Theme: Dental Treatment and Restorative Dentistry: Caries

**FC001**

A Comparison of Different Radiographic Modalities for Detection of Occlusal Caries Lesions in vitro

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**Objectives:** The aim of this in-vitro study was to compare the diagnostic accuracy of different radiographic imaging modalities in detecting occlusal caries lesions.

**Materials and methods:** Under standardised conditions, 125 extracted human permanent molar teeth with sound or occlusal caries lesions were radiographed using a conventional film system (F-speed), storage phosphor plate system (PSP), charge-coupled device (CCD) and cone beam computer tomography system (CBCT). Two observers scored the resulted images for the presence or absence of caries. Then, the teeth were histologically prepared and definite diagnosis was determined by stereomicroscopic assessment. The area under the receiver operating characteristic curve (Az), sensitivity, specificity, and accuracy of each imaging modality were calculated, as well as the intraexaminer and interexaminer reproducibility.

**Results:** For both thresholds interexaminer and intraexaminer agreement was higher for CBCT. Similar Az values were achieved with all imaging methods at diagnostic D1 threshold (enamel lesions). Az values of CBCT system were found statistically higher than other imaging modalities at diagnostic D3 threshold (p > 0.05) and no significant difference was found between other imaging modalities. All radiographic methods showed similar sensitivities, specificities and accuracy in detecting enamel lesions. CBCT system showed higher sensitivities and accuracy in detecting dentine lesions.

**Conclusions:** Within the limitations of this study, CBCT showed better performance in detecting more advanced occlusal caries lesions in all radiographic systems.

**FC002**

An in vitro SEM Comparative Study of Dentine-Biodentine™ Interface

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**Aims:** Investigate the adhesion interfaces between Biodentine™, MTA, GIC and Dentine. The sealing ability of these materials is assessed in vitro through SEM observation of the tooth-cement interface.

**Materials and methods:** Sixty three freshly extracted human molars were used and randomly divided into three groups according to filling material used for the restoration of the occlusal cavities. Groups (A) restored with Biodentine™, (B) with MTA and (C) GIC. Each group subdivided into three groups according time of storage (7, 14 and 28) days. After storage period, the teeth were sectioned mesio-distally using a low speed diamond saw through the center of the restoration. The samples were prepared for (SEM: TESCAN – Germany) to find gap between restorations and dentine.

**Results:** SEM images for the interface gap clearly appear in significant different (32 μm) with Biodentine™, MTA and GIC, at (7) days, adaptation of these materials and dentine increased (3.35 μm) at (14) days. In (28) days the results are completely different such as for GIC no adaptation (85 μm), while the MTA (7 μm), and in Biodentine™ the results was the best i.e. approximately intimate contact (1 μm), see figure (1). All the difference was statistically done for significant comparative to all storage times.

**Conclusions:** All studies material exhibited some degree of marginal gaps. A positive correlation was found between the marginal adaptation and time of storage. Biodentine™ exhibited similar performances that are better than GIC and MTA under the conditions of our study.

**FC003**

Clinical Performance of Methods in Detecting Occlusal Caries Lesions in-vitro

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**Objectives:** The aim of this in-vitro study was to assess inter-and intra-examiner reproducibility and accuracy of a newly developed light-emitting diode (LED) (Midwest Caries ID, MID, DENTSPLY Professional, New York, USA) and laser fluorescence-based device (DIAGNoSendent pen 2190. Kavo, Biberach, Germany) in detecting caries lesions in extracted human molar teeth, compared with the performance of visual inspection (VI) using the International Caries Detection and Assessment System (ICDAS).

**Materials and methods:** One hundred and forty permanent molar teeth were assessed twice by two examiners with VI using the ICDAS criteria and clinically using a LED- and a laser fluorescence...
based devices. After measuring the reference point of each tooth, the teeth were histologically prepared and classified according to lesion extension as the gold standard. Intra and inter-examiner reliability of the examinations was assessed using Cohen’s Kappa statistics. Sensitivity, specificity, and accuracy of the diagnostic methods were calculated. The area under the receiver operating characteristic curve (Az) was measured to compare their diagnostic performance of methods for occlusal caries diagnosis at D1 (enamel) and D3 (dentine) thresholds.

Results: Using the D1 and D3 threshold, all methods presented similar Az values (p > 0.05). ICDAS showed lower specificity comparing to other methods, which means ICDAS showed more false positive scores. MID showed higher interexaminer agreement at both D1 and D3 threshold. For both enamel and dentin thresholds all test methods showed similar intraexaminer agreement for both observers.

Conclusions: All test methods seemed to be useful auxiliary tools with good performance in detecting occlusal caries lesions.

FC005
The Technique of Composite Filling with Impression
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Aim: The technique of composite filling with impression is to give us valuable advantages in tooth filling processes. I have used this treatment technique successfully at my clinic for 5 years. Mostly indications are occlusal cavities, enamel yet not collapsed.

My aim is filling the composite at once by using the impression from the surface texture without fissure modeling.

Methods: Main material is orthodontic silicone wax. Before preparing the cavity, the impression of tooth will be achieved by pressing a piece of wax to the tooth surface. The wax is semi transparent material and it will permit the curing light to be absorbed by the composite. Also the pressure will be occured during the polymerization of the composite will be useful to discard the C force.

After the cavity is prepared, acid will be applied over enamel boundary. This issue will help to remove overflow composite easier. As a filling material a flow and soft composite will be satisfactory. But in deep cavities or when hard composites are needed, the desired material will be applied but 1 mm of occlusal gap must be reserved. Flow composite could be used in this gap for finishing. After removing wax, the composite must be continued to be lightened to impact the hardening process. Overflow material could be easily removed. Over occlusal contacts will not occur.

Results: Finally, the technique of composite filling with impression gives the dentist and the patient fast, reliable and aesthetic results, because of the impression is achieved from the original tooth.

FC006
Visualisation of Human Dental Pulp Vasculature by Detection of CD34
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Aim: This study was undertaken to show the vasculogenesis, process by which endothelial precursor cells form new blood vessels in the embryo. Endothelial stem cells might persist into adult life, contributing to the formation of new blood vessels. To characterize vasculization of human dental pulp, we examined the expression of the human hematopoietic progenitor cell antigen CD34.

Methods: In this study we have examined 30 human teeth under three different clinical conditions: healthy teeth, shallow and deep cavities. Teeth were extracted and immediately cut longitudinally; pulp tissue was extirpated and fixed in formalin for 24 h at 4°C. The specimens were embedded in paraffin, according to standard- ized laboratory procedure. Sections were cut at 5 µm thicknesses
and stained by the streptavidin–biotin complex immunoperoxidase method. To characterize the vascularization of human dental pulp, we examined the expression of the human hematopoietic progenitor cell antigen CD34.

Results: The findings indicate that vasculogenesis of dental pulp is a process that is present in healthy teeth with single CD34 positive cell. In carious teeth these cells subsequently coalesce to form solid vascular cords inside the connective tissue, which later aggregate with the progression of the carious lesion. Pericites were embedded within the newly formed microvessels basement membrane.

Conclusions: Present study demonstrated that presence of CD34 endothelial cells reveals the continuous adjustment of vessels in response to functional needs and dental tissue homeostasis. Endothelial cells play a key role in immune and inflammatory reactions by regulating lymphocyte and leukocyte movement into dental pulp.

A Novel Computer Controlled Tri-Dimensional Cutting and Cavity Preparation Machine (CCTCCM) for Dental Laboratory Research

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Introduction: The aim of this study was to design, manufacture a simple Computer Controlled Three-dimensional Cutting flat surfaces and Cavity Preparation Machine (CCTCCM) and to compare the accuracy of cavities prepared by a CCTCCM to those prepared by an Expert Practitioner (EP).

Materials and methods: The hardware consists of several parts to provide high-speed headpiece the ability to move in three axes. The motion control system is programmed to create repeatable movements.

There were two groups of 12 samples. Cylindrical 2 × 2 mm cavity preparations (CP) on flat dentinal surface were prepared using CCTCCM (Group A) and by an EP (Group B). Measurements were done with ImageJ software to evaluate cavity diameter and depth accuracy.

Results: Welch two sample t-test in R-software was done for circularity, circle accuracy, depth uniformity error and depth accuracy in cavity preparation between CCTCCM and ECP groups. p-values smaller than 0.05 showed highly significant differences. An improvement of 3.6, 9.1, 4.7 and 6.3 times were accrued respectively if a machine is used for cavity preparation.

Discussion: Standardized cavity preparation, repeatability, remount ability of the jig and the tooth sample at the exact previous and non-traumatic CP make CCTCCM a reliable device for in-vitro research to standardize CP.

Conclusion: The precision of CP in term of diameter and depth with CCTCCM was 8.4 and 5.0 times more than ECP respectively.

Theme: Preventive Dentistry: Caries

CPP-ACPFC Application Methods – Effects on Salivary Parameters and Fluoride Level

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Purpose: Casein phosphate products have in recent years been shown to have caries preventive effects. However, there has been no specific manufacturer’s instruction, or agreement, on how these should be “applied.” The aim of this study was to compare the effect of two methods of application, namely using cotton buds and special tray, for topical application of a casein phosphopeptide-amorphous calcium phosphate preparation (CPP-ACPFC, a product containing 900 ppm fluoride) on whole saliva.

Method: Ten healthy 18–20-year-old volunteers were strictly trained to use CPP-ACPFC (Tooth Mousse Plus®) using cotton buds and special trays in a standardized manner. Non-fluoride toothpaste was used for tooth brushing 2 weeks prior to and during the test duration. CPP-ACPFC applications were twice daily for 7 days for each method, with a 1-week washout period in between. Stimulated whole saliva of subjects were evaluated for consistency, flow-rate, pH and buffering capacity at baseline and at the end of the study period. In addition, fluoride retention and concentration were measured and compared.

Results: There were no differences in salivary parameters (consistency, flow-rate, pH, buffering capacity) following applications of CPP-ACPFC using the two methods of applications. However, there was a statistically significant different in salivary fluoride concentrations (p < 0.05) between pre- and post-treatment in the special tray group. Higher salivary fluoride concentration, with longer retention, was also achieved with special tray application.

Conclusion: Following short-term CPP-ACPFC applications, the use of special trays resulted in higher salivary fluoride level compared to its applications using cotton buds.

Theme: Preventive Dentistry: Epidemiology

Identification and Antibiotic Susceptibility of Oral Streptococci from Dental Plaque in Children

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FC007

FC008

FC009
Introduction: Oral streptococci are major inhabitants of dental plaque, particularly viridans group of streptococci, which can cause serious infections. However, their presence may be associated with infective endocarditis, especially in children with congenital heart disease.

Aim: The aim of this study is to identify the presence of different types of oral streptococci from dental plaque, using Vitek 2 methods (bioMérieux) in children and at the same time their susceptibility in some antibiotics using disc diffusion techniques.

Material and methods: Samples of supragingival dental plaques for microbiological studies were collected from 60 healthy children, ages 5–15 years from Kosovo. The samples were obtained from the bucal surfaces of the first (deciduous or permanent) molars of the lower jaw and incisors of the upper jaw using the sterile swab sticks. Gram positive cocci were identify by VITEK 2-GP card. The Samples were cultivated on Columbia nutrient agar and thioglycollat (Institute of Microbiology CCK). After the identification of positive cocci the disc diffusion method is used for their susceptibilities in antibiotics: amoxicillin, cefalexin, erythromycin and clindamycin.

Results: In microbiological tests have dominated viridans group of streptococci (S. mitis, S. oralis, S. salivarius, S. vestibularis, S. sanguis, S. mutans). From overall oral cocci group, our results shows that amoxicillin sensitive were 89%, cefalexin 63.3%, erythromycin 66.6% and clindamycin 70%.

Conclusion: It is important to know the presence of oral streptococci and their sensitivity in antibiotic because of the serious infections they can cause during the dental treatment, especially in children with special medical needs.

Theme: Preventive Dentistry: Epidemiology

FC010
Dental Caries Experience and Periodontal Status Among Schoolchildren in Georgia
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Aim: To evaluate current caries experience and periodontal status of schoolchildren in Georgia.

Materials and methods: A pathfinder study was planned and executed according to the WHO recommendations. School children were examined in three large cities populated mainly by ethnic Georgians and in two villages represented by ethnic minorities (Armenian and Azeri). In order to assess caries experience DMFT as well as dmft values were recorded by calibrated examiners in three different age groups: first grade, seventh grade and tenth grade (the age of 5–6, 12 and 15 years respectively). For the tenth grade group, periodontal status was also evaluated by recording outcomes of plaque, calculus and bleeding on probing.

Results: Overall 1053 children were examined. The total caries experience values for the first (n = 404), seventh (n = 334) and tenth grade (n = 314) children were DMF = 0.04 and dmf = 4.40, DMF = 1.81 and DMF = 3.19 respectively. The plaque was evidenced in 230 (73.25%) children; in 125 (39.81%) children plaque was evidenced on all the examined teeth. Calculus was evidenced in 117 (37.26%) children. Probing pocket depth of 5 mm and above was detected in 85 participants (27.07%). Seventeen (5.41%) children presented with more than three sites with PD > 5 mm. Bleeding on probing was recorded in 83 (26.43%) children.

Conclusions: Caries experience as well as periodontal diseases seem to be prevalent in Georgia. Further research is warranted in order to shed light on the influencing factors. Education and prevention programs should be introduced in order to improve oral health status among the children in Georgia.

Free Communication Session 02 | B342 | 28.08.2013 | 09:00–11:00

Theme: Dental Treatment and Restorative Dentistry: Endodontics

FC011
A Survey on Endodontic Practice of Dental Practitioners in Turkey
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Aim: To assess the current endodontic practice in Turkey and to find out the opinions of practitioners on their level of practice and training needs.

Methods: A questionnaire dealing with current endodontic practice was conducted. A total of 650 practitioners from Turkey were randomly chosen and the questionnaires were sent to their e-mail addresses. All responses were gathered and thereafter analyzed using the statistical software SPSS.

Results: A total of 204 dentists returned the questionnaires, giving a response rate of 31.3%. More than 70% of the respondents stated that they never used rubber-dam during endodontic treatment, 60.3% indicated that they routinely took preoperative radiographs. The most commonly chosen technique for working length estimation was taking radiographs (78%). Seventy-six percent of the respondents used rotary NiTi instruments. Nearly 64% of them used rotary NiTi instruments more than five times per week and 30.5% used them until distortion occurred. Respondents commonly applied a combination of techniques (57.2%) or crown down (28.3%). Nearly 50% of the respondents used rotary NiTi instruments for retreatment and almost 90% considered postgraduate endodontic training was necessary.

Conclusions: This study demonstrates that the majority of respondents adopted the rotary NiTi instruments and techniques into
endodontic practice. On the other hand, some other procedures such as rubber-dam usage for isolation or electronic apex locator application in working length determination are not well incorporated. The need of endodontic training after graduation is seemed to be a common opinion among practitioners.

**FC012**

**An in vitro Comparison of Antibacterial Effects of Four Different Root Canal Irrigation Method in Root Canals Infected with Enterococcus faecalis**

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**Aim:** The purpose of the study was to compare the antibacterial effect of four different currently generated root canal irrigation methods in root canals infected with *E. faecalis*.

**Methods:** In the study, 105 extracted single rooted teeth were used. Twenty samples were distributed to each of four experimental and a positive control group. Five teeth were used in SEM imaging. Groups were generated respectively in this way: Group 1: Hawe irrigation probe side-vented needle, Grup 2: EndoActivator, Group 3: EndoVac, Group 4: SAF ve Grup 5: (+) control group.

After shaping with hand instruments root canals were infected with *E. faecalis* and first samples (S1) was taken, then the mechanic preparation was done with rotary instruments and irrigation systems. Then second samples (S2) were taken. Intra and inter group analyses were performed.

Statistical analyses were performed by SPSS (Statistical package for social sciences) for windows 15.0 program. While study data were being evaluated the convenience of the parameters to normal distribution was evaluated with Kolmogorov–Smirnov test and parameters weren’t in compliance with normal distribution. The significance was evaluated at the level of p < 0.05.

**Results:** The decrease percentage of the number of bacteria in positive control group was significantly lower than experimental groups (p < 0.005). There was no significant difference between the experimental groups in terms of decrease percentage after irrigation (p > 0.05).

**Conclusions:** According to the result of the study there was no statistically difference observed between irrigation systems used in terms of antibacterial effect.

**FC013**

**Assessment of New Root Canal Filling Material Based on Polymer-Modified White Portland Cement with CaCl₂:PH and Solubility Study**

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**Aim:** This study aimed to assess a new root canal filling material which may known as Polymer-modified White Portland cement and investigate its properties in comparison with Portland cement with CaCl₂.

**Materials and methods:** The experimental materials were prepared from 20% bismuth oxide and 80% white Portland cement. Later on CaCl₂ was added to them. Polymer was added to the developing material to enhance the workability of this material to be used as injectable root canal filling, so the mixture of 17.5% polymer, 12.5% CaCl₂ and 20% water was the most favorable one that comply the requirements.

pH study was conducted to measure the pH value of the experimental material and Portland cement with CaCl₂, ten specimens were used for each material.

The percentage of solubility of the experimental material and Portland cement with CaCl₂ was determined by modified method of American Dental Association specification no. 30 (ANSI/ADA 1991). Ten specimens were used for each tested material.

**Results:** It was shown that the experimental material had a higher pH which was (8.22 ± 1.3) than that of the Portland cement with CaCl₂ which was (8.0 ± 1.1).

There was non significant difference between experimental and Portland cement with CaCl₂. Regarding the solubility of the experimental material the value was less than the control.

**Conclusions:** It was concluded that this new material (Polymer-modified White Portland Cement) had comparable or better property with Portland cement with CaCl₂.

**FC014**

**Bond Strength of Resin Sealer to Root Canal Dentin**

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**Aim:** The aim of this study was to evaluate the effect of photodynamic therapy (PDT) on the on bond strength of resin sealer to root canal using a push-out test method.

**Methods:** Sixty single rooted teeth which have round shaped canals were used in this study. The teeth were divided into four groups according to the irrigation protocol during root canal treatment (n = 15). Group 1: irrigated with saline (control), Group 2: irrigated with sodium hypochlorite (NaOCl-5.25%), Group 3: irrigated with sodium hypochlorite and EDTA (17%), Group 4: irradiated with a photodynamic system (HELBO Photodynamic Systems). The roots were filled with single cone gutta-percha and a resin sealer (Adseal; Meta Biomed Co). All the specimens were then cut perpendicular to their long axis, to obtain 1 mm thick slices from the middle portions. Using push-out test, bond strength between resin sealer and root canal dentin was measured after 24 h using universal testing machine. Statistical analysis was performed with analysis of variance followed by Tukey HSD tests.

**Results:** The analysis of variance indicated that push-out test values do not statistically vary according to the irrigating solution used (p > 0.05). There was no effect of PDT on bond strength of resin sealer to root canal dentin.

**Conclusion:** The irrigation protocols used during root canal treatment did not affect the push-out bond strength between resin sealer and root canal dentin.
FC015
Clinical Implications of Calcifying Nanoparticles in Dental Diseases: A Critical Review
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Background: Unknown cell culture contaminants were described by Kajander and Cifcioglu in 1998. These contaminants were called Nanobacteria (NB) initially and later on calcifying nanoparticles (CNPs). Their exact nature is unclear and controversial. Calcifying nanoparticles have unique and unusual characteristics, which preclude placing them into any established evolutionary branch of life.

Aim: The aim of this systematic review was to assess the published data concerning CNPs since 1998.

Materials and methods: MEDLINE (PubMed) and SPIE digital library electronic searches were conducted. Nanobacteria, and calcifying nanoparticles were used as key wards.

Results: The search yielded 135 full-length papers. Further screening of the titles and abstracts that followed the review criteria resulted in 40 papers.

Conclusions: The review showed that whether or not nanobacteria are living particles that replicate or are inert, nanocalcification is still controversial. Some Investigators have clarified a role of CNPs in pulpal and salivary gland calcification as well as the possibility of using CNPs in treatment of cracked and/or eroded teeth.

FC016
Comparative Evaluation of Cleaning Efficacy of Root Canal Using Two Rotary Ni-Ti File System vs. Hand K-File- A SEM Study
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Aim: A study was conducted to compare the efficacy of three different file system (ProTaper, RaCe and K-flex files) in smear layer removal at coronal, middle and apical third of root canal.

Methods: Thirty healthy mandibular single rooted premolars were selected and divided into three groups (n = 10). Each group was instrumented by ProTaper, RaCe and K-flex files respectively and then grooved and split into two halves. Each sample was analyzed by scanning electron microscope at coronal, middle and apical third. Smear score of all the three groups were compared. The statistical analysis was done using wilcoxon score and found coronal and middle third of root canal were cleaner than apical third in all the three groups.

Results: RaCe group smear scores were minimum and for K-flex files it were maximum, but the result were not statistically significant (p < 0.05). The results of the present study indicated that neither of the three file system achieved complete cleanliness of root canal, particularly in the apical part.

FC017
Different Treatment of an External/Internal Root Resorptions Associated with Periodontal- Endodontic lesion: A 30 Month Follow-Up
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Background: To describe the treatment of lower molar tooth associated with external/internal resorption and periodontal-endodontic lesion.

Technique: Sixty-one-year-old male patient was referred to the endodontic therapy of left mandibular second molar tooth. Radiographic examination demonstrated external-internal resorption in mesial root; also bone loss in furcation area and mesial root. Clinical examination showed the vital tooth with a deep periodontal pocket in mesial root. The access cavity was opened. While the working length was calculated, a perforation was determined between the internal and external resorption. Distal root canal was obturated with AH Plus and gutta-percha. Mesial root canals were prepared up to region of perforation and irrigated with 1% NaOCl, then a Ca(OH)₂ paste was applied to canals. One week later, Ca(OH)₂ was removed with copious 1% NaOCl irrigation, and thereafter, the root canals were irrigated with sterile saline and were filled by iRootSP sealer without gutta-percha cone up to the level of perforation in mid-root. The access cavity was restored with glass ionomer cement. At 15- and 30-month follow-up examination, no clinical or radiographic symptoms were identified. Unfilled apical portion was asymptomatic and perforation was healed.

Conclusion: CBCT is useful for detected of perforation in the external/internal root resorption cases. The studies demonstrated that when iRoot SP was exposed to moist environment, hydroxyapatite formed and being a true self-adhesive, this sealer has to possess high fracture resistance, tensile strength, and biocompatibility. Due to the features of iRoot SP can be considered as a favorable material for treatment of such cases.

FC018
Effect of Endodontic Irrigants When Used Alone or in Combinations on Mineral Content of Human Dentin
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Aim: The aim of this study was to evaluate the ultramorphological and chemical effects of different endodontic irrigation solutions alone and their combinations on dentin.

Materials and methods: Standardized dentin discs were prepared from extracted non-caries human third molar teeth. The discs were randomly divided to 12 groups (n = 4) according to dentin treatment procedure: GroupI- 2.5% sodium hypochlorite (NaOCl), GroupII- 2% chlorhexidine (CHX), GroupIII- 2.5%NaOCl + Saline + CHX, GroupIV- 2.5%NaOCl + 17%EDTA + 2.5%NaOCl, GroupV- 17%EDTA + 2.5%NaOCl + 17%EDTA, GroupVI- Phosphate buffered saline solution (PBS), GroupVII- 17%EDTA + CHX + 17%EDTA, GroupVIII- QMix, GroupIX-
Octenidine hydrochloride (OCT), Group X- OCT + EDTA + OCT, Group XI- Saline and Group XII- no treated dentin as a control group. After exposure of dentin discs to 5 ml of test irrigation solutions for 15 min, the specimens were subjected to scanning electron microscopic (SEM) and energy dispersive X-ray (EDX) spectrometric analysis to determine calcium, phosphorus, carbon, sodium, magnesium, silicon and oxygen content in% weight of each specimen surface.

Results: The EDX results showed that calcium content was significantly decreased in Group V, VII and IX. Phosphorus content was significantly decreased only in Group V. Significantly higher carbon content was detected in all test groups except in Group I, VIII and XI. Group I was the only group that had the least effect on sodium content. No differences were observed in magnesium and silicon content of any of the groups while oxygen content was significantly decreased in Group V.

Conclusions: QMix and saline solutions caused the minimal effect on mineral content of dentin whereas 17% EDTA combination had the worst effect on dentin.

FC019
Interfacial Adaptation and Thickness of Bioceramic-Based Root Canal Sealers
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Introduction: Aim of this study is to evaluate the sealing ability of bioceramic-based sealer compared to AH plus sealer in term of interfacial adaptation to the root dentin and sealer thickness.

Methods: Sixty extracted single root premolars were standardized and instrumented. Teeth were divided into four groups (15 roots each) according to type of sealer as following; Group 1: Apatite Sankin type III, Group 2: MTA-Fillapex, Group 3: Endosequence BC, and Group 4: AH plus. Sealers were labeled with 0.1% Rhodamine B fluorescent dye. The roots were sectioned transversally at the level of 1 mm (apical), 3 mm (middle), and 6 mm (coronal) from the terminus of filling. Each cross section was evaluated under confocal laser scan microscope and the percentage of sealer to the whole canal was measured. Specimens also examined under stereomicroscope and percentage of sealer to the whole canal was measured.

Result: For interfacial adaptation, the apical level had significantly more interfacial gaps compared to middle and coronal level (p < 0.001). Apatite, MTAF and Endosequence BC sealer resulted in more gap compared to AH plus (p < 0.05), however no significant different between the three sealers (p > 0.05). The sealer thickness was significantly higher at apical and middle thirds compared to coronal in all groups (p < 0.001) and Endosequence BC has significantly the highest thickness compared to MTAF (p < 0.001) and AH plus (p = 0.005).

Conclusion: With the limitation of this study, bioceramic-based sealers have higher sealer thickness and more interfacial gap to root dentin compared to epoxy resin based sealer AH plus.

FC020
Investigation of the Root and Canal Configuration of Maxillary Permanent First and Second Molars Using Cone-Beam Computed Tomography
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Objective: To investigate the root and canal morphology of maxillary first and second molars in a Turkish population by using cone beam computed tomography (CBCT).

Materials and methods: Maxillary first (n = 894) and second (n = 944) molar teeth from 605 Turkish patients were analyzed to make the following observations: (i) the number of roots and their morphology; (ii) the number of canals per root; (iii) the incidence of a second root canal in the mesiobuccal root (MB2), and the correlations between the incidence of an MB2 canal and age, gender, and tooth position and (iv) the frequency of C-shaped canals. The root canal configuration was categorized and compared according to Vertucci’s criteria.

Results: The most common root morphology was that of three separate roots in both first (93.6%) and second molars (69.1%). Type I canal configuration was the most frequent in all roots: 56.6–100%. The mesiobuccal root (MB) had significantly more variations in canal configuration when compared with other roots in both the first and second molars (p < 0.05). C-shaped canals were found as 0.52% in second molars. The incidence of an MB2 canal (39.3% for females and 43.3% for males both in first and second molars) showed a statistical difference in gender (p < 0.05).

Conclusion: The MB roots of maxillary molars tended to have more variations in the canal system than the distobuccal or palatal roots and the incidence of MB2 was higher in the first molars than in the second molars.

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Theme: Dental Treatment and Restorative Dentistry: Materials

FC021
A Clinical Photogrammetric Technique for Dental Analysis and Visualization
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Aim: Accurate information about teeth shape, position and their appearance in the face is essentially important for various dentistry fields such as orthodontia and prosthodontia. New techniques for teeth shape and teeth occlusion registration and analysis is proposed based on applying 3D teeth arc model instead of plaster mould.
Direct intra-oral measurement seems very advantageous for dental applications and research. Firstly, direct intraoral measurement would overcome the tedium of the impression and casting procedure for patients as well as dental workers. Secondly the use of direct intra-oral measurements could improve the efficiency of measurements, degrees the time and cost of the measurement. The main purpose of this study is to evaluate the effectiveness of low-cost 3D modelling method. In the study, 3D models of different tooth were obtained with “narrow baseline photogrammetry” techniques. Moreover, these models were evaluated with the potential ability to form a base approach to digital archiving and gathering information about teeth shape, position and their appearance in the face.

Materials and methods: Method involves two basic phases. These are: (i) intra-oral image collection, and (ii) processing of the collected images. Factors, affecting the success of photogrammetric technique used in this study, could be listed as; camera resolution, camera calibration method, angles between photos, photo orientation quality, and targets.

Results: In the lights of the first applications, it could easily be said that, method was given promising results for the 3D digital archiving and acquisition of information about teeth.

FC022
Comparative Study on Enamel Microstructure of Bovine and Human Incisors
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Objective: To comparatively investigate enamel microstructure of bovine and human incisors.

Materials and methods: Sixteen human incisors (four each maxillary/mandibular central/lateral incisor) extracted for periodontal reasons and eight bovine mandibular incisors were longitudinally cut into three fragments (mesial/middle/distal thirds) at the labiolingual direction before they were horizontally cut into three small fragments (occlusal/middle/cervical thirds). Each fragment of bovine incisors was further trisected in longitudinal or labiolingual directions. Human and bovine fragments were further tangentially cut through the middle of whole enamel thickness. All the sectioned surfaces were observed by SEM.

Results: Bovine and human incisor’s enamel was mainly composed of Hunter-Schreger Bands (HBS) and parallel prisms (PP). HBS mainly located in most labial inner enamel and cingulum of lingual inner enamel while PP located in all the outer enamel, cervical region and incisal ridge. A transition zone was found between parazone and diazone within an HBS of bovine incisors, but not in human incisors. Interprisms appeared as thicker plate-like structures and decussated with prisms in bovine incisors, but were thin and round prisms in human incisors. Thicker PP in cingulum and thinner interprisms in whole enamel were main two characteristics of human maxillary central incisors.

Conclusion: Bovine incisor’s enamel was characterized as thicker plate-like interprisms, a transition zone between parazone and diazone within an HBS, and prism/interprism decussating plane, but not in human incisors. Differences of enamel microstructure between bovine and human incisors should be taken into consideration when bovine teeth were substituted as human teeth for dental research.

FC023
Adhesion of C. albicans and E. faecalis to Various Dental Filling Materials
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To evaluate adhesion of Candida albicans and Enterococcus faecalis microorganisms to amalgam (Cavex Avalloy (Harlem, Holland), composite; Tetric N-Ceram (Ivoclar, Vivadent), flowable composites; SDR (Dentsply, DeTrey, Germany) and Premise (Kerr, Orange, CA), glass ionomer; Kavitran Plus (Spofa Dental, Jicin, Czech), ZnOE cement; Alganol (Kemdent, Wiltshire, UK), Zinc Phosphate cement; Adhesor (Spofa Dental, Jicin, Czech) and composites; Dyract AP (Dentsply DeTrey, Konstanz, Germany) surfaces.

Methodology: Standardized ten discs were prepared from each material and sterilized under Ultraviolet light for 24 h. The discs were then randomly assigned to two groups (n = 5) according to test microorganism used and were either incubated with C. albicans (ATCC90028) or with E. faecalis (A197A) aerobically for 48 h. After incubation fungal and bacterial adherence was determined by using a colorimetric XTT assay. Data were statistically analyzed by using ANOVA and Tukey HSD tests (p = 0.05).

Results: E. faecalis adhered statistically significantly to amalgam and Alganol surfaces (p < 0.05). C. albicans also adhered statistically significantly to amalgam and Alganol surfaces (p < 0.05). C. albicans adhered more to zinc phosphate cement Adhesor’s, and flowable composites; SDR and Premise surfaces than E. faecalis (p < 0.05). E. faecalis and C. albicans adhered equally to glass ionomer cement Kavitran Plus.

Conclusion: Within the limitation of this in vitro study it can be concluded that these materials should be polished in order to prevent or reduce bacterial and fungal adherence to their surfaces.

FC024
The Effect of Parylene Coating on Some Properties of PMMA
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Aim: The aim of the present study was to investigate the effect of surface coating of PMMA with Parylene-C, a novel biomedical coating, on water sorption, solubility and staining.

Materials and methods: Specimens were fabricated using heat-polymerizing polymethyl-methacrylate (PMMA) and divided into...
two groups, uncoated PMMA and coated with Parylene-C. Twelve specimens of each group were subjected to water sorption and solubility tests in distilled water according to ISO 20795-1:2008 for denture base polymers. A further 24 specimens of each group were exposed to a staining test by being divided into two subgroups for soaking in distilled water or coffee solution for 1 week. CIE L*a*b* values of all samples were obtained using a digital camera imaging and appropriate image analysis software, and compared before and after exposure to the staining test. Total colour differences (ΔE) and lightness values (L*) were calculated. Non-parametric Mann-Whitney tests were used for statistical analysis with the level of significance set at p < 0.01.

**Results**: Coated PMMA samples showed significantly less water sorption while no difference was noted in solubility. The coating did not have a significant effect on ΔE values after the staining tests, but the L* values in coated samples were significantly higher compared to the uncoated ones. Significant L* value reduction occurred for uncoated PMMA, while the coated samples were not affected.

**Conclusion**: Parylene-C coating of PMMA caused significant reduced water sorption but no effect was observed in the solubility and staining.

**FC025**

**Antibacterial Effects of Conventional Glass Ionomer Cement Following Incorporation of Benzalkonium Chloride and Cetylpyridinium Chloride**

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**Background**: The antibacterial activity of conventional glass ionomer cement against three different microorganisms strains alone and following incorporation of 1%, 2% and 3% Benzalkonium Chloride and Cetylpyridinium Chloride was evaluated.

**Methods**: The agar diffusion method was used to determine the inhibitory effect of the conventional glass ionomer cement Chemflex on Streptococcus mutans, Lactobacillus casei and Actinomyces viscosus. Bacterial strains were inoculated into BHIB, and incubated in an anaerobic atmosphere (37°C). From the bacteria grown in the liquid medium, the density of the inoculum was set to be equivalent to McFarland 2 standard. In Shaedler agar, 350 µl of the bacterial suspension were equally spread. Specimens (4 mm × 6 mm) were prepared from the cement with and without addition of 1%, 2% and 3% Benzalkonium Chloride and Cetylpyridinium Chloride. The inhibition zones were determined after 48 h, after 7 days and after 21 days of incubation.

**Results**: The glass-ionomer cements with no antimicrobial compounds incorporated either form very small inhibition zones or form no zones at all. The combination ChemFlex + Benzalkonium Chloride has the best effect on the three analysed bacteria. The Benzalkonium Chloride antibacterial compound has a stronger antibacterial effect than Cetylpyridinium Chloride.

**Conclusions**: Glass ionomer cements can potentially be used as a medium for slow release of active antimicrobial components, and they have the potential to improve clinical outcomes of the cements.

**FC026**

**Biocompatibility of Two Different Restorative Materials Used in Pediatric Dentistry**

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**Aim**: Common biocompatibility problems with some of the current dental materials include chemical leakage from the material, pulpal irritation and less commonly allergy.

The aim of our investigation was to make a comparative analysis of the biocompatibility of two different restorative materials used in children.

**Materials**: Eighteen male albino rats (Wistar) weighing 200–250 mg were used in this study. Tested material was freshly prepared as advised by the manufacturer and placed in a polyethylene tube (5 mm long/3 mm internal diameter). For material implantation, the dorsal skins of the animals were shaved under ketamine (25 mg/kg) anesthesia and disinfected with 5% iodine solution. Three incisions were made on the back of each animal, on the dorsal surface of the front limbs and on the dorsal pelvic area. Each animal received one tube filled by glassionomer cement andcomposite. For control purposes, empty polyethylene tubes closed from both sides by heat were implanted on the dorsal surface of the left back limb. The histological evaluations were performed 1, 3 weeks and 45 days post implantation.

At each period, the rats were sacrificed by anesthetic overdose; the tubes and surrounding tissues were removed by tissue dissection technique and fixed in 10% buffered formalin at pH 7.0. Comparative histological analysis were made.

**Results**: One week post implantation at the control and experimental group, microscopic examination revealed the strongest inflammatory reaction despite another three examal periods.

**Conclusions**: All materials in current use are considered acceptable, in terms of their biocompatibility with local tissues, when properly handled and placed.

**FC027**

**Biodentine™ – A Biomaterial for Endodontic Applications – Clinical Cases**

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Within safety margins. Increased elution of BPA from dental resins, the amounts were C-D; the same was found after 24 h for group E. Although the individual time period was measured after 6 h for the groups A-B-C-D, the control samples (p < 0.001).

Results: The study samples generally eluted more BPA than the control samples. The analysis of variance (p < 0.001). Data was analyzed using multivariate and repeated measures analysis of variance (p < 0.05).

Conclusions: The bio-silicate technology is highly promising, mostly due to its chemical properties and easy clinical manipulation. The short working time and the high mechanical strength makes Biodentinetm a material with easy handling, highly biocompatible and with wide range of indications (such as endodontic procedures and as a dentin substitute in restorations).

Aim: Bisphenol A (BPA) elution from baby bottles into content has been of great public interest and debate in recent year. Uncontrolled BPA elution due to temperature increase may create a risk factor for human health. However, dental resins that are used in pediatric dentistry also have BPA derivatives. The aim of this study is to evaluate BPA elution from dental resins and to determine the effect of temperature increase on this elution.

Methods: Four dental resins containing BPA derivatives (Filtek Z250, Filtek Supreme XT, Fissurit FX, and Admira) and a control group (BPA free G-enial) were used in this study. Each specimen was stored in 2 ml of 75% ethanol-water solution at 37°C. Water at a temperature of 59 ± 1°C (preferred temperature of hot drinks) was added to the study samples at certain time intervals (1, 6, 24 h, 2, 3, 4, 5, and 6 days). The methanol samples were analyzed using high-performance liquid chromatography (HPLC). Data was analyzed using multivariate and repeated measures analysis of variance (p < 0.05).

Results: The study samples generally eluted more BPA than the control samples (p < 0.05). The greatest amount of BPA for an individual time period was measured after 6 h for the groups A-B-C-D; the same was found after 24 h for group E. Although the temperature increase due to hot drink consumption caused increased elution of BPA from dental resins, the amounts were within safety margins.

Purpose: The purpose of the present study is to demonstrate the endodontic treatment and re-treatment with the, so far, the most promising materials in these indications, the calcium-silicate cements.

Method: Biodentinetm, a new dental biomaterial based on calcium-silicate technology, with excellent handling characteristics and biocompatibility, has been used in patients with complications during the endodontic therapy (perforations of the root canal or pulp chamber floor), traumatic injuries and as a dentin substitute for restorations in complex situations.

Results: The clinical cases demonstrated the excellent healing potential after the treatment with Biodentinetm.

Conclusions: The bio-silicate technology is highly promising, mostly due to its chemical properties and easy clinical manipulation. The short working time and the high mechanical strength makes Biodentinetm a material with easy handling, highly biocompatible and with wide range of indications (such as endodontic procedures and as a dentin substitute in restorations).

Aim: The purpose of this clinical investigation was to evaluate the performance of Filtek™ Silorane (3M ESPE), a low shrink composite, used in conjunction with a dedicated experimental adhesive system, that was never commercialized, and compare to Tetric Ceram bonded with AdheSE (Vivadent).

Methods: The materials were placed in teeth in individuals that needed at least two box shape class II restorations of similar size. The restorations were placed by one operator in private practice. A total of 53 restoration pairs were placed in 31 patients. The restorations were evaluated by two trained examiners using USPHS criteria. The study was accepted by the National Bioethics Committee and the Privacy Commission of Iceland.

Results: At 7 years 50 restoration pairs were available for reevaluation. Color match and gingival status was unchanged and neither secondary caries nor sensitivity reported. All but three contacts scored normal. Only slight chipping and surface roughness was reported for both materials. When marginal integrity was evaluated about 2/3 scored Alfa for both materials and only 38% Tetric and 34% Silorane restorations scored Alfa for interfacial staining. For anatomic form (wear), 38% Tetric and 72% Silorane scored Beta and one Silorane restoration (2%) Charlie. There was no significant difference between the materials tested for any of the criteria evaluated except anatomic form (p < 0.001).

Conclusions: At 7 years, Filtek Silorane showed significantly more wear than Tetric Ceram. High incidence of marginal discoloration and marginal breakdown observed for both materials suggests that improved or different adhesive systems are needed.
**Results:** The results obtained indicated that, the smoothest surfaces were obtained in control groups. AFM showed that the multi-step polishing method had smoother surface than one-step ($p = 0.00$). However no statistical differences were observed between different composite resins. ($p = 0.103$)

**Conclusion:** Based on the results obtained, it was concluded that, the composite resin which was polished with multi step system could have a smoother surface, if compared to the other system tested.

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**FC032**

**Can Hydrophilic Fissure Sealants be Acceptable Alternative to Hydrophobic Sealants?**

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**Purpose:** The aim of this laboratory study was to compare microbial leakage of a new hydrophilic sealant with a conventional hydrophobic resin-based sealant.

**Materials and methods:** One hundred caries-free extracted human maxillary premolars were randomly divided into five groups. Teeth in groups I, II and III were sealed with hydrophilic sealant on dry, wet and artificial saliva-contaminated occlusal surfaces, respectively. Teeth in groups IV and V were sealed with a hydrophobic sealant on dry and wet occlusal surfaces, respectively. A newly designed microbial penetration method with Streptococcus Mutans as an indicator was used for leakage assessment. Data was analyzed using SPSS 15.0 software and the significance level was set at $\alpha = 0.05$.

**Results:** The log-rank test indicated a statistically significant difference in leakage rates among the five groups. Mantel-Cox log-rank test showed that group III had the most leakage rate and groups II and IV had the least leakage rates. There was no statistically significant difference between leakage rates of groups II and IV.

**Conclusions:** With respect to the limitations of an in vitro study, it may be conclude that from the microleakage aspect, hydrophilic sealant may be used as an acceptable alternative to hydrophobic sealant.

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**FC033**

**Clinical Evaluation of a Self-Adhering Flowable Composite as a Class 1 Restorative in Primary Molars: 12 Months Results**

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**Aim:** The purpose of this study was to evaluate a self-adhering flowable composite and compare its 12 month clinical performances with a commercially available self-etch adhesive/composite system in Class I restorations of primary molars.

**Design:** Thirty-one patients (13 male, 18 female) were recruited into the study. A total of 62 Class I cavities were restored with either a self-adhering flowable composite or a commercially self-etch adhesive/composite system according to manufacturers’ instructions. The restorations were clinically evaluated 1 month after restoration, and after 3, 6 and 12 months post-operatively using modified USPHS criteria by two previously calibrated operators. Statistical analysis were performed using SPSS 16.0 statistical package.

**Results:** All patients attended the 1, 3, 6 and 12-month recall. Lack of retention was not observed in any of the restorations. With respect to color match, marginal adaptation, secondary caries and surface texture, no significant differences were found between two restorative materials tested after 12 months ($p > 0.05$).
Conclusions: Clinical assessment of self-adhering flowable composite exhibited good clinical results with predominating alpha scores after 12 months. However, further evaluations are necessary for the long-term clinical performance of this material.

Color Stability of Anterior Restorations After Different Polishing Techniques
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Aim: The purpose of this study was to investigate the effects of different finishing-polishing techniques on the color stability of various anterior restoration materials after storing in staining solution.

Materials and methods: A composite resin (Admira, Voco), a compomer (Dyraact, Dentsply/De Trey) and a resin-modified glass ionomer (Fuji II LC, GC) were used to prepare 120 specimens (10 mm in diameter, 2 mm in depth). Specimens were randomly divided into four subgroups according to finishing-polishing systems; a series of polishing discs (Sof-Lex; 3M/ESPE), a liquid finishing-polishing material (Biscover; Bisco Inc), polishing wheels and pastes (Enhance Dentsply/DeTrey) and a control group (with no polishing) (n = 10/group). After storing in distilled water at 37°C for 24 h, the specimens were stored in coffee solution during 48 h at 37°C. Colorimetric values of the specimens before and after storing in coffee solution were measured using the spectrophotometer (Easyshade, Vita Zahnfabrik). The CIE L*a*b* system was used for the determination of the color differences. Data were analyzed using ANOVA and Tukey’s test.

Results: The color differences were affected by the material type (p < 0.05) and finishing-polishing systems (p < 0.05). The composite resin showed the best color stability; however, the color differences of the specimens of all groups were visually appreciable also for the nonskilled operator (ΔE*a*b > 2.5).

Conclusion: The results of this study suggest that all restorative materials demonstrated measurable color changes after storing in staining solution regardless of the finishing-polishing systems.

Comparison of Anesthetic Efficacy of Intraligamentary and Supraperiosteal Anesthesia by Using Computer Controlled Delivery System
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Purpose: The purpose of this study was to compare anesthetic efficacy and patient comfort of intraligamentary anesthesia vs. supraperiosteal anesthesia by using computer controlled anesthesia delivery system in different operative procedures of deciduous teeth.

Materials and methods: The study was a randomized clinical trial which comprised 90 children (58 girls, 42 boys), who required same operative procedure (pulpotomy, extraction or restorative procedure) on their left and right first mandibular primary molars. The study consisted of two visits for each child. In first visit, left or right deciduous tooth was treated after intraligamentary anesthesia and in second visit, contralateral deciduous tooth were treated after supraperiosteal anesthesia by using computer controlled anesthesia delivery system. Totally 180 injections (90 periosteal and 90 intraligamentary) were administered. In each visit, the severity of pain during injection and operative procedure was evaluated by using Wond-Baker Faces Pain Rating Scale. A post injection questionnaire was asked the subjects to rate the comfort and any side effects. The results were recorded and data were analyzed statistically.

Results: There were no statistically significant differences for anesthetic efficacy during any operative procedures in the Wond-Baker Faces Pain Rating Scale between intraligamentary and supraperiosteal anesthesia (p > 0.05). However, postoperative complications in supraperiosteal anesthesia were significantly more than intraligamentary technique.

Conclusions: Fortunately, most pediatric patients do not encounter problems related to prolonged soft tissue anesthesia. Intraligamentary anesthesia with computer controlled anesthesia delivery system may be an alternative for overcoming postoperative complications.

Comparison of Chemomechanical Caries Removal (Papacarie) vs. Conventional Method in Children
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Purpose: The purpose of this study was to investigate the clinical efficacy of chemomechanical caries removal (Papacarie), compared with conventional method.

Materials and methods: The study consisted of 50 primary molars selected from 25 healthy children (mean age 7.6 ± 1.1). Ethical committee approval was obtained and the informed consent form was signed by the parent or the guardian. Each patient had at least two primary molars with approximately equal-size caries lesions. Both treatments were carried out in the same session. Before and after treatment, fluorescence values were obtained using DIAGNOdent Pen and time for caries removal was recorded. Each patient was asked whether he/she felt any pain, requested for local anesthesia and which treatment he/she preferred and behavior of the patient during caries removal was assessed. Data were analyzed using McNemar, Wilcoxon signed rank and Mann–Whitney U-test.

