Objectives: About 20% of patients with colorectal cancer (CRC) have liver metastasis (LM) at diagnosis, liver
and colorectal resection remains the only curative option now. Various strategies such as neoadjuvant chemotherapy, portal vein embolization have been used to increase the resectability of LM with good results. However, there is no evidence up to date to support whether synchronous or metachronous resection of LM during the time of colorectal surgery have better oncologic outcomes.

Our study aims to compare the outcomes between patients undergoing synchronous and metachronous resection of colorectal liver metastasis.  

Methods: We retrospectively reviewed 22 patients who had CRC with synchronous LM at diagnosis and underwent either synchronous (Group 1) or metachronous (Group 2) resection of their LM from 2006 to 2012 at our institute.  

Results: 22 patients were studied. There was no statistical difference in total operating time, blood loss, blood transfusion, complication rate. The mean operative time was 354 min in Group 1 versus 450 minutes in Group 2 (p=0.024). The median hospital stay was 10 days and 13 days (p < 0.05). No statistically difference in 3 year and 5 year overall survival and recurrence free survival between group 1 and 2.  

Conclusion: Synchronous liver resection including major liver resections for CLC liver metastasis can be safely performed with no increased morbidity and mortality. Synchronous resection offers advantage in terms of lower hospital stay and operative time without compromising oncologic outcomes.

APHPB-0697  
AROS IS A SIGNIFICANT BIOMARKER FOR BOTH SHORT- AND LONG-TERM PROGNOSIS IN NON-CIRRHOTIC HCC  
1Surgery, Keimyung University Dongsan Medical Center, Daegu, Korea; 2Bioscience, ChosBioscience, Daejeon, Korea; 3Surgery, Ajou University, Suwon, Korea; 4Science & Technology, Pohang University, Pohang, Korea; 5Microbiology, Pukyong National University, Busan, Korea; 6Surgery, Sungkyungkwan University, Busan, Korea  

Objectives: Despite a low risk of liver failure and preserved liver function, non-cirrhotic HCC has poor prognosis. To improve clinical outcomes of the curative-intent treatment in non-cirrhotic HCC, identification of prognostic factors accompanied by new treatment strategies are needed. In the current study, we evaluated AROS as a prognostic biomarker in non-cirrhotic HCC.  

Methods: mRNA levels of AROS was measured in tumor and non-tumor tissues derived from 283 non-cirrhotic HCC patients. Relationships between clinical characteristics and AROS expression were analyzed using Chi square and Fisher’s exact test. The prognostic significance of AROS expression was analyzed using Kaplan–Meier curves and Cox regression models.  

Results: AROS was significantly up-regulated in tumors irrespective of tumor stage and BCLC stage. Additionally, recurrent tissues revealed higher average levels of AROS than non-recurrent tissues for follow-up times of 2 and 5 years and the differences were statistically significant. High mRNA levels of AROS were associated with tumor stage, BCLC stage, AFP level, vascular invasion, tumor size, and portal vein invasion. HCC patients with higher AROS levels showed higher recurrence and shorter DFS for both short-term and long-term compared to those with AROS-low group. Cox regression analysis demonstrated that AROS is a significant predictor for recurrence and DFS along with large tumor size, tumor multiplicity, vascular invasion, and poor tumor differentiation which are the known prognostic factors.  

Conclusion: Our findings on AROS as a prognostic biomarker could be helpful for designing a strategy for the effective treatment and management of non-cirrhotic HCC.

APHPB-0698  
A PROPENSITY SCORE-MATCHED CASE-CONTROL COMPARATIVE STUDY OF LAPAROSCOPIC AND OPEN LIVER RESECTION FOR HEPATOCELLULAR CARCINOMA  
K. Ahn1, K. J. Kang1, Y. H. Kim1, T. S. Kim1, T. J. Park1 and T. J. Lilm1  
1Surgery, Keimyung University Dongsan Medical Center, Daegu, Korea  

Objectives: The aim of this study was to compare the perioperative and long-term oncologic outcomes of laparoscopic liver resection (LLR) and open liver resection (OLR) for single hepatocellular carcinoma in case controlled patients groups using propensity score.  

Methods: Between January 2005 and February 2013, 292 patients underwent surgical resection for HCC. Patients of 202 patients who underwent surgical resection for initial treatment for single mass were enrolled. These patients were divided into 2 groups according to the method of operation: Laparo group (patients who underwent LLR) and Open group (patients who underwent OLR). To correct different demographic and clinical factors in two groups, propensity score matching was used at 1:1 ratio and finally, 102 patients were enrolled in this study, 51 patients in each group. Preoperative baseline variables were well balanced in both groups. There were no differences of extent of surgery and rate of anatomical resection between two groups. With the exception of shorter postoperative hospital stay in Laparo group than that of Open (8.2 days vs. 12.3 days, p = 0.004), there were no significant differences in perioperative, pathological and long-term outcomes. The 5- year overall survival rates were 80.1% in Laparo group and, 85.7% in Open group, respectively (p = 0.173) The 5-year disease-free survival rates were 67.8% in Laparo group and 54.8% in Open group, respectively (p = 0.519).  

Conclusion: Laparoscopic liver resection for HCC is safe and long-term oncologic outcomes were compara-
ble to those who underwent open liver resection in selected patients.

**APHPB-0699**

**PROGNOSTIC FACTORS OF INTRAHEPATIC CHOLANGIOCARCINOMA**

K. S. Ahn¹, K. J. Kang¹, Y. H. Kim¹ and T. S. Kim¹
²Surgery, Keimyung University Dongsan Medical Center, Daegu, Korea

**Objectives:** The aim of this study was analyzing prognostic factors of intrahepatic cholangiocarcinoma after surgical resection.

**Methods:** Between January 2001 and February 2013, 78 patients underwent curative surgical resection for intrahepatic cholangiocarcinoma. Demographics and patient disposition, perioperative results, histopathological results, long term survival were analyzed retrospectively.

**Results:** There was male dominant and mean age was 60.5 years old. In 65 patients (89.4%), tumor was single and mean tumor size was 5.9 cm. Mass forming type was most common (75.6%). After surgical resection, 5-year overall and disease-free survival rate was 50% and 21.8% respectively. On univariate analysis, presence of portal vein tumor thrombus, microvascular invasion and high CEA level were poor prognostic factors. On multivariate analysis, presence of portal vein tumor thrombus, microvascular invasion and high CEA level were poor prognostic factors.

**Conclusion:** Surgical resection for intrahepatic cholangiocarcinoma offers the best opportunity for long-term survival. Presence of portal vein tumor thrombus, microvascular invasion and high CEA level were poor prognostic factors.

**Benign HPB Diseases**

**APHPB-0700**

**MANAGEMENT OF HEPATOCELLULAR ADENOMA: RECENT ADVANCES**

S. Agrawal¹, S. Agrawal², T. Arnason³, S. Saini², S. Jain⁴ and J. Belghiti⁵

¹Hepatobiliary and Pancreatic Surgery Department of Surgical Oncology, Indraprastha Apollo Hospitals, New Delhi, India; ²Division of Abdominal Imaging and Intervention Department of Radiology, Massachusetts General Hospital and Harvard Medical School, Boston, Massachusetts, USA; ³Department of Pathology, Massachusetts General Hospital and Harvard Medical School, Boston, Massachusetts, USA; ⁴Surgical Oncology, Vythid Institute of medical sciences, Bangalore, India; ⁵Hepatobiliary and Pancreatic Surgery Department of Surgical Oncology, Beaumoin Hospital University of Paris, Clichy, France

**Objectives:** Hepatocellular adenoma (HCA) is a rare benign liver neoplasm that occurs predominantly in young women with a history of prolonged use of oral contraceptives (OCs). Surgical resection is considered because of the risk of hemorrhage in 25% and of malignant transformation in 5% of patients with HCA.

**Methods:** HCA is a heterogeneous disease comprising 3 subtypes with distinct molecular and complication profiles. The inflammatory or telangiectatic subtype is at increased risk for hemorrhage, the β-catenin-activated subtype is at increased risk for malignant transformation, and the hepatocyte nuclear factor-1α-inactivated or steatotic subtype is at the least risk for complications. One-third of the patients with HCA have multiple tumors on imaging with no increased risk of complications. Magnetic resonance imaging is the modality of choice for the diagnosis and subtype characterization of HCA. Percutaneous core needle biopsy is of limited value because the therapeutic strategy is based primarily on patient sex and tumor size.

**Results:** Systematic resection of HCA is recommended in male patients owing to the higher incidence of malignant transformation, and surgical excision in women should be reserved for tumors 5 cm or larger associated with an increased risk of complications. Transarterial embolization is the initial treatment for HCA complicated by hemorrhage.

**Conclusion:** Cessation of hormonal therapy and radiologic surveillance in women with HCA tumors smaller than 5 cm shows that the vast majority of HCA remains stable or undergoes spontaneous regression. Pregnancy should not be discouraged in the presence of HCA, however, frequent sonographic surveillance is recommended.

---

© 2015 The Authors
HPB © 2015 Americas Hepato-Pancreato-Biliary Association

HPB 2015, 17 (Suppl. S2), 25–266
Results: EUS-TD was performed 4 to 29 [average 14] days after the operation. The duration of postoperative hospital stay was 8 to 49 [median 24] days and the duration of hospital stay after EUS-TD was 10 to 38 [median 19.1] days. Two patients needed repeat-drainage within 2 weeks after the first procedure for tube obstruction and septum formation in the cavity. One patient with severe diabetes needed third drainage for recurrent pseudocyst 2 years after the first operation. Clinical success defined as resolution of fluid collection was achieved in 6 of 7 patients (86%). No serious perioperative complications were observed.

Conclusion: Although associated with a high rate of repeat drainage, EUS-TD is a safe, minimally invasive, and useful method for early drainage, which seems to be a good alternative to percutaneous drainage.

Malignant HPB Diseases
APHPB-0703

INCIDENTALLY CONFIRMED GALLBLADDER CANCER AFTER CHOLECYSTECTOMY: SINGLE CENTER EXPERIENCE

C. Park1

1Surgery, Gamgneung Asan Hospital University of Ulsan College of Medicine, Gangneung, Korea

Objectives: Gallbladder (GB) cancer is the disease of the serious mortality rate. In as many as 50% of cases, GB cancers are detected at pathologic report after cholecystectomy for benign GB disease. This study described that incidentally detected gallbladder cancer (iGBC) after cholecystectomy in single center.

Methods: Out of 4629 cholecystectomy surgeries performed from 1998, January to 2014, March. In their cases, 73(1.57%) cases were confirmed GB cancer by pathologic analysis. We excluded 17 cases for study because of other causes. We would analysis 73 cases for clinical features, and 56 cases for disease free survival (DFS), overall survival (OS) and prognostic factors for iGBC.

Results: On 73 patient’s clinical features, mean age is 68.4± 11.53. 41(56.2%) cases are female. GB perforation during operation is a risk factor of recurrence (p = 0.041), but is not risk factor of survival (p = 0.074). Patients of pT2 (n = 37) and pT3 (n = 7) had been performed variable operation, but DFS and OS are no difference by types of operation (p > 0.05).

In multivariable analysis, old age (>65), lymph node metastasis, moderate or poor differentiation, and presented lymphovascular invasion are the significant prognostic factor of recurrence and survival (p < 0.05).

Conclusion: iGBC should be suspicious patients with old age (>65), anemia or hypertension, and severe cholecystitis or GB empyema. In the presence of these risk factors, surgeons should perform cholecystectomy without GB perforation or bile spillage and prepare to perform an adequate R0 resection according to the cancer stage. In our study, lymph node metastasis is more important than tumor depth for patient’s outcome.

Benign HPB Diseases
APHPB-0704

UTILITY OF THE SHORT TYPE DOUBLE BALLOON ENDOSCOPE FOR MANAGEMENT OF BILIARY STONES IN PATIENTS WITH ALTERED GASTROINTESTINAL ANATOMY

M. Shimatani1, M. Takaoka1, M. Tokuhara1, T. Mitsuyama1, K. Kato1, S. Miyamoto1, F. Inoue1, H. Miyoshi1, T. Ikeura1 and K. Okazaki1

1The Third Department of Internal Medicine, Kansai Medical University, Osaka, Japan

Objectives: We described our experience and data of DB-ERCP for management biliary stones and provide our standard technique for DB-ERCP using a short type DBE.

Methods: Between February 2006 and February 2014, we performed ERCP with the use of a short type DBE for biliary stones in 111 patients with various anatomic variations (181 procedures; 104 procedures (63 patients) for Roux-en-Y reconstruction (R&Y), 74 procedures (46 patients) for Billroth II gastrectomy (BII), 3 procedures (2 patients) for double tract reconstruction (DT)), and evaluated the technique.

Results: Deep insertion of the short DBE to the papilla was successful in 180 of the 181 procedures (99.4%). The success rate was 99.0% (103/104) for R&Y, 100% (74/74) for BII, 100% (3/3) for DT. Deep biliary cannulation was successful in 175 of the 180 procedures (97.2%). The success rate was 97.1% (100/103) for R&Y, 97.3% (72/74) for BII, 100% (3/3) for DT. Therapeutic intervention was achieved in all of the 175 procedures of successful deep cannulation (100%). Complications occurred in 12 of the 181 procedures (6.6%). The complication rate was 4.8% (5/104) for R&Y, 9.5% (7/74) for BII, 0% (0/3) for DT.

Conclusion: ERCP by a short type DBE is highly effective and safe in patients with altered gastrointestinal anatomy, especially in patients with Roux-en-Y reconstruction. Occurrence of complication is within an acceptable range, however it is remarkable that it occurs more frequently in patients with BII unexpectedly.

Benign HPB Diseases
APHPB-0705

COLORECTAL LIVER METASTASECTOMY BENCHMARK IN A TERTIARY CENTER IN SAUDI ARABIA

F. Al-Alem1, R. E. Mattar1, A. Alsharabi1, F. Alsaif and M. Hassanain

1General Surgery, King Khalid University Hospital, Riyadh, Saudi Arabia; 2Oncology, McGill University Health Center, Montreal, Canada

Objectives: The incidence of colorectal cancer in Saudi Arabia is rising, being the most common cancer in the male population. Almost 50% of patients develop metastases targeting the liver, not only mostly, but also initially. Liver surgery has demonstrated a great impac-
ton survival, but with considerable risks for morbidity and mortality. In our institution, liver surgery is young, thus in this study we aim to evaluate our experience in colorectal hepatic metastasectomy.

**Methods:** Retrospective analysis of prospectively collected data was done on our Hepato-Pancreato-Biliary (HPB) database on consecutive colorectal cancer hepatic metastasectomy cases performed from 2007 to 2014.

**Results:** 27 patients underwent 30 liver resections for colorectal cancer metastasis. Mean age was 54.93 years. Males constituted 19 cases. 26 resections were major resections; 14 formal right, 4 left, 4 extended right, 1 extended left, and 7 non-anatomical. Mean operative time was 345.7 min. Preoperative portal vein embolization was needed in 6 patients. Three patients died within 60 days of surgery; all fulfilled the 50:50 liver dysfunction criteria. Average follow-up period was 14.2 months. Recurrence was documented in 15 patients, with the median disease free period being 12.1 months. Three patients underwent a redo hepatectomy, 2 developed recurrence within 8 months. Median overall survival was 32.9 months.

**Conclusion:** Liver resection is a feasible option in our center with acceptable survival rates. Attention should be given to reduce the risk of postoperative liver dysfunction, as it is a major contributor to early mortality, by utilizing parenchyma preserving surgical options as possible.

**APHPB-0706**

**PANCREATICOGASTROSTOMY THROUGH AN ANTERIOR GASTROTOMY IN PANCREATICODUODENECTOMY**

J. W. Park¹ and S. K. Lee¹

¹Surgery, Daejeon St. Mary’s Hospital College of Medicine The Catholic University of K, Daejeon, Korea

**Objectives:** Postoperative pancreatic fistula is the leading cause of death and morbidity after pancreaticoduodenectomy. However, the best reconstruction method to reduce occurrence of fistula is debated. Pancreaticogastrostomy (PG) has recently been reappraised as a more secure procedure over pancreaticojejunostomy (PJ). In this study we describe our technique of PG after PD: one layer continuous suture method through an anterior gastrostomy.

**Methods:** We retrospectively analyzed early surgical outcomes in 9 consecutive patients who underwent this PG after pancreaticoduodenectomy by a single surgeon between August 2012 and August 2014. PG was completed with one layer continuous suture through the retracted anterior gastrostomy.

**Results:** The patients consisted of 4 men and 5 women, with an average age of 66.4 years. Of the 9 patients, 6 patients had a soft and the remaining 3 had a firm pancreatic texture. The mean pancreatic duct size was 5.1 mm and the mean operating time was 591 min. The mean blood loss was 862.5 mL and the mean duration of postoperative hospitalization was 21.7 days. There were 1 patient with abdominal fluid collection needed drainage and 3 patients with wound problem with conservative care. And delayed gastric emptying was developed in 3 patients then they recovered with conservative care. There were no hospital mortality and no grade B or C pancreatic fistula.

**Conclusion:** In our experience, this technique is simple to perform and it has several advantages over the conventional PG or PJ: it could be less traumatic to the pancreatic stump and more secure suture is possible due to good vision through anterior gastrostomy.

**APHPB-0709**

**ENDOSCOPIC SNARE PAPILLECTOMY OF AMPULLARY NEOPLASMS: LATE COMPLICATION AND OUTCOMES**

N. Okano¹, Y. Igarashi¹, S. Hara¹, K. Takuma¹, I. Kamata¹, Y. Kishimoto¹, T. Mimura¹ and K. Ito¹

¹Division of Gastroenterology and Hepatology

Department of Internal Medicine, Toho University Omori Medical Center, Tokyo, Japan

**Objectives:** Recently, endoscopic snare papillectomy has been performed to treat ampullary neoplasms. We assessed outcomes and late complications of endoscopic snare papillectomy for ampullary neoplasms.

**Methods:** Subjects were 57 patients, 28 males and 29 females, with ampullary neoplasms who were performed endoscopic snare papillectomy. Recurrence and late complication were evaluated 1 week, 3-6 months, 1 year and every 2 years after procedure.

**Results:** The pathological diagnosis was an adenoma in 30 patients, carcinoma in adenoma in 10, carcinoma in 11, a carcinoid tumor in 1, and regenerative atypia or hyperplasia in 5. Recurrence was noted in 1 patient with an adenoma, 1 with a carcinoma in adenoma, and 4 with a carcinoma. Endoscopic snare papillectomy had a success rate of 97% (29/30) in treating adenoma, 90% (9/10) in treating carcinoma in adenoma, 55% (6/11) in treating carcinoma, and 100% (1/1) in treating a carcinoid tumor; overall, its success rate was 88% (50/57). Late complications were choledochitis in 2 patients (4%), severe pancreatitis in 1 (2%), common bile duct stones in 1 (2%), stenosis of the bile duct orifice in 1 (2%), stenosis of the pancreatic duct orifice in 3 (5%), and stenosis of both the bile duct and pancreatic duct orifices in 2 (4%). 3 patients with stenosis of the bile duct orifice and 2 patients with stenosis of the pancreatic duct orifice were improved endoscopically.

**Conclusion:** Endoscopic snare papillectomy is indicated for treatment of adenomas and carcinomas in adenoma. There is insufficient data on its outcomes in treating carcinomas.
LIVER METASTASES IN COLORECTAL CANCER: A STUDY TO EVALUATE THE OUTCOME AND PREDICTING FACTORS FOLLOWING HEPATIC RESECTION IN SELAYANG HOSPITAL

M. Khairil¹, M. Suryati¹ and R. Krishnan¹
¹General Surgery, Hospital Selayang, Kuala Lumpur, Malaysia

Objectives: To evaluate the outcome and prognostic factors for liver resections for CRLM patients.

Methods: This retrospective analysis included 75 liver resections for CRLM performed at HPB unit, Selayang Hospital from January 2010 to December 2013. Survival outcomes, morbidity and mortality were analyzed. The following prognostic factors were considered: age, gender, race and clinicopathological factors; which include size (>5 cm or <5 cm), number of tumor (solitary or multinodular), surgical margin (negative or positive) and types of resections (major: hemihepatectomy or minor: segmentectomy). Survival rates were estimated according to the Kaplan-Meier method and were compared at univariate analysis using the log-rank test. Differences were considered significant at p < 0.05.

Results: Total of 75 hepatic resections was performed for liver metastases over this three years duration. The mean age was 56 years old and majority were male 45 (60%) and 30 (40%) were female. Ethnic distribution showed a Chinese predominant (53.3%), followed by Malays (25.3%) and Indians (21.3%). The postoperative morbidity and mortality was low; 22.6% and 1.3% respectively. Complications commonly observed were wound infection (8%), followed by pneumonia (5.3%), bile leak (5.3%), pleural effusion (2.7%) and liver failure (1.3%). 26.7% had major resection and 72.6% had minor resection. The univariate analysis revealed a statistically significant difference (p < 0.05) in relation to number of tumors (multi-nodular tumors: 31% and solitary tumors: 20%).

Conclusion: Most of the prognostic factors turned out not to be associated with survival outcomes after hepatic surgery for colorectal liver metastases. Hepatic resection could be performed with low morbidity and mortality with favorable survival outcomes.

Lean Back Technique: Easy to Access Single Port Laparoscopic Cholecystectomy Even by Beginners

T. Yoo¹, Y. J. Jeon¹, A. S. Bak¹, K. C. You¹, Y. J. Keun², J. W. Hwang³, K. I. M. DJ³, J. P. Jung¹, J. Y. Jeon¹ and J. S. Kim¹
¹Surgery, Dongtan Sacred Heart Hospital, Hallym University College of Medicine, HwaSeong-Si Gyeonggi-do, Korea

Objectives: Single port laparoscopic cholecystectomy (SPLC) has been proposed as a minimally invasive surgery with the advantages of better cosmesis and less pain. However, the complicated arrangement of the instruments can cause collision and it makes difficult to provide adequate retraction of the gallbladder. In order to simplify procedures, we have developed new retraction technique called ‘Lean Back technique’, which enable to improve the dissection of Calot’s triangle without collision.

Methods: 39-year-old male with chronic symptomatic cholelithiasis was enrolled under institutional review board protocol to perform single port laparoscopic cholecystectomy. After 2 cm infra-umbilical skin incision was carried out, single port was placed through an open method. One suture was performed at the parietal peritoneum of the Rt. diaphragm and end of the thread was clipped not to fall out from the suture site. Second suture was punctured at the fundus of the gall bladder. The liver was lifted by pulling the thread and the thread was held by two metal clips. This technique provided plenty of retraction to visualize the Gallbladder infundibulum.

