The transjugular intrahepatic portosystemic shunt (TIPS)


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The creation of an intrahepatic portosystemic shunt via a transjugular approach (TIPS) is an interventional radiological procedure used to treat the complications of portal hypertension. TIPS insertion is principally indicated to prevent or arrest variceal bleeding when medical or endoscopic treatments fail, and in the management refractory ascites. This review discusses the development and execution of the technique, with focus on its clinical efficacy. Patient selection, imaging surveillance, revision techniques, and complications are also discussed.

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Introduction

The transjugular intrahepatic portosystemic shunt (TIPS) was conceived by the interventional radiologist Josef Rosch in 1969. It was an unintentional breakthrough; Rosch and co-workers had been trying to perform transjugular cholangiography and when they frequently inadvertently entered the portal vein it was realized that this was a technique that would allow formation of a portosystemic shunt. TIPS is now an established treatment for the complications of portal hypertension. It results in a permanent intrahepatic tract, typically between the right hepatic and the right portal vein, shunting blood away from hepatic sinusoids and thereby reducing portal venous pressure. However, by diverting portal blood flow, TIPS may worsen liver function and increase the risk of hepatic encephalopathy. Although Rosch and colleagues could successfully create a communication between a hepatic and an intrahepatic portal vein, these early tracts closed quickly due to elastic recoil of the hepatic parenchyma. It required the introduction of metallic stents in the 1980s before TIPS could be used with sustained clinical success; Richter and colleagues reported their initial experience of TIPS using Palmaz stents in 1989. Unfortunately, uncovered stents proved prone to stenosis and occlusion, and consequently, required close surveillance and high rates of re-intervention. Covered stents (or "stent-grafts") developed in the late 1990s to specifically address these problems now have proven superior patency compared with uncovered stents and have heralded a promising new era for TIPS.

Indications and patient selection

TIPS insertion should ideally only be performed in patients who are under the care of a gastroenterologist or hepatologist. The principal indication is for variceal haemorrhage refractory to endoscopic and medical therapy (approximately 15–20% of...