Results: Comparison of the difference in fluorescence values showed that readings were lower after conventional method (p < 0.05). The time taken for chemomechanical caries removal was approxi-
mately two times longer (t-test). There was no difference between two methods in terms of pain and patient behavior (p > 0.05).

**Conclusion:** Chemomechanical caries removal and conventional method exhibited similar efficacy in caries removal and present findings indicated that there is no clinical advantage for chemomechanical caries removal with Papacarie over conventional method.

**Aim:** Evidentiation of clinical cases of cystic pathologies in children the importance of their diagnostication on time, as well as the ways of treatment having in mind their anatomo-pathological particularities. Missing anamnesis or anamnesis based on parents, presence of mixed dentals anatomical-pathological particularities, do not knowing about anaesthetic preparations create as a result a number of questions which we will try to explain below.

**Material and methods:** To realise this work I am based on my theoretical-practical and personal experience in surgical treatment of my patients will cystical lesions for a period of about 15 years and also. In this work we will present three cystic cases of mandibular region which were not treated in a protocol way.

**Conclusions:** Dealing with little patients include a series of particularities which are not only of professional character but also sociable ones. It is and remains our duty the salvations of those with as many traumas as possible. It is very important the evaluation of each case starting with those which seem as not problematic. Diagnostication protocol if it is done correctly does not leave spaces to make mistakes at least not unrepairable. The modernization of the ambulatory service and its expansion is a good news for everyone.

**Effect of Different Surface Treatments on Shear Bond Strength of Fissure Sealants**

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**Aim:** The aim of this in vitro study was to evaluate the shear bond strength of a fissure sealant to enamel treated with ER-YAG laser (MSP and QSP mode) and acid etching with/without drying agent.

**Material and methods:** Thirty permanent human molars were used in this study. The roots sectioned 2 mm coronal to the cemento-enamel junction. The crowns were mesiodistally sectioned providing 60 halves that were embedded in acrylic resin. The enamel was flattened and a 2 mm diameter bonding area was demarcated. Ultrasel xt Plus sealant (FS) was applied in all groups. Specimens were randomly assigned to six groups (n = 10): G1: 37% phosphoric acid + Prima Dry + FS; G2: 37% phosphoric acid + FS; G3: Er:YAG (MSP mode) + Prima Dry + FS; G4: Er:YAG (MSP mode) + FS; G5: Er:YAG (QSP mode) + Prima Dry + FS; G6: Er:YAG (QSP mode) + FS. After 24 h storage in distilled water, shear bond strength of samples were tested in a universal testing machine. Statistical analysis using Kruskal-Wallis and Mann-Whitney U test was used to compare the respective groups.

**Results:** The SBS results (MPa) were the following: G1: 11.33, G2: 9.76, G3: 8.65, G4: 7.72, G5: 4.49, G6: 2.73. There were significant differences amongs the groups (p < 0.05).

**Conclusions:** The acid etching surface application showed better performance than laser surface treatment in both MSP and QSP mode. Drying agent may be used for enamel surface prior to sealant application.
A 4-Year Retrospective Study of All-Ceramic Onlays
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Objectives: The purpose of this study was to evaluate the survival rate, failure and clinical quality of all ceramic onlays retrospectively in 4 years.

Methods: All restorations placed during the period September 2007–December 2011 at Marmara University Dentistry Faculty Department of Prosthodontics were included. Patients with para-

Dental Treatment and Restorative Dentistry: Prosthetics
FC040
Microleakage and Fracture Resistance of Teeth with Novel Post
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Aim: Evaluation of coronal microleakage and fracture resistance of endodontically treated teeth restored with novel post (Wuerzburg Post) as a function of margin design.

Materials and methods: Twenty mandibular premolars were collected, decoronated, endodontically treated and received Wuerzburg Posts (Hager and Meisinger GmbH, Germany) which cemented using Rely X unicem cement (3M ESPE). Then, samples divided into two groups according to cervical margin design; group 1 (n = 10) butt margin, group 2 (n = 10) beveled margin. All samples received metal ceramic crowns and subjected to cyclic loading and thermocycling. In each group, five samples (embedded in epoxy resin blocks) used for fracture resistance test in universal testing machine (Lloyd Instruments Ltd., UK) in which compressive load applied vertically parallel to the long axis of teeth at crosshead speed of 0.5 mm/min until fracture occurred. The other five samples used for microleakage test using methylene blue dye, then samples were sectioned mesiodistally and buccolingually with diamond disc. Linear dye penetration at margins was measured using steroimicroscope. Data were statistically analyzed using Student’s t-test (p ≤ 0.05).

Results: Teeth with beveled margin showed statistically significantly lower mean microleakage values (432.5 ± 83.8 μ) than those with butt margin (1100 ± 210.5 μ). On the other hand, teeth with beveled margin showed statistically significantly lower mean fracture resistance (1078.3 ± 100.4 N) than those with butt margin (1289.9 ± 134 N).

Conclusions: When using Wuerzburg Post to restore endodontically treated teeth, beveling of cervical margin improved coronal microleakage and led to acceptable fracture resistance of posterior teeth.

A Comparison of Validity Between KKU Surveyor and Ney Surveyor
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Aim: The purpose of this experimental research was to compare the validity between the KKU surveyor [Khon Kaen University surveyor model] and the Ney surveyor.

Materials and methods: Each of 12 survey line-customized model was surveyed by two different surveyors. The investigator who performed a survey was a dentist who had more than 3 years of experience in a field of prosthodontics. After all samples were completely surveyed, the differences of survey lines created by both surveyors on each samples were measured by a stereomicroscope at four crossing points between a horizontal survey line and a vertical connection line of a customized model.

Results: The Westlake’s Testing Equivalent Mean demonstrated that the mean distance between the survey line of the KKU surveyor and that of the Ney surveyor was significantly different of <0.2 mm (p = 0.043; d = 0.2, Mean = 0.155 mm., SD = 0.068, 95% CI = 0.123–0.187).

Conclusions: Based on these results, it is indicated that the validity of the KKU surveyor is equivalent to the Ney surveyor.
supported crowns. The aim of this retrospective study was to evaluate the clinical performance of tooth supported and implant supported zirconia-based FDPs with the assessment of patient satisfaction.

**Material and method:** Ninety patients with zirconia-ceramic FDPs, restored between 2004 and 2010 were called randomly. Seventy patients were reached and 56 patients accepted the invitation for clinical evaluation to the Department of Prosthodontics, University of Marmara Faculty of Dentistry. Tooth supported FDPs were examined with a survey including (i) Modified CDA criterias. (ii) plaque index, (iii) gingival index, (iv) complications, (v) sensitivity, (vi) secondary caries. Implant supported FDPs were examined with a survey including (i) Modified CDA criterias. (ii) plaque index, (iii) gingival index, (iv) complications.

**Results:** Thirtyfour female, 22 male patients were examined clinically. Number of patients with tooth supported FDPs were 23, implant supported FDPs were 20. Fifteen patients have both tooth supported and implant supported FDPs. Major complication of tooth-supported FDPs is tooth sensitivity (18.4%). Minor chipping is the most common complication both of the tooth-supported FDPs (10.5%) and implant-supported FDPs (10.7%).

**Conclusion:** Based on the intraoral examination, zirconia-ceramic restorations are successful treatment alternative with minor complications. Most of the patients who participated in recall study, were satisfied with their prostheses in terms of colour, surface and function.

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**FC044**

**Color Interaction of Screw Hole Filling Materials in Implant Restorations**

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**Purpose:** The purpose of this study was to investigate the esthetic outcome of composite access hole filling materials and masking ability of opaque layer for screw-retained implant supported restorations.

**Materials and methods:** Two Ni-Cr cylindrical metal molds with a hole in the center were combined with either resilient composite (RC) (Clip, Voco) or restorative nanocomposite [enamel (A2E), dentin (A3B), dentin (A2B) (Filtek™ Ultimate Universal, 3M ESPE)] disc-shaped (8 × 1 mm) specimens. The metal mold and composite disc combinations were generated as follows; Group (Gr) 1 = 0.5 mm opaque (O) + A2E + A3B + RC, Gr2 = O + A2B + A2B + RC, Gr3 = A2B + A2B + RC, Gr4 = A2E + A3B + RC, Gr5 = RC + RC + RC. A Ni-Cr disc fused Shade A2 ceramic (VMKMaster™, Vident), was used for control group color measurements. The specimens were analyzed with a spectrophotometer (Easy Shade; VITA Zahnfabrik H), and data were obtained in the CIE Lab color system. The recorded data were analyzed with Kruskal–Wallis analysis of variance and Mann–Whitney U test was applied for post hoc comparisons (p < 0.05).

**Results:** The layering of composite in different shades and application of opaque layer to the inner surface of the experimental mold significantly affected the color (p < 0.01). The lowest ΔE values were obtained in opaque combined with dual layer composite (Gr1) where the highest ΔE values were obtained in the resilient composite (Gr5). No significant difference was observed between groups Gr3 and Gr4 (p > 0.01). The application of opaquer to the metal surface combined with dual layer composite, may significantly contribute to the color matching between metal fused ceramic and access hole filling for screw-retained implant restorations.

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**FC046**

**Microleakage of Class V Composite Restorations Prepared by Er, Cr: YSGG Laser**

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**Objective:** To evaluate restorations microleakage in cavities prepared by Er, Cr: YSGG laser and bonded with three types of adhesive systems.

**Materials and methods:** Class V cavities were prepared in 24 third molars on buccal by bur and lingual by Er, Cr: YSGG laser. Samples were bonded with (Total etch, Adper Single Bond 2, USA; One step self-etch, OptiBond All In One, kerr, USA; and Two step, Clearfil SE, kuraray, Japan). Cavities were restored in bulk with composite. Restorations were polished, stored, thermocycled in water bath and immersed in methylene blue solution for 24 h. Dye leakage was assessed by stereomicroscope at ×10. Data were analyzed with Kruskal–Wallis and Mann–Whitney at 5% significant level. Additional samples were prepared examined under SEM.

**Results:** Significant differences were found between bur and laser groups in one step adhesive. Also one step adhesive demonstrate higher leakage than two steps in bur cavities. No significant differences were found between restorations in laser group (p > 0.05). In bur prepared cavity SEM observation shows flat topography with smear layer. Laser cut dentin shows a corrugated or wavy profile, opened dentinal tubules and absence of a smear layer.

**Conclusions:** Microleakage of resin composite restorations was influenced by adhesive type. Bur prepared cavities bonded with one step self-etch were more prone to leakage than total etch and two step. Also one step demonstrated more leakage in bur cavities than those prepared by Er, Cr: YSGG laser.

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**FC047**

**Cytotoxicity of a Self-Adhesive Resin Luting Cement with L-929 Fibroblast Cell Line**

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**Objective:** The aim of this study was to compare the cytotoxicity of a self-adhesive resin luting cement on L-929 fibroblast cells
after polymerized by dual or chemical curing regimes at three different preincubation periods.

**Materials and method:** Thirty disc-shaped specimens of self-adhesive resin luting cement (RelyX Unicem) were prepared. Test specimens were polymerized by either dual or chemically curing regimes with 20 s (LED light curing unit) and 10 min, respectively. In order to obtain composite extracts, the samples were immersed in cell culture medium (DMEM) for 1-, 2-, 7-day. L929 fibroblasts were pipetted into 96-well microplates with a cell of approximately 3 × 100,000 cells/ml added into the well cluster cell culture plates (100 μl) and then the plates were incubated at 37°C, 5% CO2 in air for 24 h. After the incubation period, the culture medium was removed from the wells and equal volumes (100 μl) of the samples of each material extract were added into each well. Cell survival was determined by using MTT assay. Data were statistically analyzed by one-way ANOVA (p < 0.05).

**Results:** Chemically cured test groups showed significant reductions in cell viability as to the dual polymerized groups for all the time intervals (p < 0.05). Considering the preincubation periods, the highest and lowest cytotoxicity values were obtained from 2- and 7-day specimens in both chemically and dual polymerized groups respectively (p < 0.05).

**Conclusion:** The results show the importance of light irradiation for dual cure effect on the cytotoxicity of the self-adhesive luting cement evaluated.

**FC048**

**Effect of Different Adhesive Systems and Chlorhexidine on Matrix Metalloproteinase**

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**Aim:** This study evaluated the effects of adhesive systems and treatment of dentin surfaces with chlorhexidine digluconate (CHX) followed by adhesive systems to the matrix metalloproteinases (MMPs) in the dentin matrix. In addition to this, the bond strength of adhesive systems to dentin in vitro conditions was also investigated.

**Materials and methods:** This study consisted of two parts: gelatin zymography and the microtensile bond strength test. For gelatin zymography, seven groups each contains 1 g dentin powder were obtained to assay dentin MMPs activity. These groups were, mineralized dentin group, incubation of mineralized dentin powder with three different adhesive systems (Adper Scotchbond Multi Purpose, Clearfil SE Bond and Adper Prompt L-Pop) and incubation of mineralized dentin powder with CHX followed by three different adhesive systems application. For microtensile bond strength test, six groups (n = 5) were obtained in which three different adhesive system and these three different adhesive system treated with CHX were applied to the superficial dentin. Fractured surfaces were later analyzed with stereo and scanning electron microscopes to determine the type of failure. Data were analyzed with one-way ANOVA, t-test and Scheffe multiple comparisons tests.

**Results:** Zymograms showed that incubation of mineralized dentin powder with Adper Scotchbond Multi Purpose increases MMP 2 activity, while CHX pre-treatment inhibited MMP 2 activity. CHX increased the bond strength of adhesive systems, but there was no significant statistically difference among these groups. The study demonstrates the efficacy of CHX inhibition of MMPs and increase in bond strength of adhesive systems.

**Theme: Dental Treatment and Restorative Dentistry: Prosthetics**

**FC049**

**Mechanical Properties of Autocuring Temporary Crown and Bridge Materials**

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**Aim:** Temporary prostheses are applied prior to permanent prosthetic restorations, in order to protect prepared teeth, get an idea about the resulting prosthesis and avoid migration of teeth towards the spacing. The aim of this study was to compare mechanical properties of four different bis-acrylic composite based materials and methacrylate resin temporary crown and bridge (C&B) material as a control group.

**Materials and methods:** Five different temporary C&B materials (Luxatemp AM Plus/ DMG, Structur Premium/VOCO, Kingscross/KETTENBACH, Tempofit Premium/ DETAX, Temdent Classic/SCHUTZ) were used to fabricate bar shaped specimens (2 mm × 2 mm × 25 mm, ISO 4049:2000) (n = 50). Flexural strength and flexural modulus of these specimens were subjected to a three point bending test after thermal cycling (5000×, 5–55°C). Mean values and standard deviation of all measurements were calculated and data was subjected to parametric statistics in SPSS (p < 0.05).

**Results:** Difference among both flexural strength and flexural modulus values of temporary C&B material groups investigated were statically significant. The highest flexural strength and modulus values were observed in Luxatemp AM Plus, where the lowest flexural strength and flexural modulus values were recorded with Tempofit Premium (90.97 ± 17.9 MPa [flexural strength], 2788.63 ± 167.36 MPa [flexural modulus]), 34.03 ± 14.9 MPa [flexural strength], 609.30 ± 248.30 MPa [flexural modulus] respectively).

**Conclusions:** Among the groups investigated, the highest values for both flexural strength and flexural modulus were observed in temporary C&B material Luxatemp AM Plus.

**Free Communication Session 07 | B343 | 28.08.2013 | 11:30–12:30**

**Theme: Dental Treatment and Restorative Dentistry: Esthetics**

**FC050**

**Bleaching Efficacy and Color Stability of Over-The-Counter Products**

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Objective: Although demand for over-the-counter tooth bleaching products has increased in recent years, little is known regarding their efficacy and color stability. Therefore, the purpose of this study was to compare bleaching efficacy and color stability of two over-the-counter products with that of an at-home bleaching agent, considering severity of tooth discoloration.

Materials and methods: Ninety enamel-dentin samples were stained by Orange II dye and assigned into lightly (65 ≤ L* ≤ 75) and darkly (L* < 65) stained groups. Teeth were divided into three subgroups (n = 15): 10% hydrogen peroxide pre-loaded tray (Treswhite Supreme), 22% carbamide peroxide pen (Hollywood Smiles), 10% carbamide peroxide at-home bleaching agent (Opalescence Oh!). All products were applied according to manufacturers’ instructions. Teeth were then re-stained using red wine for 9 days. A dental spectrophotometer was used, baseline/post-bleaching (ΔE1) and post-bleaching/re-staining (ΔE2) color differences were determined. The data were analyzed using nested ANOVA and post-hoc tests (α = 0.05).

Results: No differences were observed between ΔE1 values for Treswhite and Opalescence in lightly stained teeth (p < 0.05), while Opalescence had the highest value in darkly stained teeth (p < 0.05). Hollywood Smiles had the lowest mean ΔE1 and ΔE2 values (p < 0.05) in both lightly and darkly stained teeth, while no differences were observed between ΔE2 values for Treswhite and Opalescence.

Conclusion: Tray-based over-the-counter product produced better bleaching efficacy, but worse color stability compared to whitening pen. Its bleaching efficacy was also similar to at-home bleaching agent in lightly stained teeth. Teeth in darkly stained group revealed higher ΔE1 values than their lightly stained counterparts with each product.

FC051
Chromatic Analysis of a Nano-Hybrid Composite Exposed to Different Whitening Mouth Rinses
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Objective: The aim of this study was to evaluate the effect of whitening mouth rinses on the color parameters of a nano-hybrid composite.

Materials and methods: Seventy composite resin disks (8.0 × 1.0 mm) were fabricated from a nano-hybrid composite resin. (3M ESPE Z550). At the beginning, samples were stored in distilled water 24 h. The initial color parameters of composite samples were measured with a clinical spectrophotometer according to the CIELAB color scale and then composite samples were randomly divided into seven groups (n = 10). A total of six whitening mouth rinses; three hydrogen peroxide including (Listerine Whitening Vibrant, Scope White, Crest 3D White) and three non hydrogen peroxide including (Oral-B 3D White, Signal White, Colgate Optic white) were tested. Distilled water was used as a control. After 1 and 24 h exposure periods color measurements were repeated and color changes were analyzed, ΔE* values over 3.3 were considered as clinically unacceptable. Statistical differences were analyzed using ANOVA and Tukey’s post hoc tests.

Results: Non of the groups had an unacceptable color change. One hour exposure to solutions caused color changes between 0.97 (Listerine Whitening Vibrant), and 2.32 (Oral-B 3D White) where ΔE* for control group was 0.67. Also after 24 h, ΔE* values were in range of 0.65 (Listerine Whitening Vibrant) and 2.73 (Oral-B 3D White) (Control ΔE* = 0.61).

Conclusions: We can conclude that tested whitening mouth rinses are not capable to cause perceptible color changes on selected novel composite resin in vitro.
Effect of Bioactive Silica and Bleaching on Caries Like Lesions

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Aim: This study was carried out to detect the progression of enamel caries-like lesions following bleaching in terms of change in mineral content using chemical analysis and surface roughness measurements. To test the remineralizing ability of bioactive silica (BS), sodium fluoride (FG) and a combination of casein phosphopeptide-amorphous calcium phosphate and fluoride (GC) on bleached enamel caries-like lesion.

Material and methods: A total of 90 freshly extracted sound human permanent anterior teeth were used in this study. Caries like lesions were induced in the specimens by Ph cycling protocol, teeth were divided into two main groups for bleaching with (Illumine™[IL] or Opalescence PF [OP]), then further subdivided into three subgroups for remineralization, Calcium and phosphorous weight percentages of OP group were significantly highest, where IL + FG treated group showed statistically significant lowest mean calcium weight percent.

Results: Surface roughness (Ra) results revealed that OP showed statistically significant highest mean Ra value compared with IL and control groups, Ranking between different groups of post bleaching remineralization OP + FG group and OP + GC showed statistically significant low mean surface roughness. Calcium weight percentages of OP group were significantly highest, where IL + FG treated group showed statistically significant lowest mean calcium weight percent.

Conclusion: In office dental bleaching with 30% hydrogen peroxide product doesn’t influence the progression of caries like enamel lesions. Topical application of BS, FG and GC was effective at reducing enamel surface roughness after bleaching.
some have to an end to resistancy. Investigation of Aloe vera leaf as antifungal has been risen in some countries to find the Minimal Inhibitory Concentrations (MICs) toward Candida albicans, but rarely to find the Minimal Fungidical Concentrations (MFCs). Whereas MFCs is important to be measure for clinical treatment.

Aim: To find MFCs of Aloe vera leaf extract to Candida albicans isolated from oral patients with HIV/AIDS and Candida albicans ATCC 10231 strain.

Materials and methods: Aloe vera leaf was soak into ethanol for 1–2 days, and extracted with rotary evaporator extractor. One hundred percent Aloe vera leaf extract was tested to find MFCs with tube dilution technique. Result

Aloe vera leaf extract has various MFC, one sample showed at 12.5%, three samples at 100%, and four samples still show the growth activity of C. albicans in 100%. For Candida albicans ATCC 10231 strain, extract Aloe Vera leaf has MFC at 75%.

Conclusion: Aloe vera leaf extract has a promising antifungal effect even for a severe oral candidiasis. The various concentration of MFCs showed different reaction towards severity of disease.

FC057
Salivary Markers for Oral Lichen Planus Disease Activity and Dysplasia
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Aim: To verify the usefulness of salivary markers for monitoring oral lichen planus (OLP) lesions severity and premalignant potential.

Materials and methods: Fifty two individuals were included, group I: 30 patients with symptomatic OLP, no histopathologic signs of dysplasia (19 females, 11 males, age 40–65 years), group II: 12 OLP cases with dysplasia (10 females, two males, age 45–65 years) and group III: ten control subjects with no oral disease. Biopsy specimen were taken from group I before and after steroid therapy (after ethical committee approval and patients' consents) and from surgical sites in control subjects. Whole unstimulated saliva was collected from all included subjects simultaneous to biopsy. TNF-alpha and INF-gamma levels were determined in tissue and salivary samples of groups I and III, using ELISA kits (R&D system, Mineapolis, USA). Salivary total soluble (s)CD44 was investigated in all groups, using an ELISA assay (Bender MedSystems, Vienna, Austria)

Results: Control group registered lowest values for studied markers, in tissues and saliva with highly significant difference from OLP patients. TNF-alpha and INF-gamma levels in OLP patients decreased significantly after steroid therapy, simultaneously in tissues and saliva, but were still higher than controls. Levels of salivary sCD44 were significantly higher in group II than groups I and III; with strong correlation between dysplastic changes in OLP lesions and salivary sCD44 levels above 20.4 ng/ml.

Conclusion: Salivary markers could be considered valuable, reliable, available, non invasive and cost effective diagnostic tools that can monitor severity, dysplastic changes and therapeutic progress in OLP.

Theme: Implantology: Oral Surgery
FC058
Minor Oral Surgery in Patients on Aspirin Therapy-To Stop the Medication or Not
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Purpose: The aim of this study is to outweigh the risk over the benefits of Aspirin withdrawal in minor oral surgical procedures.

Materials and methods: One hundred and twenty-four patients in the age group of 40–55 who visited Riyadh college of Dentistry over a period of 1 year were included in the study. First group of 62 patients were on Aspirin therapy with a daily dose of 81 mg for at least a year and second group of 62 patients were healthy individuals not on Aspirin therapy. Aspirin was not discontinued for any patient. Minor surgical procedures including extractions, implant placement and alveoloplasty were performed on the patients and Bleeding assessed before and after the surgical procedure. The bleeding time was measured once before the surgical procedure. After the procedure, bleeding time was measured at an interval of 30 min, until bleeding stopped completely. All the patients were continuously monitored for next 6 h.

Results: Preoperative values were within normal limits for all patients. Intraoperative bleeding was within normal limit in most cases except two cases in group 1 and three cases in group 2 where bleeding lasted for more than 2 h, although bleeding was easily controlled in these patients by local measures.

Conclusion: We conclude that most minor oral surgery procedures can be carried out safely without stopping long-term aspirin regimen.

FC059
Oral Surgery in Inherited Bleeding Disorder Population: Effectiveness of Local Hemostasis
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Aim: This prospective study evaluated the effectiveness of surgical packs, suturing and antifibrinolytic treatment in preventing bleeding after oral surgery in patients with hemophilia, von Willebrand’s disease (VWD), or platelet disorders.
Methods: Oral surgery was made in patients with inherited bleeding disorder, under standardized local hemostasis involving surgical pack, suturing and passive mouthwash with 5% tranexamic acid solution. Substitutive treatment was used in patients with severe deficits. Tooth extractions were made under local anesthesia, No nerve trunk infiltration was made.

Results: Twenty-two patients underwent 63 dental procedures including 39 permanent teeth and eight deciduous ones and 16 scaling. One patient had secondary bleeding requiring surgical hemostasis and postoperative transfusion.

Conclusion: Local hemostatic measures including surgical pack, suturing and inexpensive tranexamic acid mouthwash was effective in minimizing the concentration and the volume of clotting factor concentrates while carrying safely oral surgery.

Free Communication Session 09 | B332 | 28.08.2013 | 14:00–15:00

Theme: Implantology: Immunology

FC060
Biomechanical Behavior of Dental Prosthesis
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Aim: Dental prosthesis has been used and studied for the replacement of missing teeth for many years. The biomechanical behaviour of osseointegrated dental prostheses systems plays an important role in its functional longevity inside the bone. Simulation of these systems requires an accurate modelling of the prosthesis components, the jaw bone, the implant–bone interface, and the response of the system to different types of applied forces. The purpose of this study was to develop a new three-dimensional model of an osseointegrated molar dental prosthesis and to carry out finite element analysis to evaluate stress distributions in the bone and the dental prosthesis compounds under an occlusal load was applied to the top of the occlusal face of the prosthesis crown.

Materials and methods: The jaw bone model containing cortical bone and cancellous bone was constructed by using computer tomography scan pictures and computer aided design tools. The dental prosthesis compounds were constructed, simulating the commercially available cylindrical implant of 4.8 mm diameter and 10 mm length. Both finite element models were created in Abaqus finite element software. All materials used in the models were considered to be isotropic, homogenous and linearly elastic. The elastic properties, loads and constraints used in the model were taken from published data.

Results: Results of our finite element analyses indicated that the maximum stresses were located around the implant neck, in the marginal bone.

Conclusions: Thus, this area should be preserved clinically in order to maintain the bone–implant interface structurally and functionally.

FC061
3-D-FEA for Different Implant Designs Under Thermal and Dynamic Loading
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Objective: The aim of the study was to evaluate the effect of the dynamic forces on the implants with two different superstructure materials in “all on four” concept and alternative designs using 3-D finite element stress analysis.

Methods: Different treatment alternatives with different implant designs were performed in an edentulous mandible. In Design 1 and 2 implants were placed according to “all-on-four” concept; Design 3 and 4 two long (13 mm length, 4 mm diameter), two short (7 mm length, 4 mm diameter) implants; Design 5 and 6 four long, two short implants; Design 7 and 8 two long, four short implants were placed vertically. Superstructures were planned as acrylic and porcelain dentures. Totally 300 N load was applied. FEA is used to evaluate stress distribution. Dynamic loading was performed as assuming a person eating three meals a day and 60 chewing motion per minute for 15 min. It was also assumed that the teeth were in uniform temperature (36°C) at the beginning, and 60°C for hot, 15°C for cold drinks (beverages).

Results: Stresses on the implants leads to early failure in the acrylic than the porcelain for all designs. “All-on-four” concept is a long-lasting design for implant endurance when compared with the short implant treatment alternatives. Usage of long implants instead of short ones, and increasing the number of implants; ensures the braking of the implants with greater cycles.

Conclusions: Usage of long implants rather than short ones, increasing the number of implants and porcelain superstructures elongates the implant’s lifespan.

FC062
A Technique to Fabricate Passively Fitting Cast Frameworks for Fixed Detachable Implant-Supported Prostheses
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Aim: Passive fit of the frameworks has utmost importance for the long-term success of implant restorations. Non-passive superstructures may lead to biologic and mechanical complications such as non-axial loads generated on implants, cervical bone loss, mobility and prosthetic component failures. A complete passive fit of screw-retained restorations is arguably impossible according to some clinicians, whereas, some think it can be achieved with precise application of the routine application of the fabrication procedures.

Case: This report describes an intra-oral luting technique to achieve passive fit of the metal framework of a fixed detachable implant-supported prosthesis. Clinical and laboratory procedures are presented step by step.

FC063
Accuracy Assessment of Computer Assisted Implant Planning and Placement
Deeksha Rajkumar
Apollo White Dental, Chennai, India

Aim: To compare 2D CT alone with 2D + 3D reconstruction for pre-operative planning of implant placement.

Methods: Spiral CTs of 29 patients were used for both reformatted 2D and 3D computer assisted planning. The number, size and site of implants and the occurrence of anatomical complications during the planning and the implant placement were statistically compared using percentage agreement and the Kendall’s correlation coefficients. In 16 patients the surgery was based on 2D imaging while in 13 patients it was based on 2D + 3D imaging.

Results: Agreement between planning and placement of the implants was highly significant for the implant site selected. For 2D based planning and placement, agreement reached 62%. For 2D + 3D based planning and placement, agreement attained 76%. For planning and placement of implant size based on 2D images, agreement was 35% while in 2D + 3D it was 46%. Agreement was not significant for anatomical complications, 73% for 2D and 76% for 2D + 3D planning.

Conclusions: The 3D planning system is undoubtedly a more reliable tool for pre-operative assessment of implant dimensions and placement. It has a better prognostic value than 2D based planning for implant length and axial placement in relation to the prosthetic tooth position. However, there are no significant differences in the 2D and 2D + 3D planning for anatomical complications. The 3D planning system definitely facilitates a significant increase in intra-operative safety, quality and also improves the predictability of treatment goal, especially during the insertion of implants in complex cases.

FC064
Clinical and Radiographic Evaluation of IDcam™ Dental Implants
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Objective: When a new implant is brought to market, prospective trials should be carried out to determine predictability of system. The aim of this study was to evaluate implant survival, crestal bone level changes and clinical parameters of IDcam™ dental implants over a mean follow-up period of 3 years.

Materials and methods: Seventy-two patients, 32 females and 40 males, received 256 implants. Implant-supported metal-ceramic fixed restorations were inserted. Following completion of restorations, each patient was reexamined at 6-month intervals. Standardized radiographs of implants were made and radiographic crestal bone level changes were calculated as well as soft tissue parameters included pocket probing depth (PPD), bleeding on probing (BoP), plaque index (PI), and gingival index (GI). Examinations were recorded from 18 to 42 months. Implant survival was estimated using Kaplan-Meier method. The associations between implant survival and recorded variables were estimated by using Cox proportional regression analysis.

Results: The Kaplan-Meier survival analysis demonstrated a cumulative survival rate of 97.7%. Three implants in three patients failed to osseointegrate at stage 2 surgery, and three implants in three patients were lost after loading. The mean marginal bone loss was 0.33 ± 0.14, 0.47 ± 0.15, and 0.58 ± 0.16 mm as determined 6, 12, and 24 months after prosthetic loading, respectively. Cox proportional regression analysis revealed that the variables of age, gender, type of the restoration, and implant region had no significant influence on implant failure (p > 0.05). Coefficients of correlation between implant survival and crestal bone loss, PPD, BoP, PI, GI were found nonsignificant (p > 0.05).

Free Communication Session 10 | B342 | 28.08.2013 | 14:00–15:00

Theme: Implantology: Oral Surgery

FC065
Eruption with Axis’s Adjustment of a Cyst-Associated Mandibular Premolar
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Aim: Marsupialization is the most minimal intervention used for the treatment of odontogenic jaw cyst and may induce eruption of impacted teeth associated with dentigerous cystic lesion. Therefore marsupialization has been widely recommended, particularly for a
large cystic lesion, to avoid loss of teeth, bony defects in the jaw and neurovascular injury as a result of enucleation.

The purpose of this report is to describe the successful outcome of conservative surgical management of a large dentigerous cyst associated with an impacted mandibular second premolar in a young patient.

Clinical presentation: An 11-year-old girl was referred to the oral medicine oral surgery department of the university dental clinic of Monastir complaining from a painless buccal swelling in the right posterior mandible. The panoramic radiograph shows a well-defined radiolucent unilocular lesion located in the periapical area of the right second temporary mandibular molar which is endodontically treated. The computed tomography scan shows that the right second mandibular premolar is deeply impacted in a horizontal position the way that the root apex perforates the lingual cortex.

Treatment: The second right temporary mandibular molar was extracted then an incisional biopsy was performed associated with cystic decompression and suture of the pathologic tissue with the healthy mucosa. An arch was provided for space maintenance. The diagnosis of dentigerous cyst was approved by histological examination

Follow-up: During 15 months follow-up period, the cystic cavity has progressively shrunk and the impacted premolar has spontaneously erupted.

FC066
Genetic Implication in Supernumerary Teeth-Surgical Approach
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Introduction: Hiperdontia is the anomaly in the number of teeth-increased the number of teeth (supernumerary teeth), which presents a challenge to the oral surgeon, pedodontion, and orthodontist, in order to establish the adequate occlusion, rehabilitation and to achieve function and aesthetic.

Case: Three children of the same family aged, 10, 11, 13 years, came at the CUSCK in Clinic of Pedodontics because of the persitation of milk teeth in upper jaw in frontal region. After clinical examination, panoramix-RTG-in in all of three patients we found to be present the impacted permanent teeth, supernumerary teeths in frontal region of both jaws, and the evident persitation of milk teeth. After dental treatment of decayed tooth’s in the Clinic of Pedodontics and extraction of persistent milk teeths, surgical treatment is continued in the Oral Surgery of CUSCK where the supernumerary teeths are removed and at the same procedure the permanent teeths of the frontal area are denudated. Patients are constantly called to examinations after surgical intervention and what we initially noticed are the first signs of eruptions of lateral incisives at all the patients, while the central incisives remained un-erupted. The patients then underwent second intervention in order to perform the orthodontic withdrawal of the central incisives. Follow up is presented with RTG and photos taken during the treatments.

Conclusion: For proper treatment of this anomaly is necessary to establish close cooperation in between Pedodontist, Oral surgeon and Orthodontist. Based on our results this multidisciplinary approach gives visible results.
region during the restorative and surgical procedures. Despite of some dentists who use both buccal and lingual infiltrations in mandibular anterior and premolar tooth extractions, the others prefer only buccal infiltration. The aim of our study was to investigate if lingual injection is necessary in extraction of mandibular incisor and premolar teeth.

Materials and methods: Forty-four healthy patients who admitted to our clinic for dental extractions with various reasons were included in the study. Patients were divided into two groups. In the experimental group buccal infiltration only used 1.5 ml of 2% lidocain hydrochloride with 1/80,000 epinephrine administered to the buccal side. In the control group 1.5 ml lidocain hydrochloride (2%, 1/80,000) was injected to the buccal side and then 0.3 ml injected to the lingual side. Each patient asked to record the pain and discomfort degree that felt immediately after the injection according to Face Pain Scale (FPS) and Visual Analogue Scale (VAS). After 5 min, the teeth were extracted and same scales recorded by the patients.

Results: According to VAS and FPS scores, there was no statistically significant difference ($p > 0.05$) between mandibular anterior tooth removal with or without lingual injection.

Conclusion: Extraction of mandibular incisor and premolar teeth without lingual injection is possible by depositing buccal infiltration of 1.5 ml of 2% lidocaine HCl.

Large Odontogenic Cystic Lesions with Ectopic Impacted Teeth: Case Reports

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Aim: Cystic and cystlike lesions of the maxilla and mandible are primarily ellipsoid, radiolucent, and clearly demarcated and may be odontogenic or nonodontogenic. Odontogenic cysts and tumors develop during or after the formation of teeth. Most odontogenic lesions are benign, but some may exhibit aggressive and destructive behavior locally. In this case report will be presented some cases like dentigerous cysts, keratocysts and an unicystic ameloblastoma with ectopic impacted teeth and their wide variety treatment options from minimal invasive to more aggressive.

Cases: We describe six cases, who referred to our Oral and Maxillofacial Surgery clinic of Istanbul Universitly Faculty of Dentistry between years 2009 and 2010 with some complaints like facial asymmetry and absence of teeth. The patient age ranged from 18 to 34 years, with sex distribution of one female and five males. According to radiological examinations large cystic lesions and ectopic impacted teeth were diagnosed.

Four dentigerous cysts, one keratocyst and one unicystic ameloblastoma were diagnosed after histological examination. Five of these lesions were located in mandibular ramus region, one were located in maxillary tuber area. Three years follow up after surgery was made and postoperative healing were satisfactory.

Conclusion: It is important by selecting the treatment protocol. It is often difficult to distinguish cystic-appearing lesions from one another with radiography. Careful consideration of the patient history and the location of the lesion within the mandible, its borders, its internal architecture, and its effects on adjacent structures generally makes it possible to narrow the differential diagnosis.

Relation to Chronic Periodontis in Macedonians

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Aim: The aim of the present study was to evaluate the effects of the humic acid on alveolar bone loss in ligature-induced periodontitis in rats.

Materials and methods: The study protocol were approved by the Animal Ethics Committee of Cumhuriyet University School of Medicine.

(1) Non-ligated (NL) group (n = 6).
(2) Ligature-only (LO) group (n = 8).
(3) Ligature + 20 mg/kgHA (HA-20) group (n = 8).
(4) Ligature + 80 mg/kgHA (HA-80) group (n = 8).
(5) Ligature + 150 mg/kgHA (HA-150) group (n = 8).

All groups, except the NL group, were applied ligature. In the study groups, humic acid was applied systemically. On the 15th day, all the animals were sacrificed and the blood samples were taken for serum ELISA analyses. After the mandibles were dissected, the vestibular gingival tissues were taken from each animal to use for the gingival cytokine analyses. The mandibles were defleshed and stained with 1% aqueous methylene blue. The alveolar bone height was measured under a stereomicroscope by recording the distance from the CEJ to the alveolar bone crest. For the histopathological evaluation, osteoclast number, osteoblastic activity and inflammatory cell infiltration were determined. Statistical analysis were performed using the Kruskal–Wallis test.

Results: While HA-80 and HA-150 groups lowered the IL-1β levels, they dwelled the IL-10 levels. The mean alveolar bone loss was reduced by humic acid. Furthermore, the number of osteoblasts was increased and the mean osteoclast number and inflammatory cell infiltrate were decreased.

Conclusion: It is probable that humic acid may prevent the destruction of alveolar bone loss and gingival inflammation.
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Background: Genetic polymorphisms in the interleukin 6 (IL6) gene have been reported to influence the host response to microbial challenge in periodontitis by altering levels of cytokine expression.

The aim of this study was to evaluate two nucleotide polymorphisms at positions -174 (C-G) and nt565 (A-G) of IL-6 gene and their association with generalized chronic moderate and severe periodontitis.

Material and methods: The study population consisted of 299 healthy unrelated individuals and 111 patients with periodontal disease divided into two groups according to the loss of attachment (moderate periodontitis with clinical attachment loss (CAL) ≤4 mm and severe periodontitis with CAL > 4 mm). They have filled in and signed informative permission for genetic research and storage of isolated DNA in the Macedonian Human DNA Bank (hDNAMKD). Cytokine genotyping was performed by PCR-SSP (Heidelberg kit). The population genetics analysis package (PyPop) was used for analysis of the cytokine data for this report. Comparisons of different alleles, genotypes, haplotypes, and haplotype zygosity for two groups were tested by Pearson’s p-value.

Results: Within the moderate clinical phase of periodontal disease, significant associations (p < 0.05) were detected between subjects with periodontitis and cytokine genotypes IL6 -174/C:C; IL6 -nt565/A:A and cytokine haplotype zygotes IL-6/CA:CA.

Within the severe clinical phase of periodontal disease, significant associations (p < 0.05) were detected between subjects with periodontitis and cytokine genotypes IL6 -174/C:C; IL6 -nt565/A:A, cytokine haplotype IL-6/CA and cytokine haplotype zygotes IL-6/CA:CA.

Conclusion: Cytokine polymorphism on the IL-6 gene appears to be associated with susceptibility to chronic periodontitis in Macedonians.

FC072
Baseline Radiographic Defect Angle as a Prognostic Indicator of Regenerative Periodontal Surgery
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Aim: The aim of this study was to investigate whether an association exists between baseline radiographic defect angle and treatment in periodontal regenerative surgery.

Materials and methods: The study was realized on 30 patients who had pair test sites and control sites, with pockets ≥6 mm and infra-osseous defects with depth ≥3 mm measured by probing and X-ray evaluation radiographic defect angle was ≤22° than when it was ≥26°.

Results: The average values of the clinical attachment level (CAL) in the test sites were 1.8 mm at 6 months and 2.1 mm after 12 months, for the group with EMDGAIN®, 1.1 mm at 6 months and 1.2 mm at 12 months for the control group. The radiographic gain was ascertained after 12 months.

Conclusions: This study showed that there was a significant association between baseline radiographic defect angle and CAL gain of ≥4 mm after regenerative surgery with EMD is used in narrow (≤22°) intrabony defects suggests that the baseline radiographic defect angle might be used as a prognostic indicator of treatment outcome.

FC073
Clinical Evaluation of Periodontal Parameters in Marginal Dental Restorations
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Introduction: The relationship between periodontal health and the restoration of teeth is intimate and inseparable. For restorations to survive long term, the periodontium must remain healthy so that the teeth are maintained. For the periodontium to remain healthy, restoration must be critically managed in several areas so that they are in harmony with their surrounding periodontal tissues. The aim of this study was to evaluate the periodontal parameters in patients with correct marginal restorations that referred to periodontics department of Mashhad Dental School.

Materials and methods: Fifty patients with one or more marginal restorations as well as their controls were studied in a cross-sectional method. Gingival, plaque, probing depth and gingival bleeding indices were measured in both groups. Wilcoxon test was used comparing the results in both groups.

Results: Fifty percent of cases had plaque index of 0 as the rate was 60% in control samples. Considering gingival index, the percentage of patients with gingival index was 58 and 74 in case and control groups respectively. Bleeding index of 0 was reported to be 38% and 72% in case and control groups respectively. Probing depth in case group was more than control. Statistical analysis showed significant differences between the two groups considering four measured variables (p < 0.05).

Conclusion: The finding of this study showed, even the correct marginal restoration may have effect on periodontal status and as a general rule, Periodontal health is the “Sine Qua Non” a prerequisite, of successful comprehensive dentistry.

FC074
Does Periodontal Therapy Reduce Gastric Helicobacter pylori Recurrence? A Meta-Analysis
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Aim: The aim of this meta-analysis is to evaluate the effect of periodontal therapy plus eradication therapy vs. eradication therapy alone in terms of prevention of gastric Helicobacter pylori (H. pylori) infection recurrence for patients with gastric diseases associated with H. pylori.

Materials and methods: We systematically searched electronic databases, and included controlled trials comparing periodontal treatment and eradication therapy of H. pylori with eradication therapy alone for prevention of recurrence of gastric H. pylori. We used the absence of recurrence of gastric H. pylori after the first 3 months as an outcome measure to determine relative risk of persistence of gastric H. pylori. We estimated the degree of heterogeneity among trial results using Q statistic and the I² statistic.

Results: Three controlled clinical trials, including 298 patients and comparing eradication therapy alone with periodontal therapy or oral hygiene procedures as adjunct to eradication therapy, fulfilled the criteria for consideration in the review. When the effect sizes of these three trials were combined by a random-effects model, a significant relative risk reduction of 63% was seen (p = 0.0004), 68.45% (128 of 187) of patients given periodontal therapy and 22.52% of controls (25 of 111) were eradicated from H. pylori after 3 months.

Conclusions: The adjunction of periodontal treatment to eradication therapy appears to reduce gastric H. pylori recurrence compared with eradication therapy alone. The results of this meta-analysis suggest including periodontal treatment in the management of H. pylori infection.

Method: We examined patients with TMJD, as well as patients with a variety of neurologic conditions for possible TMJD. Diagnostic criteria included were jaw joint clicking or popping, jaw pain, headaches, migraines, neck and shoulder pain or tightness, limited jaw opening, and accidents or trauma to the head and neck. We confirmed the clinical diagnosis by means of MRI’s, CT scans, Tomography.

Result: In 35% of patients with neurologic pathologies, calibrated oral orthotics were successful in reducing TMJ-associated symptoms, in re-aligning the position of the mandible, and in reducing the dystonic behaviors.

Conclusion: Our research suggests that up to one third of the patients with systemic disorders associated with TMJD may suffer from peripheral neuro-inflammation of the mandibular nerve. Our findings implicate particularly the auriculotemporal branch of the trigeminal V3, which runs proximal to the TMJ. We also established that a substantial proportion of patients with neurologic pathologies, the neurologic symptoms appear to be definitely linked to TMJD.

In the remaining patients, the clinically observable neurological pathologies are clearly not systemic correlates of TMJ neuro-inflammatory processes.

**FC076**

The Effect of Ceramic Thickness and Number of Firings on the Color of Densely and Partially Sintered Zirconia Ceramic Systems

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Purpose: Milling of zirconia blocks can be performed in the partially or fully sintered stage. Their high crystalline content makes zirconia ceramics relatively more opaque to visible light. The purpose of this study was to evaluate the effects of number of firings and veneering ceramic thickness on the color of partially sintered (Cercon) and fully sintered (DC Zirkon) zirconia cores.

Materials and methods: Thirty disc-shaped specimens, 4 mm in diameter with a 1-mm core thickness, and 0.5-, 1-, or 1.5-mm dentin ceramic thicknesses, were made from each of two ceramic systems (n = 10). Repeated firings (3, 5, 7, or 9) were performed, and the color of the specimens was compared with the color after the initial firing.

Results: L*a*b* values of the ceramic systems were affected by the number of firings (p < 0.01), ceramic composition (Cercon or DC Zircon) (p < 0.01), and ceramic thickness (p < 0.01) except the a* value (p = 0.07). As the ceramic thickness increased, significant reductions in L* values (p < 0.01) were recorded for DC Zirkon specimens resulting in darker specimens, increased ceramic thicknesses has led to increased L* values for the Cercon specimens subjected to 3 and 5 number of firings which became lighter. An increase in the number of firings has led to increased L* values for both ceramic systems resulting in lighter specimens (p < 0.01).
Cercon specimens were darker, more reddish and yellowish compared to the DC Zirkon specimens for every thickness and number of firings levels except the specimens with ceramic thicknesses of 0.5 and 1 mm less yellowish than the DC Zirkon specimens (p < 0.01).

FC077
Comparative Analyse of Variables of Metal Ceramic Dental Bridges
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Aim: Our aim in this study is to:
1. Analyze the odontometric values of pontic elements of occluso-cervical, mesio-distal and vestibulo-oral dimensions;
2. Compare the getting values with homologous values of natural teeth.
3. Determine the difference in per cent of values from our study with values of control group.