Results: SPLC using lean back technique was successfully performed with time of 65 min and the patient was discharged without any complication 2 days after surgery.

Conclusion: Adequate retraction without collision can easily simplify SPLC. Therefore, the described technique for laparoscopic cholecystectomy may enable...
wider use of minimal invasive surgery and further work is also needed to investigate the efficacy of this approach.

Malignant HPB Diseases
APHPB-0713

INTRAPANCREATIC BILIARY CARCINOMA AFTER THE CHELEDOTAL CYST EXCISION
H. Jung1, J. Yun1, C. Kim1 and S. Bae1
1Surgery, Soonchunhyang University Cheonan Hospital, Cheonan, Korea

Objectives: Although the incidence of biliary carcinoma associated with choledochal cyst is high, there are extremely rare reports about cancer development in the remaining intrapancreatic biliary tract in patients who underwent primary excision of the choledochal cyst.

Methods: We present a case of carcinoma associated with the remnant intrapancreatic biliary tract in a 64 year-old woman, 7 years after the initial excision of a choledochal cyst with Roux-en-Y hepaticojejunostomy. She was treated with liver abscesses 6 months ago, 6 years after initial operation. One month later, CT scan was performed. Liver abscesses was cleared but there was an obstructive lesion in the pancreas head, duct dilatation remain and abrupt narrowing at the head. On the pathology, tubulovillous adenoma with suspicious for carcinomatous change were reported.

Results: On the operative findings, we found that Roux-en-Y hepaticojejunostomy was performed by antecolic fashion, and the common hepatic artery was originated in the SMA. Pancreatocoduodenectomy was done. On the pathologic reports, IPMN with invasive carcinoma and the tumor cell in the remnant CBD were diagnosed. She was discharged after POD 12, uneventfully.

Conclusion: Long-term follow-up may be recommended even in patients who have undergone excisional surgery for choledochal cyst, because it is possible that cancer associated with the intrapancreatic biliary tract may develop.

APHPB-0714

PRIMARY MALIGNANT PERIPHERAL NERVE SHEATH TUMOR OF THE LIVER
C. Kim1, H. Jung1 and S. Bae1
1Surgery, Soonchunhyang University Cheonan Hospital, Cheonan, Korea

Objectives: Primary malignant peripheral nerve sheath tumor (MPNST) in a young female patient, not associated with von Recklinghausen's disease is an extremely rare in the liver. We report a case diagnosis based on detailed immunohistochemical and electromicroscopic examination and its follow up.

Methods: Case: a 33-year old female, with a history of surgery for left ovary cystectomy, 8-years ago was admitted in suncheonhyang University Hospital in Cheonan, her chief complaint was a right flank pain for a week. On physical examination, there was no lesion on skin (ex café au lait) with neurofibromatosis type I, and laboratory dated was not specific findings. The CT scan showed with 12.5*11 cm sized mass located at right lobe.

Results: operative findings were a 20*16 cm sized mass on right lobe with invasion on right diaphragm, so right hepatectomy and shaving of diaphragm was done. Histologically, on FNCLCC system, the tumor differentiation score was 3, mitotic count was 8 on 10 HPFs, necrosis was 30% On immunohistochemistry, the tumor cells were strong positive for s-100 protein, bcl-2, vimentin. The patinents discharged at POD#13 without complication and received 30-cycles, 6000 cGy radiation therapy, and doing well 2-month after surgery

Conclusion: Eight cases of malignant hawanoma have been reported in the liver, its prognosis are generally poor and its associated with a highly aggressive courses of recurrence, metastases, and death but only two cases are not associated with von Recklinghausen’s disease, but we first report its follow up including radiation therapy.

Benign HPB Diseases
APHPB-0715

ENUCLEATION FOR BENIGN OR LOW-GRADE MALIGNANT LESIONS OF THE PANCREAS: SINGLE CENTER EXPERIENCE WITH 65 CONSECUTIVE PATIENTS
K. Song1, S. Kim1, D. Hwang1, J. Lee1, K. Park1 and Y. Lee1
1Division of Hepatobiliary and Pancreatic Surgery Department of Surgery, Ulsan University College of Medicine and Asan Medical Center, Seoul, Korea

Objectives: The aim of this study was to evaluate the postoperative clinical outcomes and long-term functional and oncologic results following pancreatic enucleation, and to compare the clinical results of laparoscopic and open enucleation.

Methods: From March 2005 to December 2013, 65 cases of enucleation of benign tumors in the pancreas were identified through a retrospective review of medical records.

Results: Most of the patients were women (73.8%), and the median age was 52.7 years (IQR 43.1–60.9 years old). Median tumor size was 2.5 cm (IQR:1.6–3.8 cm). The most common indication for enucleation was pancreatic neuroendocrine tumor (24, 36.9%). A clinically significant pancreatic fistula (International Study Group on Pancreatic Fistula grade B, C) was reported in 6 patients (9.2%). The patients with tumors of the pancreatic neck had more complications after enucleation than those with tumors at other locations (3/4, 75%). There were no differences of clinical outcomes between open and laparoscopic enucleation groups. At a median follow-up of 58.7 months there was one case of new onset diabetes and there were no recurrences or deaths.

Conclusion: Enucleation is a safe and effective procedure for the treatment of benign and borderline pancreatic neoplasms. It preserves pancreatic function and is not associated with recurrence. The incidence of postoperative complications, including pancreatic fistula, is
Transplantation
APHPB-0716
A RARE INFECTIOUS COMPLICATION AFTER LDLT; SEPTIC SPONDYLODISCITIS CASUED BY METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS (MRSA)
J. Kim1, D. Kim1, J. Jeon1, T. Yoo2, Y. Kwon1, J. Hwang3 and J. Jung4
1Surgery, Hallym University, Seoul, Korea; 2Surgery, Hallym University, Dongtan, Korea; 3Surgery, Hallym University, Chuncheon, Korea
Objectives: Methicillin-resistant Staphylococcus aureus (MRSA) infection frequently complicates the postoperative course of liver transplant recipient. It has been well described that MRSA associated bacteremia, pneumonia and surgical site infection are common. But, MRSA infection manifesting as pyogenic spondylodiscitis is very rare. To our knoweldge, septic spondylodiscitis caused by MRSA after LDLT has not been reported previously.
Methods: A 50-year old male patient underwent LDLT for HBV related cirrhosis using modified right lobe. Immunosuppressive treatment was administered with basiliximab, tacrolimus, corticosteroids and mycophenolate mofetil. He discharged on postoperative 28th day without complications. At one week after discharge the patient readmitted for abdominal pain and high fever. Bile leakage at the anastomosis site was found by ERCP and managed successfully with endoscopic nasobiliary drainage (ENBD). The culture of drained fluid showed MRSA and the patient was treated with vancomycin for 4 weeks.
Results: One month later the patient presented with severe back pain. MRI showed massive spondylodiscitis of lumbar 2–3 spine and paraspinal abscess formation. Our patient was treated by surgical debridement and primary bone graft. MRSA was cultured from the abscess. Postoperatively, the patient received intravenous vancomycin for 2 weeks and revealed satisfactory outcome without any neurological sequelae. Presently the patient is followed up without rejection and other complications
Conclusion: MRSA infection after liver transplantation is common and somtimes fatal. Remote site infection is rarely seen and very fatal unless treated in early course. High suspicion of MRSA infection is required in the recipient with previous biliary complications.
Benign HPB Diseases
APHPB-0717
A SIMPLE AND INEXPENSIVE MODEL FOR PREDICTING SEVERE CIRRHOSIS IN VIRAL HEPATITIS PATIENTS WITH PORTAL HYPERTENSION
G. Yuan1, W. Zhang1, L. Zhang1 and X. Chen1
1Hepatic Surgery, Tongji Hospital, Wuhan, China
Objectives: The severity of liver cirrhosis could be underestimated by surgeons before they operate on some liver cirrhosis patients according to CTP classification or MELD score. In this study, we tried to study non-invasive methods for subcategorizing cirrhosis according to the Laennec system, which may help surgeons to establish optimum treatment strategies.
Methods: 52 viral hepatitis patients with portal hypertension were included. Clinical characteristics were collected from routine laboratory tests. A size of 1 x 1 cm2 liver specimens were collected from quadrante lobes by wedge biopsy during laparotomy for portal hypertension within 2 weeks after admission. The severity of liver cirrhosis was assessed according to Laennec system after Masson-trichrome staining. The relationship between clinical characteristics and the severity of liver cirrhosis was analyzed by univariate and multivariate analysis.
Results: The main cause of cirrhosis is hepatitis B virus infection (65.4%) in this cohort. 38.5% patients are severe cirrhosis (stage 4C). Age, white blood cell count (WBC), lymphocyte count, AST, ALP, and AFP were identified as predictors of severe cirrhosis by univariate analysis. By multivariate analysis with the significant variables from the univariate analysis, only WBC and ALP had independent predictive value of severe cirrhosis, the odds ratio was 2.79 and 1.045, repectively. A simple model consisting of WBC and ALP was made according to multivariate analysis, which shows a diagnostic value of 0.78.
Conclusion: A simple model consisting of WBC and ALP can predict severe cirrhosis in viral hepatitis patients with portal hypertension, which may help surgeons to establish optimum treatment strategies.
APHPB-0718
OPTION OF BILIARY DRAINAGE FOR SURGICAL MANAGEMENT OF HEPATOLITHIAS
X. P. Geng1
1General Surgeon, The First Affiliated Hospital of Anhui Medical University, Hefei, China
Objectives: To investigate the option of biliary drainage for surgical management of hepatolithiasis.
Methods: The clinical data of 146 patients with hepatolithiasis, who were admitted to the First Affiliated Hospital of Anhui Medical University from March 2006 to June 2014, was analyzed retrospectively. These patients were divided into biliary enteric drainage group and T tube drainage group according to the function of sphincter of Oddis.
Results: There were no significant differences of the hepatolobectomy rate, intraoperative blood loss, intrapop-
Malignant HPB Diseases
APHPB-0719

PRIMARY SYNOVIAL SARCOMA OF LIVER WITH SYT-SSX2 FUSION TRANSCRIPT: A CASE REPORT
J. Chang¹, B. Zhang¹ and X. Chen¹
¹Hepatic Surgery, Tongji Hospital Tongji Medical College Huazhong University of Science and Tech, Wuhan, China

Objectives: A 43-year-old man, who complained of fatigue, nausea, and abdominal fullness, was diagnosed with monophasic primary synovial sarcoma of the liver. CT showed a large tumor mass extending from the right lobe of the liver. The tumor was resected and histopathology revealed spindle cell sarcoma. This case represents the first time where confirmed SYT-SSX2 fusion transcript is present and used to definitively diagnose this condition.

Methods: A right partial hepatectomy was performed with resection of the tumor. Immunohistochemical staining and cytogenetical (RT-PCR).

Results: IHC showing tumor cells expressed vimentin, CD99, and Bcl-2, but were immune negative for cytokeratin. Cytogenetics was crucial in ruling out differential diagnoses, and ruling in the monophasic subtype of synovial sarcoma due to an observed SYT-SSX2 reciprocal translocation between chromosome 18 and X.

Conclusion: Primary hepatic synovial sarcoma is an extremely rare neoplasm. Clinical and imaging investigation is necessary to exclude alternative primary sources and metastatic sarcoma. A definitive diagnosis requires histological morphology, detailed IHC staining and cytogenetical analysis. A balanced chromosomal translocation t(X;18)(p11.2;q11.2) is found in the majority of synovial sarcomas resulting in a chimeric transcript, SYT-SSX. The role of this transcript is unclear. Surgical excision with clear margins and adjuvant chemoradiotherapy is the currently accepted treatment.

Benign HPB Diseases
APHPB-0720

EVALUATION OF CHEMOTHERAPY INDUCED LIVER INJURY IN PATIENTS WITH COLORECTAL CANCER LIVER METASTASES
J. Shim¹, S. Yun¹ and H. Seo¹
¹Department of Surgery, Pusan National University Hospital, Busan, Korea

Objectives: Adjuvant chemotherapy improves survival in patients with curatively resected colorectal cancer. But up to 50% of patients will develop hepatic metastases during their course of disease. Surgical resection of liver is the only potentially curative treatment for patients with liver metastases. The aim of this study is to show that commonly used chemotherapeutic drug are associated chemotherapy induced liver injury which was recognized to impair the function of the remnant liver.

Methods: Between June 2007 and March 2012, data of 29 liver resection performed for colorectal liver metastases were analyzed, retrospectively. Eleven patients had liver resection without chemotherapy, while 18 patients had history of adjuvant, neoadjuvant chemotherapy before liver resection. We analyzed patients’ clinical data, histopathology of resected liver and postoperative outcome between two groups.

Results: In the comparison of patients’ clinical date, there was no statistically significant difference between nonchemotherapy group and chemotherapy group. Whereas, patients in the chemotherapy group had higher pre-operative ALT (p = 0.043), lower PLT level (p = 0.032) compared to patients in the non-chemotherapy group. In the comparison of histopathology of resected liver, there was no significant difference in the fibrosis stage and sinusoidal dilation, but in the chemotherapy group, necro-inflammatory grade was significantly high (p = 0.018). In the comparison of post-operative outcomes, there was no significant difference in post-operative AST, ALT, normalization of AST and ALT and amount of drain.

Conclusion: In this study, chemotherapy group had high ALP and low PLT which is related to necrosis of hepatocytes and liver dysfunction, and had high necro-inflammatory grade which is related to severe steatohepatitis.

APHPB-0721

INTRAPANCREATIC MIRIZZI’S SYNDROME TREATED SUCCESSFULLY BY LASER LITHOTRIPSY: A CASE REPORT AND LITERATURE REVIEW OF THERAPEUTIC MODALITIES
T. Kabir¹ and T. J. Tan¹
¹General Surgery, Khoo Teck Puat Hospital, Singapore, Singapore

Objectives: Mirizzi’s syndrome (MS) describes the phenomenon of a stone impacted in the cystic duct causing extrinsic compression of the common bile duct (CBD), leading to obstructive jaundice (Type 1).
Methods: Congenital anatomic variants of the cystic duct occur commonly, with low insertion of the cystic duct into the distal third of the CBD (intrapancreatic insertion) present in about 9–11% of patients.

Results: We discuss an interesting case of a 41 year old lady with Intrapancreatic MS. She presented initially with acute cholangitis. During Endoscopic Retrograde Cholangiopancreatography (ERCP), she was found to have a cystic duct with a very low take off, and 2 stones just above the papilla. Balloon sweeps were unsuccessful in removing these and a so biliary stent was inserted for decompression. She subsequently underwent a laparoscopic cholecystectomy and transcystic CBD exploration using a Dormier basket, but we were unable to extract the impacted stones. The procedure was converted to open and a Dormier basket and Fogarty balloon were used but these were again unsuccessful. Finally we performed laser lithotripsy under vision via a transcystic choledochoscopy, and the stones were fragmented successfully and flushed into the duodenum.

Conclusion: MS has traditionally been managed surgically. Laparoscopic cholecystectomy can be considered for Type 1 but an Open approach is more appropriate for Type 2, where the calculus fistulates from the cystic duct into the CBD.

More recently, various Endoscopic modalities have also been described for the treatment of MS and we present a literature review of the different methods available.

Malignant HPB Diseases

APHPB-0722

PALLIATIVE RESECTION FOR NEUROENDOCRINE TUMOURS WITH LIVER SECONDARIES – A REPORT OF THREE CASES

S. Sankareswaran1, P. Thirumaraichelvan1, A. Bennet Duraisamy1, R. Prabhakaran1, A. Amudhan1, D. Kannan1 and S. M. Chandramohan1

1Institute of Surgical Gastroenterology, Madras Medical College, Chennai, India

Objectives: Malignant neuroendocrine tumours of the GIT with liver metastasis are rare presentations. The survival as well the quality of life can be improved with palliative resections. This is one of the few indications where palliative cytoreduction of the liver is justified.

Methods: Case 1: 62 years old female patient found to have a growth in the antropyloric region, ulcers in D1 and D2 with bilobar liver metastasis and serum gastrin level of 9000 pg/mL. Patient underwent distal gastrectomy and right hepatectomy. HPE confirmed gastrinoma.

Case 2: 47 years old male patient was referred as a case of a hydatid cyst of right lobe of liver. He underwent resection of segment 5 and 6. HPE revealed moderately differentiated neuroendocrine tumour. Thorough post-operative workup could not identify primary.

Case 3: 24 years old gentleman presented with symptoms of pancreatitis. On evaluation found to have 2.8 cm lesion in the body of the pancreas. On laparotomy found to have bilobar liver metastasis. Serum chromogranin was 4655 ng/mL. He underwent palliative distal pancreatectomy.

Results: All patients had uneventful recovery in the postoperative period. Case 1 is on followup for 8 months and is on high dose PPI and symptom free. The remnant lesion in the liver has not increased. Case 2 is on followup for 5 months with good quality of life. Case 3 is on followup for 13 months without any recurrence symptomatically and radiologically.

Conclusion: palliative resection of primary and secondary of malignant neuroendocrine malignancy have good palliation and QoL atleast in the shortterm. Palliative cytoreduction can be safely undertaken in experienced hepatobiliary centres.

Benign HPB Diseases

APHPB-0723

SURGICAL OPERATION FOR PANCREATIC DUCT STONES: ANALYSIS OF 46 CASES


1Hepatopancreatobiliary Surgery, The First Affiliated Hospital of Anhui Medical University, Hefei, China; 2Hepatopancreatobiliary Surgery, the Second Affiliated Hospital of Anhui Medical University, Hefei, China

Objectives: To analyse the effects of surgical treatment for pancreatic duct stone.

Methods: The clinical data of 46 patients with pancreatic duct stone treated from January 2008 to January 2013 were retrospectively analyzed.

Results: The most common symptoms were abdominal pain in 42 patients, diarrhea in 4 patients, diabetes in 6 patients, hematuria increased amylase in 4 patients, high level of CA199 in 9 patients and pancreatic cancer in 5 patients. 4 patients had history of acute pancreatitis. All patients were diagnosed with pancreatic duct stones by preoperative imaging. The stones were located in the head of the pancreas in 21 cases, 17 cases of pancreatic body and tail, and 8 cases of the full pancreas. 7 cases had single stone, 28 cases had 2–3 stones, and the 11 cases had more than three stones. Pancreatic lithotomy plus pancreaticojejunostomy was performed in 33 cases, pancreateoduodenectomy in 8 and resection of the body and tail of pancreas plus splenectomy in 5 cases. 6 patients had postoperative complications, the rate of complication was 13.0% and no case was died. 3 patients had residual stones, with a rate of 6.5%. Follow-up time was 3 months to 57 months. 39 cases were followed up. All patients had a pain relief rate of 85.7%, Stone recurrence occurred in 2 patients, with a rate of 4.3%.

Conclusion: Surgery is an important treatment for pancreatic duct stones, and the treatments should be given based on the situations of different patients.
ROBOT-ASSISTED HEPATECTOMY AND COMPLETE EXCISION OF EXTRAHEPATIC BILE DUCT FOR A TYPE IV – A CHOLEDODHAL CYST

S. Cho1
1Surgery, CHA Bundang Medical Center, Gyeonggi-do, Korea

Objectives: Complete removal of dilated biliary tree is regarded as inevitable in choledochal cyst for malignant potential. However, technical difficulty and high risk of postoperative complications as well as the various presentations of the disease make a surgical option for type IV-A cyst still challenging and controversial. We report a case of a type IV-A choledochal cyst treated by robot-assisted approach.

Methods: A 41-years-old healthy female was admitted with intra- and extrahepatic cysts incidentally found in routine check-up. Preoperative studies showed two large cystic dilatations of main biliary tract at the hilum and distal common bile duct as well as multiple cystic dilatations of the left intrahepatic duct. Right anterior and posterior hepatic ducts and left hepatic duct drained into the large hilar cyst individually. Anomalous pancreatico-biliary duct union was combined. Robot-assisted complete excision of distal bile duct and left hepatectomy with hemi-caudate lobectomy were performed. The right anterior and posterior hepatic ducts were securely isolated and resected with a help of real-time fluorescent image using an ICG. Roux-en-Y hepaticojunostomy was made with ductoplasty of the two openings of intrahepatic ducts. The specimen was retrieved through pfannelstial skin incision.

Results: The total operation time was 540 min. The estimated amount of intraoperative bleeding was 300 mL. She discharged on postoperative 7th day in good condition and was followed up for 4 months without any complication.

Conclusion: With the advantages of robot system, complicated procedures for type IV-A choledochal cyst can be performed safely as minimally invasive approach.
p = 0.210), and hospital stay (12.56 ± 3.21 d vs. 10.17 ± 3.15 d; p = 0.018).

Conclusion: This study provided evidences that ω-3 fatty acid-based parenteral nutrition improves postoperative recovery for cirrhotic patients with liver cancer following hepatectomy.

Malignant HPB Diseases
APHPB-0727

DIAGNOSTIC CHALLENGES AND MANAGEMENT OF METASTATIC PANCREATIC NEUROENDOCRINE NEOPLASMS
V. Mansukhani1, D. Davra1, R. Shah1 and P. Jagannath1
1Surgical Oncology, Lilavati Hospital & Research Centre, Mumbai, India

Objectives: Pancreatic neuroendocrine neoplasm (P – NEN) are rare slow growing neoplasms with diverse clinical presentations. Most pancreatic NENs are well differentiated (G1 and G2) nonfunctional tumors. Heterogenous nature of NEN makes it difficult to standardize a treatment strategy for the primary and liver metastases.

Methods: A single institutional retrospective review of 79 cases was done from 2000 to 2014. Only histologically proven cases were included. Staging was done by CT scan and/or Somatostatin receptor based scan, ultrasound and FDG-PET scan.

Results: CT scan was the most widely used imaging technique for the localization of the primary and staging of the disease (n = 48). Out of 76 patients, 45 underwent surgery of which 7 had been operated for liver metastasis (Metastectomy with RFA = 4, Hepatectomy = 3) achieving an R0 resection. In the study curative R0 resection was achieved for 38, curative R1 for 2 and palliative for 4. The overall survival of all the operated cases was observed to be 4 years.

Conclusion: Surgery for metastatic PNETs may be curative or palliative with a potential of cure in some cases and prolongation of survival and amelioration of symptoms in the majority of patients.

