Choledochoduodenostomy for biliary drainage of malignant obstruction after failed endoscopic retrograde cholangiopancreatography

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CASE PRESENTATION

A 79-year-old woman presented with epigastric pain and jaundice, and had a bilirubin level of 291 $\mu\text{mol/L}$. A computed tomography (CT) scan of the abdomen revealed an unresectable mass in the head of the pancreas, with resulting biliary obstruction. Endoscopic retrograde cholangiopancreatography (ERCP) was attempted but failed due to tumour ingrowth into the second part of the duodenum, which prevented access to the papilla. Endoscopic ultrasound (EUS) revealed the common bile duct (CBD) dilated to 1.5 cm proximal to the tumour. Using fluoroscopy and EUS guidance, the dilated CBD was accessed using a 19-gauge fine-needle aspiration needle, followed by cholangiogram, wire cannulation, balloon dilation and deployment of a fully covered 10 mm $\times$ 4 cm biliary Wallflex (Boston Scientific, USA) stent from the CBD into the duodenal bulb, resulting in immediate drainage of bile (Figures 1 to 5). A 22 mm $\times$ 60 mm uncovered duodenal Wallflex stent was also placed to relieve the duodenal obstruction. The serum bilirubin level gradually decreased to 15 $\mu\text{mol/L}$ and remained normal at three months follow-up.

A second patient, a 68-year-old man with known metastatic pancreas adenocarcinoma diagnosed three months previously, presented with worsening abdominal pain and new-onset jaundice (bilirubin level 107 $\mu\text{mol/L}$). CT revealed a 4.5 cm mass in the head of the pancreas encasing the CBD. ERCP failed due to inability to advance the wire through the tumour, despite successful cannulation. An attempt

at EUS-guided rendezvous was abandoned after unsuccessful wire advancement due to complete obliteration of the CBD within the tumour. Under fluoroscopic and EUS guidance, a fully-covered 10 mm $\times$ 4 cm biliary Wallflex stent was then placed from the CBD into the duodenal bulb. His bilirubin level decreased to 48 $\mu\text{mol/L}$ four days postprocedure and to 4 $\mu\text{mol/L}$ at two months follow-up. No early or late complications occurred in either case.

DISCUSSION

Percutaneous transhepatic cholangiography (PTC) has been the traditional salvage option after failed ERCP in malignant distal biliary obstruction. Recently, EUS-guided biliary drainage (EUS-BD) has been developed as an alternative method. EUS-BD consists of an EUS-guided rendezvous procedure followed by conversion to ERCP, or direct transmural drainage either in the form of choledochoduodenostomy or

Figure 1) Endoscopic ultrasound-guided puncture and wire access to the common bile duct above the level of the tumour

Figure 2) Cholangiogram revealing the obstructed bile duct

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Received for publication January 8, 2015. Accepted January 12, 2015

Figure 3) Stent deployment with direct endoscopic visualization

Figure 4) Stent deployment under fluoroscopic guidance

hepaticogastrostomy. Advantages over PTC include the ability to perform it immediately following failed ERCP and lack of an external drain. There are limited data for this novel procedure; however, early series suggest similar efficacy and safety compared with PTC (1). The largest study reports equivalent outcomes between rendezvous and direct transluminal EUS-BD techniques (2). The primary reasons for pursuing transmural drainage are the inability to access

Figure 5) Biliary drainage via covered stent into duodenal bulb

the ampulla or failure to traverse a malignant biliary stricture (3). The overall success rate of EUS-BD after failed ERCP may be as high as 91% (4), with a complication rate of 15%, including pneumoperitoneum, bleeding, stent migration and, occasionally, bile peritonitis. When a duodenal stent has been placed for luminal tumour invasion, EUS-guided transmural drainage may result in higher stent patency rates compared with traditional transpapillary drainage (5). The exact role of transmural biliary drainage remains undefined and is an area of ongoing research.

EUS-guided choledochoduodenostomy is a viable alternative after failed ERCP for malignant biliary obstruction, although it should be performed at expert referral centres.

DISCLOSURES: The authors have no financial disclosures or potential conflicts of interest to declare.

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