Material and methods: During 2010 and 2011 year, clinically were analysed and measured 455 pontic elements of lateral dental bridges by 151 treated patients from both sex, and in age from 26 to 70 years old. Measurement was made with an instrument for precise measuring (shubler), with precision of 0.1 mm.

Conclusions: The getting results showed that:
1. The highest of pontic elements of dental bridge increase the resistance and the hardness of bridge with geometric progress.
2. The shorter pontic elements in mesio-distal dimension will influence on defence of dental bridge from deformity and breaking.
3. The narrower pontic elements will increase the hardness of dental bridge in linear manner.

FC078
The Impact of Complete Dentures on Oral Health Related Quality of Life
Linda Dula, Kujtim Shala, Zana Lila Krasniqi, Arinda Dragusha, Teuta Bicaj, Teuta Pustina Krasniqi, Enis Ahmedi

Oral health related quality of life (OHRQoL) is considered to be an important part of patient's general health. Therefore, the main goal of contemporary dentistry is not only to improve oral health but also to improve overall quality of patients life.

Objectives: The aim of this study was to assess the OHRQoL before and after prostodontic complete denture therapy and denture satisfaction of patients.

Material and methods: The study included 97 patients with complete denture (CD) There were 51 females and 46 males between the ages 40–80 years. These patients were selected from the waiting list for CD in University Dentistry Clinical Center, Pristhina, Kosova. The data was collected from survey questionnaires OHIP-49 more sophisticated, accepted and translated into more than 20 languages in world. All patients with CD filled in Albanian version of the questionnaire (OHIP-49) twice: the first time before the therapy had begun and the second time 6 months after the new CDs had been delivered.

Result: OHRQoL before and after 6 months was statistically significantly by the insertion of new CDs in all prostodontic patients (p < 0.0001) with Mann–Whitney test. Patients are more satisfied with upper jaw CDs than in lower jaw.

Conclusions: Elimination of oral pain and problems associated with chewing and speech and improving patient's aesthetics increase the quality of life Clinicians should also recognize the important role they play in improving a patient's quality of life aside from just manufacturing a complete denture for.

FC079
Treatment Management in Cases with Bruxism
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Aim: The primary objective of this paper is exhibiting a case presentation involving treatment management of patients with bruxism in which depending on the severity of the symptoms we fabricate various types of splints, suggest myofunctional exercises, yoga, use of vitamins, minerals and occasionally sedatives.

Materials and methods: We treated 40 patients, divided into four groups of 10. The first group manifested permanent afflictions, jaw pain, myalgia and persistent headaches. The second was comprised of patients with evidently present attrition on the dentition. The third group patients complained about TMJ pain and clicking sounds during jaw opening and closure. The severity of the bruxism in the third group caused clinically manifested stadium of periodontitis. The treatment protocol aimed to influence the impelled effectors. For the first group, we fabricated stabilization splints. For the second we used soft splints. The third was treated with restrictive splints and the fourth with partial splints for selective decompression. Simultaneously we examined the psychological component of the disorder by the use of a placebo.

Results: We documented the progress of the treatment after 6, 12 and 18 months from the beginning of treatment. The placebo
showed us that the psychological element was insignificant and the symptoms had organic origin. After the 18th month, the rehabilitation was evident in the fourth group. In the second and third group, the symptoms were eliminated after 12 months and in the first only after 6 months.

**Conclusions:** The conclusion guided us toward the comprehension that our bruxism treatment management is effective and without resurgence.

**Free Communication Session 13 | B332 | 28.08.2013 | 15:30–16:30**

**Theme: Preventive Dentistry: Public Health**

**FC080**

"Smile Healthy to Your Diabetes": Health Coaching Based Intervention for Diabetes and Oral Health Management

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**Aim:** The present study is the first to our knowledge that aims to evaluate the impact of Health Coaching (HC) on diabetes management and oral health among patients with diabetes type II (DM2).

**Methods:** The study is part of a prospective intervention among randomly selected DM2 patients (n = 186), Istanbul, Turkey. The data analyzed were Community Periodontal Need Index (CPI) and HbA1c (glycated haemoglobin). Data was collected initially and at the end of intervention. Participants were allocated randomly to Health Coaching (HC:intervention) (n = 77) and education (ED: control) (n = 102) groups.

**Results:** At baseline, there was no statistical difference between HC and ED groups [HbA1c:7.5% vs. 7.8% (59 vs. 62 mmol/mol); CPI: 2.3 vs. 2.4], (p > 0.05). At post-intervention the HC group had significantly lower HbA1c (6.7%; 51 mmol/mol) and CPI (0.6±0.1) than the ED group [7.7% (61 mmol/mol), CPI:1.9], (p < 0.01). HC significantly reduced HbA1c (F = 6.58) and CPI (F = 8.14), (p < 0.05). The impact of ED on CPI was significant (F = 14.45, p = 0.001) but not on HbA1c (F = 0.05, p = 0.94). The improvement at CPI from baseline to post intervention had significant impact on reduced HbA1c at HC (F = 2.94) and ED groups (F = 5.93), (p < 0.05).

**Conclusion:** The present findings may imply that HC has a significantly higher impact on better management of diabetes and oral health compared to ED. The impact of ED was insufficient to make significant reduction at HbA1c. Thus may underline the need for integration of HC to the daily practice of health care providers and diabetes educators to improve quality of life for patients with DM2.

**FC081**

**Adolescents’ Opinion on School-Based Oral Health Education**

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**Introduction:** Health education is one of the important components of school-based oral health promotion programme. Adolescent perspectives on the school-based oral health education (OHE) may support public health professionals in order to develop more effective interventions of OHE.

**Objectives:** This qualitative study used focus groups to gather adolescents’ opinions on school-based oral health education approach in terms of acceptance and its perceived benefits.

**Methods:** Thirty-two adolescents aged 17 years old from two secondary schools in Selangor, Malaysia participated in a total of four focus group discussions. Each session was audio and video-recorded. The data were transcribed and coded into themes using QSR NVivo 9 according to the principles of Grounded Theory approach.

**Results:** Participants described that their acceptance of school-based oral health education depended on exquisiteness, satisfaction, quality and value of the programme. Content, delivery, speakers and language were the factors that contributed to the exquisiteness of school-based OHE. The venue, duration, attitude of dental support staff and support from teachers were the factors that affected their satisfaction. Quality of school-based OHE was reflected in the conduct, audio-visual aids and surrounding. Their perceived values of oral health initiated the acceptance of the programme. Awareness, knowledge and self-confidence were the perceived benefits gained from the school-based OHE.

**Conclusions:** This qualitative study gives the insight of acceptance of school-based OHE among adolescents. Though school-based oral health educations were perceived to be beneficial to the adolescents, understanding their acceptance may provide essential information for enhancing school-based OHE programmes.

**FC082**

**Gender and Weight Concerns Among an Adolescent Population**

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**Aim:** The relationship between smoking and weight is complex, and the mechanisms by which smoking influences weight are not fully understood. Several studies have reported that smoking affects weight by increasing metabolic rate and decreasing caloric absorption, which is thought to help suppress appetite. This study examined the beliefs that Nigerian adolescents hold regarding smoking and weight gain.

**Methods:** This study used data from a cross-sectional survey among a group of adolescents to assess the influence of gender, age and smoking status on smoking-related weight concerns.
Results: Two hundred and three senior secondary school students whose ages were 14–19 years participated in the study. Prevalence of current cigarette smoking was 2% and all smokers were males.

There was no statistically significant differences in terms of age (p = 0.139), gender (p = 0.053) and weight gain concerns. However there was a significant difference in terms of smoking status with significantly higher proportion of smokers believing that smoking helps to gain weight while non smokers believe it helps to lose weight (p = 0.000).

Conclusion: Results highlight potentially important differences in the relationship between weight concerns and smoking status and the influence these concerns may have on smoking uptake. The relationship between smoking and weight concerns among the population studied is different from previously reported studies.

FC083

Greek Dentists’ Work-Related Stress During the Economic Crisis
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Aim: Greek National Health System dentists suffer from work stress because of wage cuts and job insecurity due to the economic crisis and consequent health policies. The aim of this study was to investigate chronic work stress of dentists working in public sector’s primary healthcare by using the Effort-Reward Imbalance (ERI) questionnaire, which was used for the first time among Greek dentists.

Materials and methods: All 192 dentists working in Greek public health centers were invited to participate; 135 (70.3%) agreed. Of them, 68 (50.4%) were male (age 55.3 ± 6.6 years) and 67 (49.6%) were female (age 54.3 ± 4.5 years). The translated, adapted and validated into Greek version of the ERI, a 23-item instrument using a simplified, uniform 4-point Likert response scale, was delivered between July and October 2012, with permission of the Ministry of Health.

Results: Factor analysis revealed three main profiles characterizing dentists’ responses: (i) one pattern, combining intense time stress, physical fatigue, anxiety and feelings of decreased esteem and respect by others, (ii) one comprising by time stress, physical fatigue, work insecurity and instability and (iii) one exhibiting intense daily work stress. ER ratio >1 was found in 60.18% of dentists, while 13.56% had overcommitment score in the upper tertile.

Conclusions: A relative imbalance between efforts dedicated and rewards perceived was found in primary care Greek dentists at the specific timing. Therefore, appropriate interventions should be implemented to monitor and address work-related stress, which is expected to increase in the era of crisis.

Theme: Preventive Dentistry: Epidemiology

FC084

Gingival Crevicular Fluid Levels of Monocyte Chemoattractant Protein-1 in Patients with Aggressive Periodontitis
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Aim: Monocyte chemoattractant protein-1 (MCP-1) is a member of the C-C chemokine family, and a potent chemotactic factor for monocytes. MCP-1 is synthesized in inflamed gingiva by vascular endothelial cells and mononuclear phagocytes. This study was carried out to examine the gingival crevicular fluid (GCF) levels of MCP-1 in aggressive periodontitis (AgP) and periodontally healthy subjects.

Materials and methods: GCF samples were collected from 141 patients including 50 localized (L) AgP, 30 generalized (G) AgP and 61 periodontally healthy control (C) patients Analysis for GCF MCP-1 was measured by an enzyme-linked immunosorbent assay. The mean whole mouth scores of plaque index (PI), gingival index (GI), probing depth (PD) and clinical attachment level (CAL) were recorded.

Results: Compared to healthy controls, all clinical parameters, concentrations (pg/ml) and total amounts (pg/site) of MCP-1 levels were statistically significantly higher in subjects with LAgP and GAgP (p < 0.001). There were a significant correlations between total amounts of MCP-1 and clinical parameters in subjects with AgP (p < 0.001).

Conclusions: These results indicate that total amounts of MCP-1 levels in GCF may have a potential indicator of periodontal tissue destruction in subjects with LAgP and GAgP.

Free Communication Session 14 | B342 | 28.08.2013 | 15:30–16:30

Theme: Dental Treatment and Restorative Dentistry: Prosthetics

FC085

A New Apparatus: Changing the Bonding Force of Impression Tray to the Edentulous Jaw
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Aim: This in vivo study evaluated the bonding strength of impression material to the edentulous maxillary jaw using different impression materials with and without an impression valve system (IVS).

Materials and methods: Two impression materials – ZnOEugenol (ZnOE) and irreversible hydrocolloid (IH) – were used as experimental material to determine the bonding force of an individual impression tray (IIT) with and without IVS to edentulous the maxillary jaw using digital dynamometer.
Results: There were statistically significant differences between the ZnOE and IH groups (p < 0.05). The effect of IVS on bonding strength was found to be statistically significant (p < 0.05).

Conclusions: In clinical application, taking set impression material away from the mouth can cause negative effects such as distortion of impression material, surface changes, tearing, and detaching impression from impression tray. The main advantage of this new technique is that dentists can take the impression tray away from the mouth with minimal force. Consequently, the dimensional stability and structural integrity of the impression will be protected.

FC086

A New Technique for Controlling the Patient Using RFID Card
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Introduction: Marking or labelling the dentures is not a new concept in either prosthetic or forensic dentistry, and its routine practice has been urged by forensic dentists internationally for many years. Denture identification is especially important for patients in geriatric institutions. For the patient who may have difficulty in learning to control new dentures it is possible to lose the dentures. Over the years, various methods of denture marking have been reported in the literature. These include surface marking and inclusion techniques using metal or nonmetal materials, microlabels, and chips. Automatic identification using barcodes incorporated into dentures has been developed. However, the scanning of barcodes may be difficult due to the opacity of the acrylic resin, and for this reason the use of clear acrylic resin is recommended with this system. Furthermore, the curvature of the denture may cause distortion of the barcode, making it unreadable. Also, barcode technology may present practical obstacles for denture prostheses. In medicine, radiofrequency identification (RFID) is used to reduce the errors of patient identification, particularly during blood transfusion and drug administration in hospitals. It seems reasonable to adopt this technology for denture identification. It is possible to help blind patients using a similar technology. Patients can be warned or informed with the system that placed in the living area.

Results: In this study we inserted a RFID chip in to removable prosthesis using a simple method. It helps the patients family following and controlling the patient when the he is alone.

FC087

Study of the Radius of the Monson’s Sphere in Iranian Adults
Maryam Azimi Zavare1, Farnoosh Taghavi Danghani1, Mehran Torabi1, Mahdie Chavoshzade2
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Aims: One of the required information in rehabilitating the occlusal plane in dentistry is the radius of Monson’s sphere, which like other anatomical indices varies in different races. The purpose of this study is to determine the radius of this sphere in the students of dental school as a sample of Iranian race.

Materials and Methods: Forty-five Iranian subjects (19 males and 26 females) aged 18–25 years old were selected for this study. The x, y, z coordinates of cusp tips of all mandibular teeth except for the third molars obtained with a three-dimensional digitizer, were used to derive a spherical model of the occlusal surfaces’ curvature. From the best interpolating sphere, the radii of the Monson’s sphere, the left and right curves of Spee (quasi-sagital plan), the canine and molar curves of Wilson (frontal plane) and also the depth of curve of Spee were computed. Statistical analysis of the data was performed by student’s t-test.

Results: Although all of the computed variables were greater in men, the occlusal curvature of mandibular arch was not influenced by gender. The mean radius of the Monson’s sphere was 111.5 mm (121 mm in men and 104 mm in women which was closer than men to the classical value of 4 inch, confirming Monson’s observations). The radii of the left and right curves of Spee, and the curve of Wilson in canine area were about 119 mm in men and 102 mm in women. The depth of the curve of Spee was 2/04 mm in men and 1/17 mm in women without any gender differences.

Conclusions: The average radius of the Monson sphere in this study was greater than the classic value of 4 inch.

FC088

Residual Ridge Morphology in African American vs. Caucasian Women, and Clinical Management
Asha Samant
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Osteoporosis is a risk factor for residual ridge resorption in postmenopausal women. African American women have high bone mass and less severe osteoporosis than Caucasian women. But its implication on residual ridge morphology in AA is not clearly defined much in research.

Objective: Morphology of both type women was evaluated.

Method: BMI, ridge shape presence or absence of undercuts in both arches was studied. Panoram Inde Benson) and Mandibular Cortical Index (Klementti et al) was used for calculation

Results and conclusions: Clinical and morphometric assessment reveal greater RR volume and increased occurrence of heavier, bulbous ridges in African American women. These findings are consistent with high bone mass reported in African American Women.

Clinical management: The presentation will present management of clinical cases, how to render treatment prosthesis in such patients.

FC089

An Investigation into the Effect of Different Preparation Designs and Try-in Pastes, on the Overall Color of Ceramic Laminate Veneer Restorations
Burçin Vanlıoğlu, Buket Evren, Erhan Tuğcu, Yasemin Kulak Ozkan
A Comparison of Two Different Digital Model Analysis Programs
Ruhi Nakça1, Burca Aydin2, Ali Altuğ Büçakçı3, Hikmet Orhan3
1Department of Orthodontics, Suleyman Demirel University, Isparta, Turkey, 2Department of Orthodontics, Gaziosmanpasa University, Tokat, Turkey, 3Department of Biostatistics and Medical Informations, Suleyman Demirel University, Isparta, Turkey

The aim of this randomized comparative clinical trial is to evaluate the skeletal and dentoalveolar effects of Active Vertical Protraction Appliance (AVPA) in comparison with Reverse Headgear (RH). AVPA is recently developed to prevent the undesired side effects of conventional protraction therapy and for providing simultaneous openbite and Class III treatment in patients with increased or optimum vertical dimensions.

Materials and methods: The inclusion criteria for the AVPA (30 patients, average age: 10.19 years) group were the presence of maxillary deficiency caused skeletal Class III, increased or normal vertical dimensions and being at the pubertal growth spurt or at earlier growth periods. RH group consisted randomly selected 30 patients (average age: 10.81 years) from archive records. Interand intragroup differences were analyzed with independent and paired samples t-tests.

Results: As a result of AVPA treatment major Class III correction was achieved in all patients. Palatal plane inclination remained stable in AVPA group whereas it decreased significantly in RH group. Gonial, ramal and mandibular plane angles decreased significantly in AVPA group, however, significant increase was observed in RH group. Upper maxillary incisor extrusion and protrusion were recorded in both groups and as for the lower incisors, protrusion was recorded in AVPA group whereas retraction was recorded in RH group.

Conclusions: With the use of AVPA treatment, vertical control was successfully achieved during protraction while preventing the maxillary and mandibular side effects of the conventional protraction treatment. The use of skeletal anchorage with AVPA can be considered in further studies for the prevention of dentoalveolar side effects.
Aim: With regard to innovations in computer technology and systems, three-dimensional dental models have been a good alternative for conventional casts. In the literature there are some researches that surveys the accuracy and reproducibility of the measurements comparing digital and conventional dental casts, however there is not any study that compares different three-dimensional model analysis softwares. The purpose of the current study was to evaluate and compare reliability of measurements performed by two different three-dimensional digital orthodontic model analysis programs.

Material and methods: From the archive of our faculty 20 dental casts were selected and scanned in STL format with an Orthodontic 3D Scanner (3 shape R700, Copenhagen, Denmark). For orthodontic analyses we used Orthomodel (v.1.01, Orthomodel Inc., Istanbul, Turkey) and O3DM (v.3.4, O3DM Thunoegade, Aarhus C, Denmark) software programs. With both programs one examiner performed Bolton and space need analyses, tooth widths, arch lengths, intermolar and intercanine measurements. For intra-observer reproducibility, 1 week after assessment, ten randomize-selected dental casts were re-measured by the same observer. Paired-samples test was used to determine the differences between the groups and Cronbach’s alpha analysis was applied for intra-observer reproducibility.

Results: Orthomodel and O3DM programs showed no significant differences in the measurements that are crucial for treatment planning (p > 0.05). Also Cronbach’s alpha value was very close to the ideal value of 1 (α = 0.905), which shows good intra-observer reliability for all measurements.

Conclusions: The results of our study suggest that both of the programs are clinically acceptable for orthodontic measurements with respectable reliability.

FC093
Antibacterial Effects of Six Orthodontic Bonding Materials
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Mehmet Burak Gunser2, Faruk Ayhan Basciftci3
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Objective: Long-lasting antibacterial effects of orthodontic bonding materials may be beneficial in the prevention of white spot lesions. The aim of this study was to evaluate antibacterial effects of six orthodontic bonding materials which are commonly used in orthodontics.

Materials and methods: The antibacterial effects of six orthodontic adhesives were evaluated against Streptococcus mutans and Streptococcus salivarius by direct contact test (DCT). With DCT, quintet specimens of Transbond XT, Bloo Gloo, Gren Gloo, Opal, Light Bond and Clearfill AP-X were placed at the bottom of the wells at a height of 2 mm in 96-microtiter plate. Two sets of test materials were prepared: 1- and 7-days samples. Ten microliters of bacterial suspension was added to each well for direct contact with each material for 1 h at 37°C. Bacterial growth was then measured using a microplate spectrophotometer hourly for 24 h (ODa280 = 0.6). Five uncoated wells using identical inoculum size served as positive controls. Another five uncoated wells with media served as negative controls. The data obtained at the end of 24 h was statistically analyzed with one-way ANOVA and post hoc comparisons were done using Tamhane’s T2 test.

Results: Although statistically it was not significant, Bloo Gloo generally showed greater antibacterial activity than the other materials. Transbond XT usually showed the least antibacterial activity. There was a statistically significant difference between Transbond XT and Light Bond in 1 day sample against S. mutans. No statistical significant differences were found among the other groups (p > 0.05).

Conclusions: Bloo gloo possessed the most potent antibacterial activity.
Both the groups were divided into three subgroups on the basis of main groups, depending on the presence or absence of irradiation. The selected and decoronated before being randomly divided into two root canal obturating materials.

**Method:** Freshly extracted human maxillary anterior teeth were selected and decoronated before being randomly divided into two main groups, depending on the presence or absence of irradiation. Both the groups were divided into three subgroups on the basis of different root canal obturating materials used (REAL-SEAL, BEEFILL.2IN1 and GUTTA PERCHA without sealer). For the groups that received irradiation, a dose of 60 gray was delivered in fractions of 1.8 Gray per day, 5 days a week for 7 weeks. The specimens were then analyzed by SEM for marginal gap width and the images obtained were recorded and evaluated using Orion 6.604 software. All analyses were performed on Statistica software using Tukey’s post hoc test.

**Results:** In all the specimens receiving radiotherapy, mean marginal gap width was slightly higher when compared to those without irradiation, but was not statistically significant, except in case of the obturating material Resilon.

**Conclusion:** Radiotherapy significantly effects the sealing ability resilon.

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**FC096**

**Effect of Radiotherapy on the Sealing Ability of Obturating Materials**

Aseem Prakash Tikku, Monika Khangwal

*King George’s Medical University, Lucknow, India*

**Aim:** It is a known fact that radiotherapy, an important treatment modality for cancer patients, effects dental hard tissues at the same time. However, the effect of radiotherapy on the sealing ability of root canal obturating materials is not yet established. This in-vitro SEM study was carried out with the aim to assess the influence of radiotherapy on the sealing ability of three different obturating materials.

**Method:** Freshly extracted human maxillary anterior teeth were selected and decoronated before being randomly divided into two main groups, depending on the presence or absence of irradiation. Both the groups were divided into three subgroups on the basis of different root canal obturating materials used (REAL-SEAL, BEEFILL.2IN1 and GUTTA PERCHA without sealer). For the groups that received irradiation, a dose of 60 gray was delivered in fractions of 1.8 Gray per day, 5 days a week for 7 weeks. The specimens were then analyzed by SEM for marginal gap width and the images obtained were recorded and evaluated using Orion 6.604 software. All analyses were performed on Statistica software using Tukey’s post hoc test.

**Results:** In all the specimens receiving radiotherapy, mean marginal gap width was slightly higher when compared to those without irradiation, but was not statistically significant, except in case of the obturating material Resilon.

**Conclusion:** Radiotherapy significantly effects the sealing ability resilon.


**Microirricodontics**

Anuj Bhardwaj, Amit Bhardwaj, Amit Kumar Garg  
Modern Dental College & Research Centre, Indore, India

**Aim:** Endodontists have always taken pride in saying that they can do much of their work blindfolded simply because there is “nothing to see.” The truth is always sour, that there is a great deal to see with the right tools. In the past decade, there has been an innumerable development of new technologies, instruments, and materials. These developments have improved the precision with which endodontic treatment are performed. These advances have enabled clinicians to complete procedures that were once considered impossible or that could be performed only by talented or lucky clinicians.

But the credit goes to the introduction and adoption of the Cone beam computed tomography (CBCT), Dental operating microscope (DOM) and irrigation devices, which has revolutionized how endodontics is practiced worldwide.

Until recently, endodontic therapy was performed using tactile sensitivity, and the only way to see inside the root canal system was to take a radiograph.

Before the CBCT and DOM, the presence of a problem (ledge, perforation, blockage, retreatment, broken instrument) was only "felt," and the clinical management of the problem was never predictable and depended on happenstance. Most endodontic procedures occurred in a visual void, which placed a premium on the doctor’s tactile dexterity, mental imaging, and perseverance.

**Conclusions:** This presentation provides basic information on how a CBCT, DOM along with irrigation devices are used in clinical endodontic practice to make endodontics more of seeing rather than just feeling.

**Methodology:** Ninety-six lateral incisor teeth were sectioned at or below the cementoenamel junction and were randomly divided into eight experimental groups (n = 12). Root canals were prepared using ProTaper rotary files, with the exception of the Self-Adjusting File (SAF) group. Canals were irrigated with 2 ml of 5% sodium hypochlorite (NaOCl) at each instrument change, and received a final flush with 10 ml of 17% EDTA and 10 ml of 5% NaOCl for 1 min. The surface of root dentin was observed using a scanning electron microscope. Statistical analyses of the data were performed using Kruskal–Wallis and Bonferroni adjusted Mann–Whitney U-tests (p < 0.05).

**Results:** This in-vitro study showed that; the use of EndoActivator, EndoVac, Ultrasonic and SAF systems increased efficacy of smear layer and debris removal, and furthermore manual dynamic activation increased efficacy of debris removal.

**Conclusions:** Neither technique completely removed smear layer and debris from the root canal walls. However irrigation activation protocols (especially sonic, ultrasonic, apical negative pressure and continuous irrigation during instrumentation) increased the cleaning efficacy of root canal debridement in comparison with syringe irrigation.

**POSTERS SESSION 01 (P001–P209)**

**Theme:** Dental Treatment & Restorative Dentistry: Caries

**P001**  
**Restoration of Non-Caries Cervical Lesion in the First Maxillary Premolar**  
Xiao Xu  
Department of Oral VIP, Shanghai Second Medical University, Shanghai, China

**Purpose:** To investigate the factors such as cavity depth, shape restoration material and occlusal adjustment which had influences on the restoration of non-carious cervical lesion (NCCL) in the first maxillary premolar.

**Methods:** 3-D finite element models of adult first maxillary premolars which had cavities of different depths and shapes in buccal cervical region were built. The models were restored and divided into three groups: glass ion cement (GIC), amalgam and composite resin. We evaluated stress profiles and distribution in normal occlusions and malocclusion were evaluated from vertical and lateral loading.

**Results:** In normal occlusion, there was mainly tensile stress and uniform distribution on buccal cervical margin. Compressive stress appeared when approaching to tooth root. In malocclusion, there was mainly greater concentrated tensile stress on buccal cervical margin with vertical loading. The results showed that interface stress values of GIC and composite resin model were smaller than amalgam, the latter was 3–9 times greater than the former two.

**Conclusion:** For smaller cavity depth, cavity shape is not the primary factor affecting treatments of NCCL. But the rectangular cavity isn’t suitable for larger defects. There is positive correlation between stress values of restoration and cavity depth. Supported by Research Fund of Science and Technology.

**P002**  
**Lactotransferrin Gene Polymorphism in Children with Dental Caries**  
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**Aim:** The aim of this study was to determine the association between lactotransferrin (LTF) gene polymorphism and dental caries.

**Materials and methods:** Unrelated 13-years-old to 15-years-old children (n = 637) were enrolled into the study. They were divided...
into two groups: caries free (DMFT = 0) and caries affected (DMFT ≥ 1). The LTF rs1126478 (140A/G exon 2, Lys/Arg) genotypes were determined by polymerase-chain reaction (PCR) with restriction analysis by EarI enzyme.

**Results:** There were no statistically significant differences between caries experience and allele or genotype distributions of the LTF rs1126478 variant in the total cohort. When the caries affected group (N = 482) was stratified according severity: low (DMFT = 1), moderate (2 ≤ DMFT ≥ 3), and high (DMFT ≥ 4) caries experience, allele and genotype frequencies were not significantly different.

**Conclusions:** Lactotransferrin 140A/G (exon 2, Lys/Arg) variant was not associated with dental caries susceptibility or severity in the Czech children.

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**P004**

**Evaluation of the Prevalence and Risk Factors of Mucous Retention Cyst**

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**Introduction:** Mucous retention cyst (MRC) is a kind of the mucus pseudocyst. MRC of the maxillary sinus are often found incidentally during the evaluation of radiographs. It is detected in panoramic radiography as well defined, not corticated, smooth, dome-shaped radiopaque mass in maxillary sinus. It rarely causes any sign or symptom. The purpose of this study was to determine the prevalence and some associated risk factors of (MRC) in panoramic view in patients referring to the oral and maxillofacial radiology department of Babol dental school during 2011.

**Materials and methods:** In this cross sectional study, panoramic radiographs of 700 patients referring to oral and maxillofacial radiology department of Babol dental school were examined for detection MRC maxillary sinus for 1 year and MRC prevalence and some associated risk factors such as sex, site of occurrence, seasonal allergy, month and smoking habit were evaluated. The data were statistically analyzed by SPSS software and we used chi-square and t-tests. For all of tests the p-value of <0.05 was considered for statistical significance.

**Results:** Among 700 radiographs sixty-seven MRC was founded and the prevalence of this lesion was 9.57%. Prevalence of MRC was significantly higher among men (p < 0.05) and there were no significantly correlation between smoking, family history, seasonal allergy, month and smoking habit with MRC (p > 0.05).

**Conclusion:** The results of this study were similar to previous studies but despite the low incidence of this lesion, practitioners should pay special attention to these lesions in maxillary sinus.

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**P003**

**Subgingival Class V Composite Restorations using Miniflap Technique**

Youn Hee Cho, Moon Hwan Lee, Kyung Mi Son, Jung Hong Ha, Young Kyung Kim, Sung Kyo Kim, Myoung Uk Jin  
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**Introduction:** When cervical lesions occur supragingivally, access to the area for preparation and restoration is often easily obtained. But if the lesion has progressed to or below the free gingival margin, isolation for complete caries removal, tooth preparation, restoration placement, and finishing can be difficult. The use of miniflaps can often provide sufficient access to subgingival lesions. Following cases present subgingival class V resin restorations using miniflap technique.

**Case presentation:** Case 1

1. Sex/age: M/45
2. Chief Complaint: caries on no. 43
3. Past Dental History: N/S
4. Present Illness: per (−), pal (−), mob (0), cold (+), EPT (35/64)
5. Impression: cervical C2 dental caries
6. Treatment plan: Composite resin restoration through miniflap

**Case 2**

1. Sex/age: F/66
2. Chief Complaint: caries on no. 11
3. Past Dental History: N/S
4. Present Illness: per (−), pal (−), mob (0), cold (+), EPT (7/64)
5. Impression: cervical C2 dental caries
6. Treatment plan: Composite resin restoration through miniflap

**Conclusion:** It is essential that the class V caries lesion be exposed, including all demineralized tooth structure in these cases. As shown by these cases, the rubber dam retainer is modified and positioned on the tooth with subsequent placement of the dental dam material over the retainer and tooth. This technique saves time and provides good retraction of the gingival tissue and isolation of the cavity preparation from contamination.

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**P005**

**Origin of Fractures and Wear of Ni-Ti Endodontic Files**

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1Medical University, Oran, Algeria, 2Endodontics Department, Oran, Algeria

**Aim:** Endodontics concerns prevention, diagnosis and treatment of pulp diseases and associated periradicular complications.

**Material and methods:** The principles and the modalities of canal preparation and obturation are presently clearly systematized and accepted by a large number of practitioners. Shape Memory Alloys (SMA) and in particular Nitinol, open new perspectives. Nikel-titanium instruments have become an indispensable complement to traditional instrumentation in cleaning and shaping steps of canal system.

**Conclusion:** They allow a respect of canal anatomy, dentin and pulp debris removal toward coronal access, regular preparation and better adaptation of the main cone. However, these innovative technologies must not overshadow certain major disadvantages.

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Theme: Dental Treatment & Restorative Dentistry: Endodontics

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and their consequences such as difficulty in fabrication and ease of breakage of SMA.

P006
An Evaluation of the Apical Seal in Oval-Shaped Root Canals
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Aim: The purpose of the present study was to evaluate the apical seal obtained with lateral compaction of gutta-percha in oval-shaped root canals prepared with either self-adjusting files or Protaper rotary files.

Material and methods: Twelve pairs of extracted mandibular premolars with oval-shaped root canals were randomly divided into two groups. The first group was biomechanically prepared with Protaper files, while the self-adjusting file system was used in the second group. The roots were obturated using cold lateral compaction of gutta-percha. Apical microleakage was measured with the computerized fluid filtration method. The results were analyzed statistically using the Mann-Whitney U-test.

Results: All of the roots in both groups showed leakage. Group 1 demonstrated significantly less microleakage (p < 0.05). Instrumentation of oval-shaped canals using a self-adjusting file system with cold lateral compaction of gutta-percha demonstrated significantly greater apical microleakage when compared to Protaper.

P007
A Rapid Molecular Method for Detection and Identification of a New Candidate Endodontic Pathogen
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¹Department of Restorative Dentistry, Chiang Mai University, Chiang Mai, Thailand, ²Dental Research Center, Faculty of Dentistry, Chiang Mai University, Thailand

Aim: Cultivation of endodontic anaerobic pathogens has several significant limitations, including time-consuming processes, difficulty in detecting fastidious and not-yet-identified bacteria, and misidentification of species with aberrant phenotypic behaviors. The purpose of this study was to develop a rapid and reliable method for detection and identification of Prevotella baroniae, a new candidate endodontic anaerobic pathogen.

Materials and methods: A pair of specific primers was designed from the sequences of 16S rRNA genes of P. baroniae. The primers were tested with genomic DNAs of various oral bacteria by polymerase chain reactions (PCR) under an optimized condition. The amplified products were analyzed by agarose gel electrophoresis followed by SYBR® Safe DNA gel staining.

Results: It was found that, the primers were very specific for P. baroniae. The sensitivity of the PCR was 0.75 pg/μl. The specific fragment of approximately 848-bp could only be amplified from a standard strain and clinical strains of P. baroniae, but not from other bacteria. Digestion of the amplified products with a restriction enzyme; EcoRV, generated a specific pattern when separated by gel electrophoresis.

Conclusion: Our results show that the assay is very effective for rapid detection and reliable identification of P. baroniae.

P008
Antimicrobial Action of a Chinese Medicine Extract on E. faecalis Biofilm
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¹Centre of Studies for Restorative Dentistry, Faculty of Dentistry, Universiti Teknologi MARA, Shah Alam, Selangor, Malaysia, ²Comprehensive Dental Care, Faculty of Dentistry, University of Hong Kong, Hong Kong

Aim: To investigate the effectiveness of various irrigants and an aqueous extract of Fructus mume in combating E. faecalis biofilm.

Methods: A mono-species biofilm of E. faecalis was cultivated for 3 days on Thermanox™ plates. Each biofilm specimen was subjected to 10 s of immersion in different irrigants: Fructus mume solution, citric acid, sodium hypochlorite or sterile saline. The amount of viable bacteria remaining on the substrate was quantified by LIVE/DEAD® BacLight™ staining and confocal light scanning microscopy (CLSM). Then, the same biofilm was retrieved and processed for scanning electron microscopy (SEM).

Results: Images were obtained from 12 sites throughout the biofilm, which were grouped into four regions of concern: Bottom where it would be immersed in the solution for most of the duration of the experiment; Centre where it was struck by the stream of irrigant; Middle and Upper where the effect was due to splashing or vapour of the irrigant. Results of the amount of viable bacteria residual indicated that Fructus mume showed no significant activity, with an effect similar to physiological saline or citric acid, and significantly inferior to sodium hypochlorite.

Conclusion: Sodium hypochlorite (0.5%) solution was superior to citric acid, Fructus mume and physiological saline as an antimicrobial agent against E. faecalis biofilm.

P009
Periapical Status in an Algerian and French Population
Oudghiri Fouad¹, Lasfargues Jean Jacques², Serradj Sid Ahmed³
¹Fouad Oudghiri, ²Jean Jacques Lasfargues, ³Sid Ahmed Serradj

Aim: The prevalence of apical periodontitis and the quality of root fillings and restorations were determined in an Algerian and French population.

Material and methods: Full-mouth periapical radiographs of 507 French and 216 Algerian adult patients were examined. The occurrence and technical quality of root fillings were assessed for each root according to the position and the density of the obturation. The periapical status was evaluated using the Periapical Index Scoring System.
Results: The frequency of apical periodontitis in ours Algerian and French sample is respectively 7.33% and 5.23%. It is above the averages of the other studies (5.2%) indicating values between 0.6% and 9.8%.

The prevalence of the apical periodontitis in our Algerian sample is more alarming, where 84.26% of the patients develop an apical periodontitis. This result is the highest off all the previous studies (59.7–68.3%). This risk is important, which places the apical periodontitis in the forefront in the epidemiologic scale of infectious disease and constitutes a real problem to public health.

The radiographic quality of endodontic treatments for our Algerian sample is incorrect for 88% and 64.2% for our French sample. The risk of seeing an apical periodontitis develop is significantly higher with inadequate treatment than for teeth with an adequate filling.

Conclusion: Our epidemiologic results revealed a strong correlation between the bad quality of endodontic procedures and the prevalence of apical periodontitis. The improvement of the quality of endodontic treatment using efficient technical is a great necessity to the public health.

P010
Biological Evaluation of Ca(OH)2 Psidium cattleianum Plant Extracts Associated with and Calcium Hydroxide
Eloi Dezan Junior, Diego Valentim, Loiane Massunari, Joao Eduardo Gomes Filho, Aguinaldo Candido Da Silva Facundo, Camilla Pires Bruno, Gustavo Arcos Lopes, Luciano Tavares Angelo Cintra
UNESP – Univ EST Paulista School of Dentistry

Objectives: Leaf extracts of araçá (Psidium cattleianum) exhibit biocompatibility and inhibitory activity against oral microorganisms. Association of this hydroalcoholic extract to Ca(OH)2 imbibed E. faecalis in 24 h while Ca(OH)2 associated with propylenglycol extract and distilled water needed 7–14 days. Evaluation of biological immediate and late response of calcium hydroxide pastes associated to ethanolic and watery solutions prepared with vegetable extract of araçá compared with CH and distilled water.

Material and methods: For the edemogenic analysis (immediate reaction), we used 18 male mice. Under general anesthesia, the animals received intravenous injection of 1% Evans blue. Thirty minutes later, it was injected 0.1 ml of one of the pastes, on the dorsal under skin region of the animal. The animals were euthanatized after 3 and 6 h and the obtained material were put in formaldehyde for 72 h for spectrophotometer. For the morphological analysis, 30 mice received polyethylene implant with the pastes extracts or saline on dorsal region. Analysis were after 7, 28, 60 and 90 days for the thickness evaluation of the fiber capsule and counting of the damaged cells, that quantified the damaged infiltrate.

Results: The associations of calcium hydroxide with hydroalcoholic extract of Psidium cattleianum and in propylenglycol extract presented similar results to calcium hydroxide and distilled water.

Conclusion: Association of calcium hydroxide to Psidium cattleianum extracts are biocompatible.

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Escherichia coli and mixture of these microorganisms. Nano silver suspension was used.

Contact dilution and colony count method was used to evaluate the antibacterial activity of these cements. Cements mixed with liquid or two concentrations of nano silver suspension were placed into the sterile microtubes. Then the standard suspension (0/5 McFarland) of each microorganism was added to each microtube. Colonies were counted after After 0, 24, 48, 72 and 96 h incubation at 35°C.

Results: The result showed that MTA and CEM had antibacterial activities on all microorganisms strains except for Enterococcus faecalis and mixture group. MTA had better antibacterial activity than CEM but this difference was not significant. The combination nano silver suspension with two cements resulted into higher antimicrobial activities.

Conclusion: Mixture of MTA and CEM with different concentration of nano silver suspension significantly increased the antibacterial activity.

P013
Unintentional Extrusion of MTA in Treatment of Immature Tooth
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Introduction: Obturation of nonvital permanent teeth with immature apices can be performed using an apical barrier material. Mineral trioxide aggregate (MTA) is a well-known root-end closure material for non-surgical management of wide open apices. However, it is difficult to avoid extrusion of MTA into periradicular tissues. This case report presents the healing after unintentionally extrusion of MTA into periradicular lesions.

Methods: Thirteen year-old male patient was referred for root canal treatment. The patient had no trauma history that he remembered. Clinical examination revealed that maxillary left lateral incisor was asymptomatic and had normal mobility and no sinus tract was present. Radiographic examination demonstrated an open apex and radiolucency at the periradicular area of the maxillary left lateral incisor. The tooth was not responsive to the sensitivity tests. It was decided to perform root canal treatment by an apical barrier technique. MTA has chosen as barrier material. After instrumentation and irrigation procedures, the apical third of the canal was obturated with MTA. The remaining canal space was filled with warm vertical gutta percha using Obtura ll. During the placement of MTA, material was inadvertently extruded beyond the apex. The patient was recalled 3, 6 and 12 months after the treatment.

Results: The clinical and radiological follow-up revealed that the tooth was asymptomatic and repair of the lesion was achieved without endodontic surgery.

P014
Effect of Gutta-percha with Calciobiotic sealer vs. Resilon with Epiphany sealer on Healing of Periapical Tissues
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The present study was designed to compare clinically and radiographically the effect of two root canal filling materials “Gutta-percha with Calciobiotic sealer vs. Resilon with Epiphany sealer” on healing of periapical tissues.

Materials and methods: Thirty single rooted teeth from 21 patients were selected, with their ages ranged from 20 to 40 years. The selected teeth had necrotic pulp with varying degree of periapical inflammation. The teeth were divided into two groups of 15 teeth each. Teeth of group I were filled with Gutta-percha points and Calciobiotic sealer, while teeth of group II were filled with Resilon points and Epiphany dual curing resin sealer and Epiphany self etching primer. Obturation was performed after obtaining negative bacteriological culture from the canals. Clinical and radiographical examination was conducted immediately after treatment and after 3, 6, 9 and 12 month postoperatively. Evaluation was carried out using the periapical index scoring system (PAI). Readings were collected and subjected to statistical analysis.

Results: Although no statistical significant difference was reported between the two materials, Statistical analysis of the results showed that teeth treated with Resilon had a higher healing rate (83.3%) compared to those treated with Gutta-percha (60%) after 12 months, while Gutta-percha had a higher improvement rate (40%) compared to Resilon (16.7%).

Conclusion: Resilon acted clinically as gutta-percha and could be used successfully as a root canal filling material.
(3) The 3rd group was treated at the end of preparation with the Nd: YAP laser.
(4) At the end of treatment a second bacteriological sampling was done immediately for each tooth.
(5) Bacteriological analysis was performed according to the standards of Microbiology

**P016**

**Contribution of the Continuous Rotation and the EDTA in the Infection Control Ductal**

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**Objective:** The objective of the study to compare the efficacy and rotary instruments associated with the use of EDTA during the preparation to eradicate flora endodontic hand instruments compared to steel.

**Materials and methods:** The study was conducted in vitro, gnarled teeth, freshly extracted single rooted.

All teeth were thoroughly cleaned and sectioned at the crown.

On each tooth, a bacteriological sampling was performed before and after root canal treatment using sterile paper points and analyzed according to standard microbiological standards.

The study was performed on a total of 84 teeth randomly divided into four groups as follows:

1. The first group was prepared manually with steel instruments and received sodium hypochlorite 2.5% as irrigating
2. The 2nd group was prepared manually with steel instruments and received sodium hypochlorite 2.5% associated with 17% EDTA as irrigant
3. The 3rd group was prepared with rotary instruments Hero Shaper and received sodium hypochlorite 2.5% as irrigating
4. The 4th group was prepared with rotary instruments Hero Shaper and received sodium hypochlorite 2.5% associated with 17% EDTA as irrigant

**Results:** Twenty-three percent eradication of germs to the teeth of the first group, 56% in the 2nd group, 47% for the 3rd group and 68% for the 4th group.

**P017**

**Antimicrobial Efficacy of Gaseous Oxygen in Infected Root Canals.**

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**Aim:** To determine antimicrobial efficacy of gaseous oxygen in infected root canals combination with 2.5% NaOCl, 2% CHX and 0.9% NaCl.

**Materials and methods:** This in vivo study includes 30 male/female. The samples groups were divided into two test group. Treatment protocol was as follows: Group 1 (test) was irrigated with 2.5% NaOCl + gaseous O3 (Prozone, WH Austria) 18” and 24”, Group 2 (test) was irrigated with 2.5% CHX + gaseous O3 18” and 24” and group 3 (control) was irrigated with 2% NaCl + gaseous O3, 18” and 24”. All of the treat teeth bacterial samples were taken as the per following protocol: sample 1 (D1) at the baseline (no irrigation), sample 2 (D2) after first 18” exposure to gaseous O3, sample 3 (D3) after second 24” exposure to gaseous O3, and sample 4 (D4) 3 days after treatment. Cultivable bacteria recovered from root canals were counted. Data were analyzed by One Way ANOVA and Kruskal-Wallis test.

**Results:** There was significant (p < 0.05) reduction of aerobic bacteria in second group (2% CHX) at D4.

**Conclusion:** None of these combinations yielded bacteria free canals. Group 2 (2% CHX) at D4 showed better efficacy toward aerobic/anaerobic bacteria.

**P018**

**Determination of Effects of Propolis in Root Canal Disinfection as an Intracanal Medicament: A Clinical Study**

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**Aim:** The purpose of this study was to determine the effects of propolis in root canal disinfection as an intracanal medicament.

**Materials and methods:** Nineteen patients presenting as emergencies to our clinic were included in the study. Inclusion was limited to patients with a diagnosis of pulp necrosis and obvious periapical radiolucency. All teeth underwent conventional root canal treatment, which involved the instrumentation to the apices of each canal at the first visit. After 1 week, powder propolis was instructed to root canals with glycerin, and procedure was finished by temporary filling material. Propolis was removed after 3 weeks and root canal treatment was finished with gutta-percha and permanent filling material. Healing was controlled by radiographically and clinically for each month.

**Results:** After 1 year follow-up only two patients failed and apical resection was chosen as a treatment modality. Seventeen patients have no either clinically or radiographically symptom after 1 year follow-up period.

**Conclusion:** According to these results propolis would be used as an intracanal medicament, but this study must be confirmed by more studies and under different clinical conditions.

**P019**

**Comparison of the Antimicrobial Effects of Various Root Canal Medicaments on Microorganism (An In Vitro Study)**

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Aim: The antimicrobial effects of the various root canal medications on C. albicans and E. faecalis were examined following 3- and 7-day periods.

Materials and methods: Two hundred-seventy single rooted, single canal human incisors and premolars were used for the study. Mechanically shaped root canals were embedded into the acrylic blocks and sterilized in an autoclave. The samples were divided into two groups. Half of the samples were inoculated with C. albicans (ATCC10231-Group A) and the other half with E. faecalis (ATCC29212-Group B) for 48 h duration. The infected teeth in each group were further divided into subgroups (n:15) and medicated with (i) saline/calcium hydroxide mixture, (ii) 1.5% chlorhexidine gel (iii) 2% liquid chlorhexidine/calcium hydroxide mixture. Saline treatment was used as the positive control group (n:15). Fifteen teeth were kept in the incubator served as the negative control group. At the end of the 3rd and 7th days, samples collected from the root canals with paper points were suspended and transferred into petri dishes. After 24-h incubation, the colony counts were performed and evaluated statistically (ANOVA test).