Malignant HPB Diseases
APHPB-0728

MULTIDISCIPLINARY APPROACH IN THE MANAGEMENT OF COLORECTAL LIVER METASTASES
V. Mansukhani1, D. Davra1, R. Shah1 and P. Jagannath1
1Surgical Oncology, Lilavati Hospital & Research Centre, Mumbai, India

Objectives: Colon cancer is the third most commonly diagnosed cancer. Approximately 50% of patients diagnosed with colorectal cancer will develop liver metastases over the course of their disease. Liver resection remains the most important modality in the treatment of colorectal liver metastases but variety of other minimally invasive surgical and medical options are available like thermal ablative techniques (e.g., radiofrequency ablation, microwave ablation, cryotherapy), chemoembolization, or radioembolization, chemotherapy and targeted therapy.

Methods: A retrospective review of 36 cases of colon cancer was done, who were treated in our institute between January 2010 and April 2014. Only the histologically proven adenocarcinomas of colon which were metastatized to the liver were included. Out of 36 patients, 21 (58%) patients with synchronous and 15 (42%) with metachronous liver lesions were included. The evolution of the criteria for resectability has resulted in more patients being offered a hepatectomy. This is further augmented with the utilization of adjuncts to liver resection, including portal vein embolization and local ablative techniques. Two-stage Hepatectomy is also being used to increase resectability.

Results: Out of 36 patients with liver metastasis, 18 underwent Metastectomy, 2 Segmentectomy, 6 Hepatectomy, 1 Extended Hepatectomy after liver augmentation with portal vein embolisation and 2 RFA. Remaining 7 patients underwent chemotherapy because of extensive bilobar disease.

Conclusion: The management of colorectal liver metastases has evolved over the past few years. More patients are now offered surgery. Two-stage Hepatectomy is also being used to increase resectability. A multidisciplinary approach is essential in the management of metastatic colorectal liver metastasis.

Malignant HPB Diseases
APHPB-0729

METACHRONOUS CANCER OF GALLBLADDER AND PANCREAS. A DOUBLE WHAMMY
V. Kandiah1, M. Shari3, D. Klokol1 and S. Mokhtar2
1General Surgery, Queen Elizabeth Hospital, Kota Kinabalu, Malaysia; 2Hepatobiliary, Hospital Selayang, Kuala Lumpur, Malaysia

Objectives: Metachronous cancer of the gallbladder and pancreas or biliary tract is an extremely rare pathology with fewer than 20 cases reported in the world medical literature. We report a rare case of 52-year old lady with metachronous adenocarcinoma of Gallbladder and Head of Pancreas. Four years previously she underwent curative surgery for Ca Gallbladder in one of the private medical centers in Malaysia and after the operation she was under close surgical follow-up. She presented to us with jaundice and abdominal pain. Initially we suspected metastasis, however CT-scan showed a tumor in the Head of Pancreas. Subsequently we did for her a pylorus-preserving pancreato-duodenal resection. The result of pathological examination of specimen was moderately-differentiated adenocarcinoma of pancreas. We managed to obtain the specimen from the first surgery and sought a review from the pathologist in our hospital. The first surgery’s specimen was well-differentiated adenocarcinoma of Gallbladder with negative margins hence proving the Head of Pancreas tumor was a metachronous lesion. She has been under our follow up for the last 2 years and is currently free from recurrence.
Keywords: Gallbladder cancer, Pancreatic cancer, Metachronous cancer, pancreaticobiliary maljunction, double biliary tract cancer.

Methods: As stated above.

Results: As stated above.

Conclusion: As stated above.

Transplantation
APHPB-0730

DE NOVO MALIGNANCY WITHIN 1 YEAR AFTER LDLT; A CASE REPORT
J. Kim¹, D. Kim¹, J. Jeon¹, T. Yoo², Y. Kwon², J. Hwang³ and J. Jung³
¹Surgery, Hallym University, Seoul, Korea; ²Surgery, Hallym University, Dongtan, Korea; ³Surgery, Hallym University, Chuncheon, Korea

Objectives: Biliary obstruction is a common morbidity after liver transplantation. The most common cause of biliary obstruction is a biliary anastomotic failure. When the patient with hepatocellular carcinoma (HCC) underwent liver transplantation and developed jaundice, the recurrence of HCC is suggested as the main cause. Here we describes a case of biliary obstruction due to pancreatic head cancer at 11 months after LDLT.

Methods: The patient was a 54-year-old male with HBV related cirrhosis and hepatocellular carcinoma (HCC) within Milan criteria. Our patient previously underwent liver resection for HCC two times in 1998 and 2002. Recurrence of HCC revealed and LDLT using the right lobe from his 23-year-old daughter was performed in December 2008. Immnosuppressive treatment was administered with basiliximab, tacrolimus, corticosteroids and mycophenolate mofetil. He discharged on postoperative 28th day with uncomplicated course.

Results: At eleven months after operation, the patient showed icterus. Ampullary stricture below the anastomosis site was found by MRCP and finally diagnosed in adenocarcinoma with endoscopic biopsy. Pylorus-preserving pancreaticoduodenectomy (PPPD) was performed for complete resection of pancreatic head cancer on 14 months after LDLT. The patient revealed favorable outcomes except for superior mesenteric arterial (SMA) pseudoaneurysmal bleeding controlled by endovascular graft postoperatively. However, the patient died from recurred pancreatic head cancer two year after LDLT.

Conclusion: Our experience suggest that high suspicion of de novo malignancy is needed for the patient with HCC who undergo liver transplantation.

Benign HPB Diseases
APHPB-0731

PANCREAS DIVISUM TREATED BY PYLOROUS-PRESERVING PANCREATODUODENECTOMY; A CASE REPORT
J. Kim¹, D. Kim¹, J. Jeon¹, T. Yoo², Y. Kwon¹, J. Hwang³ and J. Jung³
¹Surgery, Hallym University, Seoul, Korea; ²Surgery, Hallym University, Dongtan, Korea; ³Surgery, Hallym University, Chuncheon, Korea

Objectives: Pancreas divisum is a rare anatomical variant, and the incidence is reported as 7% of autopsies. Most cases remain without clinical symptoms. However, some patients develop symptoms of recurrent pancreatitis. When pancreatitis occurs, the goal of management is the improvement of the dorsal pancreatic drainage. This may be achieved by endoscopic or surgical approaches. The indication and method of surgical options are not clearly determined. A case of young male patient with pancreas divisum is presented, who underwent pylorus-preserving pancreateoduodenectomy (PPPD) and achieved clinical improvement.

Methods: A 29 year-old male patient admitted due to severe epigastric pain lasting for 3 months. The patient suffered from indigestion, postprandial discomfort and vomiting since childhood. The patient admitted to hospital due to epigastric pain, nausea and vomiting 5 years ago, and was managed under impression of acute pancreatitis. The imaging studies were done. Under the impression of pancreas divisum the patient underwent PPPD. The head of pancreas showed chronic inflammatory changes. The patient discharged without complications.

Results: Presently the patient is observed at outpatient clinic. Four years after operation, he is well without indigestion and postprandial pain. He gained 3 kg after operation.

Conclusion: In this case, endoscopy could not be introduced through the ampulla, and endoscopic approach failed. Variable methods of operation are suggested by many authors. Currently PPPD is regarded as a safe and effective operation. Considering the patient age, the PPPD is selected for this patient. The long-term result is needed to be evaluated in this patient.

Benign HPB Diseases
APHPB-0732

OUR EXPERIENCES OF LAPAROSCOPIC DEROOFING BY REDUCED PORT SURGERY, INCLUDING SINGLE INCISION SURGERY FOR SYMPTOMATIC LIVER CYST
T. Aoba¹, T. Kato¹ and K. Hiramatsu¹
¹Surgery, Toyohashi-Municipal Hospital, Toyohashi, Japan

Objectives: Laparoscopic deroofing is considered to be appropriate for simple liver cyst due to its minimal invasiveness. Furthermore reduced port surgery, includ-
ing single incision laparoscopic surgery has been attracted due to its cosmetic benefit. We report our experience and indicate its benefit.

Methods: Both of two cases, patients had upper abdominal pain and distension. And their liver cysts were about 150 mm in maximum diameter. The X-Gate® (Ethicon) were placed at the umbilicus using 25 mm incision with two 5-mm trocars and one 12-mm trocar. One of two cases was added another 5-mm trocar on upper abdominal and we used flexible camera in all cases. The Cysts contained about 1000 mL serous liquid. We unroofed and excised the cyst walls using an ultrasonic coagulation incision apparatus.

Results: No postoperative complications occurred and patients were discharged from our hospital 4 days after the surgery. Six months have passed since the operation, and no recurrence of the cyst has been detected. The procedures were excellent from a cosmetic view point of the surgical wound and all patients were satisfied with the procedure.

Conclusion: We should perform adequate use of device to prevent surgical complications, and excise wall of cyst completely to prevent postoperative recurrence of the cyst. Laparoscopic deroofing by reduced port surgery, including single incision surgery for symptomatic liver cyst is an excellent operative procedure in terms of minimal invasiveness and cosmetic. This procedure can be an alternative to conventional deroofing for simple liver cyst.

Malignant HPB Diseases
APHPB-0733

COMPLETELY LAPAROSCOPIC ALPPS USING THE ROUND-THE-LIVER LIGATION TO REPLACE PARENCYHAL TRANSACITION

X. Cai¹, S. Peng², Y. Wang¹ and H. O. N. G. Yu¹
¹Surgery, Sir Run Run Shaw Hospital Zhejiang University, Hangzhou, China; ²Surgery, The Second Affiliated Hospital Zhejiang University, Hangzhou, China

Objectives: To report a modified totally laparoscopic ALPPS in treating patient with HCC complicated with cirrhosis.

Methods: Two patients with HCC underwent totally laparoscopic ALPPS using the round-the-liver ligation to replace parenchymal transaction in the Sir Run Run Shaw Hospital. The first-stage operation included laparoscopic deroofing of the left/right branch of portal vein and execution of a round-the-liver ligation. The second-stage operation, laparoscopic left/right lobectomy, was carried out on the day 11 or day 12 after the first-stage operation.

Results: The two-stage operation was performed successfully on the two patients. They recovered uneventfully. No bile leakage occurred in either of them. The FLR volume increased 94.8% in the first patient on day 9 and 37.9% in the second patient on day 10 after the first-stage operation.

Conclusion: The operation can be performed safely and result in a rapid hypertrophy of liver remnant in patients with HCC complicated with cirrhosis.

Malignant HPB Diseases
APHPB-0734

PYLORUS PRESERVING PANCREATICODUODENECTOMY FOR SUPERAGED (95 YEAR OLD) PERSON WHO HAD PANCREATIC HEAD CANCER INDISTINGUISHABLE FROM GROOVE PANCREATITIS

S. Min¹
¹Surgery, Ewha Woman's University, Seoul, Korea

Objectives: We need consideration for strategy to treat superaged person because modern society is an aging society. I experienced treatment of superaged person for pancreatic head cancer with duodenal obstruction, so I report possibility of radical treatment by major operation for superaged person.

Methods: The patient was 95 year old man. He has hypertension and diabetes mellitus. The low density small lesion at pancreatic head and neck has been found in his abdominopelvic computed tomography (CT) during work up study since 2013. The lesion was slowly increasing and combined duodenal nodular lesion around the ampulla of Vater. Initially, the lesion was considered focal pancreatitis or groove pancreatitis. Recently, he underwent nausea and vomiting due to duodenal obstruction. So, he has been treated with gastroenterostomy bypass surgery because of only one reason of superaged person. However, his condition deteriorated slowly with dyspepsia, anorexia and hyperbilirubinemia. Finally, we decide radical surgery after take consent.

Results: He underwent radical pylorus preserving pancreaticoduodenectomy under general anesthesia. He took the meal at 4th day after operation. He discharged at 19th day after operation without problem. The staging of his cancer was T3, N0, M0. His condition is very good state except mild general weakness. His laboratory results are also normal range with 9.8 U/mL of CA19-9 (preoperative value: 88.6).

Conclusion: I think the age by itself is not contraindication of radical surgery for malignancy although who is superaged person.

Malignant HPB Diseases
APHPB-0735

TOTALLY LAPAROSCOPIC ANATOMICAL RESECTION FOR CENTRALLY LOCATED TUMORS: 4 CASES

W. J. Kim¹
¹Liver Transplantation and Hepatobiliary Division, Asan Medical Center, Seoul, Korea

Objectives: In this report, we present 3 cases of Totally laparoscopic right anterior sectionectomy and 1 case of totally laparoscopic central bisectionectomy.

Methods: Case 1 was 42-year-old man who was preoperatively diagnosed with Hepatocellular carcinoma (HCC) at the border of segment 5 and 8. He was also HBV carrier and Child-Pugh class A liver cirrhosis was noted.
Case 2 was 54-year-old man who was admitted for 3 cm hepatic mass detected by follow-up CT scan for aortic dissection. And Case 3 was 51-year-old man was admitted for 2.3 cm hepatic mass detected by MRI at other general hospital. He was performed liver bx at previous hospital and resulted 'focal atypical hepatocytes proliferation'.

The patient visit our center and he want to further evaluation of hepatic lesion. After 2-month later we rechecked MRI and showed that 3 cm sized lobulating countour that strongly suggestive HCC in the S5.

At last, case 4 was 38-year-old man who was admitted for a hepatic mass located at the border of S4, 5, 8 and rectal mass noted on a health screening test.

**Results:** Operative times for case 1,2,3 and 4 were 405,470,478 and 396 min and estimated blood loss during operations was 545,510,260 and 515 mL. All 4 cases do not necessary transfusion during operations and Patients 1,2,3 and 4 were discharged on postoperative days 9,10,11 and 11 respectively.

**Conclusion:** This cases shows that totally laparoscopic anatomical resection can be safely performed in patients with centrally located tumor (S4,5,8)

**Benign HPB Diseases**

**APHPB-0736**

**INTER- AND INTRA-OPERATOR REPRODUCIBILITY OF POINT SHEAR WAVE ELASTOGRAPHY IN THE EVALUATION OF LIVER ELASTICITY**

M. Tulbe¹ and F. L. Morabe¹

¹Radiological Sciences, National Kidney and Transplant Institute, Quezon City, Philippines

**Objectives:** To assess the reproducibility of point shear wave elastography in the evaluation of liver elasticity by determining the inter- and intra-observer agreement between measurements performed in the same patient.

**Methods:** This is a retrospective study approved by the hospital research ethics committee. One hundred four patients met the inclusion/exclusion criteria. Two independent operators acquired the elastography measurements, in succession, for 10 consecutive measurements each. The second operator was blinded by the results of the first operator. The average value was obtained and assigned its corresponding METAVIR fibrosis stage. All examinations were standardized. Measurements were acquired in the right liver lobe through an intercostal approach, with patient in the left lateral decubitus position.

**Results:** Within operator reliability (INTRAOBSERVER) was excellent at 0.9229 (95% CI) and 0.8963 (95% CI) for Operators 1 and 2, respectively. Overall intraobserver agreement was excellent at 0.9222 (95% CI). Also, differences in liver stiffness did not significantly vary across 10 consecutive measurements. Estimated reliability (INTEROBSERVER) between two operators was poor at 0.24, with 95% CI, which is quite wide. Correlation in liver stiffness evaluation between two operators was significantly low (rho = 0.196).

**Conclusion:** This study shows that INTEROBSERVER differences in point shear wave elastography liver stiffness values do exist, again proving that ultrasound imaging techniques are subject to user dependency. However, it is characterized by high levels of INTRAOBSERVER agreement.
A NOVEL TECHNIQUE FOR LAPAROSCOPIC DISTAL PANCREATECTOMY WITH SPLENECTOMY

M. Aikawa, M. Miyazawa, S. Ishida, Y. Watanabe, K. Okada, K. Okamoto and I. Koyama

Objectives: In laparoscopic distal pancreatectomy with splenectomy, extension of the wound is needed to extract the spleen, as the spleen is larger than the pancreas.

Methods: In the report, we describe a new technique for safe extraction of the distal pancreas along with the spleen, wherein the spleen is stored in the bag under pneumoperitoneum and the pancreas and spleen are then laparoscopically divided.

Results: This technique was employed in three cases. The average total duration of the operation was 398 minutes (range, 317–412) and the average duration of extraction was 64 minutes (range, 31–92). The extracted specimens could be used for pathological staging. No operation-related complications were noted. The patients were discharged from the hospital an average of 9 days (range, 7–27) after the operation.

Conclusion: Through this novel method, we could perform laparoscopic distal pancreatectomy with splenectomy in a safe manner, without extending the wound size to more than 2 cm.

RESPONSE TO TRANSARTERIAL CHEMOEMBOLIZATION MAY SERVE AS SELECTION CRITERIA FOR HEPATOCELLULAR CARCINOMA LIVER TRANSPLANTATION

L. Jianyong, L. N. Yan and W. T. Wang

Objectives: This study sought to extend the inclusion criteria for hepatocellular carcinoma (HCC) liver transplantation (LT), particularly addressing the safety and effectiveness of pre-LT transarterial chemoembolization (TACE).

Methods: Our study included 115 patients with HCC who underwent LT after TACE. The response measured after each TACE session was based on the modified Response Evaluation Criteria in Solid Tumors (mRECIST). Complete response (CR) and partial response (PR) patients were classified into the responder group, while patients with stable disease (SD) and progressive disease were classified into the non-responder group.

Results: The majority of responders could be identified after the first or second TACE sessions (57 cases, 89.1%). Overall survival rates at 1, 3, and 5 years were 95.3%, 89.1%, and 75.0%, respectively, in the responder group, while in the non-responder group (13 cases, 16.4%), the survival rates were 87.2%, 72.6%, and 53.5%, respectively (p = 0.001). In addition, the tumor-free survival rate in the responder group was also higher than in the non-responder group (p = 0.009). In the responder group, a statistically improved long-term outcome was observed in patients whose HCC did not satisfy the Milan criteria (p < 0.05). Univariate and multivariate Cox analyses showed that achieving CR or PR was the best predictor of survival and tumor-free survival following TACE.

Conclusion: The response to TACE, particularly following the first two sessions, primarily and robustly predicted overall and tumor-free survival in HCC patients, particularly those whose HCC did not satisfy the Milan criteria.
APHPB-0741

HEPATECTOMY ON THE PROGNOSIS IN HEPATOCELLULAR CARCINOMA WITH TUMOR RUPTURE

K. Hung1, Y. Chen1, P. Hsieh1, K. Hsieh1, C. Wei1, H. Lee1, S. Chou1, M. Tsai1, C. Hung1 and P. Lee1
1Surgery, E-Da Hospital/I-Shou University, Kaohsiung, Taiwan

Objectives: The current TNM staging systems classify ruptured hepatocellular carcinoma (HCC) as T4 based on insufficient evidence. Ruptured HCC has been associated with the dismal prognosis. Due to this reason, hepatectomy was not usually considered for ruptured HCC. The aim of the present study was to investigate the survival benefit by surgical tumor resection on the patients with ruptured HCC.

Methods: There were 2427 patients with HCC from 2007 to 2012 in E-Da hospital, Taiwan. Ruptured HCC was diagnosed according to abdominal pain, and image study (sonography or CT) with hemoperitoneum. A modified TNM staging classification adjusted from the 7th edition of AJCC/UICC excluded the factor of ‘tumor rupture’. The survival curves using the modified classification were generated and compared to evaluate the survival benefit by surgical tumor resection on the prognosis.

Results: 55 patients with ruptured HCC were diagnosed. The analyses showed that tumor rupture was associated with advanced tumor status (total = 55; Stage I = 14, II = 3, IIA = 19, IIIB = 6, IIIC = 2, IVA = 6, IVB = 5, according to modified AJCC 7th ed). Hepatectomy was done in 11 patients, in which 8 patients were in stage I and 3 patients in stage II. Survival was significantly better in patients received hepatectomy. Instage I, survival in the operative patients were superior to the non-operative group.

Conclusion: HCC rupture itself had anegative impact on survival. Hepatectomy was advised for those resectable patients with ruptured HCC. Further study should be made to give additionalstages to the baseline tumor staging in cases of ruptured HCC.

APHPB-0743

IDEAL SPHERE FOR MING CULTURE CONDITION FOR MAINTAINING A STEMNESS IN HEPATOCELLULAR CARCINOMA CELL LINE

K. S. Kim1, S. O. Min1, S. Y. Park1 and S. W. Lee1
1Surgery, Yonsei University College of Medicine, Seoul, Korea

Objectives: Cancer stem cells are one of the biggest causes of tumor metastasis and recurrence. Sphere formation is culture method of cancer stem cell. In this study, we produced three different types of culture medium for sphere formation of hepatocellular carcinoma cell line.

Methods: Huh7 cells were plated in different culture media allowed for sphere formation. To confirm the stemness characteristics of sphere cells, the proliferation, expression of stem cell markers (Oct4, Nanog, Sox2) of Huh7 sphere-forming cells. And we evaluated the gene expression of cancer stem cells by RT-PCR analysis with EpCAM, Connexin32 and Connexin43 primers and Immunocytochemistry assay with E-cadherin, beta-catenin, CD90, CD133 antibodies on sphere-forming cells. Flow cytometry was provided to confirm stem cell markers and CD133, Connexin32.

Results: Cells in M3 media showed higher level of cell proliferation than in M1 or M2 media cells on 11 days, while M1 media cells exhibited higher level than others on post 20 days. Proliferation of M2 media cells did not improve; consequently, it was impossible to obtain sufficient amount of cell for further analysis. M1 and M3 media cells had similar tendency on expression of cell surface markers. In results of flow cytometry, there were no significant differences between two groups.

Conclusion: Results showed that sphere-forming cells in M1 and M3 media had similar character. So, it is assumed that our growth factor-free medium is more efficient tool for in vitro cultivation of cancer stem cells, because the tool shall be reduced expense for experiments which may occur due to the treatment of growth factors.

APHPB-0744

IMPLANTATION OF ADIPOSE DERIVED STEM CELLS FOR TAILORED THERAPY ON LIVER FIBROSIS

S. O. Lee1, S. O. Min1, S. Y. Park1 and K. S. Kim1
1Surgery, Yonsei University College of Medicine, Seoul, Korea

Objectives: Adipose derived stem cells (ADSCs) were known as the most appropriate mesenchymal stem cells for therapeutical application because of rapid proliferation in vitro and harmless acquisition from patients. This study was tried to grope the effective hepatogenic differentiation using human ADSCs and the new cell implantation for cell therapy on liver fibrosis.

