

Biliary Obstruction following Transjugular Intrahepatic Portosystemic Shunt Creation in Patients with Variceal Bleeding

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ABSTRACT

This report describes an unusual complication after creation of a transjugular intrahepatic portosystemic shunt (TIPS). Biliary obstruction developed in two patients with portal hypertension accompanied by portal vein thrombosis, one patient with and the other without portal cavernous transformation. The biliary obstruction was thought to be secondary to compression of the bile duct by the stent graft placed in the TIPS. Awareness of this possible complication is important for its early diagnosis.

ABBREVIATIONS

PVT = portal vein thrombosis, TIPS = transjugular intrahepatic portosystemic shunt

The transjugular intrahepatic portosystemic shunt (TIPS) procedure is an important part of the current armamentarium used to treat the complications of portal hypertension when conservative medical management has failed. The most common complications of the TIPS procedure include bleeding, deterioration of liver function, hepatic encephalopathy, stent occlusion, and rare complications such as biliary–venous fistula, hepatic infarction, and hepatic artery–portal vein fistula (1).

Some patients with normal portal veins have been reported to experience biliary obstruction after the TIPS procedure (2–4). Here we describe two patients with chronic portal thrombosis who experienced biliary obstruction as a complication of TIPS creation. This

retrospective case study was exempted from institutional review board approval.

CASE REPORTS

Patient 1

A 37-year-old man with Child–Pugh class B liver cirrhosis and hypertension presented with recurrent episodes of esophageal variceal bleeding. Endoscopic measures had failed. He was admitted to the emergency room with esophageal variceal bleeding. Laboratory investigation showed a hemoglobin level of 75 g/L (reference range, 120–160 g/L), total bilirubin level of 22.9 $\mu\text{mol/L}$ (reference range, 3.4–17.1 $\mu\text{mol/L}$), alanine aminotransferase level of 195 U/L (reference range, 0–40 U/L), and alkaline phosphatase level of 102 U/L (reference range, 10–40 U/L). The patient was determined to have a Child–Pugh score of 9. Abdominal computed tomography (CT) showed a shrunken cirrhotic liver, main portal vein thrombosis (PVT) with portal cavernous transformation accompanied by enlarged parabiliary venous collateral vessels, partial superior mesenteric vein thrombosis, and mildly dilated intrahepatic bile ducts (**Fig 1**).

The patient underwent a TIPS procedure with the use of an 8-mm \times 8-cm bare metal stent (Bard/Angiomed, Karlsruhe, Germany) and an 8-mm \times 4-cm endovascular

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Figure 1. Preoperative contrast-enhanced CT in patient 1 shows a shrunken cirrhotic liver with massive ascites, along with partial superior mesenteric vein thrombosis (triangle), portal cavernous transformation (arrow), and mildly dilated intrahepatic bile ducts (circle).

covered stent (Fluency; Bard Peripheral Vascular, Tempe, Arizona). A 12-mm × 6-cm bare metal stent (Bard/Angiomed) was inserted into the thrombosed main portal vein to maintain its patency.

Five days after the procedure, biliary obstruction developed with obvious symptom of jaundice, accompanied by a total bilirubin concentration of 253 $\mu\text{mol/L}$. A transhepatic cholangiogram demonstrated obstruction of the right central hepatic duct at the site of the TIPS stent graft (Fig 2). After unsuccessful attempts to a cross the obstruction, a 7-F multipurpose drainage catheter (Dawson–Mueller; Cook, Bloomington, Indiana) was inserted into the right hepatic ducts for external biliary drainage (Fig 2). During the following 2 weeks, the patient's bilirubin level decreased from 253 $\mu\text{mol/L}$ to 35.2 $\mu\text{mol/L}$. The patient refused to undergo further treatment for economic reasons and associated risks. Two years later, the catheter remained in place. Follow-up at that time showed no evidence of ascites, hepatic encephalopathy, or variceal bleeding, and mild cholangitis was successfully controlled with medical management, including the administration of intravenous fluids and antibiotic agents.

Patient 2

The second patient was a 60-year-old woman with schistosomal cirrhosis and recurrent episodes of esophageal variceal bleeding unresponsive to β -receptor

blockers. Ten years earlier, she had undergone a splenectomy plus a portozygos disconnection procedure. She was admitted with severe esophageal variceal bleeding. Abdominal CT revealed a shrunken cirrhotic liver, calcification of the main portal vein with collateral circulation, and calcification of the superior mesenteric vein wall (Fig 3). Laboratory investigation showed a total bilirubin level of 24.5 $\mu\text{mol/L}$. The patient was determined to have a Child–Pugh score of 8.

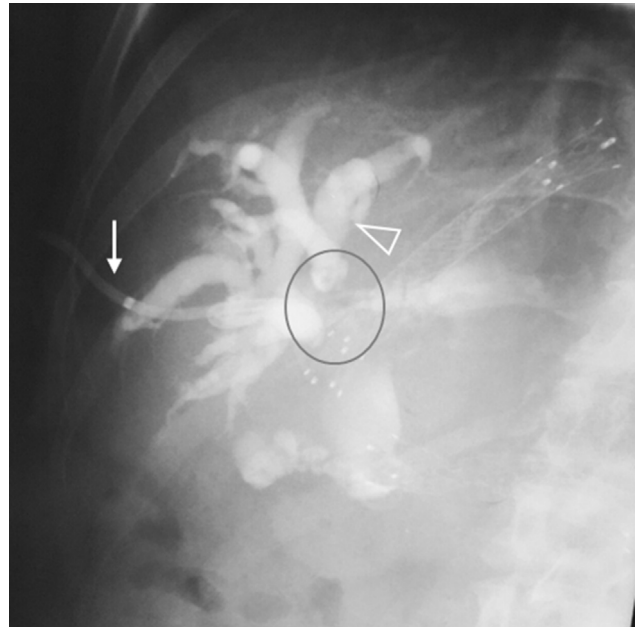


Figure 2. Postoperative percutaneous transhepatic external catheter (arrow) cholangiography in patient 1 shows dilated intrahepatic bile ducts (triangle) with obstruction of the ducts (circle).



Figure 3. Preoperative contrast-enhanced CT in patient 2 shows a shrunken cirrhotic liver and calcification of the portal vein and superior mesenteric vein walls (arrow).

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