Results: According to the findings, 2% chlorhexidine gel showed the most efficient antimicrobial activity against C. albicans in 3- and 7- day periods. This is followed by 2% liquid chlorhexidine/calcium hydroxide mixture and then saline/calcium hydroxide mixture. Two percent liquid chlorhexidine/calcium hydroxide mixture showed the most efficient antimicrobial activity against E. faecalis, which was followed by calcium hydroxide and chlorhexidine gel.

P020
Evaluation of NiTi Rotary System and Hand Files on Young Permanent Teeth by Using Micro-Computed Tomography
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Aim: Several studies show that the success and reliability had proven of the NiTi rotary systems used in the root canal treatment. However, there isn’t enough information to use in young permanent teeth. The purpose of this study is to evaluate the shaping properties of NiTi Rotary systems and hand files on young permanent teeth per root canal volume changes, unprepared surface area, and deviations occurred at the centerline of the canal by using micro-computed tomography (µCT).

Material and methods: In the study, 30 second molar teeth that were extracted from patients 15–18 years old were used. (i) Group-NiTi hand files: was prepared with the conventional step-back technique (2.25% NaOCl). (ii) Group-NiTi rotary system: was prepared with crown-down technique (lubricant gel, 2.25% NaOCl). Before and after root canal preparation, the root canal volume changes, the percentage differences between these volumes, the ratio of unprepared surface areas to the total surface areas, and amount of canals deviation from the center line were evaluated with the recorded µCT data and analyzed statistically.

Results: As a result, the canal volume differences and percentage increase in volume, before and after preparation was statistically significant (p < 0.05) among all canals in both groups. When an evaluation was made between Ni-Ti hand files group, and Ni-Ti rotary system group, and also within groups, the root canal volume changes, the percentage differences between these volumes, unprepared surface area ratio to the total surface, and deviation of root canal from the center line had statistically no significant differences (p > 0.05).

P021
In Vitro Evaluation of the Effects of Different Power Parameters of KTP Laser on Smear Layer and Temperature Change
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Objective: The purpose of this study is in vitro evaluation of the effects of KTP laser applied to root canals at different power parameters on the smear layer and the temperature changes.

Material and methods: Two hundred four single-rooted mandibular premolars teeth, 85 for evaluate temperature changes and 119 for smear layer, were employed. All of the root canals were prepared at 1 mm short of the apical foramen by a conventional technique using K-files by the step-back technique. The temperature rise was evaluated using an infrared thermographic camera during different power parameters (1W, 1.5W, 2W, 3W, 4W; Tof: 10 ms, Toff: 50 ms, repeated mode) KTP laser irradiation. Roots bisected longitudinally and SEM evaluations were made with ×1000 magnifications. Data were analyzed statistically using Kruskal–Wallis and Tukey’s tests.

Results: In all areas, the difference between the group where 17% EDTA was used and all other groups were significant while in apical 1/3 area the difference between the group where 2.5% NaOCl group was used and 4 W KTP laser groups was significant and in the middle 1/3 area the difference between, with 1.5 W KTP laser group and KTP laser group 1.5 W KTP laser group and the group where 2.5% NaOCl group was used was found significant (p < 0.05). Increase in temperature values in all groups were found to be below 10° centigrade in 20 s.

P022
Effect of Diode Laser on Antibacterial Activity of Natural Irrigation in Contaminated Root Canals (In Vitro)
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Aim: The purpose of current investigation was to evaluate the combination effect of diode laser on antibacterial activity of Vinegar/Morinda Citrifolia juice and 2% Chlorhexidine (as a control group) in Enterococcus faecalis inoculated root canal dentines.

Materials and methods: Forty single human teeth were selected and after ethical and experimental consideration. All specimens were instrumented up to the apical size (40), in addition smear layer was remove and transferred to sterile Brain Heart Infusion (BHI) broth and then autoclaved. All specimens were contaminated with E. faecalis and incubated for 7 days. In each group
half specimens (n = 5) after incubation period samples underwent laser irradiation by diode laser emitting at a wavelength of 810 nm and power of 2W subsequently. The samplings from root canal dentine walls were taken place at the 7 days and colony counting was done.

**Results:** Statistical analysis of data using Kruskal–Wallis and Mann–Whitney tests showed a significant difference between all groups (p < 0.0001).

**Conclusions:** It was concluded that 2% Chlorhexidineidine by a final flush of diode laser at a wavelength of 810 nm can be regarded as an effective solution on eliminate of E. faecalis of root canal dentin.

**P023**

**Effects of Ultrasonic Root-End Cavity Preparation with Different Retro-Tips and at Different Power-Settings on Micro-Leakage**

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**Aim:** The aim of this study was to evaluate the effects of different ultrasonic surgical-tips and power-settings on micro leakage of root-end filling material.

**Methodology:** A hundred extracted human single-rooted teeth were selected for this study. The coronal parts of the teeth were removed at the samento-enamel junction and the root canals were instrumented with a crown-down technique using ProTaper rotary files up to file F3 at the working length. The root canals were filled with ProTaper F3 gutta-percha and AH Plus root canal sealer using a single-cone technique. The apical 3 mm of each root was resected and the roots were divided into six experimental groups 15 root each. Ten roots were used as negative and positive control groups. Root-end cavities were prepared with diamond coated, zirconium nitride coated and stainless steel ultrasonic tips at half power and high power settings. Root-end cavities were filled Super-EBA regular set. Leakage of specimens was evaluated with glucose penetration method after 1, 2, 3, 4 weeks. The results were statistically analyzed with Kruskal–Wallis and Waller–Wolfe tests. The aim of this study was to evaluate the effects of different ultrasonic surgical-tips and power-settings on micro leakage of root-end filling material.

**Results:** There were no statistically significant differences in the glucose penetration between the groups at first and second weeks (p > 0.01). Diamond-coated surgical tip showed the least leakage at high-power setting at third and fourth weeks (p < 0.01).

**Conclusion:** Under the conditions of this study, the leakage of the root to set, the empty parts of the roots in Groups 1, 2 and 4 were filled with gutta-percha and root canal sealer, and leakage was measured using liquid transport method. Data was analyzed with SPSS statistical software (Version 11.5; SPSS Inc, Chicago, IL) using the Kruskal–Wallis H test. A p-value of <0.05 was considered statistically significant.

**Results:** No statistical differences in microleakage were observed between Groups 1, 2 and 4 (p > 0.05). Group 3 showed significantly less leakage than the other groups tested (p < 0.01).

**Conclusion:** Using BA to completely fill the root canal gives ideal results in one-step apexification; however, considering the cost of the material, 2–4 mm may be used instead with success.

**P024**

**The Effect of Application Thickness on Microleakage of Bioaggregate used in One-Step Apexification Models**

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**Aim:** The aim of this study was to evaluate the microleakage of different thicknesses of Bioaggregate [(BioAggregate, Verio Dental Co. Ltd., Vancouver, Canada) (BA)] and 4-mm-thick mineral trioxide aggregate [White ProRoot MTA, Dentsply, Maillefer, Switzerland (WMTA)] in an apexification model using liquid transport model.

**Materials and methods:** Thirty-two mandibular premolar teeth extracted for orthodontic reasons were sectioned at the cemento-enamel junction and 3–4 mm from the tooth apex to obtain 12-mm-long root segments. To mimic the clinical situation, apical and coronal thirds were prepared with No. 2–6 Gates Glidden burs. Teeth were divided into three groups according to material and thickness, as follows: Group 1: 2 mm BA; Group 2: 4 mm BA; Group 3: 12 mm (total length) BA; Group 4: 4 mm WMTA (control). Teeth were stored at 37°C for 4 days to allow the material to set, the empty parts of the roots in Groups 1, 2 and 4 were filled with gutta-percha and root canal sealer, and leakage was measured using liquid transport method. Data was analyzed with SPSS statistical software (Version 11.5; SPSS Inc, Chicago, IL) using the Kruskal–Wallis H test. A p-value of <0.05 was considered statistically significant.

**Results:** No statistical differences in microleakage were observed between Groups 1, 2 and 4 (p > 0.05). Group 3 showed significantly less leakage than the other groups tested (p < 0.01).

**Conclusion:** Using BA to completely fill the root canal gives ideal results in one-step apexification; however, considering the cost of the material, 2–4 mm may be used instead with success.

**P025**

**In Vitro Fracture Resistance of Roots Obturated with Different Sealers**

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**Introduction:** The aim of this study was to evaluate the fracture resistance of teeth filled with three different endodontic sealers.

**Methods:** Seventy-five single-rooted extracted mandibular premolars were decoronated to obtain 13 mm length. Teeth were randomly divided into five groups (n = 15). In group 1, teeth were left unprepared and unfilled (negative control). The rest of the roots were prepared with the ProTaper System up to a master apical file size of F3. Group 2 was left unobturated (positive control), group 3: bioceramic-based sealer (Endosequence BC sealer) + gutta percha, group 4: MTA-based sealer (Tech Biosealer Endo) + gutta percha, group 5: epoxy resin-based sealer (AH Plus Jet) + gutta percha. The specimens were stored for 2 weeks in 100% humidity to allow complete setting of the sealer. The roots were subjected to fracture testing under universal testing machine. The force required to fracture was recorded as Newtons (N). Data were analyzed statistically by one-way ANOVA followed by Tukey’s multiple comparison test.

**Results:** Mean fracture load was recorded as follows: group 1 (470.68 N), group 2 (320.19 N), group 3 (457.61 N), group 4
Apical Microleakage of Root Canal Sealers: A Comparative Study

P027

Apical Microleakage of Root Canal Sealers: A Comparative Study

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Aim: Root canal sealers should ensure an impervious seal of the apical portion of the root canal systems. The purpose of this in vitro study was to compare apical microleakage of three root canal sealers.

Materials and methods: For this study, 60 single rooted human teeth were used. They were divided into three experimental groups and 12 teeth were also divided into three control groups. All of the teeth were instrumented using the step-back technique and sealed with cold lateral compaction of gutta-percha with Pro Root MTA™, GI Fuji I or Endo Rez. Apical microleakage was measured using dye penetration method of 2% methylene blue. The samples were incubated (at 37°C for 7 days and 100% humidity). Following longitudinal sectioning, linear dye penetration at the apical third of the roots was recorded with a stereomicroscope at 20× and 30× magnification. The results were analyzed using descriptive statistics and T-test.

Results: Maximum rate of dye penetration was the following: MTA 1.07 mm, GIC 0.23 mm and EndoRez 1.01 mm. Comparison of the results demonstrates that GIC had the lowest dye penetration rate.

Conclusions: There was a significant difference in dye penetration rate between MTA fillet teeth and GIC and EndoRez, respectively.

P026

Longitudinal Assessment of Biocompatibility and Healing Response of MTA Filapex

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Aim: A longitudinal assessment of biocompatibility and wound healing tissue responses of MTA Filapex and AH-Plus using rat subcutaneous implants

Materials and methods: Fifteen adult female Wistar albino rats were divided into three groups according to three experimental periods (3, 7, and 30 days), five animals for each period. Group 1: MTA Filapex, Group 2: AH-Plus, Group 3: control. Sそれぞれた loaded in sterile polyethylene tubes were surgically implanted subcutaneously in each animal, two with the tested sealers and an empty control tube. Tissue specimens were collected and histologically stained with H&E and Masson Trichrome. Immunohistochemistry was applied to assess the healing response using: Transforming Growth Factor Beta-1, Proliferating Cell Nuclear Antigen, Matrix Metalloproteinase 9 and Fibronectin. Kruskal-Wallis test was used to compare the three experimental groups as well as to compare between the three time periods. The significance level was set at p ≤ 0.05.

Results: There was no statistically significant difference in necrosis and inflammation mean scores within the three groups through all periods. After 3 days; MTA Filapex showed the highest mean granulation tissue, TGF-β1 and PCNA positive cell count area percentages. After 1 week MTA Filapex showed the highest mean granulation tissue, TGF-β1, PCNA positive cell count and MMP-9 area%. After 1 month MTA Filapex showed the highest mean granulation tissue, PCNA positive cell count, MMP-9 and fibronectin area%.

Conclusion: Both sealers showed similar biocompatibility outcome while MTA Filapex revealed an enhanced healing response compared to AH Plus.

P028

Endodontic Treatment of a Traumatized and Iatrogenically Damaged-Tooth

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Case: A 35-year-old male patient without systemic disease presented to our clinic for endodontic treatment. In 2009, he had a traffic accident which caused trauma to the maxilla, and an emergency intervention was performed by a doctor of medicine. Then, Le Fort-I surgery was performed by an oral and maxillofacial surgeon. In our clinic examination, maxillary right canine tooth was found to be tender to percussion. The tooth was not sensitive to palpation and there was no caries. Radiographically, a periapical radiolucency was noticed. Further, there was a notch-like radiolucent area at the mesial aspect of the root, which was caused iatrogenically during the emergency intervention while drilling a mini-screw, as reported by the patient. At the periodontal examination, the tissues around the tooth was healthy. After written informed consent was obtained, root canal treatment was initiated. The tooth was devital. After shaping and dressing with calcium hydroxide, the root canal was obturated 10 days later.

Conclusion: At 3 and 6-month postendodontic follow-ups, the patient was asymptomatic and there was a reduction in the size of the periapical lesion. The radiographical size of the iatrogenical defect remained the same.
P029
The Effect of Irrigation Solutions on the Bond Strength of Cemented Fiber Posts
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Objectives: To evaluate the effect of endodontic irrigants on the bond strength and resin tag formation of fiber posts cemented with resin cement.

Methods: Fifty-two human anterior teeth were stored in 1% sodium azide. The crowns were sectioned 2 mm incisal from the CEJ. Endodontics was performed using 6.15% NaOCl during instrumentation and a final flush with 17% EDTA. Root canals were obturated with gutta percha and sealer. Teeth were assigned into four groups for post space rinsing (n = 13); Group 1- 6.15% NaOCL; Group 2- 17% EDTA; Group 3- 6.15% NaOCl + 17% EDTA; Group 4- 6.15% NaOCl + 0.12% Chlorhexidine. Parallel-sided fiber posts were cemented with self-adhesive resin cement and samples were embedded in a PVC mounting jig for sectioning. Cervical and apical sections, were subjected to a push-out test using an Instron and failure mode was analyzed.

Results: Group 2 had the highest bond strength, (18.63 ± 2.85 MPa cervical; 13.49 ± 3.67 MPa apical) and was significantly higher than other groups. Cervical specimens in Group 3 had the next highest bond strength (11.22 ± 4.55 MPa). Group 1 had the lowest bond strengths, 5.93 ± 2.33 cervical and 5.18 ± 1.53 apical. Adhesive failure was the main failure mode in all groups. Groups 2 and 3 showed better resin tag formation, while Groups 1 and 4 showed less resin tag formation

Conclusions: Irrigation with 6.15% NaOCl reduced the bond strength of cemented fiber posts. Post spaces irrigated by 17% EDTA produced higher bond strength and more distinct resin tag formation.

P030
Distribution Evaluation of Anterior Teeth Color in Client Patients of Gilan Dental School
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Aim: As maxillary anterior teeth have important role in esthetics, knowing the common shades can help dentists to achieve best treatment so this article evaluates the most prevalent upper anterior teeth in different ages and gender.

Material and method: Upper central incisor of 600 clients of clinic of rasht dental school (in north of Iran) primarily were cleaned with low speed hand piece and slurry of pumice then their color shade were selected by Vita standard shade guide under standard daylight lamp. 288 of samples were female and 312 male.

P031
Orthodontic and Prosthetic Rehabilitation of a Patient with Cleft Lip and Palate
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Aim: In this case report, orthodontic and prosthetic treatments of a cleft lip and palate case is presented.

Methods: A 18-year-old man with a cleft lip and palate presented with a concave facial profile due to maxillary hypoplasia. The patient exhibited sagittal and transverse maxillary deficiency. On treatment, narrow upper arch was corrected with orthodontic expansion appliance and tooth alignment problem was corrected with fixed orthodontic treatment. Metal brackets with 0.018 × 0.022” slots were bonded to maxillary and mandibular teeth. Orthodontic leveling and finishing stages were performed in 22 months period. Following the orthodontic treatment, the missing teeth was restored and the occlusion problem was solved with fixed prosthetic appliance.

Conclusion: Correction of the malocclusion improved the patient’s speech and pronunciation. As an added benefit, the patient reported a better self-esteem and a greater degree of pleasure related to his appearance. This case report demonstrated the need for multidisciplinary treatment in patients with CLP.

P032
In Vitro Determination of Permanence of Tooth Bleaching
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Aim: This study aims to compare the whitening efficacy of bleaching techniques and bleaching agents with distinct concentrations by spectrophotometric analysis methods with painting the tooth, bleaching with related techniques, then recoloring with the same matters.

Methods: The samples used in the study are consisting of tooth exposed to a special preparation to cause interior coloring. Eight experimental and three control groups are formed with seven samples in each group. Five color measurements (The initial color, selection were made in four age groups: 20–29, 30–39, 40–49 and 50–59 years old.

Results: In females the most prevalent shades were: in 20–29 year: A2 with 54.05%, 30–39 year: A3 with 36.5%, 40–49 year: A3 with 44.4% and 50–59 year: A3 with 33.3%.

The most prevalent shades in males: 20–29 year: A2 with 33.3%, 30–39 year: A3 with 40.8%, 40–49 year: A3 with 46.1% and 50–59 year: A3 with 31.2%.

In overall the most prevalent shade without relation to age and gender was A2 with 32.5% and the least was C1 with 0.3%.
kept in the coloring matters, after the bleaching after the kept in artificial saliva and after the recoloring of the same coloring materials) of the samples has been made with the spectrophotometer.

For the evaluation of the results obtained from the study, non-parametric Kruskal–Wallis one-way variance analysis was used.

For the evaluation of the results obtained from the study, non-parametric Kruskal–Wallis one-way variance analysis was used.

Results: As the result of the study, a similar whitening level was observed by changing the application time and number of whitening agents in different concentrations, and while evaluating the recoloring level of bleaching, even there exists some minor distinctions in bleaching agents; no difference has been seen from statistical perspective, and in the meantime no effect has been derived as the bleaching application increase the possibility of recoloring of the tooth (p > 0.05).

Conclusion: According to our study, the bleaching application does not lead to an increase in the tendency of restaining of the tooth.

P033
The Golden Proportion Among Malay Students in IUM/Malaysia
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Objectives: The maxillary anterior teeth are significant in achieving beautiful dental aesthetics. This study aimed to find the application of golden proportion on Malaysian populations.

Materials and methods: The sample size consisted of 100 students from any faculty, 50 men and 50 women, ranging in age from 20 to 25 years old. The subjects have all of their natural anterior teeth, no history of orthodontic treatment or tooth size alteration and are of Malay origin. Impression was taken and measurements done by using cast. The golden percentage calculated by dividing the width of each central incisor, lateral incisor and canine by the total width of all six maxillary anterior teeth, multiplied by 100 in order to obtain the golden percentage for each tooth.

Results: The golden proportion found to be accurate between the width of the right central and lateral incisors in 33.2% of men and 33.1% of women subjects. 13.9% of male and 13.6% of female subjects have the widths of their right lateral incisors in golden proportion to the widths of their right canines. Moreover, the data shows 37.2% of the male and 37.1% of the female subjects have the widths of their left central incisors in golden proportion to the widths of the left lateral incisors.

Conclusion: Golden proportion is applicable to Malay population. The width of the central incisor represents 24%, lateral incisor 16% and canine 10% of the width of the six maxillary anterior teeth as viewed from the front.

P034
Reattachment of Dehydrated Tooth Fragments: Two Case Reports
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Introduction: Anterior crown fractures are the most common type of injury in dental trauma. Restoration of the tooth by reattaching the original fragment is the best way of treatment in aesthetic, conservative and economic point of view. The concept of reattachment began in 1964 by Chosack and Eidelman. In the following years various techniques have been described and due to the developments in adhesive technology reattachment treatment became very simple and successful. The ideal treatment is to reattach the fragments as quickly as possible following intraoral and radiographic examination, but sometimes delayed treatment appointments are necessary because of uninformed patients/parents or multidisciplinary cases included endodontically and periodontally. Delayed reattachment may lead to anaesthetic results because of the dehydration of fragments.

Case: The purpose of this study was to present 1 year follow ups of reattachment of dehydrated fragments by using self-etch adhesives and flowable composites in two different cases.

Conclusion: The colour of the dehydrated fragments were natural in the control appointments and 1 year follow ups show harmonious integration of colour, form and texture after the reattachment of the original piece of tooth.

P035
Minimal Invasive Approach in Restorative Dentistry
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Introduction: There are many treatment alternatives to correct the esthetically compromised maxillary anterior teeth. Today, satisfactory results can be obtained in restorative dentistry at baseline (luting appointment of indirect restorations) thanks to the improvements in dental technology. In addition to clinical success at baseline, long-term clinical outcome of indirect restorations is of great importance. At this point, which restoration type will be performed and tooth preparation depth for each indirect restoration should be strictly considered. It was accepted that the lesser the tooth tissue removing for indirect restorations, the lower the risk of complication in long-term clinical use of them. Because of their esthetic appeal, biocompatibility and adherence to the physiology of minimal-invasive dentistry Porcelain laminate veneers (PLV) have now become a restoration of choice. PLVs provide an alternative to complete coverage as they avoid aggressive dental preparation.

Case: This study describes the minimal invasive approach in restorative dentistry and treatment steps of three esthetically compromised cases.
P036

Comparison of Cytotoxicity of White and Grey Mineral Trioxide Aggregate (MTA) with Calcium Enriched Mixture (CEM) and Calcium Nitrate

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Objectives: The aim of this study was to compare the cytotoxicity of a newly invented root filling material, CEM, with Angelus white and grey MTA on L929 and Saos-2 cell lines.

Materials and methods: Sterile set discs of each material were prepared and extracted by immersing in 1 ml complete media for 24, 48 and 72 h. Three different dilutions of each cement extract in complete media were added to 24 h cultured L929 and Saos-2 cell lines in 24 well plates. After 24 h exposure to the extracts, cell cytotoxicity was measured using MTT assay. Data were analyzed by one way ANOVA and Tukey’s post hoc tests.

Results: MTT assay results revealed that none of 24, 48 and 72 h extracts/dilutions of white and grey MTA was cytotoxic. The 48 and 72 h CEM extracts were cytotoxic at 0.5 and 1 dilutions. All of tested materials were cytotoxic on Saos-2 cell line at dilution 1 after 24, 48 and 72 h extraction. Also 72 h extracts of all tested materials were cytotoxic on Saos-2 cell line.

Conclusion: It seems white and grey MTA to have similar cytotoxicity’s on both cell lines. On the other hand, while CEM showed cytotoxicity similar to white and grey MTA on Saos-2 cell line, it seems to be more cytotoxic on L929 cell line at least by some extraction periods/dilutions.

P037

The Influence of Different Ceramic Bases on the Veneering Colour

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Objectives: Metal free contemporary dental materials produce a solution for aesthetic and strength problems together. Despite of these advantages, these materials may cause some limitations due to the colour reflection of their core structures. The aim of this in vitro study was to compare the influence of base colour of two strengthened core ceramic materials on the veneering.

Materials and methods: Square-shaped ceramic framework specimens (5 × 5 × 1.5 mm) were prepared from two commercially available zirconium oxide Y-TZP ceramic, Cercon (Degussa Dental, Germany) and the lithium disilicate glass ceramic, IPS Empress 2 (Ivoclar, Vivadent, Leichtenstein). Shade 1 veneering ceramic Cercon Ceram and Ivoclar d. Sign were applied over zirconium oxide and lithium disilicate glass ceramic specimens respectively. Colour of all the specimens were tested and measured with the aid of a chromameter (SHOFU Shade Eye NCC, U.S.A) and evaluated according to CIELAB formula.

Results: The grades for Vita A1 standard colour according to Bio-material properties database of Michigan Universities are of L* = 79.37, a* = −1.61, b* = 13.05, and ΔE*ab = 80.65. Due to these standard data, the colour match of Zirconium oxide ceramics (L* = 80.03, a* = −1.19, b* = 12.63, and ΔE*ab = 81.03) are more close to the standards however was diverse lithium disilicate ceramics (L* = 75.56, a* = −2.04, b* = 10.34, and ΔE*ab = 76.29). Therefore the unacceptable difference between these two ceramic systems is mainly due to the colour difference of lithium disilicate ceramics.

P038

Effect of Temperatures on Polymerization Stress and Microleakage of Class V Composite Restorations

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Objectives: This study aimed to investigate contraction-stress of composites at 23, 37 and 60°C, and to measure microleakage in Class V restorations restored with preheated composites.

Methods: Maximum contraction-stress of the composites (n = 5) at 23, 37, and 60°C were evaluated using a low-compliance device. The contraction forces were recorded during 15 min. Calculations were done to adjust for the system’s compliance and to obtain shrinkage values of composites. Class V cavities were prepared on the buccal surface of 72 extracted premolar teeth. The teeth were restored with three composites at three temperatures, finished, and stored in distilled water for 24 h before thermocycled between 5 and 55°C for 1000 cycles. The teeth were sealed and placed in 0.5% toluidine-blue dye for 24 h then embedded in self-curing resin and sectioned mesio-distally with a slow-speed diamond saw, providing three sections/restoration. Microleakage was rated by two evaluators using a 0–4 scale at the occlusal and cervical margins under light microscope (40×). The data were analyzed with Kruskal–Wallis ANOVA and Mann–Whitney U-test (α = 0.05).

Results: Results indicated that preheating composites to 37 and 60°C significantly increased polymerization stress of composites (p < 0.05). A greater amount of leakage at the cervical margins was found when compared to the occlusal margins (p < 0.05), and preheating composites to 60°C resulted in significantly less microleakage at the cervical margin.

Conclusion: Preheating composites significantly increased their polymerization contraction stress. However, preheating composite to 60°C may help reduce microleakage at cervical margin of class V restorations.

P039

Stress Evaluation of Complete Denture by Electrical Resistance Strain Gage

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Objectives: The aim of this study was to compare the influence of different ceramic bases on the veneering.

Materials and methods: Square-shaped ceramic framework specimens (5 × 5 × 1.5 mm) were prepared from two commercially available zirconium oxide Y-TZP ceramic, Cercon (Degussa Dental, Germany) and the lithium disilicate glass ceramic, IPS Empress 2 (Ivoclar, Vivadent, Leichtenstein). Shade 1 veneering ceramic Cercon Ceram and Ivoclar d. Sign were applied over zirconium oxide and lithium disilicate glass ceramic specimens respectively. Colour of all the specimens were tested and measured with the aid of a chromameter (SHOFU Shade Eye NCC, U.S.A) and evaluated according to CIELAB formula.
Aim: The purpose of this paper was to evaluate the stress and strain state of maxillary complete dentures loaded in compression until the final fracture.

Material and method: For this study, electrical resistance strain gage were used for evaluation the strain and stress distribution on five maxillary complete dentures made by acrylic resin Triplex. Based on practical observations, the strain gages were applied on the mid-linnes of the dentures at the base of incisors and on the sides of the dentures, under molars. The dentures were loaded until failure and on registered the strains in the located strain gages through micro-measurements by Vishay devices.

Results: The Young’s modulus of Triplex was determined by tensile tests at about 3048 MPa. Based on these tests one determined the critical stress and strain in the interest areas, as follows: in median area of dentures, under the incisors, the maximum strain was \( e_{\text{max}} = 5984 \, \mu \text{m/m} \) and the tensile stress was \( \sigma_{\text{max}} = 18.239 \, \text{MPa} \); on the sides within dentures, under the molars were determined the maximum strain \( e_{\text{max}} = 3646 \, \mu \text{m/m} \) and the tensile stress \( \sigma_{\text{max}} = 11.11 \, \text{MPa} \).

In all the tests carried out the fracture occurred in the median area of the denture and the crack was initiated between the incisors teeth.

Conclusions: The stress and strain field associated with the crack initiation mode showed a strong influence of geometry on the fracture strength of denture.

The analysis provides a qualitative analysis of the stress field in the denture examined and conducted to a critical stress state of complete dentures.

Measurement Accuracy of a Three-Point Bending Device with Adjustable Specimen-Supporting Parts
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Aim: One common problem found in the flexural testing of dental ceramic bars is edge fracture due to non-parallel surfaces which can lead to the inaccuracy of the measurement. Using modified specimen-supporting parts that can be adjusted to fully attach to the non-parallel surfaces may decrease this inaccuracy. The aim of this study was to determine the measurement accuracy of three-point bending devices using adjustable or fixed specimen-supporting parts.

Material and methods: One hundred and twenty specimen bars were fabricated from VITA VMK 95 body porcelain according to the BS EN ISO 6872 standard. The specimens were ground and polished to produce six groups of 20 with opposing surfaces parallel within 0.00, 0.01, 0.02, 0.03, 0.04 and 0.05 mm. Ten specimens from each group were tested by the apparatus with adjustable specimen-supporting parts, while the others were tested with fixed parts. The flexural strength of the specimens was statistically analyzed by one-way ANOVA and the data reliability was calculated by Weibull analysis.

Results: The mean flexural strengths of the specimens tested with the adjustable was significantly higher than those tested with the fixed parts in all groups (\( p < 0.05 \)). The Weibull modulus of the data generated from the adjustable apparatus was also significantly higher than these from the fixed (\( p < 0.05 \)).

Conclusion: The results of this study indicate that using the three-point bending device with adjustable specimen-supporting parts significantly improves the force distribution at the tensile surface of the specimens and therefore the reliability of the flexural strength data.

Decision Making Between Traumatized Teeth Treatment Options?
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Introduction: Traumatized teeth affected people psychologically and physically so the problem must be solved in the most effective solution by satisfying the patient in cited two ways. After tarumas traumatized teeth taken into consideration and decision making becomes a complex outcome, as it depends predominantly on decisions taken by dentists and patients especially after traumas. There is two way to follow; one is extracting the teeth, the other is treating existing teeth part. Final desicion is mostly depending on the position of the crack observed on the tooth after trauma. If crack effects the pulp, teeth must have root canal treatment first and then must be treated with composite restorations or post- core crown restorations.

Case and conclusion: In this case report we will present two traumatized tooth cases; one scenario ends with extraction and the other ends with post-core crown restoration after endodontic treatment.

The Effect of Glass-Ionomer Containing Various Levels of Titanium-Dioxide Nanoparticles Against Streptococcus mutans
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Purpose: One of the most important topics of recent studies is the use of nanoparticles on the antibacterial properties of dental resins. In this study we added titanium-dioxide nanoparticles to a light-cured glass-ionomer to examine its antibacterial properties against Streptococcus mutans.

Materials and methods: In this in-vitro study the population were divided into five groups of glass ionomer Fuji II LC (GC Corp. Japan) containing, respectively, zero (control), half, one, three and five percent by weight of titanium-dioxide nanoparticles. Fifteen discs (three of each group) of this experimental glass-ionomer were cured inside the same plastic mold for the Disk Diffusion Test. The antibacterial effect against Streptococcus mutans was studied in Chocolate Agar. For Direct Contact Test 15 microtubes containing resin groups (three disks per group) were prepared and the antibacterial effect was examined.
Results: The mean diameter of bacterial inhibition zone around disks containing 0.5% titanium-dioxide nanoparticles was the same as around other disks containing nanoparticles and it was slightly higher than the control group. The direct contact test after 3.6, and 24 h showed fewer number of bacteria on the surface of nanoparticles. There was no difference between the four groups containing nanoparticles. However, reduced bacterial growth was observed compared with the control group.

Conclusion: Samples containing nanoparticles in both tests had antibacterial property.

P043

The Effect of Silica Nano-Particles on Mechanical Properties of Glass Ionomer

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Aim: In spite of good mechanical properties of glass ionomer, there is some problems result in limited application in stress bearing area. It seem addition of Silica nano-particles to Light Curing GIC (RMGIC), in addition to increasing its mechanical properties, do not have any adverse effect on useful properties.

Materials and methods: Amounts of 0, 0.2, 0.5, 1 and 2 weight percent of silica nano-particles with 10–20 nm in diameters added to RMGIC powder. For flexural strength test, totally 25 samples were prepared in five groups. In order to ISO 4049 Standard, rectangular samples were prepared in 2 × 2 × 25 mm. After storage in incubator (immediate, 1 day and 1 month intervals) samples were tested in flexural strength by using of three point bending test (by0.02 N primary force and 0.5 mm/min chisel speed). In order to ISO 9917 Standard for compressive strength test, 25 cylindrical samples were prepared in 4 × 6 mm, divided in five groups and were tested. Data result from this study, were evaluated by Colmograph–Smirnoff, two-way ANOVA and Tukey tests.

Result: Addition of various amount of nano-particles up to 0.5 weight percent result in significant increase in mechanical properties of RMGIC (p < 0.05). In higher amount of nano-particles, mechanical properties improved rather than control group but it was lower than optimal level (0.5 weight percent). Time and storage condition result in significant increase in mechanical properties of Fuji II LC RMGIC (p < 0.05).

Conclusion: Use of silica nano-particles up to 0.5% in RMGIC powder result in significant improvement in mechanical properties.

P044

Nanomechanical Evaluation of Fluoridated PMMA Surface Properties after Fluoride Ion Release

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Aim: To investigate the changes of surface topography of new fluoridated polymethylmethacrylate PMMA denture base material post fluoride ion release in two storage media, considering surface roughness on atomic scale and surface hardness on Nano scale.

Materials and methods: Discs of PMMA uploaded with various percentages of fluoridated glass fillers were prepared (0, 1, 2.5, 5, and 10% by weight) and aged for 3 months in deionised water (n = 5) and in lactic acid (n = 5) with the storage medium discharged and refreshed after each of 15 testing intervals detecting fluoride ion release. Evaluation of surface roughness pre and post storage was performed using atomic force microscope (AFM) in a tapping mode with the Ra measured on the scan of 25 × 25 μm images. Evaluation of the nanohardness of the specimens was carried out using Ultra Micro Indentation System, utilizing a three-sided Berkovich indenter tip. One-way analysis of variance was used to assess the influence of storage media and fluoride ion release on both surface properties.

Results: The tested groups showed no significant difference (p > 0.05) in surface roughness and hardness pre and post fluoride ion release over 3 months comparing with the control group in either media. All testing groups presented slight decrease in surface hardness and roughness post fluoride release in both media, excluding the control and 1% resin bases which became rougher in lactic acid.

Conclusion: Fluoride ion release had no negative influence on surface topography and hardness of the denture base material despite its expected rule in enhancing anticariogenic effect.

P045

Effect of Plasma Deposition of Monomers on Enamel Adhesion

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Purpose: A pencil-type floating electrode dielectric barrier discharge (FE-DBD) jet was applied to improve the adhesion of composite resin to enamel. This study investigated the effect of plasma treatment on enamel adhesion and evaluated the durability of the adhesion.

Materials and methods: Microshear bond strengths (MSBS) of composite resin to enamel after helium (He) plasma deposition with no monomer, benzene and 1,3-butadiene were compared with that of the conventional enamel bonding. The adhesive of Scotchbond Multi-Purpose (3M ESPE) was applied on etched enamel after the assigned treatment in each group. The same number of specimens were additionally prepared and the MSBS were evaluated after 5000 times of thermocycling. The MSBS data were statistically analyzed using two-way ANOVA and post hoc Duncan test at a 5% level of significance. Weibull analysis was also used to compare the effect of plasma treatment.

Results: According to two-way ANOVA, plasma deposition of benzene and 1,3-butadiene exhibited significantly higher MSBS than conventional enamel bonding procedure (p < 0.05). The differences in MSBS were not observed after thermocycling. However, according to Weibull analysis, the highest Weibull moduli of
both monomer-deposited groups were maintained even after thermocycling, although the characteristic strengths of both groups decreased to that of the control group.

Conclusions: The plasma deposition with 1,3-butadiene or benzene enhanced the adhesion of composite resin to the enamel. Although the MSBS decreased after thermocycling, their effect on adhesion durability needs to be investigated in the point of fracture mechanics.

P046
Effect of Beverages Temperature on Physical Properties of a Composite Resin
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Objective: To investigate the effect of beverages’ temperature on the surface roughness, hardness, and color stability of a composite resin.

Materials and methods: Fifty specimens of the Filtek Z-250 composite (3M ESPE, Dental Products, Seefeld, Germany) were prepared and initial roughness, microhardness, and color were measured. Then the specimens were randomly divided into five groups of 10 specimens each: coffee at 70°C; coffee at 37°C; cola at 10°C; cola at 37°C; artificial saliva (control). After the samples were submitted to 15 min × 3 cycles per day of exposure to the solutions for 30 days, final measurements were recorded. The data among groups and the changes over time were evaluated by using analysis of variance for repeated measures for the parameters of microhardness, roughness, and color (L, a, b). Multiple comparisons were evaluated by Bonferroni test. Welch-ANOVA test was used to evaluate the differences in AE measurements among the groups. Multiple comparisons were evaluated using the Games–Howell test.

Results: After immersion in beverages, the artificial saliva group showed hardness values higher than those of the other groups (p < 0.001), and the microhardness values were significantly different from the initial values in all groups except for the control group. Both cola groups showed roughness values higher than baseline values (p < 0.05), while the other groups showed values similar to baseline measurements. When AE measurements were examined, the 70°C-coffee group showed the highest color change among all the groups (p < 0.05).

Conclusion: High temperature solutions can cause alterations in certain properties of composites, such as increased color change, although they did not affect the hardness or roughness of the composite resin material tested.

P047
Quantification of Water-Based Cements Acid Erosion by 3D Microscopy
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Aim: The purpose of this study was to evaluate the acid erosion of commercially available water-based cements according to the method specified in ISO standard 9917-1 and to compare dial gauge measurements with results from 3D microscopy investigations.

Materials and methods: Water-based phosphate and copper ion cements used as filling materials were prepared according to the manufacturer’s instructions and subsequently tested by the ISO standard 9917-1 method. After 24 h of setting at a temperature of 37°C and a relative humidity of at least 90% the specimens were immersed in an eroding solution with a pH of 2.74. Quantification of the resulting depth loss of cement material after 24 h was both examined with a dial gauge and a 3D microscopy setup.

Results: Both recording methods appeared to correlate as no significant differences in terms of material depth loss were observed. As previously reported the force applied by the dial gauge onto the specimen must be carefully controlled as it may influence the depth loss. The 3D microscopy instrument operates in a non-contact mode and circumvents this problem. In addition information about surface defects and voids on the µm scale which can influence as well the results from dial gauge measurements become visible.

Conclusions: Recording of depth loss with 3D microscopy was found to be comparable to the measurements with the dial gauge. The test method using a 3D microscope points out further advantages compared to the mechanical method and seems to be suitable as a reliable alternative.

P048
Effect of an Anti-Oxidant on Cytotoxicity of Dentin Bonding Agents
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Objective: The aim of this study was to evaluate the cytotoxicity of different dentin bonding agents on mouse fibroblast (L-929) cells and to determine the effect of an anti-oxidant agent on cell viability.

Materials and methods: Four different dentin bonding agents (Group A: G-aenial Bond-GC, Group B: Optibond All in One-Kerr, Group C: Gluma Self Etch-Heraeus and Group D: Clearfil S3 Bond-Kuraray) with three different concentrations (1:1, 1:10 and 1:20) were added to the culture medium using extract method. The cells were cultured with or without an anti-oxidant (Resveratrool) addition. The dose-depended response of cells against
Resveratrol (R) was investigated. Cell survival was measured by MTT after 1 and 24 h. The data were analyzed statistically with one-way ANOVA and two-way ANOVA respectively.

Results: The most effective dose of Resveratrol that significantly increased the cell viability was found to be 0.5 \( \mu \text{M} \) (\( p < 0.05 \)). All tested bonding agents had a dose-dependent (1:1 > 1:10 > 1:20) cytotoxic effect. The strongest cytotoxic effect was determined in Group C (\( p < 0.01 \)). Considering the 1:10 concentration; Group D at 1 h (\( p < 0.01 \)) and Group B and Group D at 24 h had the weakest cytotoxic effect (\( p < 0.05 \)). After Resveratrol addition, the highest cell viability was determined in Group B + R and Group D + R at 1 h. Group A + R and Group B + R had the highest cell viability at 24 h (\( p < 0.01 \)).

Conclusion: Regarding the results of this preliminary study, the cytotoxicity of bonding agents may be decreased by addition of 0.5 \( \mu \text{M} \) Resveratrol.

P049
An Investigation of Biological Properties of Acrylic Resin Copolymers
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Purpose: Aim of this study was to assess the cytotoxicity of variety copolymer acrylic resins that evaluated physical properties previously.

Materials and methods: Specimens of copolymer test groups were prepared by adding volumetric percent of 10–20–30–40 of ethyl, butyl and isobutyl methacrylate monomers in conventional heat cured acrylic resin monomer. Test specimens divided into 13 groups that including the control group. Five specimens of each resin were fabricated 10 mm in diameter by 1 mm thick. Eluates were prepared by placing five discs into a sterile glass vial with Dulbecco’s Modified Eagle’s medium and incubating at 37°C for 24 and 48 h. The cytotoxic effect from the eluates was evaluated on L929 cells using the MTT assay. The results were assessed statistically.

Results: Statistical significance was determined by one-way ANOVA. The result of ANOVA indicated that there was a statistically significant difference between acrylic resins in terms of cytotoxicity for 24 and 48 h (\( p < 0.01 \)). Also there was statistically significant interaction between times and groups.

Conclusion: There was a statistically significant difference between acrylic resins in terms of cytotoxicity for 24 and 48 h. However, the values of cytotoxicity of all groups for 24 and 48 h were within acceptable limits clinically. For all copolymer groups, values of cell viability for 48 h decreased by increasing the volume of the monomer in the copolymer. When cell viability compared for 24 and 48 h, values of cell viability increased at 48 h in general.

P050
Comparison of Microleakage of Four Self-Adhesive Resin Cements
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Aim: The aim of this study was to compare the microleakage of four self adhesive resin cements used for fiber post cementation with fluid filtration method.

Materials and methods: In the study, 50 upper human canine teeth extracted for periodontal reasons were used. The root lengths of the teeth were standardized. Root canals were enlarged with rotary instruments (Protaper, Dentsply Maillefer, Ballaques, Switzerland) and filling was achieved using lateral compaction technique. The specimens were randomly assigned to five groups (\( n = 10 \)). The fiber post (Exacto Glass Fiber posts, Angelus Industria de Produtos Odontológicos S/A, Londrina-PR-Brasil) cementsations are completed with the materials below:

(1) Group 1: Variolink II Professional Pack (Ivoclar Vivadent, Liechtenstein) (Control)
(2) Group 2: G-Cem Automix (GC, Tokyo, Japan)
(3) Group 3: Panavia SA Cement (Kuraray, Okayama, Japan)
(4) Group 4: Smart Cem 2 (Dentsply DeTrey GmbH, Konstanz, Germany)
(5) Group 5: Rely X U200 (3M ESPE, Neuss, Germany)

The measurement of microleakage was performed at 2nd, 4th, 6th and 8th minutes. The data was analyzed by univariate analysis of variance and Tukey tests (\( p < 0.05 \)).

Results: The best results were obtained in group 3 and 5, while the most leakage was seen in group 2 and 4. There was statistically significant difference between Rely X U200 and Panavia SA Cement groups compared to the control group.

Conclusion: From the point of microleakage, some self adhesive resin cements used for fiber post cementation were found to be more reliable than the control group material.

P051
Polymerization of Dual-Cure Resin Cements under Zirconia with Two Different Light Curing Units
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Purpose: Adequate polymerization is a crucial factor in obtaining optimal physical properties and a satisfying clinical performance of composite resin materials, however it depends on several factors including the ceramic system, luting agent, curing light characteristics, and curing regimen. The aim of this study was to evaluate the curing efficiency of resin cement used under zirconia structures with two different light curing units.

Material and methods: Four disc samples with four different thicknesses representing the zirconia substructures were prepared 4.0 mm in diameter using CAD/CAM system and layered with feldspathic porcelain. The resin cement was light cured using two
different light curing units (LED: Light Emitting Diode and QTH: Quartz-Tungsten Halogen). The values of depth of cure (mm) and the Vickers Hardness values (VHN) were evaluated for each specimen. Statistical analysis was performed using One-way ANOVA, Tukey’s HSD, and Student’s t-tests ($p < 0.05$).

**Results:** The use of LED unit produced a greater depth of cure compared to QTH under ceramic discs with 0.5 and 1.0 mm thickness. At 1.0 and 2.0 mm depth, the LED unit produced significantly greater VHN values compared to the QTH unit. At 3.0 mm depth, the difference between the VHN values of LED and QTH groups were not statistically significant.

**Conclusions:** Light curing may not result in desired resin cement polymerization under thick zirconia structures. Using LED light sources should be preferred rather than QTH for curing dual-cure resin cements especially under thicker zirconia restorations.

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**P052**

**Temperature Rise During Polymerization of Light-Cured Pulp-Capping Materials with Different Modes**

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**Aim:** Pulp damage may occur because of the temperature rise during polymerization of light-cured dental materials. The purpose of this study was to evaluate three different curing modes of a light emitting diode (LED) on the temperature rise in the pulp chamber during polymerization of a light-cured resin-modified calcium silicate filled pulp-capping material.

**Material and methods:** A straight-cut was made to the occlusal surface of an extracted molar ensuring 1 mm dentin thickness over the pulp. Pulpal circulation was simulated by water cycling through the pulp chamber with a defined flow pressure to simulate the clinical case. Temperature rise was measured during the light curing of capping material (Theracal, Bisco Inc., USA). Three modes of light curing unit (Planmeca Lumion, Mectron, Italy) were used to polymerize the material; fast (FP), slow rise (SRP) and soft (SP). Thermal changes were measured with J-type thermocouple and recorded by a data-logger. The data were statistically analyzed by one-way ANOVA.

**Results:** ANOVA test showed that pulp chamber temperature changes were influenced by the mode of light source. All groups showed significant differences between each other ($p < 0.05$). The intrapulpal temperature changes induced by different modes were: (7.19 ± 0.44°C) for FP, (6.62 ± 0.34°C) for SRP, (6.10 ± 0.37°C) for SP.

**Conclusions:** Following conclusions were drawn; The intrapulpal temperature changes induced by various light modes were; FP, SRP and SP in descending order. All curing modes of light curing unit showed significant differences between each other. Light curing of the Theracal with different polymerization modes of the same light unit resulted in more than 5.5°C increase in the pulp chamber.