Methods: Hepatogenic induced hADSCs with Activin A, and various growth factors such as HGF, bFGF, EGF and OSM for 20 days expressed the bipotential hepatic precursor genes (Foxy2, CK7, Sox17 and CK19) on low concentration of Col I, and the hepatic specific genes (HNF4α, ALB) on high concentration by RT-PCR analysis. After application of bipotential hepatogenic differentiated hADSCs and non differentiated hADSCs into scaffolds, grafts were implanted into SCID mice which had liver fibrosis by intraperitoneal injection with TAA (thioacetamide) for 6 weeks. Implanted scaffolds were maintained without degradation for 30 days after implantation.

Results: In implantation of hepatogenic differentiated hADSCs applied scaffolds, blood serum albumin significantly increased higher than the datum of non-differentiated hADSCs from post-op 10 days. In comparison with intrasplenic injection, blood serum albumin had higher levels in implantation groups of scaffolds. Also, in results by immunohistochemical and immunofluorescence assay, CD34, VEGF and Ang-1, related with vascularization, were expressed from the membrane of implanted scaffolds to inner space.

Conclusion: In these results, it was affirmed that neovascularization of implanted scaffolds originated by the
ductus hepaticus communis and ductus choledochus – II resection) in 17 (5.9%); previous operations on stomach (Bilroth-syndrome of Mirizzi II – concrements in extrahepatic bile ducts – concrements in the bile ducts. pathology are the anatomic changes and big size concrements of pylorus – stenosis of pylorus – ulcer stenosis of pylorus – syndrome of Mirizzi II – strictures of ductus hepaticus communis and ductus choledochus – in 187 (30.0%); previous operations on stomach (Bilroth-II resection) – in 16 (5.5%); biliodigestive fistula – in 87 (30.0%); big size of ducts, their analysis and classification.

Methods: The results of treatment of 290 patients with the pathology of the biliary system and obturation jaundice have been given.

Results: Endoscopic cholangiography has been applied in 243 (83.8%) patients, papillotomy for the access to ductus choledochus and with the therapeutic aim – in 198 (68.3%). The main reasons for the impossibility of elimination of biliary pathology with the help of ETPI were: changes of anatomy, connected with parapapillary diverticulum, stenosis of papilla and distal part of ductus choledochus, deformation of stomach and duodenum due to inosculation or attendant pathology, ulcer stenosis of pylorus – in 108 (37.2%); big size of concrements in extrahepatic bile ducts – in 87 (30.0%); syndrome of Mirizzi II – in 47 (16.2%); strictures of ductus hepaticus communis and ductus choledochus – in 17 (5.9%); previous operations on stomach (Bilroth-II resection) – in 16 (5.5%); biliodigestive fistula – in 15 (5.2%) patients.

Conclusion: The most frequent reason for impossibility of endoscopic transpapillary interventions in biliary pathology are the anatomic changes and big size concrements in the bile ducts.

Malignant HPB Diseases
APHPB-0746

COMBINATION OF LOCAL DESTRUCTION METHODS IN PRIMARY AND METASTATIC LIVER CANCER TREATMENT
D. Ionkin1, A. Chzhao1 and S. Kungurtsev1
1General Surgery, A.V. Vishnevsky Institute of Surgery, Moscow, Russia
Objectives: to improve treatment outcomes in patients with metastatic and primary liver cancer.

Methods: Combinations:
1. Cryoablation (CA) in pts with HCC (6) and MTS of CRC (3)+percutaneous foci alcoholisation in the p/o period.
2. Liver resection for MTS+CA of surface node located on the branches of the VP (3), on the hepatic vein (1)+RFA.
3. During resection for HCC due we used the following combination: lesion on the periphery was processed using RFA and thereafter subjected to CA (n = 2).
4. Right hemipatectomy with RFA for MTS+CA of subcapsular MTS, located directly on the left branch of the portal vein (1).
5. pRFA for MTS + MBA of metastasis enveloping the right portal vein (2).
6. CA+ a porous-permeable nickel-titanium applicators are justified in their use (4).

It is important that over the last years all patients have subsequently undergone appropriate adjuvant chemotherapy, which in 6 cases was supplemented by regional chemoembolization.

Results: The immediate p/o period in these patients was uneventful. Noted in 2 pts moderate hydrothorax was treated with puncture. Wounds healed by first intention. When monitoring in 2, 4, 6 months there were no signs of continued growth and other manifestations of the cancer progression.

Conclusion: The treatment outcomes in pts with neoplasms of the liver using the local destruction methods, and their combinations, as well as at the liver resection depends on prognosis factors.
Methods: We collected specimens using biopsy forceps for the diagnosis of anastomotic stenosis after cholangiojejunostomy for malignant obstructive jaundice. Shepatic cholangiography provides histopathological samples to guide clinical treatment. We aimed to discuss the feasibility and advantages of this technique in the pathological diagnosis of anastomotic stenosis after cholangiojejunostomy for malignant obstructive jaundice.

Results: Satisfactory specimens were obtained from all patients. Pathological changes in six patients were diagnosed as cicatricial stenoses based on pathological, imaging and laboratory findings. The remaining three pathology-negative patients were proven to be recurrent tumor based by imaging, laboratory and follow-up data. No complications occurred during biopsy, including gastrointestinal hemorrhage or perforation.

Conclusion: Percutaneous transhepatic cholangiobiopsy using biopsy forceps for the diagnosis of anastomotic stenosis after cholangiojejunostomy for malignant biliary obstructive jaundice is easy to perform, safe and has a high sensitivity.

Conclusion: PTC and intraductal radiofrequency ablation combined with biliary stenting for malignant biliary obstruction is safe, feasible and effectively prolongs stent-patency time. A large randomized controlled trial is required to validate this finding.

Benign HPB Diseases
APHPB-0749

PERCUTANEOUS TRANSHEPATIC CHOLANGIOBIOPSY FOR THE PATHOLOGICAL DIAGNOSIS OF ANASTOMOTIC STENOSIS AFTER CHOLANGIOJEJUNOSTOMY FOR MALIGNANT OBSTRUCTIVE JAUNDICE

T. Li1, X. Han1 and Z. H. E. N. Li1

1Interventional Radiology, the First Affiliated Hospital of Zhengzhou University, Zhengzhou, China

Objectives: Cholangiobiopsy during percutaneous transhepatic cholangiography provides histopathological samples to guide clinical treatment. We aimed to discuss the feasibility and advantages of this technique in the pathological diagnosis of anastomotic stenosis after cholangiojejunostomy for malignant obstructive jaundice.

Methods: Using biopsy forceps, we collected specimens from the stenosis site of patients with recurrent jaundice (n = 32) who had previously undergone cholangiojejunostomy for malignant obstructive jaundice.

Results: Stenosis occurred in all patients at the biliary-enteric anastomosis based on percutaneous transhepatic cholangiography, and was the location of the biopsy. Satisfactory specimens were obtained from all patients. The sensitivity was 90.6% (29/32). We obtained tumor tissue in 23 cases and confirmed tumor recurrence. Pathological changes in six patients were diagnosed as fibroplasia and/or inflammation. We considered these cicatricial stenoses based on pathological, imaging and laboratory findings. The remaining three pathology-negative patients were proven to be recurrent tumor based by imaging, laboratory and follow-up data. No complications occurred during biopsy, including gastrointestinal hemorrhage or perforation.

Conclusion: Percutaneous transhepatic cholangiobiopsy using biopsy forceps for the diagnosis of anastomotic stenosis after cholangiojejunostomy for malignant biliary obstructive jaundice is easy to perform, safe and has a high sensitivity.

Malignant HPB Diseases
APHPB-0750

THE CURATIVE EFFECT ANALYSIS OF BILIARY STENT COMBINED ANTI-TUMOR THERAPY FOR EXTRAHEPATIC CHOLANGIOCARCINOMA

J. Ren1, K. Zhang1, M. Zhang1, X. Han1 and G. Huang1

1Interventional Radiology, the First Affiliated Hospital of Zhengzhou University, Zhengzhou, China

Objectives: To discuss the curative effect of biliary stent combined Anti-tumor therapy for extrahepatic cholangiocarcinoma.

Methods: collect the clinical and imaging data of 123 patients who were diagnosed as extrahepatic cholangiocarcinoma by biliary forceps biopsy in percutaneous transhepatic cholangiography (PTC) from January 2013 to march 2014.60 patients of them were treated...
by self-expanding metallic stents with subsequent anti-tumor therapy. They were randomly divided into A?B?C three groups, 20 patients in each group, and artery infusion chemotherapy for A group, particles chain of 125I into biliary tract for B group and combination treatment of A and B group for C group. Meanwhile, we bring 60 patients who only receive biliary stent placement into the study as control group. Observe the operative complication and admission of jaundice of the control group, treatment group and each subgroup that use different therapy, closely follow and compare the 3 months and 6 months of stent patency after the operation.

Results: All patients with postoperative get complete follow-up by outpatient or telephone, the total bilirubin and direct bilirubin of these patients were significantly decreased. The stent patency rate of treatment group and control group for 3 months after operation is 56/60 and 51/62 (p = 0.06), and A?B?C subgroup is 18/20?19/20?19/20 (p = 0.76) respectively. The stent patency rate for 6 months after operation is 42/60?27/62 (p = 0.0032), and A?B?C subgroup is 13/20?11/20?18/20 (p = 0.0477) respectively.

Conclusion: Stent placement with anti-tumor therapy can obviously prolong stent patency time. And between different anti-tumor treatment, comprehensive treatment methods of artery infusion chemotherapy with particles chain internal radiation therapy with metallic stent have more advantages to prolong stent patency time.

APHPB-0751
THE TREATMENT OF MALIGNANT BILIARY OBSTRUCTION BY SELF-EXPANDING METALLIC STENT COMBINED WITH BILIARY STENT
J. Ren1, K. Zhang1, G. Huang1, M. Zhang1, X. Duan1 and X. Han1
1Interventional Radiology, the First Affiliated Hospital of Zhengzhou University, Zhengzhou, China

Objectives: To investigate the feasibility and safety of percutaneous transhepatic biliary endovenous radiofrequency ablation technique for palliative treatment of malignant obstructive jaundice

Methods: To analyze 20 cases patients with unresectable malignant biliary obstruction, 9 of them underwent percutaneous liver puncture biliary tract lumen radiofrequency ablation from the perspective and placed metallic biliary stent; the residual 11 similar cases placed metallic biliary stent only after successful PTC. Then operative complications and remission of jaundice between 2 groups need to be observed and stent patency after percutaneous liver puncture biliary tract lumen radiofrequency ablation 3 months and 6 months should be followed closely.

Results: All patients were followed completely by outpatient or telephone. The stent patency of Percutaneous liver puncture biliary tract lumen radiofrequency ablation was 9/9 and the controlled group was 8/11 (p = 0.218) after 3 months. After 6 months the stent patency was 8/9 and 3/11 (p = 0.02) respectively. During follow-up, 1 case in the group with Percutaneous liver puncture biliary tract lumen radiofrequency ablation died from gastrointestinal bleeding, 1 case in the controlled group died from hepatic failure after 57 days and 1 case died from DIC after 142 days.

Conclusion: The treatment method of Percutaneous liver puncture biliary tract lumen radiofrequency ablation is safe and feasible, and the Preliminary efficacy of self-expanding metallic stent in liquidity is satisfactory, but The treatment method need A large sample randomized controlled studies to verify further.

Benign HPB Diseases
APHPB-0752
COMPARISON OF PERCUTANEOUS TRANSHEPATIC VARICEAL EMBOLIZATION (PTVE) FOLLOWED BY PARTIAL SPLENIC EMBOLIZATION VERSUS PTVE ALONE FOR THE TREATMENT OF ACUTE ESOPHAGOGASTRIC VARICEAL MASSIVE HEMORRHAGE
J. Ren1, X. Duan1, K. Zhang1, G. Huang1, M. Zhang1 and X. Han1
1Interventional Radiology, the First Affiliated Hospital of Zhengzhou University, Zhengzhou, China

Objectives: To compare the efficacy of percutaneous transhepatic variceal embolization (PTVE) followed by partial splenic embolization (PSE) with that of PTVE alone for the treatment of acute massive hemorrhage of esophagogastric varices in patients with cirrhosis unable to undergo alternative procedures

Methods: Sixty-five patients with acute variceal massive hemorrhage were retrospectively studied, including 31 who underwent PTVE/PSE and 34 who underwent PTVE and refused PSE. Recurrent bleeding rate, survival rate, postoperative complications, number of days of hospitalization after PTVE, and outcome were evaluated. Peripheral blood cell counts and hemoglobin levels before and at 1 week and 6, 12, and 24 months after intervention were analyzed.

Results: Cumulative recurrent bleeding rates at 6, 12, and 24 months after intervention in the PTVE/PSE group were 3.2%, 6.7%, and 13.3%, compared with 20.6%, 36.7%, and 53.6%, respectively, in the PTVE group; the difference at each time point was statistically significant (all p < 0.01). There were more cases of ascites and portal hypertensive gastropathy after PTVE than after PTVE/PSE (p < 0.05). Survival rates at 6, 12, and 24 months in the PTVE/PSE group were 100%, 96.8%, and 96.8%, compared with 94.1%, 88.2%, and 82.4%, respectively, in the PTVE group. There were significant differences in peripheral blood cell counts and hemoglobin levels between the PTVE/PSE and PTVE groups at all observed time points (all p < 0.01).

Conclusion: PTVE/PSE not only has long-term efficacy in alleviating hypersplenism, but decreases recurrent bleeding and maintains hepatic reserve in patients with cirrhosis and esophagogastric variceal massive hemorrhage unable to undergo other procedures.
APHPB-0753

OUTCOMES OF THROMBOLYSIS WITH AND WITHOUT PREDILATION OF THE INFERIOR VENA CAVA (IVC) IN PATIENTS WITH BUDD-CHIARI SYNDROME WITH OLD IVC THROMBOSIS

J. Ren1, G. Huang1, K. Zhang1, X. Duan1, M. Zhang1 and X. Han1
1Interventional Radiology, the First Affiliated Hospital of Zhengzhou University, Zhengzhou, China

Objectives: To compare the efficacy of thrombolysis with and without predilation of the inferior vena cava (IVC) for Budd-Chiari syndrome (BCS) with old IVC thrombosis.

Methods: We divided 40 patients with BCS with old IVC thrombosis into 2 groups, group A (n = 21), thrombolysis after dilation of the obstructed IVC and group B (n = 19), thrombolysis without predilation of the obstructed IVC. Thrombolysis was performed via urokinase administration through the dorsal vein of the foot.

Results: Color Doppler ultrasonography at 30 days showed complete resolution of the thrombus in 21 (100%) group A patients and 6 group B patients (31.6%; p < 0.001). Thrombolysis was achieved using a lower dose of urokinase and within a shorter time frame in group A than in group B (p < 0.001).

Conclusion: Thrombolysis after dilation was superior to thrombolysis alone and was safe and efficacious in patients with BCS with old IVC thrombosis.

APHPB-0755

USE OF STREPTOKINASE FOR ENHANCEMENT OF PERCUTANEOUS DRAINAGE OF PANCREATIC NECROSIS: A DOUBLE BLINDED RANDOMIZED CONTROLLED TRIAL

R. Gupta1, R. Gupta4, M. Kang3, D. Bhasin3, M. Khullar4 and R. Singh1
1Surgical Gastroenterology Division Department of General Surgery, Postgraduate Institute of Medical Education & Research, Chandigarh, India; 2Radiology, Postgraduate Institute of Medical Education & Research, Chandigarh, India; 3Gastroenterology, Postgraduate Institute of Medical Education & Research, Chandigarh, India; 4Experimental Medicine, Postgraduate Institute of Medical Education & Research, Chandigarh, India

Objectives: To study safety and efficacy of streptokinase in enhancing percutaneous drainage of pancreatic necrosis.

Methods: Patients of severe acute pancreatitis managed with percutaneous catheter drainage from April 2013 to December 2014 will be included in the trial. Currently, 27 patients have been recruited and randomized to placebo group (PG) & streptokinase group (SG). Patients not responding to percutaneous drainage underwent necrosectomy. Primary endpoints were sepsis reversal and death. Secondary end points were catheter and streptokinase related complications, need for surgical necrosectomy and duration of hospital stay.

Results: There were twenty males and seven female. The mean age was 35.9 years. The most common etiology was alcohol [65.38%]. The modified CTSI, APACHE II and MMS of the two groups at randomization were similar. Sepsis reversal was seen in 7/12 in PG and in 4/13 patients in SG (p = 0.247). Twelve patients expired, seven in SG and five in PG (p = 0.551). Major complications [bleeding, enterocutaneous fistula] occurred in eleven, six in SG and five in PG (p = 0.825). There were no streptokinase related complications. Ten required surgical necrosectomy for sepsis, five in each group while two patients in PG required surgery for bleeding and two patients in SG for colonic perforation. The mean duration of hospital stay after randomization in PG was 25.3 days while it was 19.9 days in SG (p = 0.26).

Conclusion: This is first study of its kind to demonstrate use of streptokinase in pancreatic necrosis and its safety. (Clinicaltrials.gov Identifier: NCT01977118).

Transplantation

APHPB-0757

AN EARLY SINGLE-CENTER EXPERIENCE OF ABO INCOMPATIBLE LIVING DONOR LIVER TRANSPLANTATION: NEW SIMPLIFIED INTRAVENOUS IMMUNOGLOBULIN PROTOCOL WITHOUT LOCAL INFUSION THERAPY

J. Kim1 and D. Choi1
1Department of Surgery, Catholic University of Daegu College of Medicine, Daegu, Korea

Objectives: Since various innovative strategies including rituximab have been introduced, the outcomes of recipients in ABO incompatible (ABO-I) living donor liver transplantation (LDLT) have markedly improved. Thus, ABO-I LDLT can be a feasible therapeutic option for the patient with end-stage liver disease if ABO compatible donor is not available. Herein, we describe 22 cases of ABO-I LDLT with new simplified protocol and compare the outcomes with those in ABO compatible LDLT.

Methods: We analyzed the outcomes via retrospective review of 172 adult LDLT cases including 22 ABO-I LDLT cases from January 2011 to June 2014. The desensitization protocol comprised plasma exchange, rituximab, intravenous immunoglobulin without local infusion therapy. The preoperative anti-ABO antibody was achieved ≤32 by performing plasma exchange. Splenectomy was not performed routinely.

Results: The median MELD score was 16 (range, 8–37) and the initial range of isoagglutinin IgM and IgG titers were 1:4–1:512 and 1:8–1:1024, respectively. The comparisons between two groups showed no significantly differences in demographics, perioperative variables, and survival for patients and grafts. Although significant rebound elevation in anti-ABO titer occurred in three cases, Neither C4d staining in the graft nor clinical signs of antibody mediated rejection (AMR) was not apparent.
in these cases. Moreover, neither diffuse intrahepatic biliary stricture nor anastomotic biliary stricture was encountered at all ABO-I group.

**Conclusion:** Neither definite immunological failure nor biliary stricture occurred in 22 consecutive cases under this desensitization protocol. Therefore, this new simplified protocol could be considered as safe and effective modality to overcome ABO blood type barrier in ABO-I LDLT.

**Benign HPB Diseases**

**APHPB-0758**

**EXTRACELLULAR HISTONES INDICATE DISEASES ACTIVITY AND EXACERBATE INFLAMMATION IN ACUTE LIVER INJURY**

T. Wen<sup>1</sup> and Y. Liu<sup>2</sup>

<sup>1</sup>Beijing Institute of Hepatology, Beijing Youan Hospital affiliated with Capital Medical University, Beijing, China; <sup>2</sup>Department of Liver Diseases, Beijing Youan Hospital affiliated with Capital Medical University, Beijing, China

**Objectives:** Activation of systemic inflammatory responses syndrome (SIRS) may promote acute liver failure (ALF), but the key factors that trigger SIRS in this process are unknown. In this study, we used a murine model of ALF caused by D-galactosamine (GalN) plus lipopolysaccharide (LPS), and human plasma samples from patients with ALF to test a putative inflammatory role of extracellular histones.

**Methods:** Mice were given a lethal dose of GalN/LPS to induce ALF. Hepatic function, liver histology as well as extracellular histones in the plasma of mice were measured. To further check the role of histones related to ALF, exogenous histones and anti-histone neutralized antibody were administered to GalN/LPS-treated mice, respectively. Meanwhile, human plasma samples from ALF patients were analyzed for the levels of circulating histones.

**Results:** GalN/LPS caused severe liver damage in mice, as evidenced by increased ALT levels, massive hepatocyte death. Extracellular histones were found increased notably in GalN/LPS-treated mice and correlated with ALT levels. Exogenous histones demonstrated potent toxic effects by decreasing the survival rate in mice, whereas anti-histone antibody significantly protected mice from death. Similarly, extracellular histones were elevated considerably in the plasma of patients with ALF. It was found that the plasma in ALF patients was cytotoxic to mouse primary hepatocytes and activated mouse NPCs, whereas anti-histone antibody blocked such effects.

**Conclusion:** Extracellular histones may act as a marker indicating the severity of ALF. Besides, histones contribute to liver damage by exacerbating inflammation remarkably and blockade of histones shows potent protective effects, which may become a potential therapeutic target.

**Malignant HPB Diseases**

**APHPB-0759**

**A STUDY OF OTHER PRIMARY CANCER IN PATIENTS WITH TUMORS OF THE MAJOR DUODENAL PAPILLA**

S. Hara<sup>1</sup>, N. Okano<sup>1</sup>, Y. Kishimoto<sup>1</sup>, K. Takuma<sup>1</sup>, K. Ito<sup>1</sup>, T. Mimura<sup>1</sup> and Y. Igarashi<sup>1</sup>

<sup>1</sup>Internal Medicine, Toho University Omori Medical Center, Tokyo, Japan

**Objectives:** Tumors of the major duodenal papilla is similarly reported to be accompanied by the presence of primary cancer in other organs. We studied that the patients with tumor of the major duodenal papilla have other organ’s cancer in our hospital.

**Methods:** 91 patients with a tumor of the major duodenal papilla (48 men, 43 women) who were treated from October 2002 to February 2014. 65 patients were performed endoscopic snare excision and 26 were underwent surgical resection. Multiple primary tumors were defined in accordance with the criteria of Warren et al.

**Results:** Of the 91 patients, 30 were adenocarcinoma, 11 were carcinoma in adenoma, 44 were adenoma, 5 were an endocrine tumor, and 1 was papillitis. 19 were found to have primary cancer in other organs. Of these 19 patients, 8 had synchronous cancer while 11 had metachronous cancer. In 11 patients with metachronous cancer, multiple primary cancer was noted preoperatively in 7 patients and which was noted postoperatively in 4 patients.

**Conclusion:** Tumors of the major duodenal papilla are often accompanied with other organ’s cancer. When patients with tumors of the major duodenal papilla undergo endoscopic snare excision or surgery, they are needed to screening examinations for not only digestive tract but also other organs before or after treatment.