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**P053**

**Determination of Wettability of Dentine by Er:YAG Laser Irradiation**

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**Objectives:** The aim of this study was to observe wettability characteristics of dentin surfaces after Er:YAG laser and acid etching applications.

**Methods:** Sixty human posterior teeth were segmented by means of a precision cut-off machine and dentin surfaces were polished till 4000-grit silicon carbide paper. The specimens were analysed in three main groups according to application methods: Unirradiated control dentin (UD), Low energy laser (LEL) (80 mJ, 15 Hz), High energy laser (HEL) (250 mJ, 15 Hz) (Kavo K-E-Y). Each main group was examined in five groups according to acid etching (ESPE Scotchbond Etchant) duration after irradiation (0–15–30–45–60 s). A droplet of water/adhesive (ESPE Scotchbond Universal Adhesive) was applied on the surface and contact angle was measured (KSV CAM100). Determination of water wettability was recorded by four measurements for each specimen ($n = 16$ group).

For the investigation of the adhesive resin contact angle, two measurements were recorded ($n = 8$ group) and second measurement was carried out after 0.5 mm grinding of the surface. Statistical analysis was performed using ANOVA followed by post-hoc comparisons (Tukey B, $p < 0.05$).

**Results:** The highest results were observed in 60 s etchant groups for both tests and main groups (74.480–77.530 for water, 47.390–52.240 for adhesive); The lowest results were recorded in HEL groups (48.970 ± 5.690 on non-etched surface for water test and 38.360 ± 3.110 on 30 s etched surface for adhesive test).

**Conclusions:** Er:YAG laser is affecting dentin surface characteristics, and etchant application for short duration followed by laser may lead to a better bonding by enhanced surface wettability.

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**P054**

**Microshear Bond Strength of a Self Adhering Flowable Resin Composite to Dentin**

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**Objective:** The purpose of this study was to evaluate the microshear bond strength (µSBS) to dentin of a self-adhering flowable resin composite and to compare it with those of different resin composites in combination with a self-etching adhesive system.

**Materials and methods:** Forty eight caries-free human molars were transversally sectioned in order to achieve a flat dentine surface. They were divided into four study groups ($n = 12$) according to the materials; Group-I: Vertise Flow (self-adhering flowable); Group-II: Single Bond (self-etching adhesive) + G-ænial (flowable composite), Group-III: Single Bond + Charisma Opal (flowable composite), Group-IV: Single Bond + Filtek Ultimate (Universal hybrid composite). In groups II-III-IV; after the application of...
adhesive system, composite cylinders were placed to dentin using Tygon tubes with an inner diameter of 0.90 mm. However self-adhering flowable composite was used without adhesive application. The μSBS of samples were determined using a Universal testing machine. Data obtained were analyzed with one-way ANOVA followed by Tukey test (α = 0.05).

**Results:** G-ænial and Vertise Flow presented higher μSBS than the others (p < 0.05). However the μSBS of Single Bond + G-ænial was not significantly different from that of Vertise Flow (p > 0.05). Additionally the μSBS of Single Bond + Filtek Ultimate was the lowest (p < 0.05).

**Conclusions:** Within the limitation of this study, it was concluded that self-adhering flowable composite in dentin depicted a comparable performance to those of other flowable composite resins used with a self-etching adhesive system. The performance of a self-etching adhesive system may be affected by the quality of the flowable composites.

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**P055**

**An In-Vitro Comparison of the Bond Strength of FRC Posts to Radicular Dentin Using Different Adhesive Cements**

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In this research we decided to evaluate the bond strength of FRC posts to endodontically treated teeth with different adhesive cements.

**Material and methods:** Forty-four caries-free, single-rooted human premolars, were selected for this study. The crown of each teeth was removed 2 mm below the CEJ and the roots were endodontically treated then prepared for post cementation. Then they divided into four groups, according to the adhesive cement type: group 1: Breeze (self-adhesive), group 2: ED Primer II/Panavia F2 (self-etch), group 3: Prime & Bond NT/All-Cem (etch & rinse), group 4: GC Fuji plus cement.

Each specimen was cut in to 2 mm thick section from middle third of root and push-out bond strength test was performed in each section at a cross-head speed of 0.5 mm/min. Data was analyzed with one-way ANOVA and a post hoc test.

**Results and conclusion:** The interfacial bond strength was different among the four groups.

GC Fuji plus cement obtained the highest bond strength values, this result indicate that the chemical interactions between the adhesive cement and hydroxyapatite may be important for root dentin bonding. Breeze (self-adhesive resin cement) without any pretreatment procedure can not obtain the acceptable bond strength.

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**P056**

**Effect of Nd:YAG Laser on Human Dentin Fluid Flow**

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The aim of the current investigation was to assess the rate and magnitude of dentine fluid flow of dentinal surfaces irradiated with Nd:YAG laser.

**Materials and methods:** Thirty third molars were sectioned, mounted and irradiated with Nd:YAG laser at 2 W power settings. The samples were irradiated automatically at individual runs until all dentine surfaces were completely irradiated. Samples were divided into three groups, group 1: the flow was for measured over 5 min after irradiation, group 2: dentin flow was measured over 10 min after irradiation and group 3: teeth were treated with 1% sodium hypochlorite prior to irradiation and then dentin flow was measured over 10 min after irradiation. Fluid flow was measured using fluid flow apparatus (Flodec). The rate, magnitude and direction of dentine fluid flow were recorded at baseline and after irradiation.

**Results:** Non-parametric Wilcoxon Signed Ranks repeated-measure t-test and Kruskal–Wallis ANOVA test revealed statistically significant increase in fluid flow for all the groups after irradiation. However, no significant differences were found between the groups. The samples demonstrated a baseline outward flow followed by inward flow due to irradiation then followed by increased outward flow.

**Conclusions:** Nd:YAG laser at 2 W power settings has significantly increased dentinal fluid flow rate. The removal of smear layer with sodium hypochlorite prior to irradiation did not have any significant effect on the dentin fluid flow rate.

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**P057**

**Effect of Hydrocholoric Acid on Surface Properties of Restorative Materials**

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**Purpose:** The purpose of this study was to evaluate the effect of hydrochloric acid on wear rates and surface hardness of six different tooth-coloured restorative materials.

**Material and method:** Conventional glass ionomer (Fuji IX GP), resin-modified glass ionomer (Fuji II LC Improved), compomer (Compoglass F), hybrid composite (Aelite LS Posterior), microhybrid composite (Gradia Direct) and nanohybrid composite (IPS Empress Direct) were tested in a pin-on-disc wear machine at 20 N load. Each specimen was subjected to 10,000 cycles under two different solutions (artificial saliva, pH 7; hydrochloric acid, pH 2.6). Amount of material loss were evaluated by profilometer. For the hardness test restorative materials immersed in distilled water, artificial saliva and hydrochloric acid. Measurement of surface microhardness were carried out using a hardness tester under 500 g load for 20 s. The statistical analyses were performed by One-way ANOVA test, Tukey HDS test, Student t-test and paired sample t-test.
**Results:** Hybrid composite, demonstrated the highest hardness values and the lowest wear loss (p < 0.01). Compomer and composites at artificial saliva showed significantly higher wear loss than hydrochloric acid solution (p < 0.01). Conventional glass ionomer, resin modified glass ionomer, hybrid composite and nanohybrid composite at hydrochloric acid solution, exhibited significantly lower hardness than at distilled water and artificial saliva (p < 0.01).

**Conclusion:** The results of this study suggested that making restorations by using glass ionomer cement and resin-modified glass ionomer cement should be avoided from patient with reflux problems. In such cases, composite resins would be more suitable and reliable.

**P058**

**Evaluation of Dynamic Viscoelasticity of Tissue Conditioners with Surface Coating Agents**

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**Aim:** The application of a surface coating agent on the tissue conditioner has been reported to increase the intra-oral use of the tissue-conditioners. This in vitro study evaluated the dynamic viscoelastic properties of the tissue-conditioning materials with surface-coating agents.

**Materials and methods:** Specimens of tissue-conditioning materials (20 mm diameter × 10 mm thickness) (Coe-Comfort-C, F.I.T.T.-F and Visco-gel-V) was mixed in accordance with the manufacturers’ recommendations (C, F, V) and with altered powder/liquid ratios (C', F', V') (n = 144). Surface coating materials (Monopoly-M, Palaseal-P) was applied onto the surface of the specimens. The shear storage modulus (G'), shear loss modulus (G'') and loss tangent (tanδ) were measured using a magnetic rheometer after a gelation time of 2 h, 1, 3, 7, 14, 21 and 28 days of immersion. Data were analyzed by using Kolmogorov-Smirnov, Kruskal-Wallis and Mann-Whitney U-tests (p ≤ 0.05).

**Results:** For all the time periods tested, G' and G'' values of FM, F'M, VM and V'M groups were lower than F, F', V and V'. Higher G' and G'' and lower tanδ values of C' and V' than those of C and V groups were detected; while lower G' and G'' and higher tanδ values of F' than those of F groups were detected. Palaseal surface coating material did not affect the viscoelasticity of the all samples tested while Monopoly surface coating affected the dynamic viscoelasticity of tissue-conditioners mixed with altered powder/liquid ratios.

**Conclusion:** The application of surface coating agents on the tissue-conditioners might be advantageous to increase the viscoelastic properties and cushioning effect of these materials.

**Theme: Dental Treatment & Restorative Dentistry: Periodontics**

**P059**

**Clinical and Histological Evaluation of Primary Second Molar with Caries**

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**Aim:** Managing dental caries in young children is demanding due to the elusions present on the right diagnostic criteria for treatment. The present study evaluated the histological status of pulp tissues extracted from primary second molar with caries involvement. Histological findings are correlated with clinical and radiographic assessment.

**Materials and methods:** Simple experimental study was conducted with ethical approval on upper or lower second primary molars with occlusal (22 teeth) or proximal (22 teeth) dental caries. Selected children were below 6 years of age. Percentage of caries involvement, residual dentin thickness (RDT), radiographic assessment of interradicular and periapical areas, clinical caries depth and signs and symptoms are the parameters considered for comparing with histological findings. The specimens were grouped based on nature of inflammatory process as acute or chronic. The data were analyzed by student t-test to compare histological types of inflammation with clinical parameters.

**Results:** Four cases revealed severe acute inflammation in coronal and relatively mild acute inflammation in radicular pulp. In rest of the specimens coronal and radicular pulp had similar acute or chronic inflammatory changes. Histological evidence of pulpitis correlated with dental caries depth of ≥80%, RDT of ≤1 mm, radiographic rarefactions in the interradicular regions and symptoms of pain.

**Conclusions:** Primary second molars with more than two third caries involvement with symptoms of pain histologically showed inflammation of both coronal and radicular pulp tissues in all cases.

**P060**

**Assessments of Dental Fear in Children by Using the Frankl Behaviour Rating Scale and Sound Eye Motor Scale**

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**Aim:** To compare dental fear (DF) in children who practiced the tell-show-do technique with those did not by using the Frankl Behaviour Rating Scale (FS) and Sound Eye Motor Scale (SEM) at the patients’ first meeting with the dentist.

**Materials and methods:** The 532 subjects admitted and examined at the department of pediatric dentistry were assessed. Children with physical and mental health problems (mental retardation, psychotic disorders, severe sensory motor impairment), toothache (pulpitis, pericoronitis), and a history of dental treatment were excluded from the study. Thus, a total of 85 children (47 male, 38...
female) matched the inclusion criteria and participated in this randomized controlled clinical study. The study protocol was approved by the Research Ethics Committee, and informed consent was obtained from the parents of all children. All dental treatments and the tell-show-do technique were applied by one calibrated examiner, and the FS and SEM were applied by an independent calibrated examiner. All subjects received restorative therapy after local anesthesia in the first therapeutic session. For the statistical analysis and calculations SPSS for Win (SPSS, Ver. 15.0, Chicago, IL., USA) was used. In statistical decisions, p < 0.05 values were accepted as an indicator of significant difference.

Results: The children who did not perform the tell-show-do technique showed higher levels of DF than those who did; however, there were no differences in DF results between the two scales.

Conclusion: The tell-show-do technique, which is a behavioral management technique, should be preferred over pharmacological techniques in children with DF during dental treatment.

P061
The Effect of Magnetic Resonance Imaging on Microleakage of Amalgam Restorations
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Aim: To compare the effect of magnetic resonance imaging (MRI) on microleakage of class II amalgam restorations.

Materials and methods: A total of 40 human extracted, caries-free third molars were used in this study. Class II cavities were prepared using diamond burs under water cooling and were randomly divided into four groups (n = 10). The first and second groups comprised molars with cavities that were restored with dentin adhesive and amalgam, whereas the third and fourth groups comprised molars with only amalgam-restored cavities. The amalgams were placed incrementally with the condensing towards the cavity walls. The finishing and polishing procedures were completed. MRI was applied to the teeth in the first and third groups for approximately 20 min. The specimens were thermocycled at temperatures between 5 and 55°C with a 30-s dwell time for 1000 cycles. The samples were then immersed in 0.5% Methylene blue dye for 24 h and sectioned longitudinally. Dye penetration at the occlusal and gingival margins was quantified using a stereomicroscope at 15× magnification. For the statistical analysis and calculations SPSS for Win (SPSS, Ver. 15.0, Chicago, IL., USA) was used. In statistical decisions, p < 0.05 values were accepted as an indicator of significant difference.

Results: The groups that were not subjected to MRI showed less microleakage than those that were; however, there were no differences between the bonded amalgam and amalgam groups.

Conclusion: The results of this study suggest that MRI can increase microleakage of amalgam restorations.

P062
Conservative Treatment of Dentigerous Cyst Associated with Primary Teeth
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Background: Dentigerous cysts are the most common bony lesions of the jaws in children. They are associated with the crowns of permanent teeth, most frequently impacted mandibular third molars, maxillary canines, maxillary third molars and, rarely, supernumerary teeth. Radiographically, the cyst appears as ovoid well-demarcated unilocular radiolucency with a sclerotic border.

Case: The purpose of the present case was to report 7-year-old boy with a dentigerous cyst associated with unerupted mandibular second premolar tooth and its dental management. The patient referred to our department with a chief complaint of painless swelling on right side of the mandible. On the extraoral examination facial asymmetry was noted on the right side. The radiographic and 3D-CT examination showed thin sclerotic border surrounding the large, well-defined unilocular radiolucent lesion with 22.5 mm in diameter. Primary first and second molar teeth were necrotic and showed large loss of bone in the bifurcation area. Case management: Marsupialization of the cyst was chosen as the treatment of choice. The treatment consisted of extraction of necrotic first and second primary molars and created a window through the extracted socket to decompress the lesion under local anesthesia. An epithelial tissue sample from the cyst was collected. Histopathological diagnosis was inflamed odontogenic cyst. After 18 months, bone formation was observed in the same region and mandibular right second premolar was seen erupting in its proper place.

Conclusion: Careful evaluation of the history, the clinical and radiographical findings help clinicians to diagnose the condition correctly, identify the etiological factors, and administer the appropriate conservative treatment instead of serious surgery.
examination of the teeth is carried out through OPG. The decayed portions of the teeth numbers 55, 65, and 85 are removed and a root canal treatment was performed on the tooth number 75. All the second primary molars were covered by stainless steel crown. The changes in the patient has been followed in 6-month time periods.

**Conclusion:** The enamel formation of the second primary molar generally initiates during the fifth month of intrauterin life and terminates at the tenth month after the birth. Because experiencing skin eruption and inflammatory diseases during this period effects directly ameloblast activities in a negative way, enamel hypoplasia occurs. Due to the fact that they have the best impermeability, keep their original form and size of primary teeth and become more retainable, these teeth are treated with stainless steel crown.

**P064**

**Postoperative Complications Following Dental Treatment under General Anesthesia in Pediatric Patients**

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**Aim:** The aim of this study was to investigate postoperative complications following dental treatment under general anesthesia in pediatric patients over a year period.

**Method:** One hundred and thirty-three healthy pediatric patients (age range 2–9 years) were referred for dental treatment under general anesthesia. The study was approved by the ethical committee at the Faculty of Medicine, Kirikkale University in Turkey. Data were obtained by history taking, clinical examination, pre-formed questionnaire and standardized data records. During the general anesthesia procedure, a mean number of 8.1 (±3.3) teeth were filled, 1.3 (±1.4) teeth were treated endodontically and 2.6 (±2.4) teeth were extracted. Post-operative complications were assessed through telephone calls to the patient’s mother/guardian by the investigator, after the first day (after 24 h) and after the third day (after 72 h). Results showed that 69.9% of the children had one or more complaints after 24 h in contrast to only 35.3% after 72 h. Cough and pain (27.1%), inability to eat (24.8%), psychological changes (24.1%), sore throat (21.1%), were more common complaints in the first day, inability to eat (24.8%), psychological changes (24.1%), sore throat (21.1%), were more common complaints in the first day, followed by drowsiness (17.3%), bleeding (16.5%), fever (15.8%), sleepiness (15%), nausea (12%) and vomiting (9.8%). A significant reduction in complaints was reported after 72 h (p < 0.05).

**Conclusion:** Post-operative complaints were common 24 h after dental treatment under general anesthesia. However complaints were mild in severity and limited to the first day.

**P065**

**Clinical Research on Restoration of Bone Defect in Cleft Alveolar with β-Tricalcium Phosphate**

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**Objective:** To evaluate the feasibility of using β-tricalcium phosphate (β-TCP) to repair bone defects of patients with alveolar cleft. To search for ideal artificial material as a substitution of autogenous iliac cancellous bone to repair alveolar cleft.

**Materials and methods:** Twenty-four patients with alveolar cleft were chosen from oral and maxillofacial department of Beijing stomatological hospital. They were divided into two groups: group A (10 cases) and group B (14 cases). In group A, autogenous iliac cancellous bone was transplanted to repair alveolar cleft, and in group B, β-TCP was transplanted. Observe the coalesced condition of the both groups 1 week after the operation. Compare the formation of the new bone between the two groups through the images of cone beam computer tomography (CBCT) and three-dimensional reconstruction taking pre-operation and 4–6 months post-operation.

**Results:** All the 24 patients achieved well primary-healing without infection, dehiscence or rejection 1 week post-operation except one case in Group A. CBCT and three-dimensional reconstruction 4–6 months after operation showed new bone formations and the succession of alveolar being well or partly recovered. The clinical success rate is the same in both groups.

**Conclusion:** There is no significant difference in the formation of the new bone between β-TCP and autogenous iliac cancellous bone. As an ideal artificial material, β-TCP can be used to repair the bone defect of alveolar cleft in the patients with cleft lip and palate.

**P066**

**Polymicrotrauma**

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**Introduction:** Nail-biting is one of the most common but unresolved oral habits among children and important concern for paediatricians and paediatric dentists. Nail-biting may damage the structure of the mouth and can enable easier spread of infectious diseases. Beside all these damages chronically nail-biting, repetitive trauma might also cause the dental pulp to become inflamed.

**Case:** The presented case was 10-year-old boy in mixed dentition referred for emergency treatment with complaint of pain. There was no reported history of orofacial trauma. Through extra-oral examination was noted that lower lip and chip were swollen.

The mandibular left incisor did not present any carious lesion or fracture. However, the tooth was sensitive to percussion, showed abnormal colour, increased mobility and responded abnormally to thermal pulp tests. The periapical radiograph did show enlargement of the periodontal space. After being diagnosed as advanced irreversible pulpitis, root canal treatment was carried out; adequate healing was manifested clinically by resolution of symptoms and radiographically by bone filling in the radiolucent
area at the root apex over a period of 10 months. According to the medical history has a habit of nail-biting for 5.5 years.

**Conclusion:** This unusual case report gives important information about examination of oral habits in children and emergency cases. Many studies noted that nail-biting may play a significant role in the development of some anomalies of the oral-facial system or may cause damage of the cuticles and secondary bacterial infection. After treatment the patient quit this bad habit.

**P067**

**Conservative Approach for Missing Single Tooth in Adolescence: Case Study with 1 year Follow Up**

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**Purpose:** The purpose of this study was to rehabilitate the single missing tooth due to the trauma of an adolescent with the minimal invasive approach using a direct Fiber Reinforced Composite Dental Bridge.

**Materials and method:** Due to the trauma history, one single tooth was missing in the maxillary anterior region in three patients who were 11–13 years old. In these years of adolescence, they are mostly worried about their appearance. Patients were temporarily treated by fiber reinforced adhesive bridges. No preparations were done on the lingual surfaces of the abutment teeth. Because of their development period, we used only one abutment tooth to allow for the growth of the maxillary. The patients were recalled for examinations every 6 months to evaluate the restorations and their consistence.

**Results:** After a 1 year clinical follow-up, all three fiber reinforced adhesive bridges were intact and no signs of fracture, debonding or discoloration was observed. Patients were happy with their appearance. Restoring a missing single incisor is one of the most difficult esthetic procedures in dentistry especially during the developmental period. For the ongoing growth of young patients it is hard to replace the tooth with implants or using removable appliances. This alternative treatment approach may be successfully used for temporary treatment of incisor tooth loss.

**P068**

**Oral Manifestations of Hypophosphatemic Rickets: A Case Report**

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**Background:** Hypophosphatemic Rickets is an inherited disease characterized by renal phosphate loss, growth retardation and defects in bone mineralization. Patients present clinically skeletal deformities and oral manifestations including pulpal infections and dental abscesses due to defective dentin which occurs as a result of hypophosphatemia. We present oral manifestations and dental treatment of a hypophosphatemic rickets case as established by the combination of clinical, radiographic findings and laboratory values.

**Case:** A 7-year-old boy diagnosed with hypophosphatemic rickets was referred to Yeditepe University, Faculty of Dentistry, Department of Pediatric Dentistry with the chief complaint of toothache. Physical examination showed markedly curved legs and short stature. Intraoral examination revealed pulpal infections and abscess formation in the primary molars and premature loss of upper incisors. The radiographic findings were enlarged pulp chambers and root canals related to defective dentin. Following consultation with a pediatric endocrinologist, dental treatments including extractions and restoration of primary teeth were performed under general anesthesia due to the inadequate cooperation. The immediate prosthetic rehabilitation was carried out 4 weeks later and after 3 months dentures were renewed according to the changes in the mouth. Oral health care advices have been provided and the patient is under follow up at regular intervals for preventive measures.

**Conclusion:** Patients with hypophosphatemic rickets may frequently present dental abnormalities. Dentists and pediatricians should be aware of the features of this disorder and periodic oral examinations and preventive measures should be performed because early intervention could prevent more invasive dental procedures.

**P069**

**Hallermann-Streiff Syndrome: A Case Report**

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**Aim:** Hallermann-Streiff syndrome also known as occulo-mandibulo-dyscephaly is a rare congenital disorder characterized primarily by head and face abnormalities. Dental abnormalities are seen in 50–80% of the cases including neonatal and supernumerary teeth, agenesis of permanent teeth, enamel hypoplasia, open bite, malocclusion and hypodontia. The aim of this case report is to present general clinical features of this syndrome and the dental management of a patient with Hallermann-Streiff syndrome.

**Case:** A 2, 5-year-old girl was referred to the pediatric dental clinic with a chief complaint of delayed teeth eruption. Extraoral examination revealed a beak-shaped nose, sparse hair, eyelashes and eyelids, congenital cataracts, parietal and frontal bossing, microstomia, hypoplastic mandible and skin atrophy. Intraoral examination showed that primary teeth eruption was not concordant with her age. The upper right and lower both cuspid with lower right first premolar primary teeth were not erupted. Also her upper incisors had caries. So prophylactic and restorative treatments were planned.

**Conclusion:** Due to the findings of this syndrome; an interdisciplinary approach including early preventive care program, detailed oral hygiene motivation, dietary recommendations and counseling of the parents were initiated. Because of the multiple skeletal and dental problems of this patient; the premature loss of primary teeth with the congenital absence of several permanent teeth will result in functional as well as esthetical problems. Hence, the patient must be included in a strong prevention program as early as possible.
**P070**

**Relationship Between Craniofacial Morphology and Sleep Bruxism in Adolescent**

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**Introduction:** Sleep bruxism is a stereotyped movement disorder characterized by grinding or clenching of the teeth during sleep. A change in orofacial muscles function was first reflected electromyographically and in bruxism masseter and internal pterygoid muscles by their action directly influence the amount and direction of growth of gonial process. The aim of this study was to determine whether a relationship existed between the craniofacial morphologies and presence of bruxism in adolescent.

**Material and methods:** The sample group comprised thirty-four 13–16 years old children of both genders with complete permanent dentition. Bruxism was evaluated by a structured questionnaire on clinical signs/symptoms and a bite strip (BiteStrip®, S.L.P. Ltd, Israel). It is a single use small disposable electronic electromyographic device designed as a front line screener for bruxism. According to the Bite-Strip scores among the participants were: Group 1 (n: 10): No bruxism. Group 2 (n: 7): 1: mild. Group 3 (n: 8): 2: moderate. Group 4 (n: 9): 3: severe. Craniofacial measurements were obtained from lateral cephalograms by same examiner. Kolmogorov-Smirnov’s one-sample test for testing the distribution of the variables for normality and ANOVA and post hoc test was performed to analysis of differences between bruxism and cephkapometric measurements.

**Results:** This study found no statistical significant differences in the craniofacial morphologies of bruxers and non-bruxers, except for difference in Sella-Basion. This measure was significantly increased in Bruxers.

**Conclusion:** The results of this study showed that except for Sellá-Basion, craniofacial morphologies were not found to be related to bruxism in adolescents.

**P071**

**Two Different Therapeutic Approaches to Ranulas**

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**Introduction:** The term ranula is used to describe mucoceles occurring on the floor of the mouth. Ranulas develop from extravasation of mucous after trauma to the sublingual gland or obstruction of the ducts. In the treatment of ranula, which may be seen in almost all ages beginning childhood, have been reported including aspiration of mucus, marsupialization, excision of the ranula alone or with sublingual gland and cryosurgery.

**Case:** In this case report we explained that two different therapeutic approaches to intraoral ranulas. An 8 years-old and a 12 years-old boys reported discomfort with swallowing. On physical examinations, diagnosed as ranula that there was a soft, nontender fluctuant mass on the floor of the mouths. The ranula seen in the first case, we learned that occurred when he started using a removable space maintainer. The ranula of the first case was aspirated mucus and recovered spontaneously shortly after the space maintainer was disused. The ranula of the second case was observed during the presurgical period but spontaneous resolution was not detected and then the ranula excised with salivary gland duct under local anesthesia. Both of them, histopathological examination revealed that ranulas consisted of central cystic space containing mucin. No recurrence has been observed after 6 months of follow-up.

**Conclusion:** Excision of the ranula alone or with sublingual gland, commonly performed, is a successful method of treatment. If the cause of trauma eliminated, conservative treatment with spontaneous resolution may be another option for pediatric population.

**P072**

**Identification of the Mandibular Landmarks in a Pediatric Population**

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**Aim:** The aim of this study was to determine and compare reliabilities of common mandibular landmarks and to determine the incidence of incisive canal, anterior looping and lingual foramen in children from panoramic and CBCT images.

**Material and methods:** Panoramic and CBCT images from 100 children and adolescent patients were randomly selected. In order to grade the visibility of mandibular anatomical landmarks, a four-point rating scale was used.

**Results:** In panoramic images; the mandibular canal could be observed in 92.5% of the cases, with a good visibility in 12.0% of the cases. The mental foramen could be observed in 44.5% of the cases while good visibility was not seen. Anterior looping of the mental nerve was present in 16.5% of the cases while good visibility was not seen in any case. An incisive canal could be identified in 22.5% of the cases, with only 1.5% showing good visibility. The lingual foramen could be visualized in 61.0% of the cases, with good visibility in 6%. In CBCT images; the mandibular canal, the mental foramen and the lingual foramen could be observed in 100% of the cases, with a good visibility in 51.0%, 98.5% and 45.0% of the cases, respectively. Anterior looping of the mental nerve was present in 26% of the cases, with 2% having good visibility. An incisive canal could be identified in 49.5% of the cases, with only 7.5% showing good visibility.

**Conclusions:** This study confirms the applicability of CBCT images for visualization of critical structures in children.
Microleakage of Self-Adhering Material in Primary Teeth after ART

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Aim: The aim of the present study was to compare the performance of materials suitable for ART with regard to microleakage in class II restorations of primary molars in an in vitro conditions.

Materials and methods: In this study it was carried out to compare the microleakage of a flowable composite (Vertice™ Flow, Bisco, USA), an injectable resin modified glass-ionomer (Equa, GC, Japan) and conventional glass-ionomer (Lonofig, Voco, Germany) on 33 carious primary molars. Teeth were divided into three groups (n = 11). The specimen preparation procedures were performed by the same operator. The teeth were subjected to thermally cycled (between 50 and 550°C, 1000 cycle) and stained with 0.5% basic-fuchsin solution. Then the teeth were sectioned in bucco-lingual direction to examine dye penetration under stereomicroscope.

Statistical analysis were performed with SPSS for Windows 15.0. Kruskal–Wallis and Mann–Whitney U-test with Bonferroni correction were used both for occlusal and gingival scores (p < 0.017).

Results: No significant differences were found among the groups regarding gingival scores (p > 0.017). Except for the other pairwise comparisons, significant differences were only found between conventional and injectable resin modified glass-ionomer (p < 0.017) in terms of occlusal scores. However, no significant difference was observed when self-adhering flowable composite was compared to conventional and injectable resin modified glass-ionomer cement (p > 0.017).

Conclusions: This study concludes that flowable composite materials can be used like conventional glass ionomer for ART of the primary teeth but it does not effect the long-lasting time with regard to leakage.

Do Children Always Prefer Colorful Things?

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Aim: Doing known and/or preferred activities affects performance positively. Also person’s choice which he/she preferred provides more positive interaction between who gives that opportunity to him/her. While determining of children’s consumption habits, according to perception levels and age of children, color, content and design of the products are all taken into consideration. It is thought that children like colorful things. The aims of this study were to determine if children really curious about trying colorful things and choice priority of children in between the colored mouth rinsing liquids during a dental treatment session (DTS).

Material and methods: Totally 263 children (ages 3–15 year old; mean age: 8.62 ± 2.48; 122 female, 141 male) assessed in this study. Three transparent cups filled with water, green and pink rinsing solutions and aligned near dental unit. During DTS, child was told to rinse his/her mouth with one of the cups whichever he wants. The preferred color of cups, gender, age and number of sessions were recorded. All data were statistically analysed by SPSS 15.0 programme and chi-square tests.

Results: Children preferred water 62.7%, pink 21.7%, and green liquid 15.6%. Only eight children tried three of the cups in one DTS. Girls chose pink and boys chose green liquid but this difference was not statistically significant. Children attended DTS one time 74.5%; twice 22.4%; three times 3% in the study.

Conclusion: Neither ages and gender nor number of attending DTS affected children’s preference. Water was the mostly chosen rinsing liquid. Children do not wonder about colorful things in a DTS.
P077

Combined Endodontic and Periodontal Treatment of Maxillary Frontal Teeth Crown – Clinical Cases

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Objective: Endo-periodontal lesion can be treated by endodontic and periodontal care and sometimes complemented by surgery. Extensive carious lesions, especially in the maxillary frontal teeth represent not only functional and aesthetic problems, but also psychosocial discomfort due to bad appearance.

Methods: Two patients of same age (16) were treated for extensive destruction of the maxillary frontal teeth 11, 21, with involvement of the periodontal tissues, while one case had periapical pathology, too. The cases were indicated for endodontic as well as periodontal treatment.

Results: The endodontic treatment of the both cases consisted of root canal treatment and composite restoration, while the periodontal treatment consisted of surgical flap surgery (in one of the cases also with apicotomy). Postoperative follow-up after 3 weeks, 1 year and 3 years showed the maintenance of the results of the treatment.

Conclusion: The reconstruction of the maxillary frontal teeth has restored functionality and esthetics, and satisfactory psychological impact to the patient.

P078

Multiple Extractions During Periodontal Surgery – Case Presentation

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Introduction: Treatment option of periodontal disease in terminal stage is usually extraction. Due to pathological remains of the periodontal tissues after the extraction, the extraction site will have better regeneration process if the affected region is treated with periodontal flap surgery. During this procedure, multiple extractions are followed with profound debridement of bone defects and mucosae.

Material and method: Patient AB male, age 37 was referred for periodontal treatment with complaints of mobility and migration of the teeth in both jaws. Clinical and radiographic assessment concluded that most of the frontal teeth of both jaws are indicated for extraction. Periodontal surgery with Widman-modified flap was conducted in the frontal maxillary and mandibulary teeth. Teeth 12, 11, 21, 22, 32, 31, 41, 42 were extracted and the extraction sites were carefully cleaned, removing the pathological soft tissues and sharp bone extrusions.

Result: Postoperative visits showed that the restitution of the region was sufficient and ready to receive prosthetic appliance.

Conclusion: Periodontal treatment plan consisting of multiple extractions may be considered as one of the options for periodontitis.

P079

The Clinical Comparison of Free Gingival Graft and Semilunar Coronally Position Flap

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Aim: Keratinized gingival tissue around teeth is essential to withstand of gingival inflammation. Among currently used procedures for gingival recession, free gingival auto graft is more common.
The aim of this study was to clinically compare the outcome of free gingival graft vs. semi lunar coronally position flap in order to augment gingival recession.

**Materials and methods:** The present study was a controlled, clinical trial which 20 pairs of upper left and right canine teeth requiring gingival augmentation were exposed to surgery using (FGGP) and (SCPF). Statistical data analysis was done using SPSS software. Chi-square ($\chi^2$) test was used for comparison of color matching between two groups. Nonparametric Mann–Whitney U-test was used for comparison of dimensional changes of graft between two groups.

**Results:** The result showed that the amount of dimensional changes in the (FGGP) was more than (SCPF) ($p < 0.05$). With regard to the color matching with adjacent tissue, the results of (SCPF) was superior to (FGGP) ($p < 0.05$).

**Conclusion:** Both procedures had the ability to increase the keratinized gingival width, however SCPF had lower dimensional changes. In addition, SCPF had better color matching and esthetic. Also this procedure is simpler and has less side effects such as hemorrhage, wound healing.

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**P081**

**Treatment of Gingival Recession with Subepithelial Connective Tissue Graft and Double Papilla Flap Approach**

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**Aim:** This case report presents treatment of a patient who has gingival recession on the facial aspect of lower incisor by combination of subepithelial connective tissue graft and double papilla flap approach.

**Materials and methods:** A 37-year-old female patient having 7 mm Miller class III gingival recession on the facial aspect of lower left central incisor, referred to the clinic for treatment of root sensitivity and esthetic concern. After initial periodontal therapy was completed, incisions were made all along the soft tissue margin of the defect. Then, superficial horizontal incisions were made at both sides of the wound edges and two vertical incisions were performed from the edges of the horizontal incisions to below the mucogingival junction. Flap was raised with a split-full-split approach in the coronal-apical direction and a subepithelial connective tissue graft was harvested from palate. Recipient sites were de-epitelized and subepithelial tissue graft was stabilized on the exposed root surface with sutures. After that double papilla flap was coronally positioned to cover the recession completely. The surgical site was evaluated at 2, 6, and 12 months.

**Results:** The surgical site healed uneventfully. At the end of the 12 month, recession depth decreased from 7 to 2 mm and keratinized tissue width increased from 0.5 to 2 mm.

**Conclusion:** The root coverage procedure, presented in this case, involving subepithelial connective tissue graft with double papilla flap approach is a safe and predictable procedure for Miller class III recession-type defects.

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**P080**

**Gingival Recession Treatment with Connective Tissue Grafts or Platelet Rich Fibrin**

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**Aim:** The main objective of this study was to evaluate the clinical effectiveness of platelet-rich fibrin membrane used in combination with a coronally advanced flap and to compare it with subepithelial connective tissue graft in Miller Class I bilateral gingival recession treatment.

**Material and methods:** Ten healthy patients with buccal Miller’s Class I recession defects participated in this case series. Sixty recession defects were treated. Recession sites were assigned randomly into platelet-rich fibrin membrane used with a coronally advanced flap (PRF) and subepithelial connective tissue graft in combination with a coronally advanced flap groups (CTG). Root coverage and keratinized tissue gain were evaluated at 6th month. Post-surgical patient satisfaction and pain status were measured by comparing visual analogue scale (VAS) scores.

**Results:** All treatments were effective in providing a significant reduction of baseline recession. Mean recession reduction was not statistically different between groups. Complete root coverage percentages of PRF were similar or lesser compared to the subepithelial connective tissue grafts. Operation time was significantly shorter for PRF when compared to the CTG. Use of a PRF membrane in gingival recession treatment decreased subjective patient discomfort compared to CTG-treated gingival recessions.

**Conclusion:** The results indicated that platelet-rich fibrin membrane used in combination with coronally advanced flap can be considered as an alternative method for the treatment of Miller Class I recession defects.

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**P082**

**Mutational Analyses of the Cathepsin C Gene (CTSC) in Two Iranian Families with Papillon Lefèvre Syndrome**

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**Purpose:** Papillon-Lefèvre syndrome (PLS; OMIM 245000) is a rare autosomal recessive disorder. Clinically, PLS is characterized by hyperkeratosis involving the palms, soles, elbows and knees which is followed later on by periodontitis, destruction of alveolar bone and loss of primary and permanent teeth. Mutations of the lysosomal protease cathepsin C (CTSC) gene have been shown to be the genetic cause of Papillon-Lefèvre syndrome. This study analyses of the Cathepsin C Gene (CTSC) mutation in two Iranian families with Papillon Lefèvre syndrome.

**Materials and methods:** We analyzed the DNA of two members from consanguineous families for mutations by direct automated sequencing of genomic DNA that amplified for exonic regions and associated splice intron site junctions of the cathepsin C gene. We then performed RFLP to determine the presence of mutations in control groups.
P083
Therapy of Infrabony Defects Using Combination of Bone Materials, Enamel Matrix Proteins and Membranes
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Aim: Periodontal regeneration refers to the restoration of bone, cementum and ligament to their original levels before they were damaged by the periodontal disease process. It has been shown that clinical improvement of intrabony periodontal defects can be achieved with use of enamel matrix proteins (EMPs) or by grafting with bovine porous bone mineral (BPBM). This study compared the clinical effectiveness of EMPs used alone or in combination with BPBM in the treatment of periodontal intrabony defects in humans.

Material and methods: Twenty one paired intrabony defects were surgically treated using a split mouth design. Intrabony defects were treated either with enamel matrix proteins (EMP group) or with enamel matrix proteins combined with bovine porous bone mineral (EMP/BPBM group). Reentry surgeries were performed at 6 months.

Results: Preoperative probing depths, attachment levels, and transoperative bone measurements were similar for the EMP and EMP/BPBM groups. Post surgical measurements taken at 6 months revealed a significantly greater reduction in probing depth in the EMP/BPBM group when compared to the EMP group. The EMP/BPBM group also presented with significantly more attachment gain than the EMP group. Surgical reentry of the treated defects revealed a significantly greater amount of defect fill in favour of the EMP/BPBM group as compared to the EMP group.

Conclusion: The results of this study indicate that BPBM has the ability to augment the effects of EMPs in reducing probing depth, improving clinical attachment levels, and promoting defect fill when compared to presurgical levels.

P084
Role of Interleukin-33 in Gingival Fibroblasts
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Objective: Interleukin-33 (IL-33) is a novel member of the IL-1 superfamily, binding to mIL-33R (ST2L) and IL-1 receptor accessory protein (IL-1RAP). This ternary complex signals via NF-kB and MAP kinases, activating the production of Th2 cytokines by mast cells, basophils, eosinophils and lymphocytes. In this study we sought, apart from the previously described cells, if IL-33 is released from gingival fibroblasts during periodontal inflammation.

Material and methods: Local ethical committee approved the study. TNF-α IgG was used to immunostain formalin fixed paraffin embedded human periodontal tissues. Ten healthy (age range 30–37 years) and ten periodontitis (age range 31–45 years) patient samples were used. The influence of TNF-α on IL-33 in gingival fibroblasts was analyzed with ELISA for in vitro analysis. Student’s t-test was used to compare data between tissues or cultured fibroblasts.

Results: The number of TNF-α positive cells was higher in periodontitis group compared to healthy group (p < 0.001). TNF-α located in all cell types of connective tissue, as well as in gingival fibroblasts. Upon stimulation with TNF-α, gingival fibroblasts released IL-33 (p < 0.001).

Conclusion: IL-33 is released during necrosis as a danger signal or alarmin, and that is related to disease severity. Chronic periodontitis is characterized by Th2 cell dominance, which has been linked to anti-inflammatory responses and periodontal repair. Therefore, TNF-α-induced IL-33 might directly link inflammation to the IL-33-dependent stimulation of Th2 cytokine-producing cells.

P085
Comparison of Non-Viral Transfection on Human Periodontal Ligament Stem Cells
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Purpose: Inducing human periodontal ligament stem cells (hPDLCSC) differentiation by DNA transfection is a promising way for periodontal tissue engineering. However, there are very few studies focus on introducing foreign DNA into hPDLCSC by non-viral methods which were relatively safe. Hense, the major purpose of this study was to compare the transfection efficiency and toxicity of non-viral gene transfer methods on hPDLCSC and search a best approach and optimal protocol for transfer genes into hPDLCSC using non-viral vectors.

Materials and methods: hPDLCSC were transfected by (i) Lipofectamine 2000 Reagent, (ii) polyethylenimine (PEI), (iii) GBEtectene-Elite transfection reagent, (iv) X-tremeGENE HP DNA Transfection Reagent, (v) MATra Magnet Assisted Transfection, and (vi) compared to lentiviral vectors harboring a eGFP gene. Transfection efficiency was measured by fluorescence microscope and flow cytometry. Meanwhile, cell morphology and growth status were observed in brightfield of microscope in order to estimate the cytotoxicity.

Results: Among these methods, the transfection efficiency of the former 4 methods was not very satisfactory (<10%), especially lipofectamine 2000. However, MATra Magnet Assisted Transfection was the most effective non-viral method (60%). Moreover,
cellular toxicity was lower than that of former 4 methods. Finally, transduction with lentiviral vectors (positive control) obtained the highest levels of transduction (95%).

**Conclusions:** In conclusion, the transfection efficiency of PDLSCs with Magnet Assisted Transfection was higher than the other non-viral transfection regents in this study although it was far less than viral vectors.

**P086**

**Effect of Baseline Defect Angle and Depth on Periodontal Regeneration**

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**Aim:** To examine any possible association between baseline radiographic defect angle/depth and clinical/radiographical outcomes when enamel matrix derivatives (EMD) either alone or with autogenous cortical bone graft (ACBG) were used in the treatment of intrabony defects.

**Materials and methods:** Twenty intrabony defects with a depth ≥4 mm in 10 patients with advanced chronic periodontitis were included. Following sulcular incision, flap reflection and degranulation, the depth of intrabony defect was measured. Then the root surfaces were conditioned with EDTA gel and the defects were randomly treated with EMD alone or EMD + ACBG combination. Clinical parameters were recorded for the deepest site of the defect and standardized periapical radiographs were taken at baseline and 6 months after surgery. Defect angles and the percentage of intrabony defect fill (DF) were calculated on radiographs using Image J software. Pearson method was used for statistical analysis. The study approved by the Institutional Review Board of Health Sciences of Marmara University (MAR-Yç –2009-0048)

**Results:** Both treatment groups demonstrated similar significant clinical and radiographical improvements at 6 months. Statistical analysis revealed significant negative correlation between the defect angle and attachment gain (p < 0.05), also DF (p < 0.01) in both groups. On the other hand, positive correlations were found between the defect depth and attachment gain/DF (p < 0.05) in both groups.

**Conclusions:** Our findings suggested a significant correlation between baseline radiographic defect angle/depth and periodontal regenerative healing at 6 month. Within the limits of this study, it can be concluded that the baseline radiographic defect angle and depth are prognostic indicators of treatment outcome.

**P087**

**Radiological Results of Apical Cystic Granuloma Treated with Cupral**

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**Purpose:** Provision of a safe alternative for apical cystic granuloma treatment.

**Methodology:** We have treated 22 cases diagnosed with apical cystic granuloma with size exceeding 0.5 cm, nine cases in maxilla and 13 cases in the mandible, mainly in multiradicular teeth. 40% of the cases were females and 60% males, aged 25–70 years old. Endodontic cavities were opened with the traditional techniques. Starting from the entrance, we propagated in 1/3 depth of the channels. A Cupral amount was applied with the help of lentyl as deep as it was possible. Depot-suspension of Cupral was created and it was set in motion with the help of apparatus Comfort II. 4-5 sessions were carried out in the interval from 8 to 10 days. Afterwards the cases were filled with Atacamit paste. Results were observed for a period from 3-6-12 and 24 months after treatment, by clinical and radiological view.

**Results:** In the first session, the pain came as a result of proteolytic action of Cupral, noticed only in 30% of the cases. At the end of the fourth session, the patients showed no concerns in percussion and mobility, transiting mucosa color was normal. X-ray examinations after 3–6–12 and 24 months showed that destructive hearths were reduced to the maximum, and after 1 year they were ossified. The earliest radiological analysis of cases showed the effectiveness of the treatment with Cupral compared to the traditional methods.

**Conclusion:** Treatment of apical cystic granuloma with Cupral-de-phorese is a safer alternative, than the treatment with Ca(OH)2 and other antiseptics.

**P088**

**The Application of Enamel Matrix Proteins in Regenerative Periodontal Therapy**

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**Aim:** The purpose of this study was to evaluate the effectiveness of enamel matrix proteins (EMPs) compared with open flap debridement (OFD) in the treatment of intrabony defects in humans.

**Materials and methods:** Twenty-four-paired intrabony defects were surgically treated using a split mouth design. Experimental site were treated with EMPs. Control sites were treated with an OFD. Re-entry surgeries were performed after 6 months. The primary outcomes evaluated in the study were changes in pocket depth, clinical attachment level and defect bone fill.

**Results:** No differences in pocket depths, attachment levels and intra-operative bone measurements were observed at baseline. Six months after surgery, the experimental sites exhibited highly significant reduction in pocket depth (p < 0.001) and gain attachment level (p < 0.001) compared to OFD. Surgical re-entry of the treated defects in experimental group revealed a significantly greater amount of defect fill compared to the controls (p < 0.001).

**Conclusion:** The results of this study indicate that treatment of periodontal intrabony defects with EMPs is clinically and statisti-
cally superior to treatment without EMPs (OFD) for each parameter measured.

**Theme: Dental Treatment & Restorative Dentistry: Prosthetics**

**P089**
The Influence of Resin Luting Agents on the Marginal Fidelity of Lithium Disilicate Onlays: An In Vitro Study
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**Purpose:** The durability of resin-cement interfaces is reported to be the likely cause of failure of bonded porcelain restorations. The purpose of this study was to investigate the marginal fidelity of lithium disilicate glass ceramic onlays cemented to teeth using three different resin luting agents.