**Benign HPB Diseases**

**APHPB-0760**

**COMBINED MINIMALLY INVASIVE MANAGEMENT OF INFECTED PANCREATIC NECROSIS: A CASE REPORT**

W. Kim<sup>1</sup> and Y. Lee<sup>1</sup>

<sup>1</sup>Surgery, Seonam University Jesus Hospital, Jeonju, Korea

**Objectives:** Infected pancreatic necrosis (IPN) is the most threatening complication of severe acute pancreatitis. Open surgical necrosectomy is still the procedure of choice in the treatment of infected pancreatic necrosis and debridement is usually performed through laparotomy.

**Methods:** A 40-year-old man was referred to surgical department from gastrointestinal department for further treatment of the complication of the acute pancreatitis after endoscopic ampullectomy due to tubular adenoma with severe dysplasia. Computed tomography scans revealed a diffuse acute necrotic collection (ANC) involving the body and tail of the pancreas. The patient received maximal conservative treatment including intensive fluid replacement, enteral and parenteral nutrition after endoscopic pancreatic duct insertion.
The patient’s clinical condition deteriorated during the 4 week of the disease with fever and increased serum C-reactive protein of 28 mg/dL despite of antibiotic therapy, endoscopic pancreatic duct drainage, ultrasono-guided PCD 2 times and PCD drainage for left pleural effusion. The patient condition was not changed with local sepsis.

**Results:** He underwent laparoscopic peripancreatic necrosectomy through mesocolic window. The necrotic debris was removed piecemeal using grasping forceps under the visual guidance of a laparoscope. The post-necrotic cavity was thoroughly irrigated and closed suction drain was left for negative pressure drainage. Postoperatively, the patient’s condition improved and the inflammatory parameters normalized. Patient was discharged on the 35th days after laparoscopic peripancreatic necrosectomy and he remains asymptomatic 4 years after discharge.

**Conclusion:** Combined minimally invasive management of infected pancreatic necrosis is effective.

**APHPB-0761**

**PROSPECTIVE RANDOMIZE CONTROL STUDY OF CLINICAL USEFULNESS OF PROPHYLACTIC ANTIBIOTICS THERAPY IN LAPAROSCOPIC CHOLECYSTECTOMY: PRELIMINARY RESULT**

S. Bae1, H. Yu1, J. Yang1, H. Hwang1, S. Ahn1 and B. Cho1

1Surgery, Chonbuk National University Hospital, Jeonju, Korea

**Objectives:** Laparoscopic cholecystectomy (LCC) is the procedure of generating a low infection ratio, the role of Antibiotics prophylaxis is debatable. We evaluated the usefulness of prophylactic antibiotics during LCC performed.

**Methods:** The clinical features of all patients performed LCC at Chonbuk National University Hospital between April and September 2014 were randomized by comparing them with antibiotic group (n = 49, AG, cefotetan 1 g, 1 dose/prophylactic) and non-antibiotic group (n = 51, NAG) by table of random numbers. The clinical variables were pre- and post-operatively blood test, symptoms and imaging to evaluate whether the infection.

**Results:** There were no significant differences in clinical characteristics between the two groups. One of NAG (1.96%) was fever at 2nd post-operative day (POD). At 14th POD, Three of NAG (5.88%) had symptoms of RUQ pain, 1 patient had a sub-hepatic fluid collection but no bacteria growth in culture and the other 2 patients were just a pain caused by fecal impaction without such findings seem to suspect infection. And 1 patient in NAG (1.96%) had a serous wound discharge at 14th POD, also bacteria were not identified.

There was no significant difference between the two groups in comparison of factors to suspect infection such as fever (≥38 °C), leukocytosis (≥12,000/mm3), Elevation of ESR (>9 mm/h) and CRP (>5 mg/L).

**Conclusion:** In our results, antibiotic prophylaxis is no significant differences in both groups. Therefore it is not necessary to use prophylactic antibiotics during elective laparoscopic cholecystectomy in patients of including criteria, but to confirm this result further studies with more patients and large trials are required.

**Malignant HPB Diseases**

**APHPB-0762**

**THE ALTERNATIVE SOURCE OF ADIPOSE DERIVED STEM CELLS FROM FALCIFORM LIGAMENT**

S. W. Lee1, S. O. Min1 and K. S. Kim1

1Surgery, Yonsei University College of Medicine, Seoul, Korea

**Objectives:** We investigated the aptness as a new type of adult stem cells or adipose derived stem cells (ADSCs) for differentiation into liver therapeutic cells using adipose tissues derived from liver falciform ligaments (LF-ADSCs).

**Methods:** Adult stem cells were isolated from patient’s liver falciform adipose tissues and abdomen subcutaneous adipose tissues. Cells were cultivated in MSCs culture medium. Properties as adult stem cells were proved by flow cytometry, RT-PCR analysis, immuno-cytochemistry assay and multilineage differentiation. And, the hepatic induction compared with ADSCs was performed by three step differentiation protocol with various growth factors.

**Results:** Morphology LF-ADSCs was similar to ADSCs and had highly expansion capacity. Characteristics as adult stem cells via various analysis was also similar to ADSCs. However, in particular, hematopoietic and MET related surface markers (CD133, CD34, CD45 and E-cadherin) were expressed on LF-ADSCs. And, Foxa2, CK19 and HNF4a genes, as hepatic induction markers, were expressed similar to hepatic induced ADSCs on hepatic induction day 12.

**Conclusion:** LF-ADSCs had other type of character compared with ADSCs on surface markers. However, proliferation, multilineage capacity and hepatic induction of LF-ADSCs were similar to ADSCs. So, LF-ADSCs could be used for tailored therapy as a new source of adult stem cells.

**APHPB-0763**

**BIOCHEMICAL ALTERATIONS IN MALIGNANT OBSTRUCTIVE JAUNDICE: EFFECT OF PREOPERATIVE DRAINAGE**

M. Afify1, N. Samy2, A. Nabil2 and Y. Ahmed3

1Biochemistry Department, National Research Center, Aouza, Egypt; 2Biochemistry Department, National Research Center, Cairo, Egypt; 3Surgical Department, Faculty of Medicine Banha University Egypt, Cairo, Egypt

**Objectives:** The benefit of preoperative biliary drainage in jaundiced patients undergoing pancreaticoduodenectomy for a suspected cancer head of pancreas is still under debate. This study evaluated the postoperative
outcomes of preoperative biliary drainage with delayed surgery and immediate surgery.

Methods: This study conducted on 42 patients who had malignant obstructive jaundice, besides 25 healthy subjects. Patients divided into group (I) was taken initially for preoperative biliary drainage and stent insertion for a period of 3 weeks followed by surgery and group (II) received immediate surgical decompression. We determined liver functions, immunoglobulins (IgA, IgG, and IgM) and cytokines (IL-6, IL-8, and IL-10).

Results: Results, mean serum bilirubin in-group (I) was 16.3 mg/dL at admission and fell to 2.7 mg/dL by three week post drainage. While in-group (II), it was 15.9 mg/dL at admission. The morbidity and mortality were significantly reduced in-group (I) compared to group (II). The serum immunoglobulin IgA level was significantly increased at admission in both groups (I & II). Its level was significantly decreased in-group (I) three weeks after drainage, and one-week post-operative in both groups. At admission, the circulating IL-8 concentrations were significantly high at admission in both groups (I & II) and reduced significantly after drainage in group (I), and one week post-operative in both groups (I & II).

Conclusion: In conclusion, our study point at the clinical significance of the preoperative biliary drainage when major surgery is required in patients with malignant obstructive jaundice, since it improves the overall morbidity and mortality.

APHPB-0764

CHEMORADIATION WITH OR WITHOUT BRACHYTHERAPY FOR UNRESECTABLE KLASTIN TUMOURS: PROMISING RESULTS FROM A PROSPECTIVE STUDY

S. Jayant Sastri1, R. Engineer2, N. Kalyani3, S. Chaudhari4, T. Dharia4, N. Shetty4, S. Mehta5, M. Goel6 and S. Shrivastava2

1Radiation Oncology, ACTRECTata Memorial Centre, Mumbai, India; 2Radiation Oncology, Tata Memorial Hospital, Mumbai, India; 3Medical Physics, Tata Memorial Hospital, Mumbai, India; 4Intervention Radiology, Tata Memorial Hospital, Mumbai, India; 5Digestive Diseases and Clinical Nutrition, Tata Memorial Hospital, Mumbai, India; 6Surgical Oncology, Tata Memorial Hospital, Mumbai, India

Objectives: Klatskin tumours are rare tumours with poor prognosis. The present study was undertaken to evaluate outcomes in patients undergoing high dose chemoradiation (CRT)+/-endobiliary brachytherapy (EBBT).

Methods: From Aug 2005 to July 2012, 65 patients were included. Patients were treated with either EBBT with high-dose-rate Iridium-192 (median dose: 14 Gy) delivered through the PTBD catheter or CRT alone (52.5–57.5 Gy/25 fractions with concurrent weekly gemcitabine (300 mg/m2) or with a combination of CRT and EBBT. Univariate and multivariate analysis for factors impacting outcome was performed.

Results: Overall 22 (34%) received only EBBT, while 27 (41%) received both EBBT and CRT and 16 (25%) received high dose CRT. A total of 42 patients had complete (n = 21) and partial response (n = 21) Other patients had stable or progressive disease. Peritoneum (13 patients) and liver (n = 4) were commonest sites of distant progression.

Median follow up for whole group was 9 months (6–17.5 months), while the same for surviving patients was 15 months (14–18 months). The 2 year OS was 10% for whole group and 15% for EBRT group.

Patients receiving EBBT and CTRT or high dose CTRT alone had better OS as compared to patients receiving EBBT alone at 1 year (57% vs. 17%, p = 0.005). Similarly, OS was better for male patients patients (55% vs. 35%, p = 0.006) and for patients having complete response (70% vs. 34%, p = 0.005). On multivariate analysis, treatment with EBRT and complete response were significant factors influencing OS.

Conclusion: High dose chemoradiation leads to promising survival rates in patients with unresectable Klatskin’s tumours.

APHPB-0765

BY DOWNREGULATING KU80, MIR-526B FUNCTIONED AS A TUMOR PROMOTER THROUGH APOPTOSIS IN HCC

Z. Zhang1 and Z. Huang1

1General Surgery, Huazhong University of Science and Technology, Wuhan, China

Objectives: Previous study has revealed that ku80 can function as tumor suppressor gene in HCC and Ku80 is frequently downregulated in HCC compared with the adjacent liver tissue. But what cause the down-regulation of Ku80 is still unknown. MicroRNA (miRNA) is a new class of small, noncoding RNA which can which can bind mRNAs and down-regulate proteins’ expression in many species. But the relationship between Ku80 and microRNA in has never been investigated.

Methods: Through 5 databases which can predict the relationship between microRNA and protein, the microRNAs which were predicted to regulate the expression of Ku80 in HCC in most of the databases were found out. All these microRNAs were transfected in HCC cell lines and the expression of Ku80 was detected by Western blot. The cell growth and apoptosis was studied in vivo and the apoptosis. Then the microRNA expression in HCC and adjacent liver tissue were investigated by qPCR.

Results: MiR-526b was able to down-regulate the expression of Ku80 in HepG2 and PLC cell lines. After blocking the function of miR-526b by the antagonim, the expression of Ku80 was up-regulated in PLC cells. The down-regulation of miR-526b resulted in growth inhibition and apoptosis in PLC cells. MiR-526b was found up-regulated in HCC comparing with its adjacent liver tissue in 41% patients. And the up-regulated miR-526b was significantly correlated with poor differentiation of the tumor.

Conclusion: miR-526b is involved in down-regulation of Ku80, and increased miR-526b expression is associated with tumor progression of HCC.
Benign HPB Diseases
APHPB-0766
CLINICAL RESEARCH AND ANALYSIS OF CURATIVE EFFECT OF PROSTAGLANDIN E1 ON HBV RELATED ACUTE ON CHRONIC LIVER FAILURE
H. Liu1, S. You1, Z. Wan1, B. I. N. G. Zhu1 and S. Xin1
1Center of Liver Failure Treatment and Research, 302 Military Hospital, Beijing, China
Objectives: To investigate the therapeutic effect and safety of prostaglandin E1 (PGE1) on patients suffered from hepatitis B related acute on chronic liver failure.
Methods: Prospective tests were progressed with random comparison and single blind methods. 100 patients with hepatitis B related acute on chronic liver failure were randomly divided into the PGE1 group and control group (internal medicine general treatment). On the basis of internal medicine general treatment, PGE1 group was treated with PGE1 10 μg every day. Both groups were treated intravenously once a day for four weeks. The changes of liver function index level; clinical efficacy as well as gastrointestinal and systemic symptoms of adverse reactions were observed and compared before and after treatment between two groups.
Results: After 2 and 4 weeks’ treatment, the Tbil, ALT, GGT levels of both groups were significantly decreased than those before treatment, which were obviously lower on the 4th week of treatment than those on the 2nd week of treatment. The serum Tbil level of PGE1 group was significantly lower than that of the control group (p < 0.05), but no obvious significance was observed in the serum ALT, GGT levels between two groups (p > 0.05). The incidence rate of adverse reactions of PGE1 group was 14%, but no adverse reaction was observed in the control group.
Conclusion: Prostaglandin E1 could more effectively treat the hepatitis B related acute on chronic liver failure than the internal medicine general treatment, and significantly improve the liver function, promote the jaundice vanishing, and had few adverse reactions.

APHPB-0767
MICRONUTRIENT DEFICIENCY IN PATIENTS WITH IDIOPATHIC TROPICAL CHRONIC PANCREATITIS
1Surgical Gastroenterology, Narayana Medical College, Nellore, India
Objectives: Tropical Chronic Pancreatitis (TCP) is one of the common type of Idiopathic Chronic Pancreatitis in South India. The patients presents at a younger age with large intra-ductal pancreatic calculi and early onset diabetes. Its cause is postulated to be multifactorial, predominantly nutritional. Deficiency of micronutrients such as ascorbic acid, zinc and selenium are shown to be causative in some studies, where as others have shown no relation. Hence we analysed the levels of these micronutrients in our patients with tropical chronic pancreatitis
Methods: All the patients with tropical chronic pancreatitis and equal number of healthy volunteers who presented to our department between October 2012 and June 2014 were investigated for serum levels of Zinc, Ascorbic acid and Selenium.
Results: 23/48 (48%) of patients with TCP had selenium deficiency when compared to 7/48 (14.5%) of controls with a p value of 0.0008, which was statistically significant. Ascorbic acid was found to be low only in one patient (p = 1.000). Zinc levels were low in 11/48 (22.9%) of the cases compared to 5/48 (10.4%) of controls with a p value of 0.1697.
Conclusion: Significantly lower levels of selenium were present in patients with tropical chronic pancreatitis in coastal Andhra Pradesh. Few of the patients did have low levels of zinc but it was found to be statistically not significant. Ascorbic levels were normal.
In our population selenium deficiency may play a role in the pathogenesis of idiopathic tropical pancreatitis, where as the role of zinc and ascorbic acid may be questionable.

Malignant HPB Diseases
APHPB-0768
SURGICAL OUTCOMES AND PROGNOSTIC FACTORS OF INTRAHEPATIC CHOLANGIOCARCINOMA
S. Zhou1, Z. Huang1 and X. Chen1
1Department of Surgery, Tongji Hospital Huazhong University of Science and Technology, Wuhan, China
Objectives: This study aims to analyze the surgical outcomes and prognostic factors of a cohort of patients with intrahepatic cholangiocarcinoma (IHCC) undergoing curative resection.
Methods: The clinicopathological data of 125 patients with IHCC who underwent curative resection between 2002 and 2008 were retrospectively reviewed. The variables including age, sex, hepatitis B virus infection, cirrhosis, tumor marker, tumor size, number of tumors, vascular invasion, perineural invasion, bile duct thrombi, lymph node metastasis, tumor differentiation, AJCC 7th staging, and adjuvant therapy were analyzed by using the Kaplan–Meier method and Cox hazard models. The correlation between CA19-9 expression and clinicopathological factors was analyzed using the χ² test and a logistic regression model.
Results: The cumulative 1-, 3- and 5-year survival rates of the entire cohort were 81.6%, 39.2% and 18.4% respectively, and the 1-, 3- and 5-year disease-free survival rates were 61.6%, 27.2% and 12.8% respectively. Univariate analysis revealed that CA19-9 level, AJCC 7th staging, tumor size, multiple tumors and lymph node metastasis were statistically significant factors. Multivariate analysis further showed that lymph node metastasis (RR: 3.939; p < 0.001), multiple tumors (RR: 1.877; p = 0.005) and tumor size (>5 cm) (RR: 1.82; p = 0.005) were independent adverse prognostic factors.
The rate of lymph node metastasis in the CA19-9 (>200 U/mL) group was significantly higher than that in the CA19-9 (≤200 U/mL) group (OR: 3.208; p = 0.013).

**Conclusion:** CA19-9 (>200 U/mL), tumor size (>5 cm), multiple tumors, lymph node metastasis were independent adverse prognostic factors of IHCC. High preoperative CA19-9 level (>200 U/mL) is significantly associated with lymph node metastasis.

**Benign HPB Diseases**

APHPB-0769

**PROSPECTIVE STUDY OF SURGICAL OUTCOME AND DIFFERENCES ON HISTOPATHOLOGY IN PATIENTS WITH ALCOHOLIC & NON ALCOHOLIC CHRONIC PANCREATITIS**

S. Rathod¹, R. Gupta², S. Shenvi³, D. K. Bhasin³, R. Nada⁴, M. Kang⁵ and N. Sachdeva⁶

¹Senior Resident in Department of General Surgery, Postgraduate Institute of Medical Education & Research, Chandigarh, India; ²Surgical Gastroenterology Division Department of General Surgery, Postgraduate Institute of Medical Education & Research, Chandigarh, India; ³Department of Medical Gastroenterology, Postgraduate Institute of Medical Education & Research, Chandigarh, India; ⁴Department of Pathology, Postgraduate Institute of Medical Education & Research, Chandigarh, India; ⁵Department of Radiodiagnosis, Postgraduate Institute of Medical Education & Research, Chandigarh, India; ⁶Department of Endocrinology, Postgraduate Institute of Medical Education & Research, Chandigarh, India

**Objectives:** Alcoholic&non-alcoholic chronic pancreatitis appears to be two different diseases with common final outcome of pancreatic exocrine&endocrine failure. Present prospective study was planned to find the differences in both these groups in relation to postoperative pain relief,changes in exocrine & endocrine function and histopathology.

**Methods:** All patients of chronic pancreatitis admitted in Surgical and Dept Medical Gastroenterology,PGIMER from January 2012 to June 2014 were included in the study. Informed written consent was taken from all patients. Surgery was offered in patients who continue to suffer from symptoms despite best medical,endoscopic & radiological management

**Results:** 24 patients were included in the study with 13 patients being alcoholicCP and 11 patients being non alcoholicCP. Mean followup was 15 months. All patients with nonalcoholicCP underwent Frey’s procedure.4 patients with alcoholicCP underwent Pylorus preserving pancreaticoduodenectomy due to head mass and rest underwent Frey’s procedure. When we compared impact of surgery on pain relief,patients with nonalcoholicCP had statistically significant better results compared to alcoholicCP.3 patients in non alcoholicCP and 2 patients with alcoholicCP had complete resolution of diabetes during follow-up. Patients with alcoholicCP continued to have steatorrhea in follow up period but none of non alcoholic CP patients had deterioration in exocrine function. When we compared histopathology,patients with alcoholicCP has statistically significant increase in intralobular inflammatory infiltrate & fibrosis,neuritis,nerve hypertrophy and predominant plasma cell infiltration. Patients with non alcoholicCP had duct centric infiltration with predominant lymphoplasmacytes.

**Conclusion:** In this prospective study,non-alcoholicCP patients had better outcome after surgery than alcoholicCP in terms of postoperative pain relief,endocrine and exocrine insufficiency. Histopathologically,pancreatic changes in patients with non-alcoholic CP markedly differ from those with alcoholicCP.

**Malignant HPB Diseases**

APHPB-0770

**A MULTI-INSTITUTIONAL RETROSPECTIVE STUDY TO COMPARE HEMIHEPATIC INFLOW OCCLUSION, IPSILATERAL HEMIHEPATIC ARTERY OCCLUSION, AND IPSILATERAL HEMIHEPATIC PORTAL VEIN OCCLUSION IN PARTIAL HEPATECTOMIES**

X. Luo¹, L. Chen¹, X. P. Chen¹, B. X. Zhang¹ and W. H. Liu²

¹Hepatic Surgery, Tongji Hospital, Wuhan, China; ²Research Department, Tongji Hospital, Wuhan, China

**Objectives:** The aim of this study was to compare the perioperative outcomes of partial hepatectomies using these three techniques of vascular inflow occlusion.

**Methods:** A total of 1932 patients were selected from our multi-institutional hepatectomy database in China and classified into 3 groups: the hemihepatic inflow occlusion (HIO) group (n = 1693), the ipsilateral hepatic artery occlusion (IHAO) group (n = 115), and the ipsilateral hemihepatic portal vein occlusion (IHPVO) group (n = 124). The primary outcome was intraoperative blood loss. Secondary outcomes were postoperative liver function, postoperative morbidity and perioperative mortality. This program was approved by the ethics committee of Tongji Hospital.

**Results:** In the multiple covariances analysis,there were no significant differences between the 3 groups regarding intraoperative blood loss, blood transfusion requirement and perioperative mortality. However, The IHAO and IHPVO groups were associated with significantly lower peaks in ALT or AST level, and lower complication rate than the HIO group.

**Conclusion:** The results indicated that IHAO and IHPVO were as efficacious as HIO in reducing intraoperative blood loss,with better hepatic function preservation.
EXPRESSION AND SIGNIFICANCE OF VASCULAR ENDOTHELIAL GROWTH FACTOR AND MICROVESSEL DENSITY IN PANCREATIC CARCINOMA

Z. Zhang¹, H. Zhu¹ and X. Geng¹
¹General Surgery, 1st Affiliated Hospital of Anhui Medical University, Hefei, China

Objectives: To analyse the expression of VEGF and microvessel density (MVD) in pancreatic carcinoma for evaluating angiogenesis in the development of this tumor.

Methods: Collection the samples and pathological/clinical data of 43 cases of pancreatic carcinoma and 43 normal pancreatic tissues as control. Immunohistochemistry was used to detect the expression of VEGF and MVD.