**Materials and methods:** Thirty extracted premolars were prepared to receive MOD onlays with circumferential margins in enamel, allocated to three experimental groups on the basis of type of luting agent: (i) Group A – pre-heated restorative composite (Filtek Supreme, Dentsply); (ii) Group B – RelyX Unicem (Self-Etch Adhesive Resin Cement, 3M ESPE); (iii) Group C – Calibra (Esthetic Resin Cement, Dentsply). After the fabrication of thirty ceramic onlays, pre-cementation fit was assessed and post-cementation marginal continuity was evaluated. The teeth were further immersed in 2% methylene blue solution for 24 h at room temperature prior to embedding and sectioning. The extent of dye penetration along the margins was measured at tooth-cement and ceramic-cement interfaces with a stereomicroscope at 63× magnification. The data were analyzed statistically using a non-parametric Kruskal-Wallis and Dunn’s multiple comparisons tests.

**Results:** Calibra was found to exhibit least microleakage values (p < 0.001) at all sites. At the tooth-cement interface, pre-heated composite showed the lowest microleakage (p < 0.05) and RelyX Unicem showed the highest microleakage values (p < 0.01).

**Conclusion:** The results suggest that Calibra resin cement is less influenced by microleakage for cementation of ceramic onlays, hence the risk of post-operative sensitivity, caries, discoloration, staining and failure may be comparatively minimized.

**P090**
The Effect of Surface Treatments on Bond Strength of Dentin
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**Aim:** The purpose of this study was to investigate the effect of different surface treatments (acid, abrasion, laser, laser + acid and air abrasion + laser) on shear bond strength of dentin.

**Materials and methods:** In our study, maxillary central teeth were used including 105 teeth for shear bond strength, six teeth for AFM imaging. Dentin specimens embedded to clear acrylic resin were divided into seven groups: Control, acid etching (37% phosphoric acid), air abrasion (50 μm Al2O3), Er:YAG laser etching (120 mJ, 10 Hz), laser + acid etching, air abrasion + acid etching, air abrasion + laser. After the surface treatments, IPS Empress Esthetic porcelain discs were cemented by using Variolink Veneer light-cured resin cement. After specimens had subjected to thermal cycling (10,000 cycles, 5–55°C), shear bond strength test was applied and fracture types (adhesive, cohesive, mixed) were observed. Surface treated dentin specimens were observed with SEM and AFM. Shear bond strength values were analyzed by one-way analysis of variance and Tamhane’s T2 tests.

**Results:** Porcelain-dentin bond strength values of laser group were statistically higher than control and air abrasion group; Porcelain-dentin bond strength values of acid group were statistically higher than control, air abrasion and air abrasion + laser group (p < 0.05). AFM and SEM images showed changes in dentin surface topography after surface treatments.

**Conclusion:** Laser etching produced no demineralization of peritubular dentin.
Results and conclusion: We determined that microwave disinfection increases the surface roughness of both materials, but this increase is not statistically and clinically significant. Further investigation is needed.

P092
Dimensional Stability of Made Casts from Conventional and Extended-Pour Alginites
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Objectives: The aim of this study was to determine the accuracy of casts made from alginate impression materials with immediate and delayed pouring with the help of a 3D scanner.

Materials and methods: A master model was mounted on a modified articulator designed to standardize impression procedures. A total of 125 impressions were taken and grouped into 25 groups (n = 5) according to alginate brand [CA37 (Cavex), Tropicalgin (Zhermack), Colorchange (Cavex), Hydrogum 5 (Zhermack), and Hydrocolor 5 (Zhermack)] and storage time (0, 1, 24, 72 and 120 h). Impressions were stored at 23 ± 1°C and 100% relative humidity and poured with gypsum at the predetermined storage time. Casts were scanned with a 3D model scanner. The digital models were measured and the data obtained was statistically analyzed using two-way analysis of variance (ANOVA) and Tukey's tests (p < 0.05).

Results: With impressions poured following 0, 1 and 24 h of storage, no statistically significant differences were found between measurements made from the master model and those made from the impression casts (p > 0.05). However, with impressions poured following 72 and 120 h of storage, measurements made from the master model and those made from casts of Tropicalgin and Cavex CA37 alginites were found to differ significantly (p < 0.05), whereas no significant differences were found between measurements made from the master model and those made from Colorchange, Hydrogum 5 and Hydrocolor 5 impression casts.

P093
Fretting and Fretting-Corrosion of 316L Steel in Oral Cavity Environment
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Aim: Destruction processes of prosthetic and orthodontic appliances not only significantly diminish their stability in use but also patients’ comfort. One of causes of these negative processes, although not so well known, appears to be the destruction of kinematic connection in these appliances due to fretting an fretting-corrosion processes [1]. The paper presents the results of research on fretting and fretting-corrosion of stainless steel type 316L - widely used in dentistry, especially in prosthetic and orthodontic appliances.

Materials and methods: The investigations were carried out using original devices and following specially devised methodology worked out by the author. The friction and corrosion tests were performed in the presence of phosphoric buffer (PBS) as well as natural and artificial saliva. For research purposes some original compositions of artificial saliva were manufactured. Destruction processes resulting from fretting and corrosion were analyzed using scanning electron microscopy (SEM) and a confocal microscope.

Results: The research results have shown a strong influence of fretting on the corrosion processes (fretting - corrosion). Material transfer processes in the contact zone were observed and evaluated. Significant influence of investigated lubricants on the processes was also examined. The optimum protection effect was confirmed for human saliva and its substitute with Mucine III content.

P094
Study of Longevity of Fixed Prosthesis in Tunisia
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It’s a retrospective and analytic study conducted on patients who are consulted at the emergency of the dental clinic of Monastir-Tunisia.

Aims of study:
Determination of longevity of fixed prosthesis.
Identification of the failure’s factors.

Materials and methods:
Study concerned 60 patients (41.7% Men and 58.30% Women) aged between 26 and 72 years.

In a practical way, we proceeded by performing:
(1) a clinical examination of a total patients
(2) a radiological examination of the crowned teeth.

Results: A study allowed the repartition of the sample according to age, sex, motivation prosthesis longevity and consultation motive.

Discussion: The results of study were compared to those found in the literature.

Conclusion: This study allowed to identify the factors favouring the appearance of different types of failures.

P095
Anxiety in Prosthodontic Clinic
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Aim: The psychological status of an individual is an effective stimulus for unexpected behavior. The aim of this study was evaluated
the anxiety level for patients in prosthodontic clinic, and the relationship between anxiety level and the difficult patient.

**Material and methods:** One hundred patients, 65 male and 35 female, in the age range 30–65 years were randomly selected for the study.

The State-Trait Anxiety Inventory (STAI) was used to measure the anxiety level of the selected sample.

The difficult patients were identified and classified according to Graves’s classification.

**Results:** The results clarified that, anxiety was influenced by the patients’ age, behavior and social problems. Patients aged <50 had higher anxiety levels than patients aged 50 years or over.

The social problems were a factor which increased the anxiety scores. The anxiety scores for difficult patients were higher than for normal patients, but this difference was statistically insignificant. The social problems were the main factors for creating the difficult patient (p-values < 0.05 were considered significant).

**Conclusion:** The adult patients (age group <50 years) had higher anxiety levels than the old patients. The anxiety scores for difficult patients were higher than for normal patients. The social problems were the main factors for creating the difficult patient.

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**P096**

The Relationship Between Facial Variables and Maxillary Anterior Teeth

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**Introduction:** The maxillary anterior teeth are important in achieving pleasing dental and facial aesthetics. Selection of the appropriate size of maxillary anterior teeth in complete dentures may be difficult, when pre-extraction records are not available.

**Purpose:** The aim of this study was to investigate where there is a relationship between the facial variables (face width, philtrum width, mouth width, interbuccal frenum distance) and mesiodistal width of the six maxillary anterior teeth.

**Material and methods:** One hundred and sixty dental students (80 males and 80 females, aged 18–25 years) of the University of Prishtina participated in the study. Face width (FW), mouth width (MW) and philtrum width (PHW) were measured directly on the subjects, while the interbuccal frenum distance (IBFD) and the width of the maxillary anterior teeth (WMAT) were recorded on the dental cast. All measurements were made using a digital caliper (Boss, Germany) with accuracy of 0.01 mm. Descriptive statistics and regression analysis were calculated.

**Results:** The mean mesiodistal width of six maxillary anterior teeth was 46.13 ± 2.02 mm. There were significant correlation between MW (β = 0.187, t = 2.234, Sig 0.027, Partial 0.177), IBFD (β = 0.289, t = 3.837, Sig 0.000, Partial 0.295) and the width of the maxillary anterior teeth (WMAT).

**Conclusions:** Within the limitation of this study, the mouth width and interbuccal frenum distance can be used as preliminary methods for estimating the width of maxillary anterior teeth for edentulous patients.

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**P097**

The Effect of Implant Shape and Screw Pitch on Bone Microdamage

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**Objective:** The aim of this study was to investigate the effect of implant shape and screw pitch on microdamage in bone during insertion of dental implants.

**Materials and methods:** Thirty custom-made implants (length, 10 mm; diameters, 4.1 mm; cylindrical, tapered and taper-cylindrical shapes; screw pitches, 1.25 and 0.8 mm; classified as 1.25C, 0.8C, 1.25T, 0.8T, 1.25TC, 0.8TC) were randomly placed in goat mandibles with a surgical device. Four cylindrical and four tapered or taper-cylindrical ostectomy sites were made as control groups. Two implant sites were prepared in the edentulous area on each side of the mandible. Immediately after the placement of implants, the bone block with the implant was collected. Histomorphometric analyses of the microcrack length (Cr.l.e, μm/mm²) and damaged bone area fraction (DB.Ar/B.Ar, %) were performed. Wilcoxon tests were done for statistical analysis.

**Results:** (i) On the osteotomy sites of both control groups, no evidence of any type of microdamage was discovered adjacent to the holes. (ii) Microcrack length: 1.25T>0.8T>1.25TC>0.8TC (p < 0.05). (iii) Microcrack surface density: 1.25C>0.8C>1.25T>0.8T>1.25TC>0.8TC (p < 0.05). (iv) Damaged bone area fraction: 1.25C>0.8C>1.25T>0.8T>1.25TC>0.8TC (p < 0.05).

**Conclusion:** (i) The generation of microdamage is the result of the placement of implant. Osteotomy preparation does not generate microdamage. (ii) For the implants with the same screw pitch, implant shape has a significant effect on the generation of microdamage. Taper-cylindrical implants cause the least microdamage to the bone. (iii) For the implants with the same implant shape, screw pitch has a significant effect on the generation of microdamage. Increased screw pitch cause greater microdamage to the bone.

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**P098**

Establishment of Digital Models of Tilted Incisors Restored with Fiber Post-Core and Crown

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**Objective:** This study aimed to establish the three-dimensional digital model of labially or palatally tilted upper central incisors restored with fiber post-core and all-ceramic crown, and to provide the basis for the finite element mechanical analysis subsequently.

**Methods:** A maxillary central incisor extracted from a 25 years old male for periodontic reason and a #1.4 mm fiber post (match-post, RTD) were scanned by micro-CT. Then, the tooth was root canal treated and subsequently prepared according to the requirement of fiber post-core and all-ceramic crown restoration, and was
scanned by Micro-CT again. Then the sectional images obtained from Micro-CT were imported into Mimics software to generate the three-dimensional model of nature tooth, preparation and fiber post. Then the three-dimensional model was imported into Geomagic Studio software to obtain triangular patches of preparation, fiber post, resin core and all-ceramic crown after relaxation and refinement. Finally, models of labially or palatally tilted upper central incisors restored with fiber post-core and all-ceramic crown were designed by adjusting the angle between the long axis of resin core-crown and root (0°, ±10°, ±20°, ±30°) and were imported into SolidWorks software and materialized after surface precision, to obtain the final three-dimensional models.

**Results:** The three-dimensional digital model of labially or palatally tilted upper central incisors restored with fiber post-core and all-ceramic crown were obtained.  

**Conclusion:** This study establishes the three-dimensional digital model of labially or palatally tilted upper central incisors restored with fiber post-core and all-ceramic crown, and provides the basis for the subsequent finite element mechanical analysis.

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**P099**  
**TMD in a Population of Urban Bosnian Young Adults**  
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**Aim:** The aim of this study was to determine the presence of TMD in a population of urban Bosnian young adults.  

**Materials and methods:** A cross-sectional survey was carried out among 1062 randomly selected subjects, 646 females, aged 20-40 years, drawn from the five cities in Eastern region of Republic of Srpska, Bosnia and Herzegovina in 2010/2011. Subjects were screened for TMD using a clinical oral examination, a visual analog scale (VAS) and Oral Impacts on Daily Performances (OIDP) questionnaire. The oral health interview recorded data on socio-demographic information and their previous denture history including number of previous dentures and period of wearing the existing dentures. The existing complete dentures were evaluated by the same prosthodontist for retention, stability, occlusion, articulation and vertical dimension. Participants rated their level of satisfaction with their dentures using a VAS. OHRQoL was assessed through Bosnian version of OIDP, recently validated for this population. The data were statistically analyzed using descriptive statistics and Spearman’s correlation.

**Results:** Overall, 42.1% reported at least one oral impact in the last 6 months. Difficulty eating (33.3%) and difficulty smiling (17.5%) were the most common impacts. The Spearman correlation coefficient revealed no significant correlation between the functional assessment of denture and patients’ satisfaction for any of the factors evaluated.

**Conclusion:** The prevalence of oral impacts was high. There was no significant correlation between the clinical variables assessed by the prosthodontist and subjective variables evaluated by the patient.

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**P100**  
**Quality of Life and Denture Satisfaction in Complete Denture Wearers**  
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**Aim:** This study aimed to assess: (i) oral health-related quality of life (OHRQoL) and denture satisfaction in complete denture wearers and (ii) correlation between patients’ and prosthodontists’ assessment of dentures.  

**Materials and methods:** A sample of 114 community-dwelling adults was selected; all were aged ≥65 years, were completely edentulous, wore complete dentures on both arches. Participants were randomly drawn from four senior day-centres for elderly people. Data were collected using an oral health interview, a clinical oral examination, a visual analog scale (VAS) and Oral Impacts on Daily Performances (OIDP) questionnaire. The oral health interview recorded data on socio-demographic information and their previous denture history including number of previous dentures and period of wearing the existing dentures. The existing complete dentures were evaluated by the same prosthodontist for retention, stability, occlusion, articulation and vertical dimension. Participants rated their level of satisfaction with their dentures using a VAS. OHRQoL was assessed through Bosnian version of OIDP, recently validated for this population. The data were statistically analyzed using descriptive statistics and Spearman’s correlation.

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**Conclusion:** The presence of TMD pain was found in 30.4% of TMD subjects, in 29.2% of cases related to muscle dysfunctions.

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**P101**  
**Diagnosis and Management Challenges of Temporomandibular Joint Dysfunction and Pain Syndromes**  
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**Objective:** Diagnosis and management of temporomandibular joint (TMJ) is challenging. In some cases, patients don’t need to be systematically referred to a TMJ-specialist and general dental practitioners can make diagnosis and offer valuable treatment plan to...
patients. We report here three clinical cases illustrating this approach.

**Methods:** In all three cases, the main clinical symptom was chronic TMJ pain accompanied by clicking and popping. One patient had also a discomfort, locking of TMJ. Panoramic orthopantomography and dental occlusal analysis were systematically performed using a semi-adjustable arcon-articulator following a careful physical examination.

**Results:** In two patients, our results showed a poor occlusion. One with linguoversion of teeth #37–47, responsible for a limited mandibular propulsion and retrusion. The second, with multiple tooth positioning abnormalities, responsible for reduced jaw mobility. In these patients with objectively diagnosed occlusal problems, a treatment associating occlusal bite splint (OBS), physiotherapy, on demand NSAI drugs was given. Clinical signs were rapidly decreased 1 week after the beginning of the treatment and subsequently, restorative dental solutions such as implants or dental prostheses were used to give a long-lasting physiologic occlusion. In our third patient, despite disabling pain, no clinical or radiological abnormality was detected. She had a satisfactory OBS treatment leading to pain relief.

**Conclusion:** Pathophysiology of TMJ pains are not fully understood. Patients with objectively detected occlusal disorders should be distinguished from those with chronic pain but no detectable abnormalities. Treatment strategy should be adapted accordingly. General practitioners may start treatment with OBS, nonspecific pain management and refer difficult cases to specialists. The potential link between anxiety, depression and TMJ pain should be carefully evaluated since anxiety may induce TMJ pain or anxiety may be increased by unrelied permanent pain.

**P102**

**Effect of Core Build-up Materials on Polymerization of Elastomeric Impressions**

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**Objectives:** The purpose of this study was to detect whether multiple core build-up materials could have a negative effect on the polymerization of commonly used elastomeric impression materials, and to evaluate several decontamination methods to eliminate any inhibitory effect of core build-up materials.

**Materials and methods:** The polymerization of six brands of elastomeric impression materials (Virtual, Aquasil, Genie, Correct Plus, Express and Impregum) was evaluated in vitro after direct contact with various core build-up materials (composites resin, flowable composites and resin-modified glass ionomers). The setting of impression materials was visually scored as either inhibited or non-inhibited independently by three different general practitioners. Different methods to prevent inhibition were also tested. The materials were dispensed according to manufacturers’ instructions on exposed dentin of premolar teeth mounted in dental stone. A Chi-square analysis was used to evaluate the results (p < 0.05).

**Results:** Setting inhibition was found with five brands of polyvinylsiloxane impression materials when in direct contacted with four types of core build-up materials, while none of the materials used caused inhibition to the polyether impression material. No decontamination method proved adequate in preventing impression material inhibition except grinding 1 mm from the multicore restoration surface. Examiners were in complete agreement (kappa +1).

**Conclusions:** Under these in vitro conditions, direct contact of polyvinyl siloxane impression materials to some brands of core build-up materials resulted in polymerization inhibition. For optimal result, flowable composites should not be used as a core build-up material with PVS impression materials; polyether is the material of choices.

**P103**

**A 13 Year Follow-Up Study of In-Ceram FPDs**

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**Aim:** The aim of this study was to review the long-term clinical performance of In-Ceram Fixed Partial Dentures (FPDs).

**Materials and methods:** The study comprised a total of 33 FPDs luted with zinc phosphate (n = 17) cement and glass ionomer cement (n = 16). The California Dental Association (CDA) quality rating system was used to clinically evaluate the FPDs. The Kaplan and Meier nonparametric statistical method was used to analyse the fracture rates obtained.

**Results:** The estimated survival rate at 13 years for all FPDs was 60.6%. For the CDA rating “Surface”, the score “excellent” decreased from 91% at baseline to 21% (p < 0.001) at the 13 years clinical evaluation. There were no statistically significant differences between the two luting agents used in regard to the fracture rates obtained.

**Conclusion:** Almost 40% of the In-Ceram ceramic bridges had fractured after 13 years, which emphasize that the risk of fractures has to be taken into consideration when planning for ceramic FPDs that are likely to be subjected to great stress.

**P104**

**Osteonecrosis in Subpontic Bone of Fixed Partial Denture**

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**Aim:** To achieve predictable success Fixed Partial Denture (FPD) prostheses an adequate abutment teeth and supporting structures including a compact alveolar bone beneath the pontic are required. Osteonecrosis is not a disease in the usual sense but is the result of wide variety of local and systemic disorders that eventually lead to ischemia and infarction of the marrow and bone. Osteonecrosis can occur in the jaw bone that can result in ulcers (sores) of gum
tissue, exposed jaw bone and pain. The problem is approximately 90% of subpontic bone demonstrated either ischemic osteonecrosis (68%) and more than 84% of the patients had abnormal radiographic changes. The aim of this study is to discuss osteonecrosis caused of FPD wear. The jaw bones are separated from a trauma-intense and microbiologically diverse oral environment by thin mucosa and periosteum. Trauma to the periosteum may also serve to initiate osteonecrosis in patients wearing dentures or dental prostheses.

**Conclusion:** In conclusion, multifactors of local and systemic condition lead to osteonecrosis caused of FPD such as, extracted infection tooth, poor healing, traumatic prosthetics wear, bisphosphonates medications, herediter and aging process or combination of these factors.

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**P105**

**The Effect of the Gonial Angle on Masticatory Performance in Denture Wearers**

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**Aim:** To analyze the gonial angles of the mandible and to determine the relationship of gonial angles, gender, age, duration of the edentulous period, alveolar ridge resorption and the masticatory performance in complete denture wearers.

**Methods:** Thirty edentulous patients were enrolled in this study. The gonial angles and degree of alveolar ridge resorption of the mandible were measured using panoramic radiographs. Patient’s gender, age and duration of the edentulous period were recorded. The masseter and anterior temporalis muscle activities were recorded electromyographic (EMG) measurements, 3, 6, 9 and 12 months after insertion of the new dentures for the masticatory performance. EMG measurements were recorded during maximum voluntary contraction and while chewing pieces of chewing gum and peanut.

**Results:** There was no statistically significant difference between right (124.12°) and left (124.70°) gonial angles (p > 0.05). There was a statistically significant difference between gender in gonial angles (p < 0.05). The gonial angles of female subjects were greater than male subjects both on the right and left side. No statistically significant difference was seen between the gonial angles and age, duration of the edentulous period and alveolar ridge resorption (p > 0.05). However a negative correlation was found between EMG activity and gonial angles, it was not statistically significant (p > 0.05).

**Conclusions:** Female subjects have larger gonial angles both the right and left sides than male subjects. The size of the gonial angle did not correlate with masticatory performance.

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**P106**

**Full Mouth Rehabilitation of a Patient with Severe Deep Bite: A Case Report**

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**Aim:** Increasing the vertical dimension is essential to resolve each of the problems associated with deep bite. Restorative dentistry, orthodontia and oral surgery are the three disciplines that can perform to help gaining the vertical dimension necessary in these patients.

**Case:** This case report presents increasing vertical dimension with the full mouth restorative treatment procedure for a 40-year-old male patient who exhibited severe deep bite. After clinical evaluations, extraoral examination showed a reduction of the lower facial height and protuberant lips, wrinkles, drooping and overclosed commissures. Additionally, intraoral examination showed a severe anterior deep bite articulation and upper incisors were in contact with the labial tissue of lower incisors. A removable partial denture was made at increased occlusal vertical dimension to use in the first stage of rehabilitation. Diagnostic wax-up was performed at the increased vertical dimension. Then, provisional crowns were fabricated according to this increased vertical dimension. Interim restorations were used for 3 months as a guide for preparing the definitive restorations.

**Conclusion:** The adaptation of patient to the increased occlusal vertical dimension was evaluated. During this period the patient was asymptomatic. Following the evaluation period definitive restorations were completed and routine clinical assessments were made at the 1st week, 1st month, 3rd month and 6th month, then 1st and 2nd year with visual and radiographic examinations.

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**P107**

**An Alternative Method of Adding Eyelashes on Orbital Prostheses**

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**Aim:** Development of an alternative technique about adding eyelash on orbital prostheses.

**Material and method:** Impression of defect and healthy side was made as traditional methods. Ocular prosthesis location was determined according to the anatomical planes. Wax modeling was completed on the dental stone model. Eyelashes were embedded in this wax phase. After this phase, eyelashes were coated with silicone elastomer impression material. After this phase, silicone prostheses finished by traditional methods.

**Results:** In contrast to the traditional method, it was determined that the appearance output as natural as natural eyelash. There was not displacement in eyelashes.

**Conclusion:** Eyelashes bonded with various adhesives in the traditional method. In this proposed method, there was not required adhesive. Thus was prevented dirty appearance, and rupture of eyelashes and orbital prostheses. With this method, orbital prosthesis could be meet the expectations of the high aesthetically image of the patients.
Evaluation of Antimicrobial Activity on Denture Adhesives
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Purpose: The purpose of this study was to evaluate efficacy of two commercially denture cleansers on microorganism.

Material and methods: Staphylococcus epidermidis, Streptococcus viridans, Streptococcus pneumoniae, Escherichia coli, Enterobacter aeruginosa, Pseudomonas aeruginosa, and Candida albicans patient saliva and additionally Staphylococcus aureus and Enterococcus faecalis isolated from isolates of the clinical microbiology laboratory. All microorganisms were transferred into 2 ml Brain-Heart-Infusion Broth containing tubes and were incubated at 36 ± 1°C for 3 h. After incubation, these samples were cultured routinely on different mediums at 36 ± 1°C for 24 h. 0.5 Mc Farland suspensions were prepared for each strain (108 CFU/ml) and two commercially available denture cleansers (Protefix Active Cleanser and Corega) were prepared manufacturers’ instruction. 45 x 2 sets sterile tubes were prepared for five different dilutions (1/2, 1/4, 1/8, 1/16, and 1/32) including mixture of Mc Farland suspensions and denture cleansers. This mixture tubes were stored in incubator at 37°C for 24 h. At the end of 24 h, samples from each tube were inoculated widespread surface Muller Hinton Agar plates and incubated for 24 h again. After incubation, the growth of bacteria was performed by counting the Colony-forming Units.

Results: 1/2 dilution of Protefix was especially determined to be effective on gram-positive bacteria. In all dilutions of Protefix, Pseudomonas aeruginosa, Candida albicans, Enterobacter aeruginosa, and Enterococcus faecalis were not eliminated completely. 1/2 dilution of Corega had an antibacterial activity, except Pseudomonas aeruginosa. 1/4 dilution of Corega had an antibacterial activity on Staphylococcus epidermidis, Streptococcus pneumoniae, Escherichia coli, and Enterobacter aeruginosa.

Prosthetic Rehabilitation of a Patient with Cleidocranial Dysplasia
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Introduction: Cleidocranial dysplasia (CCD) is an uncommon but well-known genetic skeletal disorder affecting bones and teeth. CCD is associated with complete absence or hypoplasia of the clavicles, delayed or deficient closure of the fontanellas and open sutures, retarded exfoliation of the deciduous teeth, retarded eruption of the permanent teeth and multiple impacted supernumerary teeth.

Case: This case report describes the prosthetic rehabilitation of a 31-year-old Caucasian woman with CCD who had been through an unsuccessful orthodontic treatment for 10 years and absolutely didn’t want any more orthodontics. The patient was suffering from severe periodontitis. Hopeless teeth and dislocated supernumerary teeth were extracted and the patient was treated with a removable denture retained by double crowns with flanges to obtain lip support. Regular recalls are planned in order to check if the impacted teeth without any bone retention are erupting and if so to prepare appropriate space in the denture.

Conclusion: Fabricating a removable denture is a viable prosthetic treatment option for adult patients with CCD in order to obtain lip support and to be able to modify in case any of the impacted teeth erupts.
Introduction: The Papillon-Lefevre syndrome (PLS) is a rare autosomal recessive inheritance affecting both the deciduous and permanent dentition. Defective Neutrophil Chemotaxis is found to be responsible for extensive periodontal tissue destruction. Severe periodontitis starts at the age of three or 4 years. The development and eruption of deciduous teeth proceeds normally, but their eruption is associated with gingival inflammation and subsequent rapid destruction of the periodontium. Primary dentition is usually exfoliated prematurely by the age 4 years. After exfoliation, the inflammation subsides and gingiva appears healthy. However, with eruption of the permanent dentition the process of gingivitis and periodontitis is usually repeated and there is subsequent premature exfoliation of the permanent teeth.

Case: A 8 yrs old boy was brought to the Department of Prosthodontics, GMMA Haydapa Education Hospital Istanbul with the chief complaint of multiple tooth loss and inability to at properly. He exhibited hyperkeratosi of palms, soles, elbows, knuckle and kness. The case was diagnosed as Papillon Lefevre Syndrome. As the syndrome can reduce the self-confidence of the patient at a very early age oral rehabilitation must take the forefront. Metal clasps of conventional removable partial dentures, especially used in anterior section, cause aesthetic problems. Traditional acrylic resins have possibility of various physical and chemical incompetence and allergic reactions.

Conclusion: In this case report the combined periodontal therapy and prosthetic treatment was presented with a semi-flexible polyamide material (Deflex).

Purpose: The purpose of this study was to change the bonding force of impression tray to maxillary jaw with new apparatus that impression valve system.

Materials and methods: In this in-vitro study, polyether-coated maxillary jaw simulator (FM) that simulates edentulous maxillary jaw was used. Impression valve system (IVS) was placed into the individual impression tray. Irreversible hydrocolloid impression was taken from FM while IVS was open and closed. Bonding force of impression tray was measured by digital dinamometer. Significance test of the difference between the two groups was performed with Student’s t test. It was observed that impression ray was more easily separated (108 ± 3.9 N) from FM when IVS was open and difficult to seperate (153.7 ± 14.2 N) when IVS was closed. Statistically significant difference between the two groups (p < 0.001) was observed.

Conclusion: Use of IVS makes impression tray easily taken from mouth when taking impression from edentulous maxillary jaw.
Two different dual cure resin cements were polymerized under each ceramic sample using a LED curing unit, thus eight groups were formed (n = 12). Degree of conversion was evaluated using Vickers Hardness Test and depth of cure of samples were measured. Data were analyzed statistically using One-way ANOVA and Tukey’s HSD test (p < 0.05).

Results: Microhardness and depth of cure values were different under same thickness of ceramic discs for two resin cements. As the thickness of the zirconia discs increased, the microhardness values and depth of cure decreased.

Conclusion: Photocuring time cannot be the same for all clinical conditions therefore the manufacturer’s recommendations may not be successful in all situations. Clinicians should be aware that, especially for dual-cure resin cement under thicker zirconia restorations (>2.0 mm), an extended period of light curing or a light unit with a high irradiance should be used.

P115
The Evaluation of Periodontal Changes in Fixed Prosthesis
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Aim: The aim of this study is to evaluated of the influence of fixed prosthesis on the periodontal health status, emphasizing the pathological changes induced by the restorative materials.

Materials and methods: The study group was made by 112 patients evaluated 282 fixed dental bridges by clinical and paraclinical exams. The clinical evaluation included the age of the dental bridge, the material was made of, the periodontal changes, the bleeding index. For the statistical processing of the data was used STATISTICA a special program for medical research.

Results and discussion: Periodontal changes were highlighted by periodontal bleeding index, with significant values for 46.43% of the cases, by periodontal pockets in 12.5% of the cases, by recession in 3.57% of the studied cases.

Conclusions: There is a significant correlation between the material in use for the dental bridges and the presence of the periodontal damage, specially for the metal – acrylic and cast metal crowns.

P116
Evaluation of Materials Facing Zirconia Primary Crowns in Telescopic Systems
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Aim: The purpose of this in vitro study was to evaluate the usage of casted non-precious alloy secondary crown instead of electroformed gold in secondary crowns on zirconia primary crowns in terms of long-term retention force changes, wear and phase transformation.

Materials and methods: Eight groups, each containing six samples, consisting of zirconia primary crown-electroformed gold secondary crowns (ZA) or casted non-precious alloy secondary crowns (ZC) with conus angles of 0°, 2°, 4°, 6° were manufactured. Double crowns were subjected to 10,000 insertion-separation cycles in artificial saliva and retention force was measured. X-ray diffraction and scanning electron microscope analysis were performed on the surfaces of the samples.

Results: The highest retention forces were obtained from ZC-0° group (72.09 N–71.26 N) and the lowest were obtained from ZA-4° (12.73 N–19.44 N) and ZA-6° (5.36 N–19.73 N) groups in the beginning and after 10,000 cycles respectively and the retention force increased as the conus angle decreased. ZC material couple showed higher retention force values for all conus angles, also wear was observed in the zirconia primary crowns of only ZC-0° and ZC-2° groups and all secondary crowns. The monoclinic phase ratio on the surfaces of zirconia primary crowns decreased after the experiments.

Conclusion: Retention force values obtained from ZC material couple were higher than ZA material couple and higher than the suggested range. Although ZC material couple was more advantageous than ZA material couple in terms of cost and stability of retention force, their retention force was too high especially with low conus angles.

P117
Corrosion Behavior of Ni- Cr Alloys in %10 Carbamide Peroxide
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Purpose: The aim of this study was to investigate the corrosion behaviour of two different commercially available Ni- Cr metal alloys exposed to %10 carbamide peroxide solution using electrochemical technique.

Material and methods: Two types of dental metal alloys [Bellabond Plus (Ni- Cr- Mo) and Wiron 99 (Ni- Cr- Mo)] were evaluated. Fabrication of test samples (n = 3 for each alloy) was carried out using lost-wax technique. Each sample with its contact surfaces open were immersed in polyester material, which was then poured into a Teflon cylinder mould, and in this manner the rotary disc electrodes were constructed. The experiments were carried out in a galvanic cell that was open to air and the temperature was kept constant. Cyclic potentiodynamic polarization tests were used to evaluate the corrosion behaviour of metal alloys in 10% carbamide peroxide of bleaching agents with pH 6, 5 at 37°C. Corrosion values of metal alloys were detected electrochemically. Each sample was polarized three times and the mean of all were calculated.

Results: Results showed that the dental metals investigated in this study corroded in 10% carbamide peroxide solution. Corrosion rate values of Bellabond Plus and Wiron 99 alloys were 1.87 µA/cm² and 3.21 µA/cm² respectively.

Conclusion: Wiron 99 alloy exhibited the higher corrosion tendency in carbamide peroxide solution. Bellabond Plus alloy demonstrated more desirable corrosion resistance properties comparing to Wiron 99 alloy.
P118

Accuracy of Bite Mark Analysis: An Affirmation to the Guilt
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Purpose: The study aims to conduct the most accurate bite mark overlay fabrication technique.

Materials and methods: Thirty subjects both male and female with age above 20 years with complete set of natural upper and lower anterior teeth were selected for this study after Institutional Ethical Committee Approval. The upper and lower alginate impressions were taken from 30 subjects. Die stone model was obtained from each impression; overlays are produced from the biting surfaces of six upper and six lower anterior teeth using the following methods like: Hand tracing from study casts, Hand tracing from wax impression method, Radiopaque wax impression method and Xerographic based method.

Results: Xerographic method was the most accurate with highest reproducibility for bite mark analysis compared to hand tracing from wax method and hand tracing from study casts.

Conclusions: Comparison techniques used in bite mark analysis are many and varied, the choice of technique depending largely on personal preference. Until recently, no one technique has been shown to be better than the others and very little research has been carried out to compare different methods. This study evaluated the accuracy of direct comparisons between suspects’ models and bite marks with indirect comparisons in the form of conventional traced overlays of suspects with the xenographic technique being the best.

P119

Endocrown Restorations in Anterior and Posterior Regions of the Dental Arch

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Introduction: Restoration of endodontically treated teeth is a common problem in restorative dentistry, related to the fractures occurring in such teeth. The access preparation for endodontic treatment causes the loss of the roof of the pulp chamber, which may account for the relatively high fracture incidence documented in pulpless teeth. Posts have often been described as not to reinforce endodontically treated teeth. Moreover, some authors noticed that posts may interfere with the mechanical resistance of teeth, increasing the risk of damage to residual tooth structure. With the development of adhesive techniques and ceramic materials, the advantage of adhesive restorations is that macroretentive design is no longer a prerequisite if there is enough tooth surface for bonding. All-ceramic endocrown restorations have been used as an alternative to post-core restorations in teeth with excessive tissue loss by utilizing the adhesive bonding techniques. The objective of this restorative approach is to provide adequate function and esthetics in the anterior and posterior regions of the dental arch.

Case: Patients presented in this report were chosen from the group who applied for treatment in our clinic having excessive tissue loss in their anterior teeth, due to trauma and posterior teeth because of profound caries. After the endodontic treatments, tooth preparations were accomplished. Additional silicone materials were used for impressions. Restorations were made by pressed glass ceramics (Ivoclar-Vivadent, Schaan, Liechtenstein) and cemented by a self curing (Super-Bond C&B- Sun Medical Co. Ltd, Shiga, Japan) adhesive resin material.

Conclusion: Patients were followed 1 year after the insertion of endocrown restorations.

P120

Effect of Carbamide Peroxide on Elemental Release from Heat-treated Alloy

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Objective: This study investigated the effect of various heat-treatments simulating porcelain firing on elemental release from a base metal alloy subjected to 10% carbamide peroxide (CP).

Methods: Cylinder shaped 30 specimens were cast from Ni-Cr alloy (Wiron 99) and divided into following three groups (n = 10) after finishing: (1) casting (as-cast state), (2) casting, simulating firing procedure according to a mean value (950°C for 5 min) (3) casting, simulating firing procedure according to general porcelain firing cycle without applying porcelain. Then all groups were divided into additional two sub-groups, each contains five samples. Test groups were exposed either phosphate-buffer solution (PBS) as control or CP for 15 days; then total mass and individual elements (Ni, Cr and Mo) released into solutions were measured by means of atomic absorption spectrometry. Differences in total mass released were determined using ANOVA and Dunnett T3 test.

Results: Presence of CP induced the total mass released compared to control group; this effect was recorded in both as-cast and heat-treated groups. For PBS and CP treatments, the order of total mass released was 3, 2, 1 and 1, 2, 3; respectively. All differences were found statistically significant. With in the limitations of this study, results showed that procedures for porcelain firing have different effects in presence of CP. For all groups (except for group 3/PBS treatment), the order of individual elements released was Ni, Mo, Cr. The increase in amount of Cr released was higher than Mo released for group 3/PBS treatment.

Theme: General Dentistry and Oral Health

P121

Efficacy of Elaeagnus angustifolia Topical Gel in the Treatment of Symptomatic Oral Lichen Planus

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Background and aims: The purpose of this study was to determine efficacy of 19% Elaeagnus angustifolia (EA) topical gel in the treatment of symptomatic oral lichen planus.

Materials and methods: Patients with symptomatic oral lichen planus referring to the Department of Oral Medicine, Faculty of Dentistry at Shahid Beheshti University of Medical Science were asked to participate in the study. Twenty-eight patients who were histopathologically diagnosed with lichen planus were divided into two groups (15 in the case and 13 in the control groups). The subjects were randomly assigned to either topical gel of EA or placebo in a double – blind manner. They were then instructed to apply the medication on dried lesions three times daily. Pain and size of the lesions were evaluated after 2 weeks. Data were analyzed by SPSS 12.0 software, using t-test, paired t-test, Fisher’s exact test and chi-square test.

Results: Twenty-eight patients (m/f: 7/21) with symptomatic oral lichen planus participated in the study. Fifteen patients (m/f: 4/11) received EA gel and 13 patients (m/f: 3/10) received placebo. There was a 75% decrease in pain (33.3% in the case and 7.7% in the control group), and a decrease of 50% in size (33.3% in the case group) and 75% only in 7.6% of the case group.

Conclusion: The results suggest that 19% EA gel is efficient in the treatment of symptomatic oral lichen planus, with anti-inflammatory and analgesic effects, as well.

P122

Good Occlusion Impact on Chewing Muscles Electromyographic Activity
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Aim: To study the relationship between teeth occlusion and muscle activity in patients with healthy teeth expressed by number of teeth contacts.

Material and method: The sample consists of 20 patients (10 M/10 F) from 25 to 40 years old (2011–2012). The patients had full dental formula up to the second molar, belonged to Angle I classification. The electromyography data were conducted with an eight channel electromyography on a computer allowing recording and graphic presentation. Electrodes were located on masseter muscle and anterior temporal muscle on both sides over Bausch joints. We verified the teeth contacts from 17 to 27. Each patient clenched their teeth for a few seconds registering the electromyography potential.

Results: 25% of teeth contacts of first group and 28% of second group were found on first molar, 25% of first group and 20% of second group are found on premolars. 24% of contacts of first group and 10% of second group were recorded on canines and incisive. We calculated the POC for each patient for masseter and temporal muscles, mean values 86.49% (temporal), 85.59% (masseter) with a mean of 86.04%.

Conclusions: The results verify the systematic impact of occlusal contacts on the elevator muscle activity during clenching. The study gives a good relation between the morphology expressed as a number of the teeth contact and their function expressed by EMG waves.

P123

Awareness and Perception of Dental Students on E-learning Use
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Aim: To assess the awareness and perception of dental students on the use of e-learning as an instructional tool in dental education.

Materials and methods: A descriptive cross-sectional study was undertaken using one hundred and five 5th and 6th year clinical dental students. Ethical approval was granted by the relevant body. Data collection was by self-administered questionnaires consisting of five sections. Information obtained include; socio-demographic characteristics, awareness on e-learning, perception on benefits and challenges of e-learning, perception on e-learning compared with conventional classroom learning.

Results: Majority (94.3%) of respondents have heard of e-learning, 61.5% have prior use of at least one e-learning tool with CD/DVD-ROM and audio/visual conferencing been the most commonly used e-learning tools (32.4%) and virtual reality/simulation been the least used (1.0%). Increase access to lecture materials and ease of lecture delivery to a large number of students were identified as two major benefits of e-learning (68.6% and 55.2% respectively) while poor electricity supply and poor internet access were the major challenges confronting e-learning (65.7% each). Majority of respondents (93.3%) strongly agreed or agreed that e-learning should be combined with conventional classroom learning.

Conclusion: The use of e-learning in dental education is an exquisite innovation with numerous benefits. However, poor electricity supply and poor internet access are major obstacles that may militate against its use as an instructional tool in dental education.

P124

Surgical Treatment of Odontogenic Infections with Acute Periapical Lesions in Children
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Introduction: Bacterial infections of odontogenic can progress into periapical lesions. In cases of periapical abscess, surgical incision and extraction of teeth is preferred to nonsurgical treatment.

Materials and methods: In this historical study, twelve patients under 10-year-olds took part with variable periapical lesions. All teeth showed radiographic evidence of periapical lesions, varying in size from 5 to >10 mm.
Patients were take hydroxizin syrup as premedication before the application of local anesthesia (3% perilocain), incision with scalpel No. 15, drainage abscesses and then analgesic and systemic orally antibiotics prescribed for them.

Results: The rate of complete healing for each patient after procedure was good (95%).

Conclusion: Surgical treatment should be considered as the first choice in teeth with acute periapical lesions.

P125
HMGB1 Induced Alveolar Bone Cells Proliferation and Migration
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High mobility group box 1 (HMGB1) is a protein released from damaged cells during inflammation. Upregulation of HMGB1 was found in many inflammatory diseases including periodontitis. Our previous study showed HMGB1 had proliferatory and chemotactic activity in human gingival fibroblast (HGF) and human periodontal ligament fibroblasts (HPDLF) suggesting key role of HMGB1 in periodontal tissue healing.

Aim: In this study, we investigated the effect of HMGB1 on the proliferation and migration of human alveolar bone cells (ALV) as well as expression of its receptors, TLR2, TLR4 and RAGE.

Materials and methods: ALV was cultured in the presence of 10 materials and as expression of its receptors, TLR2, TLR4 and RAGE.

Results: HMGB1, at 50 ng/ml, was able to induce ALV proliferation and induced migration at 100 ng/ml. Surprisingly, HMGB1 receptor, TLR2 and TLR4, levels were found downregulated. Nevertheless RAGE expression was slightly upregulated.

Conclusions: Proliferation and migration are crucial abilities of the cells required for appropriate wound repair. The data suggested HMGB1 promising role in alveolar bone healing. Detailed mechanism, possible through RAGE receptor, requires further investigation before future clinical application.
Results: The study yielded an 86% response rate. The participants were aware of the nearby dental practices (78%) but only few were aware of opening and closing hours (35%). The most common complaint received by the public was the mouth ulcers (62%). Electric tooth brushes were the products least available (54% of the pharmacies). The pharmacist were least confident in providing information regarding dental caries and tooth whitening (62% and 58% respectively) the pharmacist showed interest in playing an active role as an integral part of primary healthcare teams with the guidance of dental bodies.

Conclusion: Community pharmacists in Malaysia provide oral healthcare advice to public and they can be an integral part of oral healthcare workforce by providing them with more support and training.

P128
Bisphosphonate Related Osteonecrosis of Jaws (BRONJ)
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Introduction: Bisphosphonates are widely used in the management of metastatic disease to the bone and in the treatment of osteoporosis. BRONJ is a serious condition that can be reported by dental practitioners and physicians in cancer and osteoporosis patients on bisphosphonate therapy.

Materials and methods: This is a computer based research that includes Medline and Pubmed databases. Out of 156 articles, eight of them were clinical trial and 38 of them were review article.

Results: People who receive frequent, high dose of bisphosphonates over long period of time and have periodontal disease, poor oral hygiene, invasive oral surgery such as dental extraction are the most one who is at greatest risk for developing BRONJ.

Conclusion: The dental practitioners, physicians and patients must come to a consensus before any dental treatment begins and dental practitioners must ask patients specifically about bisphosphonates as a part of their medical history.

P129
Oral Self Care in an Elderly Population
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Objectives: To assess knowledge, attitude and practice of oral self-care in an elderly population.

Method: A descriptive cross-sectional study of elderly people from the age of 65 years and above who resided at the Lagos Island Local Government Area was conducted using interviewer-administered questionnaires.

Results: Of the 200 elderly surveyed, 54.9% clean their teeth with chewing stick rather than toothbrush with fluoridated toothpaste while 48.5% clean their teeth twice daily. 72.6% have never visited the dentist in their lifetime. It was observed that there is a strong association between the level of education and the knowledge (p-value = 0.0000) and attitude (p-value = 0.0003) of oral self-care among the elderly.

Conclusion: From this study, it can be observed that there is poor oral self-care which can be directly related to the poor negative attitude towards the utilization of dental services due to little or no available funds for routine dental check-up. Therefore, an increased need for public enlightenment and awareness campaigns are highly recommended.

P130
Effects of Medicinal Plants on Candida Albicans
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Aim: There has been growing interest in recent years for the use of organically grown plants for medicinal purposes. The aim of this study was to determine which medicinal plant had the most in vitro antimicrobial activity on Candida albicans.

Material and methods: MATEthanonic extracts of Sinapis, Thymi, Rosmarini, Hyperici, Teucrii, Absinthii, Plantaginis, Salviae, Camelulae, Calami, Malvae, Tiliae, Hipocastanii, Bursae, Majoranae and Millefolii and essential oils of Rosmary, Salviae, Satureiae and Thymi were prepared. Candida albicans ATCC 10231 was first multiplied by growing overnight at 37°C in Mueller-Hinton Broth at pH = 7.4. Antimicrobial activity of medicinal plants extracts was determined by the dilution method. Four dilutions (300, 150, 75 and 36.5 µg/ml) of medicinal plants extracts and four dilutions (100, 50, 25 and 12.5 µg/ml) of essential oils were mixed with Saburaud dextrose agar and poured into Petri dishes in a 4 mm layer. Candida albicans was inoculated at about 106 mo/cm³ and incubated at 37°C for 48 h. The presence of colonies on all samples was tested in triplicates.

Results: Results are shown as minimum inhibitory concentration (MIC). Extract of Hipocastanii had a strong antimicrobial activity (MIC = 37.5 µg/ml) and Rosmarini, Hyperici and Salviae had no effect at all. The essential oil of Satureiae was inhibitory at 12.5 µg/ml, while Thymi had no effect on the growth of Candida albicans.

Conclusion: The ethanolic extract of Hipocastanii and the essential oil of Satureiae may be used for the preparation of antimycotic medicines for oral candidiosis.

P131
Quantitation of the Stem Cell Derived from Human Exfoliated Deciduous Teeth Using a Luminescent Cell Viability Assay before the Culture
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Objective: Stem cells from human exfoliated deciduous teeth (SHED) have been identified as a novel population of stem cells capable of differentiating into a variety of cells types. Because of the small numbers that could be isolated from a single tooth the researchers avoid to count the total number of stem cells. Here we provide a new easy and useful method for the enumeration of SHED using a luminescent viability assay.

Materials and methods: 156 normal exfoliated human deciduous teeth were collected from young children under sterile conditions. SHED were isolated using collagenase/dispose digestions solutions. Separated stem cells were placed in opaque-walled multiwall plates in culture alpha Modified Eagle’s Medium. For dental pulp stem cells quantitation a simple method for determining the number of viable cells based on ATP concentration was used. Cells attached to the bottom of the multwall plates were directed toward the osteogenic, adipogenic, lineages at the respective passages. Flow cytometry was used for immunophenotyping of cultured dental stem cells.

Results: Cells counted with the luminescent assay, after culture formed fibroblastic morphology and expressed the mesenchymal stem cell markers CD29, CD105, CD146, CD44. There was a correlation between the number of plates cultured for culture and the number of mesenchymal stem cells after culture. Osteogenic and adipogenic differentiation of the cells was performed.

Conclusion: We provide a simple method for mesenchymal stem cells from human SHED count before culturing. This is important for tissue engineering purposes and for the stem cells banking.

P132
Antibacterial Effects of Propolis on Oral Aerobic Bacteria
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Aim: Propolis has bactericidal and fungicidal activities and is used as an alternative treatment for infections. The aim of this study was to determine which propolis solution had the most in vitro antimicrobial activity against selected oral aerobic bacterial cultures and to determine if the solvents used had any such activity.

Material and methods: Propolis was extracted by four solvents: ether, acetone, benzene and methyl-chloride. Enterococcus faecalis ATCC 19433, Pseudomonas aeruginosa ATCC 10145 and Staphylococcus aureus ATCC 25923 were grown overnight at 37°C in Mueller-Hinton Broth at pH = 7.4. Antibacterial activity of medicinal plants extracts was determined by the dilution method. Four dilutions (300, 150, 75 and 37.5 μg/ml) of medicinal plants extracts were mixed with Mueller Hinton Agar and put into Petri dishes and the tested bacteria inoculated at about 106 bacteria/cm². The Petri dishes were put into anaerobic pots and incubated at 37°C for 24 h. All samples were tested in triplicates.

Results: Results are shown as a minimum inhibitory concentration (MIC). Aethanolic extracts of Thymi, Rosmarini and Plantaginis showed antimicrobial activity (MIC = 37.5 μg/ml) against Staphylococcus aureus and Pseudomonas aeruginosa. Acetone solution of propolis had the strongest antibacterial effect against Pseudomonas aeruginosa. Increasing concentrations of solvents did not have any in vitro antimicrobial activity on tested bacterial strains.

Conclusion: Propolis extracted by non-polar solvents showed significant in vitro antimicrobial activity justifying further clinical investigations.

P133
The Effects of Medicinal Plants on Oral Anaerobic Bacteria
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Aim: Use of medicinal plants extracts as antimicrobial agents has received much attention recently. Therefore, the aim of this study was to determine which medicinal plant aethanolic extracts had the most in vitro antimicrobial activity against selected oral anaerobic bacterial cultures.

Material and methods: Aethanolic extracts of Sinapis, Thymi, Rosmarini, Hyperici, Teucrri, Absinthisi, Plantaginis, Salviae, Calendulae, Calami, Malvae, Tiliae, Hipocastani, Bursae, Majoranae and Millefolii were prepared. Cultures of anaerobic bacteria, namely Actinomyces odontolyticus ATCC 17929, Streptococcus mitis ATCC 6249, Streptococcus sanguinis ATCC 10556, Eikenella corrodens ATCC 23834, Fusobacterium nucleatum ATCC 25586 and Streptococcus mutans ATCC 25175, were multiplied overnight in Mueller-Hinton Broth at 37°C and at pH = 7.4. Antibacterial activity of medicinal plants extracts was determined by the dilution method. Four dilutions (300, 150, 75 and 37.5 μg/ml) of medicinal plants extracts were mixed with Mueller Hinton Agar and put into Petri dishes and the tested bacteria inoculated at about 106 bacteria/cm². The Petri dishes were put into anaerobic pots and incubated at 37°C for 24 h. All samples were tested in triplicates.

Results: Results are shown as a minimum inhibitory concentration (MIC). Aethanolic extracts of Thymi, Rosmarini and Salviae showed antimicrobial activity (MIC = 37.5 μg/ml) against all investigated oral anaerobic bacterial. Extracts of Hyperici and Calendulae inhibited the growth of all investigated bacteria except Streptococcus mutans. Only the extract of Majoranae at MIC = 130 μg/ml had the inhibitory effect on the growth of Streptococcus mutans.

Conclusions: Certain medicinal plants have shown in vitro antibacterial activity against known oral anaerobic pathogens which justifies further clinical investigations.
P134

Knowledge and Compliance with Post Exposure Management among Dentists

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Aim: To assess the knowledge and determine the level of compliance with post exposure management protocol among dentists.

Materials and methods: A descriptive cross-sectional study was done with a study population of 124 dentists. Using self-administered questionnaires, information was sought on knowledge of managing exposures—first aid and prophylaxis as well as compliance when exposed. Permission was obtained from the ethics committee.

Results: 112 (90.3%) of the 124 questionnaires distributed were completed. Majority of the respondents (74.2%) knew the correct steps to take in managing exposures however, a proportion of them were not familiar with first aid procedure when exposed. 51.8% of the respondents had experienced an exposure of which only 20.7% reported and 27.6% requested blood tests for the source patient(s).

Conclusion: The level of compliance with post exposure management is inadequate therefore; there is a need to update the knowledge and device methods of encouraging compliance with post exposure management among dentists.

P135

Infection Control Practices for Trainee Dentists in Japan

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Introduction: In Japan, after passing the national board dental examination, dental graduates must train for a further year as a trainee dentist. This training can be in the dental hospital and private dental clinics. The aim of this study was to determine the compliance of the infection control procedures of trainee dentists in the two different environments.

Subjects and methods: A questionnaire about infection control procedures was completed by 58 trainee dentists. We asked about the practice of standard precautions of infection control procedures in the dental hospital (The Nippon Dental University at Niigata) and in private dental clinics. A Likert-type scale was used to gauge positive responses as “Always” and “Usual” and negative responses as “Sometimes” and “Never”.

Results and discussion: The trainee dentists reported wearing gloves in the hospital (100%), in clinics (97%). Changing their gloves between patients in the hospital (100%), in clinics (66%). They washed hands before treatments in the hospital (100%), in clinics (88%). Take gloves when writing medical records in the hospital (95%), in clinics (74%). Finally, 25% of trainee dentists responded that they were not able to perform infection control procedures in private dental clinics.

Private dental clinics are usually small scale with a few full-time dentists. There may be differences in the standards of the infection control procedures between the dental hospital and private dental clinics. The training environment has a significant effect on the compliance of infection control procedures.

P136

Oral Cavity Mucosa Cytogram Peculiarities in Patients with Lichen Planus

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Objectives: To give cytological evaluation of oral mucosa epithelium state in patients with lichen ruber planus.

Materials, methods and treatment: The object of our research was cheek tunica mucosa swabs of 20 healthy patients and 40 ones with erosive lichen ruber planus. Patients at the age of 32–47 were under study. Swabs were dried, fixed in spirit-acetone (1:1) and May-Grunvald and Romanovsky-Himsa stained. Combination therapy with liquid extract “Leyar” and phototherapy (helium-neon laser radiation of 20 mW output power) were used. Epithelial cells in various stages of differentiation, contaminated epithelial cells, dystrophically changed ones, epithelial cells with neutrophil invasion, mononuclears, segmentonuclear neutrophils and lymphocytes per 1000 cells were calculated in stained swabs. Basing on the cytogram results in order to evaluate the proliferation and differentiation processes of cheek tunica mucosa epithelium “left shift” index and “epithelial cells differentiation” index were calculated. The obtained data analysis and evaluation of credibility of differentiating averages were done using Student’s test. Indexes changes were considered to be credible for p < 0.05.

Results: We observed considerable increase of neutrophils, monocytes and dysstrophically changed epithelial cells in patients with erosive lichen ruber planus. Epithelial cells proliferation growth was also seen. The applied method has strong therapeutic effect. Most indexes have normalized by the 14th day of the session.

Conclusion: Oral cavity mucosa cytogram analysis in patients with erosive lichen ruber planus before and after the treatment can be used as a sensitive diagnostic test and for effectiveness evaluation of its treatment.

P137

Non-Syndromic Multiple Supernumerary Teeth: A Case Report

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Aim: Supernumerary teeth may be defined as any teeth or tooth substance in excess of the full complement of primary and permanent teeth. Multiple impacted supernumerary teeth are rare. This case report presents a case with nonfamilial and nonsyndromic multiple supernumerary teeth.

Case presentation: Nine-year-old male patient referred with the chief complaint of the unpleasant appearance of his anterior teeth to Department of Pediatric Dentistry, University of Ondokuz Mayis, Turkey. Medical and family histories were noncontributory. Extraoral findings did not show any abnormality. Intraoral examination revealed many deep caries lesions and a supernumerary tooth between his maxillary central incisor teeth. Radiographic examination revealed the presence of 11 supernumerary teeth in all four quadrants. The proposed treatment plan consisted of extraction of the erupted and unerupted supernumerary teeth in order to immediate initiate orthodontic treatment. The supernumerary teeth were surgically removed and sent for histopathological examination, which revealed features which are suggestive of odontoma of the compound type. At present the patient is undergoing orthodontic treatment and his regular clinical and radiographic follow-ups scheduled.

Conclusion: This case highlights the treatment options of a patient with multiple supernumerary teeth and the need for multidisciplinary planning and treatment.

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Early Non Invasive Detection of Premalignant Lesions of Oral Mucosa

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Aim: The aim of our report is to familiarize medical public with the possibility of early detection of malignant and premalignant lesions of the oral mucosa and to evaluate our experience with the method of light-induced natural autofluorescence of tissues.

Materials and methods: Carcinoma of the oral cavity is a serious and relatively common disease, which is often overlooked and underestimated by the lay and professional public. For this reason, we encounter bad or late diagnosed neoplastic disease of the oral cavity in our practice. Today’s medicine offers several methods for early diagnosis of malignant neoplasms of oral mucosa. One of the methods – natural tissue autofluorescence provided by apparatus Velscope – is used at our clinic. Principles of the method and our clinical experience with Velscope device are summarized in our poster.

Results: Natural autofluorescence method seems to be beneficial for increasing success in early detection of malignant diseases of oral cavity, as well as for allowing radical surgery. For correct evaluation of the results of investigations using this method, it is required to have certain experience, because of the high sensitivity and low specificity of this examination.

Conclusion: By using the method of natural tissue autofluorescence we can early detect lesions, that are hard to recognize under polychromatic day light. With help of this device, we can also determine the range of safety margins in radical surgery or find the ideal biopsy sampling point. This method is also suitable as a dispensarizing method by capturing control images.

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Chronic Conditions’ Policies: Oral Health, A Felt Absence

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Introduction: Dental caries is the most common non-communicable disease, affecting more than 90% of population. All other mouth diseases have significant impacts on general health, well-being and productivity. This research aimed to identify how oral health is considered in elaboration of public policies for non-communicable diseases.

Methods: This was a cross-sectional quantitative research and data were collected between 12/05/2012 and 12/10/2012 in WHO website, “media centre” section, with the expression “non-communicable diseases”. It resulted in 12000 publications. Filtering in advanced search, asking for “Find results with all of the words, 100 results, Language English, File Format.pdf, Occurrences in the title of the page, Domain who.int, Sort by date” it produced 45 publications. Analysis occurred from 12/10/2012 to 12/15/2012, using the tool “Find” on Windows 7 to identify the key words: oral health, dental caries, and periodontal disease.


Discussion: The inexpressive presence of “oral health” (7) could be credited to a wider approach of health, but what about “dental caries” (just 4) and “periodontal disease” (0), the most prevalent oral non-communicable diseases? The undisputed leadership that WHO plays in combating diseases, through admittedly efficient health policies, have already brought many benefits to millions of people. Partnerships with several organizations from different nature seem highly positive. But it is undeniable that oral health has been overlooked in policies to combat non-communicable diseases, particularly cardiovascular diseases and diabetes, which have more interactions and oral manifestations.

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Assessment of Dental Anxiety among Dental Students during Pre- Clinical and Clinical Year

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Aim: Anxiety is a response to a perceived threat or danger and is recognized as a significant barrier to the utilization of oral health care service. The purpose of this study was to evaluate the factors
associated with dental anxiety and to assess the most provoking stimuli during the dental treatment among dental students in their pre-clinical and clinical years.

**Materials and methods:** All data were collected by self-report questionnaire. One hundred sixty-six dental students completed a 2-section questionnaire which consists of sociodemographic information including age, gender and frequency of dental visits and a second section in which students answered questions about factors related to dental anxiety. Chi-square test was used in statistical analysis.

**Results:** The most provoking stimuli were “seeing the needle”, “the noise of dental equipment” and “the view of dental equipment” among pre-clinical students respectively. Post clinical training values were significantly decreased (p = 0.0001, p = 0.0049, p = 0.0005). No statistically significant difference was observed between genders according to the pre-clinical year questionnaire answers. Moreover statistically significant differences in anxiety values were found at female students between clinical and pre-clinical years.

**Conclusions:** According to our findings we suggest that the change in the reported dental anxiety of the students during the years of dental studies in the present study may be related with the increased dental education and clinical training that the students acquire throughout the dental school.

**Theme: Implantology: Immunology**

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**Oral Lichen Planus in Relation to Transaminase Levels, Hepatitis C and B Virus**

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**Aim:** The aim of this study was to evaluate the relationship of transaminase levels, hepatitis C and hepatitis B virus infections in patients with oral lichen planus (OLP) and to compare to healthy controls.

**Materials and methods:** The study protocol was approved by the local Committee of Research and Ethics of Marmara University. Thirty patients with OLP and 30 age-gender matched healthy controls were participated in the study. All patients were subjected to routine blood test and the estimation of serum glutamic oxaloacetic transaminase (SGOT) and serum glutamic pyruvic transaminase (SGPT), detection of anti-HCV antibody and hepatitis B surface antigen (HbsAg) by using the enzyme immunoassay. The data were statistically analyzed using Student-t, Mann-Whitney U and Chi-Square Fischer’s Exact tests.

**Results:** The difference between OLP patients and healthy controls of SGOT, SGPT, anti-HCV antibody and HbsAg into group was not significant (p > 0.05).

**Conclusions:** This study identified that there was no association between OLP and elevated SGOT/SGPT levels, hepatitis C and/ or hepatitis B virus.

**Theme: Implantology: Implantology**

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**The Biomechanical Interest of Damping Materials in Dental Implantology**

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**Aim:** Finite element analysis (FEA) has been frequently used to study the loading situation of dental implants and bone resulting from the fixation of non-passively fitting restorations. This work presents a numerical study performed with FEM of new dental implant system.

**Materials and methods:** A conventional dental implant system was redesigned and an artificial periodontal ligament was interposed between the implant and the bone. The aim was to attenuate the stress in the bone surrounding the implant. The new system was assessed and the interface stresses compared with the ones provoked by the conventional implant.

**Results and conclusion:** In general, the novel dental implant provoked lower interface stresses due to the stress shielding effect of the artificial periodontal ligament.

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**An Alternative Healing Abutment Production Technique for Deeply Placed Implants**

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**Aim:** A healing abutment is placed into the implant to help the soft tissue healing around the implant after first or second stage surgery. Conventional prefabricated gingival formers are designed for a machined abutment and are produced in several lengths and project through the soft tissue into the oral cavity. Prefabricated healing abutments may fail to provide support for the supracrestal soft tissue in deeply placed implant sites. In some clinical cases, there is a need to be placed the implant deep subgingivally due to bone availability. Especially in patients with cleft palate and patients with severe bone resorption, the overlying soft tissue may be too thick to be transversed by the conventional highest length healing abutment. If implants are placed deeply; an alternative technique can be used to achieve ideal tissue form.

**Case:** A 20-year-old male patient presented with edentulous mandible and operated maxilla for cleft palate. Four tissue level
implants were placed in left and right molars region and tuber region of operated edentulous maxilla. During the prosthodontic phase, a custom healing abutment was planned. Because the implant was deeply placed. In this technique, implant transfer piece was used rather than healing abutment. The implant transfer piece was screwed on suitable analogues to ease handling during restoration procedures. The implant piece was fabricated using flowable composite resin. To create a strong bonding between composite and the implant transfer piece, circumferentially retentive grooves was attained and used adhesive bonding system. 

Conclusion: The new custom healing abutment was produced 4 mm longer than the highest prefabricated healing abutment which was belonged to this implant system.

P144
Zigomatic and All on Four Implant Supported Rehabilitation: sEMG Study
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Aim: The aim of this clinical study was to evaluate the muscular function of patients totally rehabilitated with Zigomatic (maxillar) and all on four (mandibular) implants, compared with those having natural dentition and complete denture.

Materials and methods: The present research was approved by the Ethics Committee and evaluated 72 patients, divided into three groups. The implant group was composed by 24 patients (12 men, 12 women; mean age 57.8 years) totally rehabilitated with Zigomatic (maxillar) and All-on-Four (mandibular) implant-supported prostheses. The dentate and denture groups consisted of 24 subjects each, paired with members of the implant group according to age and gender. Surface Electromyography of masseter and anterior temporalis muscles was carried out during clenching, non-habitual and habitual chewing and rest. All values were standardized as percentage of a maximum voluntary contraction. Inter-group comparisons were made using ANOVA and Tukey post hoc test (SPSS 17.0). Significance level was set at p < 0.05.

Results: No one statistical difference was found between Implant and dentate group. The sEMG activity of masseter and anterior temporalis muscles of denture group presented statistically significant differences (p < 0.05) from those of denture and implant groups.

Conclusions: Patients using implants and dentate patients demonstrated similar sEMG values, showing that Zigomatic an All On Four implants-supported prostheses can be considered a good treatment option for oral rehabilitation in edentulous patients.

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Comparative Study of Two Mandibular Partial Implant Overdenture Designs
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Objective: Comparison between two mandibular implant overdentures of class II Kennedy classification.

Method: Fourteen male patients were selected with age ranging from 30 to 45 years divided into two equal groups. Group I received a mandibular removable partial over denture retained with implant abutment at the first molar region and with extra coronal attachment to the first premolar. Cross arch stabilization was made by using double Aker clasp on the first and second molars of the opposite side. Group II received a unilateral mandibular removable partial over denture retained with implant abutment at the first molar region and with extra coronal attachment to a splinted first premolar and canine. Patient satisfaction, clinical and radiographic evaluations were carried out at regular appointments up to 1 year from implant loading.

Results: There was insignificant increase in the pocket depth and gingival recession, insignificant decrease in the perio test values and plaque index around implants and abutments and insignificant increase in the marginal bone loss around implants and abutments in both groups. All patients strongly disagreed the high cost of the treatment. Group II patients were more satisfied regarding aspects of the patients’ comfort and phonetics.

Conclusion: Unilateral removable partial denture was more comfortable and more better with speech. The use of dental implant as a distal abutment in class II Kennedy classification reduces all the movements of denture base and results in better healthy condition for the gingival and periodontium of the abutment tooth than when using conventional partial denture.

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Adhesion of HMS0014 Cells on Titanium Discs with Surface Modifications
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Purpose: The present study evaluates the microenvironments of titanium (Ti) discs having similar surface modifications of prevalent dental implants to acquire an optimal osseointegration of human bone marrow-derived mesenchymal stem cells, therefore contributes to an in vitro study of the dental implant therapy.

Materials and methods: Cell proliferation/differentiation of HMS0014 Yub62b cells (Riken BRC), and mineralisation of the ECM in monolayer culture were studied. Subsequently, the HMS0014 cells were GBR-engineered to initiate osteogenesis on either 99% Ti (JIS type 4; SPL, Thomen Med/Morita) or Ti alloy (Ti-6Al-4V; anodic oxidation (AO), hydroxyapatite coating (HA); JMM) discs modified with different surface substrates (Disc-SPI, Disc-AO, Disc-HA). The histology of attachment onto the substratum, extension and intercellular contact of the HMS0014 cells under inducing condition (POWEREDBY10/AA+β-GP+DEX; 14 days) were studied with fluorescence light microscopy (BIO-REVO BZ-9000; KEYENCE) and SEM (H-4100; Hitachi).

Results: The SEM demonstrated that the spherical-to-polygonal (d = 10–40 μm) HMS0014 cells proliferated and differentiated
Osseointegration of HMS0014 Cells in Cellmatrix I-A around Ti Implants

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Purpose: We have investigated culture of HMS0014 Yub621b cells (Riken BRC) on titanium (Ti) discs, and revealed that (i) ECM mineralisation was initiated since day 1 and became markedly deposited during days 7–14, (ii) 3-D culture acquired more Ca and OC volumes, and (iii) The cells were more expansively adhered on anodic-oxidized (AO) Ti discs. In this study, we cultured clusters of HMS0014 cells in a collagen scaffold on AO Ti implants (AO-IPs) and studied osseointegration by the GBR concepts in vitro.

Materials and methods: Straight root-shaped AO-IPs (FINAX; POI, JMM) were laid in dishes paved with Cellmatrix Type I-A Gel (Nitta Gelatin; layer I), cultured together with the cell cluster (immature HMS0014 + Cellmatrix; layer II) and sandwiched with another Cellmatrix layer overlaid with POWERBY10 (AA + β-GP + DEX, 21 days; layer III). AO-IPs with the growing peri-IP tissue (layers I-III) were either embedded (Technovit 7200; Heraeus Kulzer) for ground-section by the Cutting-Grinding Technique (EXAKT BS-300CP-A/MG-400CS; MEIWAFOSIS) or cryosectioned (CM 3050; Leica); the specimens were prepared for the LM (BX41/FX380; Olympus). Furthermore, the peri-IP tissue was prepared for the conventional TEM (H-7100; Hitachi).

Results: Contact osteogenesis was commenced with osteoconduction of HMS0014 cells and sedimentation of cement lines. In the peri-IP GBR tissue, the distribution of elongated polygonal Ob-like cells, invasion of the ECM and appositional collagen-related mineralisation among/between the warp/weft of the 3-D collagen meshwork were demonstrated.

Conclusions: We cultured a tissue-engineering material by growing HMS0014 cells within a 3-D collagen gel scaffold on AO-IPs, and elucidated augmentation of IP osseointegration by the GBR.

Effect of Surface Treatment of the Implant Collar Area on the Crestal Bone Resorption: A Comparative Study in Mandibular Implant-Denture Cases

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The present study was designed to compare crestal bone resorption, up to 1 year, around immediately-loaded endosseous implants supporting mandibular implant-dentures, with different surface treatment of the implant collars (polished vs. sandblasted), using CAD/CAM-based surgical guides, flapless implant surgery, and split-mouth design.

Materials and methods: Ten healthy completely edentulous patients (eight males and two females) were selected, with their ages ranged from 58 to 65 years. Informed consents were signed by all patients. Pre-operative CBCT was performed for all patients and their mandibular stone models as well. CAD/CAM technology was used to fabricate stereolithographic surgical guides using data collected from CBCT.

According to split-mouth design, right canine areas received implants with polished collar, while left canine areas received implants with sandblasted collar. All implants were of the same length, diameter, and collar height. Implants were placed using punch technique and were immediately loaded over ball attachments.

Radiographic assessment of crestal bone resorption was carried out using standardized periapical digital radiographs. Readings were statistically analyzed using Wilcoxon-Signed Rank test.

Results: Statistical analysis of the results showed more crestal bone resorption around the implants with polished collar starting from the 3rd month of evaluation, however, no clinical significance difference was reported.

Conclusion: Surface treatment of implant collar area minimizes the rate of crestal bone resorption, specially when used in combination with punch technique, CBCT, and CAD/CAM technology. Split-mouth design research design is highly recommended in clinical trials for more accurate results, reduction of bias and cost, and to save resources.

Regression Analysis of the Findings 1 year After Implant Placement

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Aim: In a clinical-microbiological and prospective study 108 patients were assigned to four groups [G] (G1: no residual teeth...
with probing depth [PD] >3.5 mm, G2: at least one [alo] PD of 3.6 to <6 mm, G3: alo PD of 6–8 mm, G4: alon PD ≥8 mm) and received 194 implants (88 in the upper jaw, 106 in the lower jaw). One year after implant placement, 81 patients (74.2% implants) were reassessed. 95.5% of the implants in the upper and 91.1% in the lower jaw were free of plaque and in nearly all cases free of inflammation.

**Material and methods:** All findings before and after implant placement (dental visit [V] 3, V8) and after 1 year [V11] underwent a regression analysis using the method “step-wise” to determine influence factors and power (Beta) on pocket probing depth [PPD] of the patients.

**Results:** The model with 15 variables proved to be significant and explained PPD at 82.7%. Thus, the regression equation for PPD was: $y = 2.386 + 9.619 \times 10^{-9} \times V_3$ total bacterial count [TBC] deepest periodontal pocket $-0.591$ past periodontal treatment $0.127 \times V_3$ Community Periodontal Index [CPI] $17/16 - 0.42 \times V_3$ maxillary prosthetic status $+0.032 \times V_1$ status crown $24 + 0.189 \times V_1$ status root $43 + 0.045 \times 10^{-6} \times V_1$ F. Nucleatum in implant sulcus $+0.071 \times V_3$ CPI $26/27 + 0.069 \times V_3$ status crown $15 + 0.412 \times V_3$ CPI $31 + 0.029 \times V_3$ status root $41 + 0.180 \times V_1$ status root $46 + 0.187 \times V_3$ status root $35 + 0.164 \times V_8$ attachment loss $47/46 + 0.120 \times V_1$ smoking.

**Conclusion:** The highest influence on PPD exerted the maxillary prosthetic status crown $15 + 0.412 \times V_3$ CPI $31 + 0.029 \times V_3$ status root $41 + 0.180 \times V_1$ status root $46 + 0.187 \times V_3$ status root $35 + 0.164 \times V_8$ attachment loss $47/46 + 0.120 \times V_1$ smoking.
lasers; similarly, the likelihood of surface alterations occurring secondary to irradiation was controversial and depended on laser type and settings.

**Conclusions:** Outcomes varied between the included studies with little consistency in laser decontamination capacity or surface alteration potential. This may be due to researchers employing various test specimens, contamination methodologies, irradiation settings and outcome measures leading to limited study comparability. More investigations are required to provide guidelines for using laser therapy which has demonstrated promising results in vitro trials to date.

**Theme:** Implantology: Oral Pathology

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**Intraoral Localized Reactive Hyperplastic Lesions in the Turkish Population**

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**Aim:** This retrospective study aimed to contribute to the literature by investigating the types and distribution of intraoral localized reactive hyperplastic lesions (LRHL) in the Turkish population.

**Methods:** The histological diagnostic records of the Department of Pathology at Cumhuriyet University were reevaluated for 210 patients who had been treated for lesions from 1987 to 2008. The lesions were classified into four groups—focal fibrous hyperplasia (FFH), pyogenic granuloma (PG), peripheral giant cell granuloma (PGCG), and peripheral ossifying fibroma (POF)—and were analyzed for histological diagnosis, age, gender, and site.

**Results:** The total of 210 lesions consisted of 82 (39.05%) FFH, 79 (37.62%) PG, 41 (19.52%) PGCG, and 8 (19.52%) POF. Age for all cases ranged from 6 to 80 years (mean age was 39.5 ± 16.8 years) with a female-to-male ratio of 1.1:1.

**Conclusions:** Despite some discrepancies, the characteristics of LRHL of Turkish patients are in line with those of patients from other countries according to lesion type, site distribution, and age and gender of patients.

**Theme:** Implantology: Oral Surgery

P154

**Impacted Lower First Premolar Associated with Supernumerary Teeth**

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**Aim:** Supernumerary teeth often causes disturbances in the eruption of its associated tooth. Supernumerary teeth occur in the primary and permanent dentition. This case report documents a 12-year-old-child with a supernumerary teeth located in the mandible, which caused the impaction of the right lower first premolar.

**Material and methods:** Twelve-year-old-girl was referred to our clinic due to the failure of the right lower first premolar to erupt. Intraoral examination revealed a permanent dentition period, and all teeth except for the right lower first premolar was present in the mouth. Extraoral examination revealed no abnormal signs in gingiva, buccal tissue and alveolar bone of the right mandible. A lower first premolar in the vertical position and covered with primary and supernumerary teeth was determined to be present through panoramic and periapical radiographs and extracted in a surgical operation. After surgery, orthodontic treatment began with the fitting of upper and lower preadjusted edgewise appliances of 0.018-in slot. The arches were banded and bonded, and the teeth leveled and aligned.

**Results:** The impaction of the right lower first premolar was successfully brought into alignment through surgery treatment and orthodontic traction.

**Conclusion:** Detection and removal of a supernumerary teeth associated with an impacted tooth might have contributed to the favorable results for establishing acceptable occlusion.

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**Surgical Approaching Of Endodontics Failure Teeth**

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**Aim:** The aim of this study is to analyze the difference of success by retreatment with orthograde and retrograde filling method of endodontically failure teeth.

**Material and methods:** In a period from 2010 to 2011 year were surgically treated 48 patients (27 males and 17 females) in age from 11 to 68 years old. 48 surgically treated teeth with periapical lesions were divided into two groups. First group (control group) was compound from 24 teeth with periapical lesions filled by orthograde way. Second group (study group) was also compound from 24 teeth with periapical lesions filled by retrograde way, because they have intra radicular restorations or metal ceramic crowns.

**Results:** After 12 months, bay all patients was made X-ray control, and by first group(control group) were evaluated eight cases with complete healing, ten cases with unfinished healing, four cases with suspect healing, and two failure cases. By second group (study group) were evaluated 14 cases with complete healing, six cases with unfinished healing, four cases with suspect healing. Concerning the postoperative healing of lesions, by X-ray controle there was no statistically significant difference between two groups after 12 months (p = 0.59).

**Conclusions:** From this study, we can conclude that application of a retrograde filling with surgical intervention-apicectomy, could
bee considered like a minimal invasive procedure, which has positive effect by postoperative clinic results.

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Excision of Benign Soft Tissue Formations with Er:Yag Laser and Reparative Process Follow up with Thermal Imaging
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Aim: The usage of Er:Yag lasers in the surgery has proven advantages: lack of pain, reduced bleeding, possibility of haemostasis. A raise of the temperature is an indicator of inflammation or of a reparative process. The purpose of our survey is to assess and compare the date collected with the camera for thermal imaging (FlirA320 with resolution of 0.06°C) about the reparative process after excision of benign formations in the oral cavity with Er:Yag laser.

Material and methods: To all 15 participants so far were made photographic and thermal pictures before the excision, immediately after it, on the 3rd and on the 7th day.

Results and conclusion: The results showed that there was no raise in the local temperature with more than 0.8°C during the reparative process in the 7-day period of follow up.

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Implants and Bisphosphonate Related Osteonecrosis of Jaws (BRONJ)
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Introduction: Bisphosphonates are widely used in the management of metastatic disease to the bone and in the treatment of osteoporosis. BRONJ is a serious condition that has been reported by dental practitioners and physicians in cancer and osteoporosis patients on bisphosphonate therapy.

Materials and methods: This is a computer based research that includes Medline and Pubmed databases. Out of 156 articles, eight of them were clinical trial and 38 of them were review article.

Results: People who receive frequent, high dose of bisphosphonates over long period of time and have periodontal disease, poor oral hygiene and invasive oral surgery such as implant are the most one who is at the greatest risk for developing BRONJ.

Conclusion: Because of broad dental implant usage, dental practitioners must ask patients specifically about bisphosphonates as a part of their medical history.

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Multidisciplinary Rehabilitation of Limited Intercuscal Spaces: A Case Report
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Aim: Prosthetic management of partial and total edentulism can be challenging with the presence of limited interocclusal space. The extrusion of opposing teeth combined with the alveolar extrusion of the edentulous areas reduces the space needed for fabricating a removable or fixed prosthesis when edentulous areas are present in the maxilla. This clinical presentation describes the treatment provided to a patient who presented with limited interocclusal space because of bone development disorders.

Case: The case who had partial edentulism was rehabilitated with extraction and alveoplasty. The mandibular left first premolar, maxillary left and right first premolars were extracted and the maxillary right and left posterior alveolar crest was reduced by alveoplasty. And also mandibular right posterior area was grafted with autogenous bone collected from the maxilla because of adequate alveolar width. After gaining adequate space, prosthetic rehabilitation was completed with removable partial denture.

Conclusion: During the follow-up period, the patients chewing functions and physical appearance improved, and no complications occurred.

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Laser Therapy on Cultured Osteoblasts Submitted to Sodium Alendronate
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Introduction: The management of bisphosphonates related osteonecrosis of jaw (BRONJ) remains a challenge. Literature describes different forms of treatment, almost all of the studies agree in minimal invasive procedures. Then, the laser phototherapy (LPT) using red wavelength has shown positive effects on BRONJ lesions healing.

Objective: This study aimed to evaluate the effect of LPT on the viability and proliferation of osteoblasts (OSTEO1 lineage) submitted to sodium alendronate.

Methods: Cells stayed in contact with DMEM containing sodium alendronate for 24 h, after this period cells were irradiated (6 J/cm²), using a continuous diode laser (InGaAlP, 660 nm) in punctual and contact mode, 40 mW, spot size 0.028 cm². Two irradiations with 6 h-interval were performed. Cell viability and proliferation were determined with the MTT (3-[4,5-dimethylthiazol-2-yl]-2,5-diphenyltetrazolium bromide) reduction assay in three different periods 24, 48 and 72 h after first irradiation.

Results: Controls and cultures treated with sodium alendronate and LPT presented cell viabilities significantly higher than those of cultures solely treated with alendronate.

Conclusion: The alendronate showed to be cytotoxic to osteoblast in culture. The LPT in the parameter tested was able to reverse the cytotoxicity of the alendronate.
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Glandular Odontogenic Cyst: A Rare Case Report
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Introduction: Glandular Odontogenic Cyst (GOC) is a rare developmental cyst of jaws, which suggests an origin from the remains of dental lamina. GOC was first reported as a sialo-odontogenic cyst by Padayachey and Van Wyk in 1987. Gardner et al. described it as a glandular odontogenic cyst in 1988 after understanding there is no relationship between salivary gland and cyst. In 1992, World Health Organization classified the lesion as a developmental odontogenic epithelial cyst and accepted GOC as the preferred term.

Magnusson et al. observed that GOCs account for only 0.012% of all cysts seen on the oral cavity. To our knowledge, only 111 cases of GOC has been reported in the literature.

GOC has a slight male predilection and occurs primarily in middle-aged patients. Clinically, the most common site of occurrence is anterior mandible. GOC may be asymptomatic or may cause pain, slow-growing swelling and tooth displacement. Radiographically, GOC appears as a well-defined multilocular or unilocular cystic lesion of jaws that often causes expansion, thinning, erosion or perforation of the cortical plates.

Case: In this study, clinical, radiographic and histopathological evaluation and treatment of a rare case of GOC with maxillary impacted canine tooth in a 39 years old female patient is presented. She was admitted to our clinic with the complaint of swelling in the anterior maxilla which was noticed 7 months back and rapidly attained the present size.

According to the patient’s relatives’ report (because of the patient was mental retarded); this growth had appeared after extraction of tooth 21. The patient was taken to Ear-Nose-Throat clinic about 3 months ago. After a biopsy she was not treated surgically, only an antibiotic had been prescribed. The growth had not been regressed, contrarily it continued enlarge. Intraoral clinical examination showed a swelling extending from teeth 11 to 25 obliterating the buccal sulcus, measuring 6 × 4 × 3 cm with a firm and erythematous surface. The CT scan revealed an unilocular radiolucency extending to basis of orbita and nose. Surgery was performed under local anesthesia. The tissue was removed and the histopathological diagnosis was a CGCG.

Conclusion: Giant cell granuloma outside the jaw was a non-neoplastic lesion, and extremely rare. It was somewhat difficult to make a correct diagnosis. Combining the clinical data and pathological feature were more helpful to the diagnosis.

P161

Bilatered Diagnosis of a Central Giant Cell Granuloma: A Case Report
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Introduction: Central giant cell granuloma (CGCG) is a non-neoplastic intraosseous lesion of unknown etiology. They affect females more than males with the mandibular anterior region being the most common site of occurrence. Clinically CGCG’s are slow growing, asymptomatic, which do not recur and as aggressive lesions, found in younger patients, painful with rapid growth, often causes root resorption and tendency to recur. Definitive diagnosis can be made only histologically.

Case: A 36 year old female patient was referred to our clinic with a chief complaint of swelling in the anterior maxilla which was noticed 7 months back and rapidly attained the present size.

According to the patient’s relatives’ report (because of the patient was mental retarded); this growth had appeared after extraction of tooth 21. The patient was taken to Ear-Nose-Throat clinic about 3 months ago. After a biopsy she was not treated surgically, only an antibiotic had been prescribed. The growth had not been regressed, contrarily it continued enlarge. Intraoral clinical examination showed a swelling extending from teeth 11 to 25 obliterating the buccal sulcus, measuring 6 × 4 × 3 cm with a firm and erythematous surface. The CT scan revealed an unilocular radiolucency extending to basis of orbita and nose. Surgery was performed under local anesthesia. The tissue was removed and the histopathological diagnosis was a CGCG.

Conclusion: Giant cell granuloma outside the jaw was a non-neoplastic lesion, and extremely rare. It was somewhat difficult to make a correct diagnosis. Combining the clinical data and pathological feature were more helpful to the diagnosis.

P162

Biochemical and Biomechanical Assessment of Effects of L-Carnitine on Oral Mucosal Wounds
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Aim: The present study aimed to investigate the oral mucosal wound healing potential of L-carnitine, which is used to relieve inflammation and to heal skin wounds in the world.

Materials and methods: Twenty-four Wistar-albino rats were divided into four groups: Control group (Group I), L-carnitine groups (Group II and III), Vitamin E group (Group IV). A 1.5 cm linear incision was created on the buccal mucosa of each rat and was left to heal by secondary intention. Control group was not given any pharmacologic agent. The wound healing effect was comparatively evaluated with Vitamin E. L-carnitine (100 mg/kg/day and 200 mg/kg/day intraperitoneally) and Vitamin E (100 mg/kg/day, intraperitoneally) were used for 10 days. Wound healing were evaluated using biochemical methods and the tensile strength has been tested. The structure of this study was approved by the Gazi University Animal Experiments Local Ethics Committee.

Results: The animals receiving the 100 mg/kg/day L-carnitine supplements healed more rapidly, with almost complete restoration of mucosa by 10 days. In the analysis of tissue samples; there was a statistically significant decrease in MDA levels in group II. Wound tension strength that was seen in groups II (% 57.88) and IV (% 48.71) was better than the group III (% 33.39).

Conclusion: L-carnitine has positive effects on wound healing rate and tensile strength in rats. Although there was a tendency toward faster healing in the groups receiving l-carnitine, it may have a dose-dependent positive effect for wound healing.
P163

Maxillofacial Rehabilitation and Treatments of Pilots and Flight Crew

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Aim: Actually, although number of the people who prefer to travel by airline because of the advantages of safety, time and comfort is gradually increasing, military air activities for security, cargo transport, agricultural protection, fire fighting, air taxi, air ambulance are increased busy traffic of air.

The main purpose of this article was to have sufficient knowledge and put emphasis on diagnosis and medical-surgical treatment of physiological problems among pilots, cabin crews and also passengers in oral and maxillofacial surgery.

Material and methods: Besides treatments, giving information about physiological problems conceivably experienced during flight have a great importance. Apply and advance scientific knowledge to promote and enhance the health, safety and performance of those involved in aerospace and related activities.

Results: During the flight, hypoxia, vertigo, air sickness, decompression illness (barotitis, bend, choke, the expansion of gases in the abdomen), visual illusions, jet-lag, caused by G forces of disorder, fear of flying are major problems due to the high-speed, altitude, low pressure, radiation, G forces and movements in three axises for pilots, cabin crews and passengers. Aerospace medicine concerns the determination and maintenance of the health, safety, and performance of persons involved in air and space travel.

Conclusion: Maxillofacial rehabilitation and treatments of pilots and flight crew should be carried out by maxillofacial surgeons experienced on aerospace medicine.

P164

Primary Myelofibrosis: A Case Report

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Introduction: Primary myelofibrosis is a myeloproliferative disorder in which an increase in reticulin and/or collagen fiber in bone marrow is accompanied by proliferation of atypical megakaryocytes resulting in anemia, bleeding problems, splenomegaly, and other secondary abnormalities.

Case: This case report documents the bleeding problem of a 51-year-old male patient in dental treatment which led to the diagnosis of primary myelofibrosis. The aim of this case report is to share the findings regarding diagnosis of a disease, which may be asymptomatic, by means of symptoms emerged after the tooth extraction.

Conclusion: In case of a massive bleeding in the dental treatment, primary myelofibrosis should also be taken into consideration besides the common hematologic diseases.

P165

Multiple Eruption Cysts: A Case Report

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Introduction: Eruption cyst (EC) is a benign cyst associated with a primary or permanent tooth in its soft tissue phase after erupting through the bone.

Case presentation: 1-year 5-month age male baby was referred by his parents to Department of Pediatric Dentistry, University of Ondokuz Mayis, Turkey, due to 1 × 1 cm diameter soft, smooth and bluish four lesions in the area of the primary first molar teeth of maxilla and mandible. After the needle aspiration biopsy, incision and exposure of the associated teeth was performed. Follow-up examinations were performed 15 days later the surgery. By the end of the first year, the lesions had disappeared completely and the primary first molar teeth erupted to oral cavity without pathology.

Conclusion: It is clinically significant in that knowledge among general dentists is very essential regarding this developmental disturbance to reach the correct diagnosis and to provide proper treatment.

P166

Iatrogenic Paresthesia after Implant Surgery: Case Report

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Introduction: Dental implant applications are frequently used in reconstructions of edentulous maxilla and mandible. The risks of injury of the branches of the mandibular division of the trigeminal nerve (inferior alveolar nerve, lingual nerve, and mental nerve) are known complications of mandibular implant applications. Especially in atrophic cases, preoperative evaluation using advanced imaging modalities such as dental volumetric tomography scans can assist in localization of inferior alveolar canal and foramen mentale, thus decrease complication rates.

Case: Treatment of the patient who has sustained a nerve injury from dental implant procedures must be done immediately in order to treat neurosensory disturbances.

P167

Assessment of Preemptive Analgesia for Third Molar Surgery

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Aim: Preemptive analgesia is a method used to manage postoperative pain by preventing central sensitization. However, the preemptive effects on postoperative oral surgery pain is still controversial. We investigated the preemptive analgesic effect for third molar surgery by reviewing the latest randomized controlled trials (RCTs).

Methods: An electronic database was accessed to search for all relevant articles of RCTs published between 1996 and 2012. Characteristics of studies such as the study design, active drugs, method of preemptive analgesia and results were extracted from original articles and evaluated.

Results: In many studies, pre-administration of NSAIDs before extraction demonstrated that the severity of postoperative pain was reduced beyond the expected effect time. On the other hand, some studies reported that postoperative administration immediately after extraction was more effective than pre-administration. This suggests that peripheral sensitization caused by reactive inflammation following the tooth extraction and secondary central sensitization are more important factors than direct central sensitization caused by surgical tissue damage.

Conclusions: For the removal of mandibular third molars, central sensitization can be inhibited by the presurgical administration of analgesics. Re-administration of analgesics after extraction to inhibit postsurgical peripheral sensitization is a more successful method for suppressing postoperative pain. Acid NSAIDs are effective but there is a concern about adverse events. Accordingly, for presurgical administration, acetaminophen can be used since it has less of an anti-inflammatory effect and a limited COX inhibition effect. For postsurgical administration, a COX-2 inhibitor with anti-inflammatory effect is recommended.

Theme: Preventive Dentistry: Caries

P168
Effect of Temporary Cements on Microleakage of Composite Restoration
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Purpose: Cements such as zinc oxide eugenol have been frequently used as temporary restorations, but, the presence of eugenol in cement can negatively affect the seal of the permanent restorations like composite resin.

Aim of this study was to evaluate the microleakage of composite restorations following pre-treatment with ZOE temporary cements of different powder: liquid ratios and compare them with eugenol-free temporary cement.

Materials and method: Class V cavities were prepared on the buccal surfaces of 32 freshly extracted human premolars. Teeth were divided into four groups of eight each. Gr. I-Received no temporary restoration. Groups 2 and 3 filled with Type III ZOE mixed at P: L ratio of 10: 1 g and 10: 2 g, respectively. Gr 4: Received eugenol-free cement (RelyX Temp NE). After 1 week storage in water, temporary fillings were removed and cavities were restored with composite resin (Z 100). The restorations were finished, thermally stressed for 500 cycles at 5 ± 36°C, subjected to dye penetration testing and observed under stereomicroscope at ×40 magnification.

Results: Results were analyzed using Kruskal–Wallis and Mann–Whitney tests. At both enamel and dentin margins, the microleakage associated with group 3 was significantly more than group 1, 2 and 4. Pre-treatment of cavity with ZOE mixed at a P: L ratio of 10 g: 2 g significantly increased microleakage.

Conclusion: Pre-treatment of cavity with ZOE cement can increase microleakage and is not recommended clinically.

P169
Remineralisation Potential and Micropermeability of Invitro Fissure Sealant Study
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Objectives: The aim of this study is to determine a quantity of remineralisation ions which are released by materials for pit and fissure sealing and its adhesion.

Materials and methods: The clinical study included 39 molars which were treated with three different materials: Breseal (Bre-dent), Helioseal F (Ivoclar Vivadent) and Fuji 7(Triage) GC. The teeth were thermocycled at 0 and 55°C, after that were stored in 1 l distilled water for 14 days and measuring of fluoride ions was done with ion chromatograph.

The teeth were dived in methylene blue for 24 h and were cut through mesial, distal and central fissure and the penetration of colour was evaluated using stereomicroscope.

Results: The results shown that Helioseal F and Breseal do not release fluoride ions and Fuji 7(Triage) releases most fluoride ions and has the best adhesion.