Results: The positive rate of VEGF and MVD were significantly higher in tumor group than in control (76.7% vs. 53.5%, 50.01 ± 26.33 vs. 12.66 ± 5.76) (p < 0.05). In pancreatic carcinoma, VEGF and MVD in the group with lymph node metastasis were significantly higher than in the LN(-) group, as well as in the group with advanced TNM staging VS early staging (p < 0.05). VEGF expression in pancreatic carcinoma was consistently correlated with MVD (p < 0.05). In the pancreatic carcinoma, survival time in the group with higher expression of VEGF or MVD was significantly shorter than in the lower expression group (p < 0.05). MVD was the unique factor which could impact the survival time (p < 0.05).

Conclusion: 1) VEGF plays an important role in the angiogenesis, tumor growth and metastasis of pancreatic carcinoma. 2) VEGF and MVD may be considered as two ideal indicators of angiogenesis in pancreatic carcinoma. 3) VEGF and MVD can be used as predictors for the biological behavior and the prognosis of pancreatic carcinoma.

SURGICAL MANAGEMENT OF RECURRENT HEPATOLITHIASIS AFTER CHOLEDOCHOJEJUNOSTOMY

F. Liu¹ and C. Liang²
¹General Surgery, NO 1 hospital of Anhui Medical University, Hefei, China; ²General Surgery, NO 1 of Anhui Medical University, Hefei, China

Objectives: The aim of this study was to explore the proper surgical individualized treatment for the patients, who were suffering recurrent hepatolithiasis after receiving cholechochojejunostomy.

Methods: Analysis of 28 patients with recurrent hepatolithiasis after biliary-enteric drainage treatment in the No 1 Hospital of Anhui Medical University from January 2006 to June 2013. Classified the cause of the stone formation and analyzed the approach.

Results: According to the different types of bile ducts after biliary-enteric drainage, 28 patients were categorized into 2 groups, Group A (continuous extrahepatic biliary tract) and Group B (discontinuous extrahepatic biliary tract). 16 cases in Group A, among 8 cases underwent removal of the original anastomotic and repaired bile duct and implemented T-tube drainage. 7 cases underwent cholecodochojejunostomy anastomotic demolition and reconstruction, both were acted with normal cholecodochojejunostomy Roux-en-Y anastomosis. Except 1 case with unresectable bile duct tumor only removed hepatolithiasis. 7 cases cholecodochojejunostomy anastomotic stricture to rebuild it. 5 cases were removed stone from anastomosis. 11 cases had happened postoperative complications (39.3%). 3 cases of biliary fistula, 6 cases of wound infection, two cases of abdominal bleeding. All of them were cured. Group A and group B immediately stone clearance rate and finally stone clearance rate were 68.8% vs. 66.7%, 87.5% vs. 83.3%, follow-up them were all in good condition (85.7% vs. 90%), there were no statistically significant.

Conclusion: In order to increase the stone clearance rate and decrease the calculi residue rate, it is essential to remove all the intrahepatic biliary duct calculi by lobectomy of liver added cholangioscopic lithotomy, distinguish and choose proper surgical drainage according to the function of Oddi’s sphincter and reconstruct the standard Roux-en-Y choledochojejunostomy.

MALIGNANT HPB DISEASES

APHPB-0773

MIXED ADENONEUROENDOCRINE CARCINOMA OF THE DISTALBILE DUCT: A CASE REPORT

C. Uchida¹, S. Tsutsumi¹, N. Kimura¹, D. Kudou¹, K. Ishido², Y. Toyoki² and K. Hakamada¹
¹Gastroenterological Surgery, Hirosaki University Graduate School of Medicine, Hirosaki, Japan

Objectives: A 71-year-old woman was admitted to our hospital because of jaundice.

Methods: Abdominal ultrasound examination and contrast-enhanced computed tomography revealed the distal bile duct tumor. Pancreatoduodenectomy with regional lymph nodes dissection was performed.

Results: Pathological examination showed neuroendocrine carcinoma (NEC) and papillary adenocarcinoma components were found in the mass with regional lymph nodes metastases of adenocarcinoma. This case was finally diagnosed as mixed adenoneuroendocrine carcinoma (MANEC) in accordance with the 2010 WHO classification of Tumors of the Digestive System. The post-operative chemotherapy with CDDP and CPT-11 was done according to the regimen for the lung small cell cancer for this patient to prevent the early relapse.

Conclusion: MANEC of distal bile duct is extremely rare. We herein report this case with literature reviews.
QUALITY OF LIFE OF PATIENTS WHO UNDERWENT CURATIVE HEPATECTOMY AT THE NATIONAL KIDNEY & TRANSPLANT INSTITUTE

J. Lumicday\(^1\), A. Casupang\(^1\), E. Ragaza\(^1\) and C. Teh\(^1\)
\(^{1}\)Surgery, National Kidney and Transplant Institute, Quezon City, Philippines

**Objectives:** This study was designed to assess the quality of life in patients who underwent curative liver resection before and after surgery from 2009 to 2013 at the National Kidney and Transplant Institute.

**Methods:** This retrospective study was done on all patients who answered the Functional Assessment of Cancer Therapy questionnaire and underwent hepatectomy at National Kidney and Transplant Institute from 2009 to 2013. Data from those who underwent liver resection from 2009 to 2013 and completely answered the questionnaires at pre-operative stage and post-operatively on the scheduled intervals were collected and analyzed. The QoL of the patient was assessed using the Functional Assessment of Cancer Therapy – Hepatobiliary questionnaire. Wilcoxon Signed Ranks Test was used to determine if there was a difference in the QoL of these patients pre and post liver resection. Mann-Whitney U test and Kruskal-Wallis one-way analysis of variance were chosen to compare the quantitative parameters between subgroup of patients.

**Results:** A total of 61 patients with Functional Assessment of Cancer Therapy questionnaire underwent curative major liver resections for benign or malignant hepatic lesions from 2009 to 2013. Twenty-five (41%) patients met the inclusion criteria. The majority of these patients were males (60%) with a median age of 61 years old. Quality of life was significantly improved (0.001, p < 61 years old. Quality of life was significantly improved these patients were males (60%) with a median age of 61 years old. Quality of life was significantly improved two of the 12 cases. Injuries were classified according to the AAST injury scoring scale. There was one case of Grade I injury, two cases of Grade II injury, eight cases of Grade III injury and one case of Grade IV injury. There was only one case of isolated pancreatic injury while the rest were associated with other injuries. All cases of Grade II injuries were treated conservatively without complications. Operations were performed in seven of the Grade III and IV injuries - six distal pancreatectomies (5 spleen-preserving) and one pancreatico-jejunostomy. Two Grade III pancreatic injuries were managed with pancreatic stents via ERCP. There were no cases of mortality.

**Conclusion:** Pancreatic injuries are uncommon but had always been associated with significant morbidity and mortality. Our review shows that a tailor-made plan of management involving surgery, endoscopy or even conservative care directed according to each particular patient is necessary. In doing so, a low mortality rate can ultimately be achieved.

**Malignant HPB Diseases**

APHPB-0776

DA VINCI ROBOTIC SURGERY VS. TRADITIONAL PTBD PROCEDURES IN THE TREATMENT OF ADVANCED HILAR CHOLANGIOCARCINOMA: A RETROSPECTIVE COMPARATIVE ANALYSIS

A. Li\(^1\), N. Zhou\(^1\), J. Chen\(^1\) and T. A. O. Zhang\(^1\)
\(^{1}\)Hepatobiliary Surgery, General Hospital of Second Artillery PLA, Beijing, China

**Objectives:** To explore the way to improve the treatment of advanced hilar cholangiocarcinoma by comparing the robotic surgical approach with the traditional PTBD (percutaneous transhepatic biliary drainage, PTBD) procedures.

**Methods:** We retrospectively analyzed 34 cases of advanced hilar cholangiocarcinoma (Bismuth type IV, unavailable to radical surgery) from January 2009 to December 2013 in our institute, including 18 cases in the robotic group and 16 cases in the PTBD group. We proposed to explore the treatment of advanced hilar cholangiocarcinoma by robotic biliary drainage, biopsy and postoperative immune therapy, and traditional PTBD procedures as the control group. The postoperative liver functions, coagulation, and quality of life and survival rate were observed. The measurement data were analyzed by using a t-test; the enumeration data were compared by \(\chi^2\) test; and the survival rate was contrasted by using log-rank test. The p-value <0.05 (p < 0.05) was considered statistically significant.

**Results:** There were no significant differences (p > 0.05) in the aspects of serum albumin, PT and APTT on day 1 and day 3 postoperatively in the robotic group and PTBD group. The robotic surgery was more conducive to homeostasis and beneficial for patients’ recovery. Further, the robotic group is super-
rior to the PTBD group in the survival rate (9.2 ± 3.6 months vs. 5.4 ± 2.8 months, p < 0.05).

Conclusion: The robotic biliary drainage, biopsy and postoperative immune therapy may be an option for advanced hilar cholangiocarcinoma patients who had no chance to receive radical surgery.

APHPB-0777

THE SIGNET RING CELL CARCINOMA IN GALLBLADDER – RARE ETIOLOGY IN UNCOMMON SITE. SINGLE MEDICAL CENTER EXPERIENCE WITH SYSTEMIC LITERATURE REVIEW

F. J. Hsieh1, C. H. Liao1, C. N. Yeh2, Y. Y. Jan2 and T. S. Yeh2

1Department of Trauma and Emergency Surgery, Chang Gung Memorial Hospital, Taoyuan County, Taiwan; 2Department of General Surgery, Chang Gung Memorial Hospital, Taoyuan County, Taiwan

Objectives: Gallbladder carcinoma is a dismal disease and most of them were adenocarcinoma histologically. Signet ring cell carcinoma is a rare type of carcinoma. In digestive system, they occur in stomach or colon usually. Primary gallbladder signet ring cell carcinoma is extremely rare, till now, there were only six cases reported in English literature.

Methods: We reported three cases with gallbladder signet ring cell carcinoma in this study.

Results: The first case was a 68-year-old male patient with gall bladder signet ring cell carcinoma. The tumor was occupied gall bladder and cystic duct with liver and mesocolon invasion. Radical surgery with en bloc hepatectomy, pancreaticoduodenectomy and transverse colectomy were done. There was one peri -pancreatic lymph node metastasis. The TMN stage was pT4N1 cM0, stage 4a. This case received adjuvant chemotherapy after surgery and still alive. In past 20 years, this patient was the third case of gall bladder signet ring cell carcinoma in our institute. The first two cases in our hospital were 70 and 70 years old male patient whose post-operative overall survival were 2.8 and 3.1 months, respectively.

Conclusion: Gall bladder signet ring cell carcinoma was aggressive disease according to published literatures. We will have a systemic literature review in this article. According to past literatures and our results, gallbladder signet ring cell carcinoma is an aggressive disease with worsen prognosis than ordinary adenocarcinoma in gallbladder. Multidisciplinary therapy might be benefit in patients with this rare disease.

APHPB-0778

A NEW CHOLANGIOJEJUNOSTOMY FOR MULTIPLE BILIARY DUCTAL OPENINGS: A STUDY IN PIGS

H. Yang1, J. Tang2, S. Xiang3, W. Lau4, X. Peng1 and X. Chen2

1The Department of Hepatobiliary Surgery, First Affiliated Hospital School of Medicine Shih Hsin University, Shihezi, China; 2Department of Preventive Medicine, First Affiliated Hospital School of Medicine Shih Hsin University, Shihezi, China; 3Hepatic Surgery Center, Tongji Hospital Tongji Medical College Huazhong University of Science and Technology, Wuhan, China; 4Faculty of Medicine, The Chinese University of Hong Kong Prince of Wales Hospital Shatin, Hongkong, China

Objectives: To investigate the safety and feasibility of a new intrahepatic cholangiojejunostomy for multiple intrahepatic biliary ductal openings after hepatobiliary resection.

Methods: Forty-eight pigs were randomly assigned into two groups: the new intrahepatic cholangiojejunostomy group (n = 24); and the control group (n = 24) with classical hepaticojejunostomy. Six pigs in each group were sacrificed on postoperative day 7, 30, 90 and 180. The primary outcomes were postoperative mortality, morbidity, and the pathological changes in the anastomoses. The secondary outcomes were levels of aspartate transaminase, bilirubin, albumin and alkaline phosphate.

Results: The operations were successfully carried out. The rates of anastomotic leakage and cholangitis in the study group were 0% and 20.8% (5/24), while in the control group they were 4.2% (1/24) and 20.8% (5/24), respectively. The stenotic rates of the sectional areas of the anastomotic stomas in the study group were 0% and 8.3% (2/24), while in the control group they were 4.2% (1/24) and 20.8% (5/24), respectively. Under microscopy, in the study group, the anterior wall of the stoma was everted and sunken while the posterior wall was protruded in a semicircular-disc shaped. The liver transection plane was epithelialized with mucosal covering by post-operative day 30. In the control group, however, the stoma was centripetally protruded with a relative circular stenosis.

Conclusion: The new intrahepatic cholangiojejunostomy is safe, simple, and convenient for multiple biliary ductal openings.

APHPB-0779

IS ROUTINE INSERTION OF NASOGASTRIC TUBE REALLY NECESSARY IN ELECTIVE PANCREATODUODENECTOMY?

H. Kwon1, S. Kim1, Y. Han2, J. Chun2 and Y. Hwang1

1Surgery, Kyungpoon National University Medical Center, Daegu, Korea; 2Surgery, Kyungpoon National University Hospital, Daegu, Korea

Objectives: The objective of this study was to investigate the efficacy of inserting nasogastric (NG) tube
after pancreatoduodenectomy (PD) by comparing clinicopathological factors and complications of between patients with and without a NG tube in the patient who underwent elective PD.

**Methods:** 72 patients were enrolled in this trial from September 2009 to June 2011. The patients were randomly assigned to the with NG tube group (Group 1, n = 36) and without NG tube group (Group 2, n = 36). Clinicopathological factors and surgical outcomes such as length of hospital stay after PD, delayed gastric emptying (DGE), postoperative hemorrhage (PPH), postoperative pancreatic fistula (POPF), pulmonary complications, cardiovascular complications, wound complications, and mortality compared prospectively.

**Results:** There was no difference in terms of age, gender, operating time, pathological diagnosis, time to flatus, length of hospital stay after PD between two groups. Postoperative complication rates, including DGE (Grade B) (22.2% vs. 16.7%, respectively; p = 0.767), POPF (Grade B) (5.6% vs. 11.1%, respectively; p = 0.674), PPH (Grade B) (8.3% vs. 2.5%, respectively; p = 0.614), pulmonary complications (63.9% vs. 66.7%, respectively; p = 1.000), and cardiovascular complications (5.6% vs. 2.7%, respectively; p = 1.000), were similar in each group. There was no leakage of duodenojjunostomy in both groups. A case of mortality due to myocardial infarction occurred in Group 1 but the difference was not statistically significant.

**Conclusion:** Routine insertion of NG tube offers no benefit in preventing postoperative complications after elective PD and does not shorten length of hospital stay after PD. Therefore, routine use of a nasogastric tube is not required in elective PD.

**APHPB-0780**

**THE PROGNOSTIC SIGNIFICANCE OF R1 RESECTION FOR MIDDLE AND DISTAL BILE DUCT CANCER**

S. Kim¹, H. Kwon¹, Y. Han², J. Chun² and Y. Hwang¹

¹Surgery, Kyungpoo National University Medical Center, Daegu, Korea; ²Surgery, Kyungpoo National University Hospital, Daegu, Korea

**Objectives:** To identify the influence of R1 resection in middle and distal bile duct cancers, we reviewed clinicopathological features, and surgical outcomes of the patients with middle and distal bile duct cancer.

**Methods:** From August 1990 to June 2013. For 156 patients who underwent macroscopic curative resection (R0 and R1), the status of resection margin and clinicopathological factors were analyzed as variables using univariate and multivariate analysis. Site of initial disease recurrence were classified as locoregional or distant.

**Results:** The 5-year survival was 39.4% after R0 resection, 15.6% after R1 resection, and 0% after R2 resection. The difference of survival between R1 and R2 was statistically significant, whereas the difference of survival between R1 and R0 was just a little short of statistical significance. On univariate and multivariate analysis for patients who underwent macroscopic curative resection, resection margin was no statistical significance. Recurrence after macroscopic curative resection occurred in 69 patients. 21 patients displayed disease recurrence concomitantly at a locoregional and distant site. Only locoregional recurrences and only distant metastasis were observed in 29 and 18 patients. The patterns of recurrence according to margin status was not difference. The most common site of first recurrence was liver followed by abdominal lymph node.

**Conclusion:** R1 resection, if inevitable, can be performed because it offers better survival than that of R2 or no resection. However the prognosis of R1 resection was much lower than those of R0 resection. Thus, every efforts need to be tried to achieve R0 resection for middle and distal bile duct cancer.

**APHPB-0781**

**OUTCOME OF PT2 GALLBLADDER CANCER ACCORDING TO MANAGEMENT OF REGIONAL LYMPHADENECTOMY**

G. Jung¹ and K. Chae²

¹Surgery, Iksan Hospital, Iksan, Korea; ²Surgery, Wonkwang University Hospital, Iksan, Korea

**Objectives:** To analyze of outcome of pT2 gallbladder cancer (GBC) and clarify its effect on long term survival according method of lymphadenectomy

**Methods:** The patients were divided into two groups according to type of lymphadenectomy (sampling lymphadenectomy with liver wedge resection vs. radical cholecystectomy) in each T stage. We defined as sampling lymphadenectomy when were retrieved No. 12 lymph node or enlarged hilar lymph node. Forty seven of 80 patients had pT2 lesion. We divided four groups according to lymph node metastasis (LN (+/-)) and type of lymphadenectomy (LND); group A was LN (+) and sampling LND; group B was LN (+) and radical LND; group C was LN (+) and sampling LND; group D was LN (+) and radical LND.

**Results:** Mean follow up months was 32.5 months. Mean survival month of all patients was 32.6 months (± 35.3 months). 5 year survival rate of this cohort was 36.5%. Two and 5 years survival rate according to pT stage (T1a, T1b, T2, T3 and T4) were 100%, 86%, 52%, 20%, 0% and 100%, 72%, 37%, 0%, 1%, respectively. In pT2 lesion, there was statistically difference between group A and B (p = 0.001), however did not show statistically significance between groups C and D in survival.

**Conclusion:** When there was the lymph node metastasis, it showed poor prognosis regardless of type of lymphadenectomy. So, in order to predict the exact patient’ prognosis, the radical lymphadenectomy is essential.
Benign HPB Diseases
APHPB-0782
MRCP IN GALLSTONE PANCREATITIS REDUCES THE NEED FOR UNNECESSARY ERCP
Y. M. Goh1, Y. L. Goh1, S. Lapsia2, Y. Reddy3, V. Kaushik2, C. Harris1, A. Kausar1, D. Chang1 and D. Subar1
1Department of Hepatobiliary Surgery, Royal Blackburn Hospital, Blackburn, UK; 2Department of Radiology, Royal Blackburn Hospital, Blackburn, UK; 3Department of Gastroenterology, Royal Blackburn Hospital, Blackburn, UK

Objectives: UK guidelines in the management of acute gallstone pancreatitis (GSP) with cholangitis, jaundice, a predicted or actual severe attack or dilated common bile duct (CBD) warrants an endoscopic retrograde cholangiopancreaticogram (ERCP) and sphincterotomy +/- stone extraction or stenting within 72 h of the onset of pain. However about 50% of CBD stones will pass spontaneously. The aim of this study was to assess factors predictive of CBD stones in GSP.

Methods: This is a retrospective study of all patients presenting with GSP over a 4 year period from January 2010 to October 2014. Patients were identified using NHS coding K85 and K80.2. Data on admission blood tests (C-reactive protein (CRP) and liver function test), imaging (ultrasound (USS) magnetic resonance cholangiopancreatogram (MRCP) and ERCP) results and severity of pancreatitis were collected. All categorical variables were analysed with Chi square or Fisher’s exact test. Continuous variables were analysed with logistic regression. Statistical analysis was conducted using SPSSv20.

Results: 239 patients presented with GSP over the study period. The mean age was 60.5 ± 17.8 years. The male to female ratio was 80:165. 35 patients had predicted severe pancreatitis. 98 patients went on to have ERCP. Only elevated bilirubin (>22 μmol/L) was predictive of CBD stones on MRCP (p = 0.035). The presence of a dilated CBD (p = 0.033) or stone (p < 0.05) on MRCP was predictive of a stone on ERCP. The severity of the pancreatitis did not predict the presence of CBD stones (p = 0.133).

Conclusion: Patients who present with GSP should have further investigations to confirm the presence of CBD stones before proceeding to ERCP except in cases of worsening or unresolving obstructive biliopathy or cholangitis.

APHPB-0783
A PROSPECTIVE EVALUATION OF THE PROCEDURE OF BICLAMP FOR OPEN HEPATIC RESECTION: EARLY EXPERIENCE
Z. Yi-Jun1
1Hepatobiliary Surgery, The First Affiliated Hospital of Anhui Medical University, Hefei, China

Objectives: To evaluate the efficiency and safety of BiClamp for liver parenchyma transection.

Methods: A prospective study was performed in a single center for patients undergoing liver resection. All the patients were operated by the same surgical group. This study focused on the intraoperative blood loss, resection time, and perioperative complications.

Results: There were 42 patients enrolled in this study including 27 major and 15 minor hepatectomies. The overall intraoperative blood loss (mean±SD) was 523.5 ± 558.6 mL (range 55.0-2474.1). The mean blood loss per square centimeter was 6.2 ± 7.6 mL (range 0.6-39.8 mL). Six patients received blood transfusion perioperation. Mean transection speed (parenchymal transection square per minute) was 3.0 ± 1.9 cm². There were no deaths, and the morbidity rate was 25%. Mean (SD) hospital stay was 9.3 (2.3) days.

Conclusion: Reusable BiClamp allows major and minor hepatectomies to be performed effectively and safely. Hepatectomies assisted by BiClamp may reduce the blood loss and the need for blood transfusion.

Malignant HPB Diseases
APHPB-0784
ADENOCARCINOMA DEVELOPED FROM REMNANT CYSTIC DUCT AFTER CHOLECYSTECTOMY
Y. Choi1 and L. E. E. Seung Eun1
1Surgery, Chung-Ang University, Seoul, Korea

Objectives: Cystic duct adenocarcinoma is a rare disease because the cystic duct has a short length and a narrow cavity. Cystic duct adenocarcinoma accounts for 8% of all gallbladder adenocarcinoma; of these, adenocarcinoma that develops from the remnant cystic duct (RCD) after cholecystectomy is extremely rare. We report a case of incidentally detected adenocarcinoma that developed from the RCD in a patient with history of cholecystectomy.