Conclusion: Fuji 7(Triage) can serve as a reservoir and contribute to retaining a low fluoride level in mouth preventing thus the appearance of caries.

Key words: fissure sealing, microleakage, adhesion, fluoride ion release

P170
Supplementary Methods of Early Caries Detection
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Aim: Caries is a multifactorial dynamic process which is related to mineral equilibrium that is taken place at plaque.

Material and methods: At recent years multiple researches has been taken in early caries detection and assessment of new methods. Common used technologies are based on visual, optical and radiographic science.

There are detection systems based on electrical current measurement based on lower impedance of caries due to porosities with
regard to sound tooth structure. ECM is the device for measuring this.

**Conclusion:** The radiographic detection tools consist of digital and subtraction radiographies that shows the changes in opacities of radiographies as a guide for mineral change of tooth.

Enhanced visual techniques are DFOPTI using light scattering of hydroxapatite crystals and fluorescent methods consist of QLF and DIAGNODent that has different outcomes. OCT and imaging with near infrared wavelength is also recently used techniques. USD is a ultrasonic technique used for detection of caries.

**P171**

**Caries Status and Perceived Need for Dental Care in Adolescents**

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**Aim:** To compare the caries status and perceived need for dental care among adolescents in a public and private secondary school.

**Methods:** A descriptive cross-sectional study of 160 adolescents in a public and private secondary school was conducted using self administered questionnaires and oral examination to obtain required details. The schools selection was done randomly. The questionnaires covered background information, socioeconomic status, tooth brushing behaviour, self-rated oral health of the adolescents. Data analysis was done using epi-info.

**Results:** Caries prevalence and mean DMFT were 28.8%, 0.46 and 22.5%, 0.36 in the private and public school respectively, self perceived need was higher in the public school (60.2%) as compared to private school (39.8%) with scaling and polishing ranking first, self rating of oral health was generally good (private school 77.5% and 70% for the public school). Students in the public school had shocking sensation as a symptom in the last 6 months (38.8%) while those in the private school (35%) bleeding gums while brushing. There was an association between the symptoms respondents had in the last 6 months and the self perceived need for dental care (p value = 0.0015).

**Conclusion:** Normative needs weren’t fully matched by a similar level of self-perceived needs among these adolescents. Perceived need for dental care can be affected by parameters other than the demographics such as the presence of symptoms. Preventive therapy and restorative treatment would be beneficial to these adolescents as certain symptoms were significantly associated with perceived need for dental care.

**Theme: Preventive Dentistry: Epidemiology**

**P172**

**The Oral Health of Children with Mental Retardation in Baku, Azerbaijan**

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**Aim:** The aim of this study was to assess the prevalence of dental caries and periodontal diseases among the schoolchildren with mental retardation in Baku.

**Methods:** Oral health examinations were performed on 236 children with mental retardation (169 boys and 67 girls) from the age groups: 6–8 years, 9–11, 12–16 were held among all of whom studied in four Special Secondary School in Baku city. The WHO 1997 criteria were used for diagnosis and recording of DMFT index and periodontal status, using a visual method with mouth mirrors, dental and periodontal probes, daylight illumination. Dental caries were diagnosed at the caries into dentine at the (D3) threshold. Ethical approval was obtained from the Ethical committee of the Azerbaijan Medical University.

**Results:** Results demonstrated an average caries prevalence of 97.9%. The mean DMFT for all ages was 5.31 of which a very high proportion of decayed teeth (D = 5.02) and a very low proportion of filled teeth (F = 0.02). Prevalence of gingivitis for all ages was 50.4% and increased with age. There were most often children with inflammatory form of gingivitis. Prevalence of periodontitis made 0.85% (early onset periodontitis) and found in last age group only. No gender differences were observed. In general the children exhibited very poor level of hygiene.

**Conclusion:** The study demonstrated a high prevalence of dental caries and gingivitis among children with mental retardation. The need to develop a program aimed at improving the dental health service provided for focusing group of children.

**P173**

**Methods for Increasing Oral Health Indexes of the Patients during Treatments Phase – A Glance at 13 years Experience**

Mehran Hemati  
Dr. Mehran Hemati

**Aim:** Since the activity of bacteria has a major and increasing role in the oral tissues health and how patients care the treatments, oral hygiene instruction has a great effect for the health of the treatments.

**Materials and methods:** In this treatment pattern the plan was formed this way that at the beginning in the first visit of the patient we should check the “Mutans Streptococci” and “Lactobacilli” bacteria and check the condition of the saliva of the patient for neutralizing the acids that is made by bacteria. Due to the indexes of “DMFT” and “CPTIT” we can get the risk appetite indexes. Then in the middle of treatment sessions we had tried to control the situation and ability to decay development of the bacteria with “Air Flew” techniques for “varnish fluoride”, “varnish gouluhexin”, “profelaxin” and utilization of the oral hygiene instructions. After gums control and root treatments, then tooth was filled with composite materials and after that the patient was stood in the control phase which is about 6 months up to 2 years, then we had begun restoration with ceramic abutments.

**Conclusion:** Nowadays using CEREC device (with the combination of CEREC Dentistry and Adhesive Dentistry the accuracy of the treatments increased up to 25 μm) and practically with Dental Adhesives the growth of bacteria environment is limited to personal care. So although bacteria control is still a major issue but the role of personal cares is more important than past.
P174

Oral Health of Preschool Children in an Austrian Community
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Aim: The Austrian community of Sarleinsbach with about 2200 inhabitants became 2002 a healthy community and public health policy related activities are performed to promote general and oral health. Early childhood caries is still a problem in young children therefore an epidemiological study was performed 2010 to analyse oral health status and related social factors in preschool children.

Material and methods: Sixty-two children who attended the kindergarten of Sarleinsbach were involved in this clinical trial including saliva tests. Mothers answered a validated questionnaire concerning social status and oral health behaviour of both parents and children. A trained, calibrated dentist examined children in a dental office. Caries status (d3-4mft) was registered using WHO criteria. SPSS 15.0 software was applied for statistics.

Results: Results are based on the data of 42 children (male: 18, female: 23) with a mean age of 4.5 years. The majority of parents had finished compulsory school. More than 70% of parents reported they brush teeth two times daily. Twenty-eight children brushed their teeth after breakfast and 34 before bedtime. 71% of parents supervised the tooth brushing of children. Main meals and snacks of children were mostly cariogenic. Twenty-three children showed caries free dentition (dmft = 0). The dmft amounted to 1.39. 19% of children showed high counts of Mutans Streptococci, counts of Lactobacilli were low.

Conclusion: It was concluded that oral health among preschool children should be improved by more education of parents in terms of nutrition and tooth brushing behaviour.

P175

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Background: Publications play an important role in the scientific process and provide a key link between the production and use of knowledge. Research in oral health contributes effectively to decisions and strategies aimed at improving the oral health of populations. The objective of this study was to analyse oral health production in order to produce original information on the nature and volume of research in Africa.

Methods: PubMed database was searched for published articles on topics related to oral health research in Africa. Searches were limited by publication date to each year from 2005 to 2010. Nine hundred thirty five (935) publications were retrieved. Articles were classified according to the nationality of first author, the year of publication, the areas of study and the type of research described. Only articles in English and/or in French were selected.

Results: South Africa and Nigeria were responsible for the greatest output (68%) from published articles. Depending on the type of research, cross-sectional studies and case studies are predominant (55.5%); oral surgery and public health represent 62% of production. According to the nationality of first author, South Africa (34.7%), Nigeria (29.0%) and Tanzania (7.3%) have significantly published more in public health.

Conclusion: Contribution of Africa to oral health research production was limited. Strong variations among countries in the production of articles were underlined. So building and strengthening oral health research capacity are important for effective control of disease and the socioeconomic development of country.

P176

Salivary Secretion Rates in Children at 6 and 12 years-old from Two Different Climates
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Aim: The stimulated salivary flow (SSF) increases with age and presents seasonal variations. Less is known about possible variations in unstimulated salivary flow (USF). The aim of this investigation was to analyze the SSF and the USF in school children from temperate (TC) and hot climates (HC) to assess whether their salivation rates show variations at 6 or 12 years of age.

Material and methods: School children living in TC (22°C), altitude 2240 m, humidity 52%, or HC (38°C) altitude 210 m, humidity 66% were evaluated in July. SSF was measured in children chewing paraffin tablets. USF was measured with global saliva test both for 5 min. Results are presented in ml/min. One-way ANOVA were applied to analyze differences between groups.

Results: In total, 928 school children were studied. 464 in each age group: 164 from TC and 300 from HC. Not differences were found by gender or climate. In 6-year-old children the mean of SSF was 1.1 from TC vs 0.9 ml/min from HC. At 12-years-old, 1.7 TC vs. 1.4 ml/min HC. No significant differences were observed in USF between children from TC or HC at 6 or 12 years-old. The USF at six was 0.41 ml/min. At 12 the mean was 0.44 (TC) vs 0.40 ml/min (HC). In 6-year-old children the USF was higher for boys (0.39 vs. 0.43 ml/min) from HC (p = 0.0218). At 12 years-old, the SSF was significantly higher (p = 0.0001) in boys (1.3 vs. 1.5 ml/min) from HC.

Conclusion: The SSF increases with age. However USF appears to be more stable.

P177

The Prevalence of Three Rooted Mandibular First Molars
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and dental field as well.

with most of dentist. This view will enlarge era of orthodontics
believes as at least 40% of orthodontic patient could be treated

Conclusion:
The treatment results for these patients support my
nation and diagnostic aids.

respond for these simple appliances as evidenced by clinical exami-

Results:
A total of 20 patients were found to have a three rooted
mandibular first molar: ten males and ten females. The individuals
with three rooted mandibular first molars were 2.77% of the over-
all patients. All of the three rooted mandibular first molars oc-
curred unilaterally. Of the 20 unilaterally occurring teeth, 17 occurred on the right side, and three occurred on the left side.

Conclusion: Our results indicate that prevalence of three rooted
mandibular first molars among our patients was lower than those
mentioned in the previous literature. The incidence did not differ
between men and women, but there is a big difference between
the prevalence of right and left side.

Theme: Preventive Dentistry: Orthodontics

P178
Orthodontic Treatment for All Practitioners. Is it True?
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Purpose: To simplify orthodontic treatment in daily practice and
widen the area for tooth movements for all practitioners.

Material and methods: Many orthodontic patients that treatment
just need minor tooth movement or growth modifications have
been selected. Most patients were selected from many offices after
clinical examination and investigation of the diagnostic aids. Many
removable and semi-fixed orthodontic appliances as well as
growth modification appliances were used for treatment. These
appliances can be simply designed and constructed with all dental
practitioners.

Results: All patients enrolled under treatment displayed excellent
respond for these simple appliances as evidenced by clinical exami-
nation and diagnostic aids.

Conclusion: The treatment results for these patients support my
believes as at least 40% of orthodontic patient could be treated
with most of dentist. This view will enlarge era of orthodontics
and dental field as well.

P179
Craniofacial Dysmorphology and Hypodontia in 22q11.2 Deletion Syndrome
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Stockholm, Sweden

Aim: The purpose of this study was to determine the craniofacial
morphology, as assessed on lateral cephalometric radiographs and
to investigate the prevalence and/or the prevalence of hypodontia
distribution of hypodontia in the sample of patients with dele-
tion 22q11 syndrome attending the Eastman Institute, in Stock-
holm, Sweden.

Material and methods: The sample consisted of 11 patients diag-
nosed with del22q11 syndrome. These patients were chosen from
a larger group of 76, using following criteria: del22q11 syndrome
confirmed by FISH analysis as part of a prospective, multidisci-
plinary study; no orthodontic treatment had been provided prior
to the taking of high quality cephalometric radiographs and ortho-
pantograms. The cephalometric tracings were then digitized and
measurements made using Dentofacial planner. Consequently
taken orthopantograms were used to detect the missing teeth both
in control group and patient group with 22q11 deletion syndrome.

Results and conclusion: This study indicates an increased cranial
base angle (Ba/SN) in patients with 22q11.2 deletion syndrome. A
slight correlation was found between the increased cranial base
and increased SN/NL angle indicating a posterior rotation of the
maxilla rather than the mandible. When each angle, apart from
the cranial angle, was analyzed individually, they appeared to be
relatively normal. The open bite features of these patients can be
attributed to the hypotonic activity of the oromuscular forces
rather than retrognathic features. There were no congenitally miss-
ting teeth in neither of the groups in this study.

P180
Study of the Needs in Ortho-Surgical Treatment in Tunisia
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Actually, man is more and more concerned by his aesthetic; conse-
quently, the ask for orthognathic surgery is increasing to improve
the facial profil.

Aim:
1 Evaluate the needs of ortho-surgical treatment in patients con-
sulting the orthodontic department of Monastir dental clinic.
2 Seek a correlation between the ortho-surgical treatment and
some quantitative and qualitative factors.

Materials and methods:
1 Including half of patients consulting the dento-facial orthope-
dics department of Monastir-Tunisia (175 patients: 31.9% Men,
2 Based on an information sheet elaborated at this aim, tested
and filled from clinical files.
3 Data codified and seized on computer material.
Results:

1. Five variables showed a highly significant correlation: ANB angle, SNB angle, FMA angle, Labial situation and chin position.
2. The chin position was the most decisive variable in the ortho-surgical treatment.

Discussion: Comparatively with other studies:

1. The sample of our study showed a protrusive position of the maxilla and the mandible and this could explain the indication of bimaxillary surgery for 50.5% of the ortho-surgical cases.
2. Through the two last decades, there is a clear increase in teenagers ask for orthognathic surgery to improve their facial profile.

Conclusion: This study investigated a very important approach in the decision of the ortho-surgical treatment. It opened the way for other studies to recruit a more important sample and be more conclusive in terms of complications. It took in consideration the decision of ortho-surgical treatment without fallow-up.

P181
Obstructive Sleep Apnea Syndrome and Maxillary Orthopedics
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Introduction: Obstructive sleep apnea syndrome (OSAS) is characterized by recurrent events that totally or partially obstruct the upper airway during sleep, associated with signs and symptoms. The standard treatment among children is adenotonsillectomy.

Objective: To report the case of a child with moderate OSAS.

Case: The patient was a white-skinned male aged 7 years and 4 months, presenting Angle class II, with complaints of agitated sleep, snoring, respiratory pauses and daytime somnolence and irritability. A polysomnographic examination showed that moderate apnea was present even after adenotonsillectomy. Treatment: The child underwent functional orthopedic treatment on the maxilla, with a modified indirect Planas track. After 9 months of treatment, the retrognathism was seen to have diminished, with increased airway size, as observed using lateral telerradiography. There was a noticeable decrease in the apnea index, with diminution of the initial symptoms, as seen using polysomnography.

Conclusion: The treatment accomplished was effective for improving the symptoms: it deobstructed the air passage, enabled better ventilation for the patient and controlled the side and secondary effects of OSAS on the orofacial structures.

P182
Cephalometric Study of Dental and Skeletal Variables of Lower Anterior Facial Height
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Aim: Cephalometric norms commonly used for the assessment of the lower third of the face can difficult the diagnosis and treatment of malocclusions when applied to patients with developmental patterns different from what is considered as normal.

Material and methods: For this reason, in order to assess cephalometrically the actual role of maxilla, mandible and upper and lower dentoalveolar components on lower anterior facial height, we used 40 lateral telerradiographs taken from patients presenting Angle Class I and II malocclusions, with ages varying between 18 and 28 years, with no previous orthodontic treatment. All the subjects presented an LAFH measure varying between 45 and 80 mm, and ANB angle between 0° and 8°. Seven linear and two angular measures were obtained and statistically analyzed using Pearson’s correlation coefficient to verify the existence of significative correlations between the several variables (p ≤ 0.05), followed by the application of Student’s t test to evaluate the significance of found correlations.

Results: Results showed a strong correlation between LAFH and anterior alveolar height (ANE-Me × A-Pm); LAFH and dentoalveolar heights (ANE-Me × 1s-Me; ANE-Me × 1s-A); and between upper and lower incisors (1s-A × 1s-Pm).

Conclusion: It can be concluded that maxillar, mandibular and both upper and lower dentoalveolar heights are correlated in LAFH composition. This work was approved by the Ethics Committee of University of São Paulo City, under protocol number 13314707.

P183
Evaluation of the Effects of Class II Activators
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Aim: Distal (Class II) malocclusions are the most commonly seen, and therefore, the most commonly treated type of abnormalities. Dental and skeletal factors are involved in development of distal malocclusions. Both maxillary protrusion and mandibular retrusion are evident in the development of skeletal Class II malocclusions.

Material and methods: The study was conducted on hand-wrist radiographs, together with lateral cephalometric radiographs at the beginning and at the end of treatments of a total of 27 individuals of whom were treated with a Class II activators; lateral cephalometric radiographs obtained from a total of 15 Class II individuals as a control group, which had been performed at a time interval, with which it was possible to evaluate the changes that had occurred in growth and development.

Results: Among the measurements for cranial base dimensions, only the increase in N-Ba in the treatment groups was lower when compared to that in the control group.

Conclusion: The increase in the N-Ba dimension being lower, brings about the idea that the activator treatment may influence maxillary development and consequently the nasomaxillary complex.
Prevalence of the Distal Occlusion in Different Geographical Zones
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Introduction: The distal bite is widespread among orthodontic anomalies. According to Ingerval distal bite makes 12% among orthodontic anomalies, and 49% from the investigation of Kim. Epidemiological researches showed that the distal occlusion meets at 20% of the population of Europe, North America and South Africa, and in Asia, in the Middle East and Latin America this anomaly meets at 10–15% of the population.

According to Ast and others among 1413 school children of Europe aged from 15 till 18 years the normal occlusion meets at 79.9%, and the distal occlusion meets at 23.8%. These data coincide with data of Goldstein and Stanton conducting research among the white American children, and data of Massler and Frankel conducting research among children aged from 14 till 18 years.

In Russia also the distal occlusion meets more often than others. According Pogodina conducting epidemiology research among 4000 Russia school children distal occlusion makes 16.8%, from data of Bobrov- 35.7%, from data of Sherbakov- 30.7%.

In Azerbaijan among 4875 teenagers aged from 12 till 17 years anomalies of occlusion meet at 32%. From them 10% are the share of distal occlusion, 3.2% are the share of mesial occlusion, and 18.8% are the share of others. Clinical and genetic investigations showed that in emergence of distal and mesial occlusion plays a role heredity and related marriages.

Conclusion: Results of the epidemiology researches conducted in different race conditions are similar. It shows that the distal occlusion is often widespread and doesn’t depend on environment factors and race.

Effects of Two Elastomeric Ligatures on Microbial Flora and Periodontal Status in Orthodontic Patients
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Aim: To compare the effects of a nonconventional elastomeric ligature (Slide, Leone Orthodontic Products, Sesto Fiorentino, Firenze, Italy) (SL) and a conventional elastomeric ligature (Ormco, Ormco Corp. Orange, CA) (CEL) on microbial flora and periodontal status in orthodontic patients.

Materials and methods: A total of 13 orthodontic patients (ten female, three male; mean age = 16.2) scheduled for fixed orthodontic treatment were selected for this randomized clinical study. The study protocol was approved by the Research Ethics Committee and written informed consent was obtained from all participants. Brackets on the left first premolars of the patients were ligated with SL, and brackets on the left second premolars were ligated with CEL. The gingival index (GI), plaque index (PI), gingival bleeding index (GBI) and pocket depth values were recorded and microbial samples were collected with a sterilized periodontal curette and analyzed before bonding (T0), 1 week later (T1), and 5 weeks after bonding (T2). For the statistical analysis and calculations SPSS for Win (Ver. 15.0; SPSS, Chicago, IL, USA) was used. The level of significance was set at p ≤ 0.05.

Results: No significant difference was found between GI, PI, GBI and pocket depth values of SL and CEL groups in T1 and T5 (p > 0.05). Similarly, there were no statistically differences between aerobe and anaerobe bacteria counts of the groups in T1 and T5 (p > 0.05).

Conclusions: Although the SL covers the total surface of the bracket, it does not cause more plaque accumulation and periodontal problem than CEL.

A Rare Phenomena Finding in Orthodontic Panoramic Radiograph (Case Report)
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Introduction: Panoramic radiograph is one of the most important sources of information in orthodontic treatment. Dentist can visualize the relationship of both dentition, jaw and temporomandibular joint, study of relative developmental status of the teeth and progressive resorption of primary teeth, and ascertain pathologic lesion, but sometimes the dentist found out a rare or unusual material in the picture. This material looked like a small needle which spread out in the soft tissue of the face. In our country this rare or unusual thing called “susuk” which planted by someone with supernatural force. The purpose for doing this is to make them attractive or enhance self confidence.

Case: This case report presented four cases and all the cases was a beautiful female.
Twin B expressed the presence of mouth breathing. Furthermore, Twin A reported of Twin B’s snoring. Medical and dental history, extraoral and intraoral examinations, radiological and otolaryngological findings were used to show the dissimilarities between the twins. An otolaryngological examination revealed a significant difference between twin A and twin B’s nasal septum. Twin B had a deviated nasal septum toward the right. The otolaryngologist stated that this deviation of the septum nasi was sufficient to cause mouth breathing.

**Conclusion:** The lateral cephalometric analysis revealed considerable differences in craniofacial structure and head posture. This case report supports the hypothesis that breathing pattern is one of the cardinal factors concerning craniofacial development.

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**P188**

**Dental Age Assessment by Using Demirjian Methods with OnyxCeph™**

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**Aim:** The assessment of dental age is useful in planning of orthodontic treatment, in pediatric dentistry, pediatric endocrinology and forensic medicine. It also adds some important knowledge of growth and development to human biology. Numerous methods exist that allow either the prediction of age or assessment of maturation. Most popular used method was first described by Demirjian, as based on a large number of French- Canadian children. The aim of our study was to investigate the applicability of Demirjian method for estimation of dental age by using Onyx Ceph™ software.

**Material and methods:** In this retrospective study, dental volumetric tomography (DVT) of 50 Turkish children of known chronologic age and gender were selected; 26 were females and 24 were males and their ages ranged from 7 to 18 years. Dental age assessment was done by Demirjian method with OnyxCeph™. The development of seven permanent left mandibular teeth is determined from panoramic reconstruction of DVT. The data obtained underwent statistical analysis. The p value of dental age and chronologic ages 0.001 (p < 0.01).

**Results:** No statistically significant difference was observed between the mean dental age of children in relation to gender (p < 0.01).

**Conclusion:** The analyses have shown that mean of dental age is greater than chronologic age. The standarts of dental maturation described by Demirjian may not be suitable for Turkish children. The data supports the need for population-specific standarts.

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**P189**

**Association between Periodontal Disease and Pregnancy Outcomes among Patients Attending Luth**

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**Aim:** To evaluate the association between periodontal disease and pregnancy outcomes.

**Materials and methods:** Interviewer-administered questionnaires were completed by the subjects who attended the antenatal clinic of the Lagos University Teaching Hospital. Information obtained included; age, gestational age, marital status, educational status, occupation, baby’s weight at birth, expected and actual date of delivery. Clinical assessment of the periodontium was done using Simplified Oral Hygiene Index (OHI-S) and Community Periodontal Index of Treatment Needs (CPITN). Scaling and Polishing and root planing were done for all patients with periodontal disease before and after delivery.

**Results:** Four hundred and fifty women took part in the study with a response rate of 94%. Age ranged between 18 and 34 years with mean age of 29.67(±3.37). About 71% of the participants attained tertiary level of education.

The mean oral hygiene score for the participants was 1.94 (±1.31), maximum score being 2.62 ± 0.28, and the mean OHI-S of the test group was 0.86 ± 0.65. Prevalence of preterm deliveries for the entire participants was 12.5%, with the control group I having a higher prevalence than the others. Prevalence rate of low birth weight recorded in this study was 12.1% and that of spontaneous abortion was 1.42%. Overall the control group I had better pregnancy outcomes.

**Conclusion:** It is important for health care workers to encourage and promote good oral health among pregnant women as this would improve pregnancy outcomes. There is also the need to advocate for pre-conceptional and intra-conceptional periodontal assessment and treatment in this group of women.

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**P190**

**Association of Periodontitis with Overweight and Obesity in Pregnant Women**

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**Aims:** The purpose of the present study is to investigate if overweight and obesity before pregnancy is associated with periodontitis during pregnancy in the pregnant women. Our hypothesis is that the prevalence of periodontitis during pregnancy is greater in overweight and obese people than in people of normal weight.
Materials and methods: 276 subjects in pregnant women at about 24 weeks of gestation were examined. Overweight and obesity was defined as criteria proposed by WHO Expert Consultation. Periodontal conditions were assessed by measuring periodontal clinical attachment loss (CAL). A comparison among underweight, normal weight, and overweight groups for explanatory variables was analyzed using the chi-square test for categorical variables and analysis of variance for continuous variables. Multivariate logistic regression analysis was carried out adjusting for age, health and oral health behaviors, and obstetric information.

Results: Age, delivery history, and periodontitis (two or more interproximal sites with CAL ≥ 4 mm, not on the same tooth) were significantly associated with body mass index (BMI) (p < 0.05). After adjusting for all the covariates, the adjusted odds ratio of periodontitis was 2.94 (1.25–6.89) for overweight (BMI ≥ 23 kg/m²).

Conclusions: Overweight and obesity before pregnancy is associated with periodontitis during pregnancy in the pregnant women.

P191
Periodontal Surgical Treatment of Patient with Oral-facial-Digital Syndrome – 6 Years Follow up – Case Presentation
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Aim: Oral-facial-digital syndrome is characterized by an X linked dominant mode of inheritance with lethality in males. Clinical features include facial dysmorphism with oral, tooth, and distal abnormalities, polycystic kidney disease, central nervous system malformations and abnormalities of the fingers.

Materials and methods: Patient EJ, age 24, female, had complaints of functional and esthetic nature, inability of chewing, lip incompatibility, gum bleeding, feeling of itchiness in the gums and changes on the position of the teeth. Psychosocial discomfort due to incorrect position of the teeth was associated with speech impediment. After clinical periodontal screening and radiological examination she presented combined suprabony and infrabony pockets, gingival inflammation, tooth mobility and pathologic changes on the position of the teeth. Dysmorphic features affecting the head include facial asymmetry, micrognathia, broadened nasal ridge and hemi-facial microsoma. The digital abnormalities affecting the hands and feet include brachydactyly.

Results: After basic periodontal therapy and full mouth scaling and root planning, periodontal surgery was performed. During surgery teeth 12, 11, 21, 22, 26 were extracted. Six weeks after periodontal surgery patient had prosthetic rehabilitation.

Conclusions: Surgical periodontal treatment after 6 years follow-up results with functionality and esthetics, and satisfactory psychological impact to the patient with regards to oral health. As maintenance treatment, patient is advised for the reinforcement of the tooth brushing technique, with regular plaque removal and rigorous oral examination to control and maintain healthy and stable periodontal tissue status.

P192
Case Report: Treatment of Periodontal Bone Defect with PRF and Xenograft Combination
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Introduction: Periodontal regeneration can be defined as the complete restoration of the lost tissues to their original architecture and function by recapitulating the crucial wound healing events associated with their development. Currently, there is a variety of treatment modalities available for periodontal regenerative therapy, which includes bone grafts and substitutes, guided tissue regeneration, the use of growth factors, applications of tissue engineering, or combinations of two or more of the above-listed approaches.

Bovine bone grafting material has been used to fill periodontal intrabony defects, which has resulted in clinically acceptable responses. Platelet-rich fibrin (PRF) is a leukocyte and platelet preparation that concentrates various polypeptide growth factors and therefore has the potential to be used as regenerative treatment for periodontal defects.

Case: A 35 years old female patient has guided to our periodontology department from oral diagnosis department. At clinical examination 11 mm periodontal pocket has measured and there was vertical bone defect, reaches to apical of maxiller lateral incisors apical area. After initial and nons-surgical treatment flap operation performed. Xenograft and PRF combination was fitted into defected area and they were covered with membran material.

Conclusion: After 5 months follow up pocket dept was 2 mm. Defected area has recovered completely bone regeneration and new bone growing area had same density as the adjacent areas.

P193
Carious and Periodontal Status of Patients with Thalassemia Major
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Aim: The oral health of thalassemic patients (periodontal and carious status).

Methods: Seventy thalassemic patients and 60 control subjects between 2 and 20 years old were included in this study. Clinical examination consisted in: Teeth check-up to investigate teeth decays, Lateral cephalometric radiograph and Panoramic X-rays as auxiliary method, facial, profile, and/or intraoral photos, periodontal charting, as well as collecting material from gingival crevicular fluid. Gingival biopsies were obtained in Thalassemic subjects in order to evaluate inflammation. Hematological data were collected also for each patient.

Results: In general, dental examination revealed a poor hygiene. Among 70 examined patients, 80% of them were diagnosed with gingivitis. It was observed a very high rate of caries (99%) and...
serious malocclusion stages (deep bite, open bite, Angle’s class II). VarioOr Dentos test demonstrated pathogen bacteria in gingival in 80% of thalassemic subjects.

**Conclusions:** Thalassemia is associated with higher rates of caries, periodontal problems and malocclusion. These changes should be taken into account when planning orthodontic treatment and orthognathic surgery.

P194

**Comparision of the Effects of Coronally Repositioned Flap Techniques with Releasing Incision and Without Releasing Incision for the Treatment of Localized Gingival Recession: 6 Month Controlled Clinical Study**

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**Aim:** The aim of the present study was to compare clinical outcomes of split thickness coronally repositioned flap without vertical releasing incisions and full thickness coronally repositioned flap with vertical releasing incisions in the treatment of localized gingival recessions.

**Material and methods:** Nineteen systemically and periodontally healthy patients with bilateral Miller class I recession defects were enrolled in the study. Control recession defects were treated full thickness coronally repositioned flap with vertical releasing incisions and test recession defects were treated split thickness corono- nally repositioned flap without vertical releasing incisions. Porging depth (PD), Recession depth (RD), Recession width (RW), Keratinized tissue width (KTW) and Clinical attachment level (CAL) were measured at baseline and 3 and 6 months after the treatment.

**Results:** Both groups showed statistically significant gain in Clinical Attachment Level and statistically significant reduction in Recession Depth, Recession Width, Probing Depth. The differences between groups were not statistically significant for Recession Depth; Recession Width; Probing Depth; Keratinized Tissue Width and Clinical Attachment Level after 6 months.

**Conclusion:** This clinical study showed that, new CRF technique is as effective as classical CRF technique for the treatment of localized gingival recession.

P195

**Periodontal Disease and Quality of Life**

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Private Dentist

**Aim:** The purpose of the research is to compare correlation between level of quality of life and degree of pathological changes in periodontal tissue.

**Material and methods:** Reseacher was held among 200 people who had periodontal problems in Baku. Researched were divided into three groups: group 1–95 persons with cataral gingivitis and mild form of periodontal disease, group 2–68 persons with moderate degree of periodontal disease and 3-rd group 37 persons with severe form of periodontal disease. Index of life quality were researched by Nottingham Health Profile. Authenticity of differences was determined with the method of U-test (Mann–Whitney–Wilcoxon, MWW).

**Results:** Analysis of results of Nottingham Health Profile survey revealed that in general average point of quality of life indexes for all researched patients was 8.94 ± 0.80. Indexes more than 30 points were 11.5 ± 2.26%. The highest average point was revealed in the group of patients with severe form of periodontal disease 23.2 ± 1.79. That is accordingly 5.3 times (p < 0.001) and 3.1 times (p < 0.001) higher than indexes in the group 1 and group 2. Quality of life indexes higher than 30 points was revealed when patients with severe form of periodontal disease. This index in group 3 was 6.6 times higher (p < 0.001) than in group 2. In group 1 index more than 30 wasn’t revealed.

**Conclusions:** In conclusion we can say that quality of life is directly connected with oral health, and progression of periodontal disease make it worse.

P196

**The Dental Anxiety and its Effects on Obesity and Periodontitis**

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**Aim:** The psychosocial factors and their effects on periodontal diseases initiation and progression have been widely investigated. The immuno-suppression, negative coping strategies and irregular dental visits are reported as being a predisposition to periodontitis in anxious individuals. The association between periodontitis and obesity was also investigated. The worsened periodontal condition, decreased teeth number, and irregular dental visits were reported in obese subjects. The aim of this study is to determine the effect of dental anxiety in the association between obesity and periodontitis.

**Material and methods:** One hundred-and thirteen volunteered subjects (71 female, 42 male) have participated in this study. The clinical periodontal parameters (gingival index, plaque index, bleeding on probing, probing depth and clinical attachment level), and socio-demographic characteristics (education, income, marital status, medical conditions, etc.) were recorded. The Modified Dental Anxiety Scale (MDAS) and Dental Hygiene Fear Survey (DHFS) were also applied.

**Results:** The anxiety scores have not presented any correlations with periodontal parameters (p > 0.05), but have negative significant correlations with obesity parameters (p < 0.05). Obesity and periodontal parameters were found to be significantly correlated (p < 0.05).

**Conclusions:** The results of this study have supported the literature, reported an association between obesity and periodontitis and between anxiety and obesity. Further studies with larger study groups including the subjects with higher anxiety, periodontitis and obesity parameters’ levels might give the opportunity to make more clear comments about these relationships.
P197

**Analysis of Daytime Variations in Gingival Crevicular Fluid: A Circadian Periodicity!**

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**Background:** Volumetric alterations in gingival crevicular fluid (GCF) is widely accepted to be associated with periodontal health/disease. The volume/flow of GCF is shown to be affected by an array of methodological factors. However, relatively limited information is available whether GCF is subject to circadian rhythm. Thus, the main aim of the present study is to assess the possible presence/absence of circadian rhythm of GCF. The impact of the sampling technique on daytime volumetric variations was also analyzed.

**Methods:** In 80 tooth sites and a total of 480 GCF samples, the possible daily volumetric variations of GCF with 2-h intervals (08:00–18:00) were assessed. In order to eliminate any potential volumetric differences due to tooth dimensions, only maxillary incisors were included. To analyze the potential impact of sampling technique on GCF volume and daytime variations, at one site orifice inracevicular sampling technique (OISM) was used, while the contralateral site was sampled by use of deep inracevicular sampling technique (DISM). Clinical periodontal parameters of the GCF sampling sites were also recorded.

**Results:** No significant daily variations in GCF volume could be detected. Higher volumetric measures were observed in inflamed subgroups when compared to healthy subgroups (p < 0.05). OISM was equivalent to DISM with regard to mean GCF volumes and the possible daytime volumetric alterations.

**Conclusions:** In recent years our general understanding of GCF dramatically increased. However, there still are fields that need better clarification. Factors with the potential to impact the ideal methodology and diagnostic potential of GCF seem to deserve a particular interest.

P198

**Poor Oral Hygiene Related Peripheral Giant Cell Granuloma**

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**Introduction:** Peripheral Giant Cell Granuloma is a reactive lesion derived from periodontal ligament and periosteum because of irritating factors such as trauma, tooth extraction, plaque, calculus, badly finished fillings, unstable dental prosthesis, chronic infections and impacted food. It is more common in women more than men. It can show recurrence after excision. PGCG in a man patient is discussed at literacy.

**Case:** A 41-year-old man patient was referred to the Department of Periodontology with the complain of the swelling of gum at the anterior mandibula. The patient told that he had had this sessile blush red smooth lesion since 1.5 year with no pain. The teeth near to the lesion were vital, but had bleeding on probing. Radiographically around the central incisors and left lateral incisor there had been bone resorption.

After the conservative periodontal treatment, the lesion had been excised. At the surgery, central incisors and left lateral incisor had been removed. The lesion sent to the Department of Pathology. It had been reported as a Peripheral Giant Cell Granuloma. In this case, the patient was healthy, non-smoker, but had poor oral hygiene. The lesion is likely to be occurred because of poor oral hygiene in patient man.

**Conclusion:** It is very crucial to diagnose those lesions at their initial stage. Patients should be informed about the importance of the lesions even they do not cause any pain, they can lead to tooth or bone loss. In dental practice, for providing people qualified oral health, cases should be taken care of. Furthermore, early diagnose and treatment should be done.

**Theme: Preventive Dentistry: Public Health**

P199

**Dissemination of New Japanese Cosmetic Acupuncture Techniques on New York**

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**Purpose:** Today Acupuncture is often used in the treatment of common symptoms caused by stress such as painful neck and shoulders, tension headaches, digestive problems, dry eyes, insomnia, etc. Acupuncture works by stimulating your body’s own natural healing power and unifying the vital energies “Qi”.

**Materials and methods:** Cosmetic Acupuncture (CA) helps rejuvenate the skin and improves tone by stimulating healing and enhancing the skin’s overall health. CA takes a very different approach to treatment compared with general acupuncture. To begin with, more needles are used in concentrated patterns particularly on the face.

**Results:** Natural beauty follows on from good health. Healthy body and spirit are the foundations for a youthful and beautiful appearance. For this reason, CA also promotes general health and treats any underlying medical conditions. CA is therefore a truly holistic approach to beauty, working on the body’s general health and wellbeing as well as providing highly effective cosmetic treatments.

**Conclusion:** I gave a lecture about CA at New York College of Traditional Chinese Medicine, October 2012. The lecture was favorably received by most students and teachers. I would like to spread CA all over the world.
P200
Recognition of Chewy Foods among Guardians of 3-Year-Old Children
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Purpose: We investigated some of the effects of food education, with a focus on foods cited as examples of chewy foods eaten by 3-year-olds during meals by their parents and guardians.

Materials and methods: Subjects were approximately 6000 children among those who underwent the official health checkup for 3-year-olds offered in Kanagawa Prefecture between July and October 2011. The final numbers of subjects were 4483. The survey was performed via a questionnaire that asked about attributes, actions to ensure dental health, and history of caries. In this report, we calculated the total number of cases of each type of chewy food cited as an example by parents and guardians who answered “Yes” to the question in the survey “Do you include chewy foods in your child’s meals?” Foods cited as being chewy were divided into ten categories. This ranks foods on a scale of 1–10, with higher scores indicating greater chewiness.

None of the questions related to subjects’ human rights, and individuals cannot be identified from the statistical results.

Results: A total of 2497 respondents cited actual examples of chewy foods. Because some of these gave multiple examples, 4654 valid responses were received in total. The level of chewiness is not necessarily consistent with the number of times a food is chewed.

Conclusions: The distribution of foods of different rankings did not exhibit a consistent trend, and no significant differences were evident in the goodness of fit of foods of different chewiness rankings.

P201
Follow-up Investigation after Implementation of Group Fluoride Mouthrinse Program
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Purpose: We conducted an investigation to clarify any changes in oral health status and habits from fluoride mouthrinsing at preschools, kindergartens, elementary and junior high schools that implement the group fluoride mouthrinse program in a city-run program.

Materials and methods: We administered questionnaire surveys to 5283 children in City A, which carries out group fluoride mouthrinsing. We requested the City A Board of Education to administer the surveys, who then requested the schools to distribute and collect them. The final numbers of subjects were 3698. Tests of goodness of fit were performed on selected conflicting responses, with a level of significance of 5%. This investigation was approved by the Ethics Committee at Kanagawa Dental College (no. 174).

Results: Only 18.9% responded that they observed changes in their child from the fluoride mouthrinse program. While 64.4% selected “Tooth brushing habits improved,” 2.3% selected that “Tooth brushing habits became worse.” In addition, 11.1% selected “Teeth look shinier,” but 3.4% selected “Teeth look cloudier.” A total of 7.3% selected “Gets canker sores less often,” and 2.4% selected “Gets canker sores more often.”

Conclusions: These results did not indicate neglecting of tooth brushing habits, the presence of dental fluorosis, or the presence of canker sores or other side effects on the mucous membrane.

This study was supported by Health Labour Sciences Research Grant (H24120701).

P202
Necessity of Pre-Testing and Re-Testing for Successful Questionnaire Surveys
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Purpose: We conducted a questionnaire survey of 3-year-olds and their parents/guardians to prepare guidelines that improve their understanding of ingredients for chewy foods.

Materials and methods: We conducted a pretest by questionnaire on eight male and female with experience raising children, and conducted a retest 3 weeks later. The contents of this questionnaire included personal attributes (gender, birth order, etc.), dietary habits, and dietary knowledge, etc.

This study is compliance with the Helsinki Declaration, and was approved by the Ethics Committee of Kanagawa Dental College (June 11, 2012, no. 189).

Results: Based on the opinions of respondents during the pretesting and retesting, we revised the wording and word arrangement, and underlined some parts to add emphasis. Despite the fact that questionnaires are frequently used in surveys, few of them examine question reproducibility or consider whether the intent of the questions is correctly conveyed to the respondents. The results of the current study revealed that answers to questions about personal attributes or current habits were highly reproducible, while those that required judgment based on past memories or vague knowledge were not very reproducible.

Conclusions: When carrying out questionnaire surveys, both pretesting and retesting should be performed in order to ensure the stability of responses before the main survey is implemented.

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Emergency Care by Teachers of Dental Injury in Preschoolers
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Aim: To determine the knowledge of private and public elementary teachers in the emergency management of dental injury in preschool children.

Method: The study was a cross-sectional descriptive study. A total of 100 self-administered questionnaires were administered to 50 teachers in eleven (11) private and 50 teachers in twenty-one (21) public randomly selected elementary schools. The questionnaire consisted of demographic data and sections to determine the knowledge of teachers concerning traumatic dental injury.

Results: In comparison between public teachers and private teachers on the knowledge of dental trauma and its emergency management, the association showed that there is no statistically significant association in the knowledge of the prevention of dental trauma \( p = 0.3675 \), the knowledge of the emergency treatment of dental trauma \( p = 0.3574 \), and overall knowledge of dental trauma \( p = 0.8199 \)

Conclusion: The knowledge of preschool teachers in private and public elementary schools is poor. Therefore, it is imperative that dentists improve school health programme by helping to establish oral health promotion in schools and also include the training of teachers on oral health.

Prevalence of Tooth Wear Lesions among Patients
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Aim: To determine the prevalence of toothwear lesions in a population of patients attending a selected Dental clinic.

Methods and materials: The population consisted of consecutive patients attending the Dental Clinic of the Lagos University Teaching Hospital, Lagos, Nigeria. Self-administered questionnaires were designed to determine the knowledge and the prevalence of toothwear lesions among these patients with an intra-oral examination done for every patient. The Smith and Knight toothwear index was used in recording toothwear scores. Pre-tests were used to test the clarity of the questionnaires. Data collected was analyzed using the Epi-info 3.5.1 statistical software.

Results: A total of 100 patients participated in the study, more than half of the respondents (54%) had not heard of toothwear lesions previously and 37% of the respondents were knowledgeable as to the cause of such lesions. The lesion with the highest prevalence was Attrition (45%), perhaps attributed to the high consumption of hard foods followed by the combination type (23.9%) with erosion (15.6%), abrasion (14.7%) and Abfraction (0.8%) coming in further down. The occurrence of both tooth sensitivity, associated mainly with erosion and abrasion; and pain, closely related with attrition; were the most common problems associated with the toothwear lesions.

Conclusion: From the result of this study, prevalence of toothwear lesions can be said to be on the increase when compared with previous publications, there is an increased clinical evidence to show that early detection as well as public awareness campaigns are the key to reducing the occurrence.

Impact of Dental Healthcare Waste on Our Environment-Solutions
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Introduction: Global concerns, such as ozone layer depletion caused by green-house gases, melting of ice caps due to global warming etc. are already a matter of great concern today. The large volumes of health care waste if not managed properly can lead to a similar global hazard. Every system in nature progresses towards disintegration and it contributes to creating waste. A modern hospital is a complex multidisciplinary system which consumes thousands of items for delivery of medical care and is part
of physical environment. Infectious waste being generated at Dental Offices&laboratories has gained massive importance of late, legislations&© of urate bodies viewing it as a serious threat to Healthcare workers. Mercury is a potent neurotoxin, at very low level of exposure it can cause permanent damage to the human central nervous system. Certified amalgam separators installation to offices regardless of sewer disposal type (public system), as Mercury is an important component in amalgams. Properly manage and dispose of all other dangerous waste streams generated by the dental office (e.g., X-ray wastes, or lead foils/aprons). Dispose of all scrap amalgam waste from traps, filters and separators with a licensed treatment, storage, disposal or recycling facility. Lead, Cadmium, Chromium and even disinfectants like Glutaraldehyde, Bleach though are ure disinfectants but are toxic chemicals. Proper training on how to dispose off mercury will contribute to the prevention of environmental exposure. Staff training is a key element in the proper prevention and management of mercury spills.

Methods and conclusion: This poster depicts how dental waste management precautions in Dental Offices – help in reducing the impact on environment. Thank You.

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Sources of Health Information and Access to Publicly Funded Dental Care among Toronto Youth
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Objectives: The aim of this environmental scan is to develop better understanding of behavior of Toronto adolescents towards access to health information within their existing community.

Methods: The participation was on a voluntary basis with participation of 198 adolescents between the ages of 12 and 18. Data were collected from nine different sites of the city of Toronto with a self-administered feedback form, consisting of 13 multiple choice questions. The questions focused on the self-perception of the youth regarding their general and dental health and sources of health information they prefer and utilize.

Results: Overall, the participants classified their general health status better than their oral health status; 65.2% reported that their last visit to the dentist was during the previous year and 15.7% had not visited the dentist during the previous year and 15.7% had not visited the dentist during the previous two years; and over 24% reported “tooth pain” as their main reason to visit a dentist. 36.9% of the sample indicated “cost of dental treatment” as a barrier to access dental care. As for the dental information, the most preferred sources were dental clinics (70.2%) and family doctor (31.3%).

Regarding the health advertisements, “Internet” and “Poster in schools” represented 42.4% of their preference, followed by “Pamphlets in health clinics” (34.3%) and “Poster in the TTC” (33.8%).

Conclusion: This study describes the information obtained from a small subset of the Toronto youth population. However, the findings of this scan present some discussion about the opportunities for improving ongoing processes of health communication and advertisement among youth in Toronto.
Results: 21,558 decayed, 166 filled milk teeth, df-t index (3.61) were investigated for 5431 kindergarten, primary school students. 73.6%, 18.3% of primary school students have milk, permanent teeth decays respectively. 99.2%, 96.8% of students don’t have fillings in milk, permanent teeth respectively.

6076 decayed, 1419 filled, 239 absent permanent teeth, DMF-T index (2.08) were investigated for 3708 secondary school students. 27.4%, 60.2% of students have milk, permanent teeth decays respectively. 99.2%, 81% of students don’t have fillings in milk, permanent teeth respectively.

Considering results of surveys, favorable results were obtained regarding understanding the importance of 6-year-old teeth, improvement of oral hygiene.

Conclusion: Index values were below Turkey average, thus dental health of students is concluded not to be in an unfavorable situation. Decayed teeth were concluded to be untreated. Therefore, persistence of city-wide examinations, trainings will be beneficial for taking measures.