Methods: A 74-year-old woman visited our hospital with pain in the right upper quadrant of the abdomen. Her past medical history included cholecystectomy for acute cholecystitis with gallstones 10 years previously. Imaging of the abdomen demonstrated inflammation of the RCD with multiple impacted stones. Complete removal of the RCD with stones was performed. The pathologic report showed severe inflammation with abscess formation and an unexpected adenocarcinoma that appeared to invade the perimuscular connective tissue. The second operation (confirmation of the resection margin of the RCD, wedge resection of the liver, and lymphadenectomy) was performed due to suspicion of pT2.

Results: There were no cancer cells in the resection margin of the RCD, liver, or lymph nodes (0/6). The final histopathological diagnosis was pT2N0M0.

Conclusion: She recovered without any complications. The patient is still living 1 year after surgery without recurrence or metastasis.
Benign HPB Diseases
APHPB-0785

GHRELIN ATTENUATED LIPOTOXICITY IN VITRO AND VIVO VIA AUTOPHAGY INDUCTION AND NF-κB INHIBITION
X. Fan¹, Y. Mao¹, F. Yu¹ and J. I. A. N. Cheng¹
¹Gastroenterology, Jinshan Hospital of Fudan University, Shanghai, China

Objectives: Nonalcoholic fatty liver disease (NAFLD) has been the most common chronic liver disease worldwide. Autophagy has been demonstrated to be associated with NAFLD. Ghrelin is a gut hormone exhibiting various functions including energy metabolism and inflammation inhibition. We investigated the therapeutic effect of ghrelin on NAFLD and its association with autophagy.

Methods: In vivo, C57bl/6 mice were fed a high fat diet (HFD) for 1 week, with dexamethasone (0.25 Mm/kg) subcutaneously injected in the first 4 days to induce acute NAFLD model, ghrelin (10 µg/kg/injection) or saline was administrated subcutaneously daily during the week. 8-week HFD was administrated to induce chronic NAFLD model, with ghrelin similarly treated twice a week from 6 to 8th weeks. In vitro, L02 cells were pretreated with ghrelin (10–8 mol/L) before the stimulation of free fatty acid (FFA) consisted of palmitate and oleic acid (1 mmol/L).

Results: Ghrelin reduced the triglyceride content both in vivo and in vitro NAFLD models. TNF-α and IL-6 were significantly reduced in the ghrelin treated mice group compared with the control group. Autophagy induction was accompanied with intracellular lipid reduction in ghrelin treated group. Ghrelin up-regulated autophagy via AMPK/mTOR restoration and inhibited the translocation of NF-κB into the nucleus.

Conclusion: The results indicate that ghrelin attenuates NAFLD by autophagy stimulation and inflammation inhibition.

Benign HPB Diseases
APHPB-0789

CLINICAL FEATURES OF THE GALLBLADDER ADENOMA
J. Sohn¹, J. Park¹ and J. Rhee¹
¹Surgery, Daegu Fatima Hospital, Daegu, Korea

Objectives: GB adenoma is an unusual benign disease. The dysplasia-carcinoma pathway appear to be the predominant mechanism of gallbladder cancer, but some studies showed GB adenoma may be precancerous lesion of gallbladder cancer. We investigated our cases of GB adenoma and analyzed our datas.

Methods: Among the 3793 patients who underwent cholecystectomy in Daegu Fatima hospital during January 2006 to August 2014, there were 38 patients who were diagnosed with gallbladder adenoma. We reviewed medical records and radiologic images of all patients and histological findings were reviewed by one pathologist.

Results: There were 16 male and 22 female patients. The average age of patients was 57.5 years old (30–89 yr). 24 patients were diagnosed with GB polyps, 9 patients with GB stones and 4 patients with GB cancer preoperatively. There were 29 cases of tubular adenoma, 7 cases of papillary adenoma and 2 cases of mixed adenoma. There were 16 cases of GB adenoma accompanied with gallstones and 5 cases were combined acute cholecystitis. There were 3 cases of combined pathology of GB adenoma and cholesterol polyps of gallbladder.

Conclusion: GB adenoma is a rare disease of the gallbladder and it is very difficult to diagnose preoperatively. In our cases there were no cases diagnosed as GB adenoma preoperatively. The average size of GB adenoma was 9.0 mm and minimal size of GB adenoma was only 2 mm which didn’t meet the indication of cholecystectomy for GB polyps. There was only one case of combined pathology of GB cancer and GB adenoma.
APHPB-0790
A MODIFIED SUGIURA PROCEDURE FOR CONTROL OF VARICEAL BLEEDING
F. Liu1 and Q. I. Wang1
1Hepatic Surgery Center, Tongji Hospital, Wuhan, China

Objectives: A proportion of patients with variceal bleed need surgical intervention. This study evaluated a modified Sugiura procedure in controlling variceal bleeding after endoscopic therapy.

Methods: A modified Sugiura procedure was performed in 62 patients with acute variceal bleeding that could not be controlled by endoscopic therapy or with a history of massive bleed after endoscopic therapy.

Results: Perioperative mortality occurred in 2% (1/62) patient. Esophageal anastomotic leak occurred in 2% (1/62) patient, and stenosis in 5% (3/62) patient. Twelve months after operation, esophageal varices disappeared in 79% (48/61) patients, diminished in size in 18% (11/61), remained unchanged in 3% (2/61); Fundal gastric varices disappeared in 98% (60/61) patients, diminished in size in 2% (1/62). The rebleeding rate was 3% (2/61) and 8% (5/61) in 3 years and 5 years, respectively.

Conclusion: The modified Sugiura procedure is safe and effective for long-term control of variceal bleeding after endoscopic therapy.

APHPB-0791
IS IT NECESSARY TO USE PROPHYLACTIC ANTIBIOTICS IN ELECTIVE LAPAROSCOPIC CHOLECYSTECTOMY?
K. Kim1 and Y. Roh1
1Surgery, Dong-A University Hospital, Busan, Korea

Objectives: Although laparoscopic cholecystectomy (LC) is a common and widely applied procedure, the use of prophylactic antibiotics for preventing postoperative infection in elective LC remains controversial. Elective LC has a low risk for infectious complications, but many surgeons still use prophylactic antibiotics. The aim of this study was to investigate the role of prophylactic antibiotics in patients undergoing elective LC except patients requiring empirical antibiotics.

Methods: In this prospective, double-blind randomized controlled trial from December, 2011 to May 2013, 200 patients were assigned to 2 groups. 100 patients (group A) received cefazolin 1 g intravenously within one hour before incision, and 100 patients (group B) were not given prophylactic antibiotics. In both group, surgical site infections (SSIs) were recorded and compared.

Results: In both groups, there was no difference in the preoperative demographics (age, body mass index, ASA score) and postoperative findings (operative time, length of hospital stay). Preoperative ERCP, bile spillage, diabetes mellitus and presence of American Society of Anesthesiologists (ASA) classification higher than score II did not significant increased the rate of SSIs. The wound infections in group A and B were 4 (4%) cases and 5 (5%) cases, respectively. There were no significant SSIs in both groups.

Conclusion: Based on our study, prophylactic antibiotics is not necessary in elective LC except gallbladder disease requiring empirical antibiotics.

Malignant HPB Diseases
APHPB-0792
HEPATECTOMY PROCEDURE IN CONFLUENT MULTINODULAR TYPE HCC AND HCC WITH HIGH-GRADE PORTAL INVASION
S. Fukutomi1, Y. Nomura1, Y. Maruyama1, H. Sakai1, R. Kawahara1, H. Ishikawa1, T. Hisaka1, M. Yasunaga1, H. Horiuchi1 and K. Okuda1
1Department of Surgery, Kurume University School of Medicine, Kurume, Japan

Objectives: Macroscopic classification of hepatocellular carcinoma (HCC) are classified in five types by the general rules for the clinical and pathological study of primary liver cancer. Some reported before that confluent multinodular type (CMN) are associated with high frequent portal vein invasion (Vp), intrahepatic metastasis and poor prognosis. In the present study, we addressed the CMN and Vp using surgically resected liver tumors in our institute and its individual treatment.

Methods: We used 1256 primary HCCs (pHCC) and 370 recurrent HCCs (reHCC) which underwent curative hepatectomy at Kurume University Hospital during 1989 and 2013 to classify the macroscopic findings. And also we compared the clinical manifestations, histopathological features, and imaging findings of these cases by using 422 cases CMN which were diagnosed pathologically.

Results: We found 126 cases (10.2%) of CMN in pHCCs and 57 cases (16.8%) in reHCCs. Dynamic imaging revealed that most of the CMN were found at the peripheral area of the liver and indistinct enhancement around the tumor in early phase. Histologically, 82% of CMN had high-grade Vp (simple nodular type (SN): 8.2%, simple nodular type with extranodular type (SG): 67%) and 8 cases (17.8%) invaded main portal vein (SN: 0.5%, SG: 1.1%). In CMN, there were no significant difference in overall survival between hepatectomy procedure.

Conclusion: CMN and HCC with high-grade Vp were related to the prognosis. For more appropriate hepatectomy, we have to find the distribution of portal invasion in the liver.

APHPB-0793
CARCINOSARCOMA OF THE EXTRAHEPATIC BILE DUCT: A CASE REPORT
S. Park1 and C. Nam1
1Surgery, Ulsan University Hospital, Ulsan, Korea

Objectives: Carcinosarcomas are rare malignant tumors. Although they have been reported previously in diverse organs, few cases have been reported in the biliary system, especially in the extrahepatic bile duct.

© 2015 The Authors
HPB © 2015 Americas Hepato-Pancreato-Biliary Association
We report a rare case of a carcinosarcoma of the extrahepatic bile duct.

Methods: 52-year-old male patient presented with jaundice without abdominal pain. The patient reported a past medical history of hypertension. The total bilirubin levels were increased to 23.5 mg/dL, and gamma glutamyltranspeptidase levels were increased to 2302 IU/L. The tumor marker were elevated to 192.28 U/mL. Computed tomography (CT), magnetic resonance cholangiopancreatography (MRCP) showed a 3.3 cm extended soft tissue lesion in the gallbladder, with direct invasion into adjacent structures. Endoscopic retrograde cholangiopancreatography (ERCP) showed a gallbladder neck mass and hilar stricture with upstream duct dilatation, an endoscopic nasobiliary drainage catheter was successfully placed into the right intrahepatic duct. Then, the bilirubin level was decreased.

Results: Bile duct resection and lymph node dissection with choledochojejunostomy and liver wedge resection (S4b, S5) were performed. Pathology showed carcinosarcoma of cystic duct and common bile duct with invasion to hepatic parenchyma. There was metastasis to 1 out of 8 lymph nodes. His postoperative course was uneventful.

Conclusion: Carcinosarcoma of the biliary system is extremely rare and the prognosis for patients with carcinosarcomas of the extrahepatic bile duct is still uncertain. At present, there is no optimal therapy for bile duct carcinosarcomas. Hence, we should consider radical local resection with adjuvant chemotherapy or irradiation therapy. Further discussion is required on the subject of the optimal treatment for bile duct carcinosarcomas.

Benign HPB Diseases
APHPB-0794
THE STUDY OF THE GASTROCOLIC TRUNK OF HENLE USING MULTI-DETECTOR-ROW COMPUTED TOMOGRAPHY FOR THE SAFE LAPAROSCOPIC Pancreatic SURGERY
1Department of Gastroenterological Surgery, Hirosaki University Graduate School of Medicine, Hirosaki, Japan

Objectives: The aim of this study is to clarify and classify the confluence patterns of GCTH using multi detector-row computed tomography (MDCT) for the safe laparoscopic pancreatic surgery.

Methods: In 80 patients undergoing MDCT scheduled for gastrointestinal and hepatobiliary-pancreatic surgery, the peripancreatic veins were reconstructed using maximum intensity projection and multi-planar reconstruction process. The confluence pattern of the GCTH was analyzed.

Results: In all MDCT images, right gastroepiploic vein (REGV), anterior superior pancreatoduodenal vein (ASPDV), and superior right colic vein (SRCV) were detected. Focusing on these veins, the confluence pattern was classified into five types (Type I-V). Type I (n = 52, 65.0%) was that GCTH was consisted of all three veins. Type II (n = 13, 16.3%) was that GCTH was consisted of REGV and ASPDV, and SRCV joined to superior mesenteric vein (SMV) directly. Type III (n = 8, 10.0%) was that GCTH was consisted of REGV and SRCV, and ASPDV joined to SMV directly. Type IV (n = 4, 5.2%) was that GCTH was consisted of REGV and ASPV, and SRCV joined to SMV directly. Type V (n = 3, 3.8%) was that GCTH was not formed, and three veins drained into SMV independently. Considering both of the confluence pattern of RGEV, ASPDV, and SRCV and the presence of RCV and MCV confluent to GCTH, there were 13 types of the confluence pattern of GCTH.

Conclusion: Using abdominal MDCT, GCTH could be classified systematically. This classification would help us to elucidate GCTH preoperatively and lead us to the safe pancreatic surgery.

Malignant HPB Diseases
APHPB-0795
HEME OXYGENASE-1 EXPRESSION IS ASSOCIATED WITH TUMOR PROGRESSION OF HEPATOCELLULAR CARCINOMA
H. Jang, C. Park and D. Eom
1Surgery, Gangneung Asan Hospital University of Ulsan College of Medicine, Gangneung, Korea; 2Pathology, Gangneung Asan Hospital University of Ulsan College of Medicine, Gangneung, Korea

Objectives: Heme oxygenase-1 (HO-1) is an important enzyme as Heme degradation. HO-1 degrades heme to carbon monoxide, biliverdin, and ferrous iron. HO-1 is major role of enzyme as antioxidative and antiapoptotic effect. Some studies suggested that HO-1 may play a role in tumor induction and can potently improve the growth and spread of tumor. This study represented that HO-1 expression as correlation the results with the clinical and pathological parameters in patients with hepatocellular carcinoma (HCC).

Methods: In this study, the expression of HO-1 in human HCC tissues (n = 96) was investigated by immunohistochemistry and Western Blotting (n = 10). The correlation of HO-1 with the clinicopathological characteristics was analyzed. That resected tumor tissues was confirmed HCC by pathologic division and stored by Paraflin block.

Results: Results showed that HO-1 was expressed in 43 HCC tissues from 96 cases (44.8%). A high HO-1 expression rate showed a close association with poor histological differentiation (Edmondson-Steiner grade 2, 3, 4), positive lymphovascular invasion and capsular invasion (p < 0.05). In univariable study represented that disease free survival (DFS) was slightly improved HO-1 negative HCC but not statistical difference in HO-1 positive HCC vs. negative HCC, median value was 20.30 ± 2.44 vs. 26.80 ± 26.80 (mo) (p = 0.128).

Conclusion: Actually HCC patients stained HO-1 was associated with histologically poor grade (E-S grade 2–4), presented lymphovascular invasion, capsular invasi-
sion and high level of preoperative AFP but, no different recurrence rate rather than HO-1 negative HCC patients. We thought that HO-1 was slightly related to recurrence rate of HCC, but it needs more case studies.

Benign HPB Diseases
APHPB-0796

IATROGENIC BILE DUCT INJURY ASSOCIATED WITH ANOMALIES OF THE RIGHT HEPATIC SECTIONAL DUCTS FOLLOWING LAPAROSCOPIC CHOLECYSTECTOMY (IS THE INTRAHEPATIC BILE DUCTABLATION – ANOTHER OPTION?)

H. Jang¹, J. Kwak¹ and C. Park¹
¹Surgery, Gangneung Asan Hospital University of Ulsan College of Medicine, Gangneung, Korea

Objectives: Bile duct injuries remain one of the most devastating complications of both open (OC) and laparoscopic cholecystectomy (LC). Although LC has been widely accepted as the standard operation, it continues to have a high complication rate than OC. Bile duct injury with LC has often been attributed to surgical inexperience, but it is also clear that aberrant bile ducts are present in a significant number of patients who sustain biliary injuries during these procedures.

Methods: We performed 4629 LC from 1998 to 2014. We present 6 cases (0.12%) of right sectoral duct injuries which occurred during LC for 16 years. If RHSD injury noted on postoperative period, although a repeat procedure may be necessary, the obliteration of bile ducts is a safe procedure with excellent results in patients with complications from isolated segmental ducts.

Conclusion: We present 6 cases (0.12%) of right sectoral duct injury with LC has often been attributed to surgical inexperience, but it is also clear that aberrant bile ducts are present in a significant number of patients who sustain biliary injuries during these procedures.

Benign HPB Diseases
APHPB-0798

PANCREATICOPLEURAL FISTULA: AN UNUSUAL COMPLICATION OF PANCREATITIS

H. Jang¹ and C. Park¹
¹Surgery, Gangneung Asan Hospital University of Ulsan College of Medicine, Gangneung, Korea

Objectives: Pancreatic–pleural fistula (PPF) is an uncommon complication of chronic pancreatitis occurring as a result of disruption of the main pancreatic duct and tracking of pancreatic fluid through the retroperitoneum into one or both thoracic cavities. Pleural
effusion resulting from a PPF is extremely rare and accounts for <1% of cases.

Methods: We present the three cases of middle-aged males with moderate left or right pleural effusion who had a history of pancreatitis.

Results: All of patients were male (39, 43, 45 years) and they were alcohol-associated chronic pancreatitis. Chest X-ray showed pleural effusion with moderate left or right pleural effusion and a thoracoaenitis revealed high amylase content. MRCP showed chronic pancreatitis with a PPF. Pancreatic fistula resection and pancreatojejunostomy to provide decompression of the pancreatic duct were performed in two patients. Fistula resection and distal pancreatectomy with distally obstructed pancreatic duct were performed in the other patient. Postoperative course was an uneventful. There was no recurrence of PPF on subsequent 2 years follow-up.

Conclusion: PPF is an uncommon complication of chronic pancreatitis occurring as a result of disruption of the main pancreatic duct and tracking of pancreatic fluid through the retroperitoneum to thoracic cavities. MRCP is a useful modality for diagnosing a PPF. The optimal treatment strategy for pancreaticoceleural fistula is unknown; it has traditionally been medical management followed by operative therapy for patients who fail to respond to conservative treatment. We report herein two patients underwent drainage procedure were performed. One patient underwent a distal resection with fistula tract.

Malignant HPB Diseases

APHPB-0799

PREOPERATIVE CIRCULATING TUMOR CELLS PREDICT IMPAIRED TIME TO TUMOR RECURRENT IN HCC PATIENTS AFTER CURATIVE RESECTION

S. L. Dong¹, B. H. Zhang¹ and X. P. Chen¹

¹Hepatic Surgery Tongji Hospital, Huazhong University of Science and Technology, Wuhan, China

Objectives: The aim of the study is to evaluate the prognostic significance of circulating tumor cells (CTCs) in patients with hepatocellular carcinoma (HCC) underwent curative resection.

Methods: A total of 156 patients with HCC were included and 137 patients underwent curative resection. CTCs were disclosed prospectively with CellSearch System in 7.5 mL of peripheral blood before and 3 days after surgery. The patients were followed-up for recurrence every 1–3 months.

Results: During the 1 year’s following-up time, relapse occurred in 36 of the curative resected patients. The percentage of patients with CTCs ≥2 was significantly higher in relapsed patients, when compared with that in non-relapsed patients (36.1% vs. 18.9%; p = 0.001). Preoperative CTCs ≥2 was an independent prognostic factor (p = 0.01), and predicted earlier recurrence in curative resected patients (p = 0.001). No significant change was found between CTCs before and 3 days after surgery. However, CTCs was significantly increased in subgroup of patients not performed preli-

APHPB-0800

EARLY AND LONG TERM RESULTS OF HEPATIC RESECTION FOR HEPATOCELLULAR CARCINOMA (HCC) AT A TERTIARY CARE CENTRE IN INDIA

R. Panwar¹, S. Pal¹, N. R. Dash¹, S. Shalimar², P. Sahni¹ and S. K. Acharya²

¹Gastrointestinal Surgery & Liver Transplantation, All India Institute of Medical Sciences, Delhi, India;
²Gastroenterology & Human Nutrition, All India Institute of Medical Sciences, Delhi, India

Objectives: To evaluate the early and long term results of hepatic resection for the management of HCC so as to generate data specific to Indian population.

Methods: The records of all patients who underwent hepatic resection for HCC in the Department of GISurgery, AIIMS (New Delhi) were reviewed. The relevant peri-operative and follow-up data were extracted from a prospectively maintained database.

Results: Between January 1987 and December 2013, 81 patients [71 males; mean age: 49.2 ± 15.6 years] underwent hepatic resection for HCC. Of these 23(28%) were cirrhotic and 36(44%) had hepatitis B. Hepatitis B was significantly more common in cirrhotics (74% vs. 34%; p = 0.001). Most patients had locally advanced disease at presentation [Tumor size ≥10 cm in 61(75%); vascular tumor thrombus in 10(12%)]. Anatomical resection was done in 61 (75%) including 56 major hepatic resections (≥3 segments). Overall in-hospital mortality was 13(16%) [Cirrhotic: 5(22%) vs. non-cirrhotic: 8(14%); p = 0.503]. Grade III-V complications (Modified Clavien-Dindo classification) occurred in 25(31%) patients (cirrhotic: 48% vs. non-cirrhotic: 24%; p = 0.037). Follow up information was available for 51(75%) patients. The median time to recurrence was 12 months and most (82%) occurred within 1 year. The recurrence free survival at 1-, 3- and 5-years was 49%, 37% and 33%, respectively. Positive resection margin and vascular invasion were significantly associated with very poor prognosis.

Conclusion: Majority of Indian HCC patients present with locally advanced disease. Despite this surgical resection provides a chance for long term recurrence-free survival in a third of them.
APHPB-0801
PREDICTING POSTOPERATIVE PANCREATIC FISTULA (POPF) AFTER PANCREATIC RESECTIONS USING PREOPERATIVE ENDOSCOPIC ULTRASOUND (EUS) ELASTOGRAPHY (EUSE): A PROSPECTIVE STUDY
A. A. Khan1, S. Pal1, P. Garg1, N. R. Dash1, S. Datta Gupta1 and P. Sahni1
1Gastrointestinal Surgery and Liver Transplantation, All India Institute of Medical Sciences, Delhi, India

Objectives: Pancreatic resections are associated with POPF which occur less frequently with a firm pancreas. We used EUSE to assess pancreatic texture at the resection margin and its relation to pancreatic fibrosis and POPF.

Methods: Between June 2012 and December 2013 all patients who underwent EUS for diagnosis/assessment of resectability had an EUSE done. An area (A) in the neck/body (intended resection site) and another area (B) in the peripancreatic soft tissue were analysed. The strain ratio (B/A) was used to assess pancreatic texture. The main pancreatic duct (MPD) size was measured and the degree of fibrosis at the resected pancreatic margin was assessed histologically.

Results: Thirty-four patients were studied. A strain ratio of ≤2.75 defined normal/soft and >2.75 as firm/very firm pancreas. Nine had clinically relevant POPF which occur less frequently with a firm pancreas. A higher proportion of patients with strain ratio ≤2.75 developed POPF (34.7% vs. 9.1%; p = 0.21) and had a sensitivity and negative predictive value of 88.9% and 91%, respectively. Patients with no/minimal fibrosis had a higher rate of POPF (32% vs. 11.1%; p = 0.39). Strain ratio correlated well with pancreatic texture, fibrosis grade and MPD size (p < 0.001). POPF occurred more frequently in those with a higher mean BMI (22.5 ± 3.6 vs. 20.1 ± 2.7; p = 0.04). Strain ratio had an accuracy, sensitivity, specificity, PPV and NPV of 88.2%, 89%, 88%, 72.7% and 95%, respectively for assessment of fibrosis.

Conclusion: EUSE of the pancreas did not predict POPF but correlated well with pancreatic texture, degree of pancreatic fibrosis and MPD size.

APHPB-0802
PREDICTION OF PANCREATIC FISTULA AND FIBROSIS IN PATIENTS UNDERGOING PANCREATIC RESECTIONS USING DIFFERENTIAL PANCREATIC ENHANCEMENT PATTERN ON MULTI PHASIC COMPUTED TOMOGRAPHY (MPCT) SCAN: A PROSPECTIVE STUDY
A. A. Khan1, S. Pal1, R. Sharma2, N. R. Dash1, S. Datta Gupta3 and P. Sahni1
1Gastrointestinal Surgery and Liver Transplantation, All India Institute of Medical Sciences, Delhi, India
2Radiodiagnosis, All India Institute of Medical Sciences, Delhi, India
3Pathology, All India Institute of Medical Sciences, Delhi, India

Objectives: Pancreatic resections are associated with postoperative pancreatic fistula (POPF). A firm pancreas, which is related to pancreatic fibrosis, is less likely to develop POPF. We used specialized MPCT to assess pancreatic enhancement at the resection margin and its relation to the degree of fibrosis and risk of POPF.

Methods: Between June 2012 and December 2013 all patients undergoing Whipple (PD), or distal (DP)/central pancreatcetomy (CP) underwent MPCT [unenhanced, pancreatic and hepatic venous phase]. CT attenuation value (late/early [L/E] ratio) at the intended pancreatic resection site, and the body and tail region was calculated. Fibrosis at the resected margin was assessed histologically. L/E ratio and degree of fibrosis were correlated with POPF.

Results: Sixty-three patients (PD 58, DP 3, CP 2) were analysed. Eleven patients had clinically relevant POPF (17.4%; ISGPF grades B: 7 and C: 4). Based on AUC on ROC curve and histology as gold standard a L/E ratio of ≤0.84 defined normal and >0.84 delayed enhancement. POPF were more frequent in patients with an L/E ratio ≤0.84 (21% vs. 12%; p = 0.4), with absent/mild fibrosis (22.5% vs. 8.9%; p = 0.30) and with a smaller pancreatic duct [2.5 vs. 4.15 mm; p = 0.001]. L/E ratio correlated positively with degree of fibrosis, pancreatic duct size and surgeon’s assessment of pancreatic firmness (p < 0.001). For assessment of fibrosis, L/E ratio had an accuracy, sensitivity and specificity of 87.3%, 87% and 87.5%, respectively.

Conclusion: Although pancreatic CT attenuation values (L/E ratio) correlated well with pancreatic texture and fibrosis and pancreatic duct size, it did not predict POPF.

APHPB-0803
THE POSSIBILITY OF SUGGESTION OF SIMPLE CHOLECYSTECTOMY FOR THE GALLBLADDER CANCER WITH T1B
B. Kim1, C. Nam1 and Y. Nah1
1Surgery, Ulsan University Hospital, Ulsan, Korea

Objectives: The aim of this study is to investigate the qualification of gallbladder cancer patients with stage...
T1b operated only simple cholecystectomy that can get similar treatment results for the extended cholecystectomy.

**Methods:** A review of 60 patients with the diagnosis of gallbladder cancer treated from 2000 to 2010 was performed. These patients underwent surgical treatment for GB cancer stage T1b and T2, and were retrospectively reviewed.

**Results:** Simple cholecystectomy was performed in 18 patients (30.0%) with T1b and in 42 patients (60.0%) with T2. Lymph node metastasis was observed in 0.0% of T1b patients and in 16.6% of T2 patients. A significant difference in overall survival rates was observed between lymph node metastasis and none lymph node metastasis patients. However, no significant overall survival rates difference was observed between those who underwent simple cholecystectomy or extended cholecystectomy with T1b patients, regardless of whether lymph node dissection was performed or whether lymph node metastasis was present. On multivariate analysis, above 60 years old and poorly differentiated type of cell differentiation were independently associated with node metastasis.

**Conclusion:** We suggest that the simple cholecystectomy is possible for T1b patients that had limited qualifications to be expected no lymph node metastasis. There was a controversy about the treatment of GB cancer patients with T1b. Though relatively few patients enrolled in this study, simple cholecystectomy and extended cholecystectomy showed similar survival. To be assured the qualification for simple cholecystectomy to the GB cancer patients with T1b, further evaluation is needed.

**APHPB-0804**

**INTRAHEPATIC SARCOMATOID CHOLANGIOCARCINOMA FOR RESECTION OF SEGMENT 3 AND 4 OF THE LIVER**

H. Jang¹, C. Park¹ and D. Eom²

¹Surgery, Gangneung Asan Hospital University of Ulsan College of Medicine, Gangneung, Korea; ²Pathology, Gangneung Asan Hospital University of Ulsan College of Medicine, Gangneung, Korea

**Objectives:** Sarcomatoid features are occasionally seen in various types of epithelial tumors, and it is sometimes difficult to differentiate between sarcomatoid carcinoma and true sarcoma. Most sarcomatoid carcinomas in the liver are thought to be sarcomatoid hepatocellular carcinomas. Recently, there have been reports demonstrating sarcomatous changes in cholangiocarcinomas. This type of tumor is defined as ‘sarcomatous intrahepatic cholangiocarcinoma’ in the WHO classification of tumors.

**Methods:** We report herein a patient with intrahepatic sarcomatoid cholangiocarcinoma who underwent a hepatic resection. The main part of the tumor consisted of pleomorphic spindle and giant cells.

**Results:** A 63-year-old male patient presented with a liver mass. Computed tomography revealed a well-demarcated, low-attenuated mass in the left lobe of the liver. A radical surgery, which included segment 4 and 3 resection with preservation of the left hepatic duct and the segment 2 was performed. The histopathological examination revealed that the tumor did not involve the liver parenchyma and had no lymph node metastasis. The tumor was 3 × 4 in size. Microscopically, the tumor cells were contained in the sarcomatous component, and adenocarcinoma component on histological mapping. Immunohistochemical staining for cytokeratin was positive in the sarcomatous components. The diagnosis confirmed a sarcomatoid cholangiocarcinoma. 4 months after surgery, the patient died of pneumonia.

**Conclusion:** To the best of our knowledge, only 17 cases of intrahepatic sarcomatoid cholangiocarcinoma have been reported in the English-language literature. It has been reported that the prognosis for intrahepatic sarcomatoid cholangiocarcinoma is worse than that for intrahepatic cholangiocarcinoma. We report herein a patient with intrahepatic sarcomatoid cholangiocarcinoma who underwent a hepatic resection.

**APHPB-0805**

**THE KIDNEY-TYPE GLUTAMINASE (GLS1) IS A BIOMARKER FOR PATHOLOGIC DIAGNOSIS AND PROGNOSIS OF HEPATOCELLULAR CARCINOMA**

D. Yu¹ and X. Shi¹

¹Department of Hepatobiliary Surgery the Affiliated Drum Tower Hospital Medical School of Nanjing University, Affiliated Drum Tower Hospital of Medical School Nanjing University, Nanjing, China

**Objectives:** Observe the expression and distribution of glutaminases (GLS1 and GLS2) in hepatocellular carcinoma (HCC), and identify the unique role of glutaminases in HCC pathological diagnosis and prognosis.

**Methods:** Four clusters of the samples from HCC, normal liver, and other liver diseases from multiple clinical centers were enrolled. Immunohistochemical staining and qRTRCR were performed to investigate the expression and/or biodistribution of GLS1 and GLS2. Enzyme activity of GLS1 was determined in tumor and nontumor tissues, four HCC and one normal liver cell lines. Tissue microarray was used to evaluate the sensitivity and specificity in diagnosis, and prognosis of HCC. The roles of GLS1 and GLS2 in HCC progression, clinical relevance were evaluated.

**Results:** GLS1 was intensively expressed in HCC, whereas GLS2 mainly expressed in nontumor hepatocytes. The sensitivity and specificity of GLS1 for HCC reached to 96.51% and 75.21%, respectively. A metabolic switch from GLS2 to GLS1 was observed in a serial of liver tissues from normal liver to fibrotic liver to dysplasia nodule and to HCC, which mimics HCC oncogenic transformation. Both GLS1 and GLS2 in HCC were conversely correlated to survival time of HCC patients and were independent indexes for survival time, however, GLS1 dominantly determined the prognosis.

**Conclusion:** GLS1 is a sensitive and specific biomarker for pathological diagnosis and prognosis of HCC.
CELL DEATH-ASSOCIATED BIOMARKERS MAY NOT BE USEFUL TO DISCRIMINATE BETWEEN DISPLASIA AND HEPATOCELLULAR CARCINOMA: A PILOT STUDY

E. Ulukaya¹, D. Nart², F. Yilmaz², Z. Karasu³ and S. Ulukaya⁴

¹Medical Biochemistry, Uludag University Faculty of Medicine, Bursa, Turkey; ²Pathology, Ege University Faculty of Medicine, Izmir, Turkey; ³Gastroenterology, Ege University Faculty of Medicine, Izmir, Turkey; ⁴Anaesthesiology and Intensive Care, Ege University Faculty of Medicine, Izmir, Turkey

Objectives: Hepatocellular carcinoma (HCC) is one of the most common diseases worldwide, with extremely poor prognosis because there is no reliable biomarker (s) to screen and diagnose it early. Alpha-fetoprotein (AFP) is the only available biomarker for HCC diagnosis. However, to discriminate displasia from HCC is difficult. Furthermore, there is currently no biomarker for this aim.

Methods: Therefore, we investigated the possible role of these novel biomarkers (M30 antigen and M65) to discriminate from HCC. 13 HCC and 13 displasia patients were enrolled the study. The histologic material contained primary HCC and surrounding liver tissue from 26 patients who underwent hepatectomy at the time of liver transplantation.

Results: The mean of M30 antigen was 146.04 (SD = 0.05) in displasia patients, while it was 264.93 (SD = 0.247) in HCC patients. The mean M65 was 629.87 (SD = 0.240) in HCC patients, while it was 827.90 (SD = 0.423) in displasia patients. There was no statistically difference between the groups (p = 0.05). In addition, we analysed the correlations between these two biomarkers and the classical tumor markers (AFP, CA-125, CEA, CA-19.9). Only correlation (r = 0.495) was found to be between AFP and M30 antigen in HCC patients.

Conclusion: In conclusion, because neither M30 antigen nor M65 are significantly changed between HCC and displasia in liver, the cell death-related parameters may not be useful to discriminate these two neoplastic processes of liver.

COMPARING SURGICAL OUTCOMES OF LAPAROSCOPIC VERSUS OPEN LIVER RESECTION FOR HEPATOCELLULAR CARCINOMA

W. Q. Leong¹, I. S. Ganpathi², A. W. Kow², K. K. Madhavan¹ and S. K. Y. Chang²

¹Yong Loo Lin School of Medicine, National University of Singapore, Singapore, Singapore; ²Department of Hepatobiliary & Pancreatic Surgery, National University Health System, Singapore, Singapore

Objectives: Hepatocellular carcinoma (HCC) is the sixth most prevalent cancer worldwide, with about 750,000 new cases diagnosed yearly. In this study, we compared the surgical outcomes between patients who underwent laparoscopic (LLR) and open liver resection (OLR) for curative treatment of HCC in our institution.

Methods: Case records of patients undergoing curative resection of HCC at the National University Hospital (NUH) Singapore from 2005 to 2012 were retrieved and manually culled for data. Vital status and the death date for subjects were supplemented from the National Death Registry Database. All analyses were performed using SPSS version 21.0.

Results: Of the 152 patients included in our study, 42 underwent LLR and 110 underwent OLR. Intraoperative duration in the LLR group was significantly shorter (mean 250.43 min vs. 349.90 min, p < 0.001). Intraoperative blood loss was also significantly lower (495.83 mL vs. 1085.00 mL, p < 0.001), as was the requirement for blood transfusion (9.5% vs. 39.1%, p < 0.001). For post-operative outcomes, there was no difference in the complication rate or post-operative mortality. The total length of hospital stay was significantly shorter in the LLR group (7.55 days vs. 11.42 days, p < 0.001). In terms of long-term oncologic outcomes, there was no significant difference in overall survival in both groups, however recurrence-free survival was higher in the LLR group compared to the OLR group (p = 0.023).

Conclusion: In this study, LLR for HCC was associated with better intra-operative outcomes and comparable post-operative outcomes compared to OLR.

EXPERIENCE IN PANCREATIC TRAUMA AT A TERTIARY REFERRAL CENTRE IN INDIA

P. Subramanian¹, B. Seshukumar¹, S. Munde¹, N. Chakavarthy¹ and G. Vikram¹

¹surgical Gastro Enterology and HPB Surgery, Kovai Medical Center and Hospital, Coimbatore, India

Objectives: Background: Pancreatic injury is rare, if undiagnosed can result in significant morbidity and mortality. Correct diagnosis is challenging, particularly in blunt trauma patients. The optimal management of pancreatic injury is also not well established.

Aim: To analyse the management of pancreatic trauma at a tertiary referral center in India.

Methods: A retrospective review of 10 cases of pancreatic trauma managed in a tertiary referral unit between 2008 and 2014.

Results: Nine cases were secondary to blunt injury abdomen and a single case of penetrating injury. Age ranged from 4 to 41 years (median 25). Patients presented between one hour to after four days of injury. There were 9 males and 1 female, 3 patients presented with peritonitis, 3 with pancreatitis, 3 with haemorrhagic shock & peritonitis and 1 with pain. CECT was the imaging of choice in all the cases and MRCP confirmed pancreatic injury in one. Surgeries ranged from emergency whipples (1), mid segment pancreatectomy (1), distal pancreatectomy with splenec-
APHPB-0809

LIVER RESECTION: A 5 YEAR REGIONAL HOSPITAL EXPERIENCE IN HONG KONG

C. C. Lee1 and C. Cheung1

1Department of Surgery, Tuen Mun Hospital, Hong Kong, Hong Kong China

Objectives: In Hong Kong, most of the liver resections were performed in tertiary major hospitals because of its complexity and high morbidity. Since 2009, The Tuen Mun Hospital (TMH) hepatobiliary surgeons started to perform the liver resections for their regional residents using a multi disciplinary team approach. This is a summary of the liver resection statistics in TMH.

Methods: Data of liver resections performed between May 2009 and May 2014 of TMH were collected prospectively and reviewed with special attention to patient survival, post-operative complications and mortality.

Results: There were 386 liver resections during the study period.

Most of the patients (90%) received open hepatectomy. The average blood loss was 634 mL and 66 patients received blood transfusion (14.5%). Most of the patients (90%) received open hepatectomy. Hospital stay ranged from 10 days to 2 months. Half of the patients had significant morbidity (ISGPF grade B fistula in 2, grade A fistula in 1 and duodenal fistula in 1) and 1 died of sepsis.

Conclusion: Pancreatic injuries vary in their presentation from mild pain to frank peritonitis. Management ranges from conservative to major abdominal surgeries. The type of management should be tailored to the individual case.

Malignant HPB Diseases

APHPB-0810

IMPACT OF PREOPERATIVE DIABETES AND DEGREE OF HYPERGLYCEMIA ON PROGNOSIS OF PATIENTS WITH RESECTED PANCREATIC DUCTAL ADENOCARCINOMA

Y. S. Yoon1, W. H. Lee1, H. S. Han1, J. Y. Cho1, Y. R. Choi1, J. Y. Jang1 and H. L. Choi1

1Surgery, Seoul National University Bundang Hospital, Seong-nam si Gyounggi-do, Korea

Objectives: The purpose of this study was to evaluate the oncologic outcomes of patients with resected pancreatic ductal adenocarcinoma (PDAC) according to the presence of preoperative DM and the degree of hyperglycemia using glycosylated hemoglobin (HbA1c).

Methods: 142 patients with R0 or R1 resection who underwent pancreatectomy in Seoul National University Bundang Hospital between September 2003 and June 2012, were selected for this study. The patients were divided into three groups according to the presence of DM and level of HbA1c: non-DM (n = 69), DM with HbA1c <8.8% (n = 48), and DM with HbA1c ≥8.8% (n = 25). We compared the survival outcomes of the three groups with retrospective analysis using a prospectively collected database.

Results: There was no significant difference in age, presence of jaundice, preoperative biliary drainage, tumor site, tumor size, cancer stage, postoperative complication and adjuvant chemotherapy among three groups. The 3-year overall survival rate was similar between non-DM and DM groups. However, DM with HbA1c ≥9.0% group showed a significantly lower 3-year OS (22.3%) compared with non-DM (34.3%) and DM with HbA1c <9.0% (40.2%) groups (p = 0.028). The multivariate analysis revealed that DM with HbA1c ≥9.0% (p = 0.007; RR = 2.531) and presence of angiolymphatic invasion (p = 0.039; RR = 1.842) were independent prognostic factors for OS.

Conclusion: This study shows that severely uncontrolled hyperglycemia over prolonged periods of time rather than the presence of preoperative DM negatively affects the survival outcome in patients with resected PDAC.

Benign HPB Diseases

APHPB-0811

QUALITY OF LIFE TRENDS IN PATIENTS UNDERGOING SURGERY FOR CHRONIC PANCREATITIS

S. H. S. Reddy1, R. Gupta1, S. Shenvi1, P. Kohli1, S. S. Rana2, D. K. Bhasin2 and R. Singh1

1General Surgery, PGIMER, Chandigarh, India; 2Gastroenterology, PGIMER, Chandigarh, India

Objectives: To evaluate the post-operative trends of chronic pancreatitis by comparing the quality of life amongst our cohort of operated chronic pancreatitis patients.

Methods: A retrospective analysis of cases with a minimum follow up of 1 year was done. They were administered the disease-specific EORTC QLQ-PAN28(CP) questionnaire. Izbicki pain scores, steatorrhea and diab--
betes outcomes were measured simultaneously. The cohort was divided into alcoholic and non-alcoholic pancreatitis groups. Short-term (<3 year) and long-term (≥3 year) follow-up subgroups were compared.

Results: 41 of the 70 cases could be followed-up and 19 (46.3%) of them belonged to alcoholic and 22 (53.7%) to non-alcoholic groups. Reliefs in exocrine/endocrine insufficiency were similar in both groups. Postoperative Izbicki pain score improvements were significant in all the subgroups. The global health status, role functioning and social functioning was significantly better post-operatively in all subgroups. Improvement in physical functioning, fatigue, body image and sexuality was significant only in the short-term subgroups. Cognitive and emotional functioning improvements were significantly better only in non-alcoholic subgroups. Among the symptom scores pain scores were significantly better in all the subgroups. Betterments in nausea-vomiting, eating related items, weight loss and loss of muscle strength were not significant in alcoholic long-term subgroup (some of them had resumed alcohol consumption).

Conclusion: Improvements in postoperative outcomes and QOL using the EORTC QLQ PAN 28(CP) were similar among short-term (<3 year) and long-term (≥3 year) subgroups which may imply that the benefit of surgery is preserved over time. Physical scores though, didn’t show such a trend of sustained improvement.

Malignant HPB Diseases
APHPB-0812
THE ENHANCED RECOVERY PROGRAMME DOES NOT INFLUENCE FITNESS FOR CHEMOTHERAPY OR NUMBER OF CYCLES IN PATIENTS HAVING ADJUVANT CHEMOTHERAPY FOR COLORECTAL LIVER METASTASES
A. Chan¹, Z. Ali¹, S. Lapsia², H. Coleman¹, A. Krige³, A. Kausar¹, D. Chang¹, C. Harris¹ and D. Subar¹
¹Department of Surgery, Royal Blackburn Hospital, Blackburn, UK; ²Department of Radiology, Royal Blackburn Hospital, Blackburn, UK; ³Department of Anaesthetics, Royal Blackburn Hospital, Blackburn, UK

Objectives: The Enhanced Recovery Programme (EPR) reduces length of hospital stay in patients undergoing liver resection for colorectal liver metastasis (CRLM). Progression free survival is improved by perioperative chemotherapy with time to chemotherapy shown to affect survival in other malignancies. The aim of this study was to assess the effect of ERP on time to adjuvant chemotherapy and the completion of chemotherapy in patients CRLM resection.

Methods: This retrospective study of patients undergoing liver resection for CRLM between April 2005 and March 2013 compares 50 patients who received standard care and 50 patients on the ERP. Demographic and clinical outcome data was analysed, in particular, details of neo-adjuvant and adjuvant chemotherapy.

Results: The mean age was 65.7 ± 9.6 years (range 42–88 years), with a male:female ratio of 65:35, with no statistical difference in age (p = 0.21) and sex distribution (p = 0.83) between the groups. ERP significantly decreased the length of hospital stay (p = 0.007). 54 patients proceeded to adjuvant chemotherapy, but ERP did not influence this (p = 0.229). ERP did not affect the number of cycles that patients had (p = 0.511) or the number of patients completing 6 or more cycles of chemotherapy (p = 0.606). Patients who had received neo-adjuvant chemotherapy were less likely to complete at least 6 cycles of adjuvant chemotherapy (p = 0.0610)

Conclusion: Although ERP reduces length of hospital stay in patients undergoing CRLM resection it did not affect the ability of patients to complete 6 or more cycles of adjuvant chemotherapy post-hospital discharge. Neo-adjuvant chemotherapy may decrease the ability of patients to tolerate adjuvant chemotherapy.