



EUS-guided choledochoduodenostomy as a rescue after failed ERCP and percutaneous transhepatic biliary drainage in the management of postoperative benign biliary stricture

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A 34-year-old woman presented with a 4-month history of obstructive jaundice. She had undergone complicated cholecystectomy and common bile duct exploration 5 years earlier. She underwent surgical choledochoduodenostomy (CDS) for recurrent biliary obstruction 5 months after the first surgery. She was asymptomatic until 4 months earlier, when she presented with obstructive jaundice and cholangitis. Magnetic resonance cholangiopancreatography showed a smooth common hepatic duct stricture, intrahepatic stones and bilateral intrahepatic biliary radicle (IHBR) dilatation. The choledochoduodenal anastomosis was stenosed, through which contrast and the guidewire could not be negotiated. On percutaneous transhepatic biliary drainage (PTBD), contrast and the guidewire could not pass across the tight biliary stricture (Fig. 1).

An EUS-guided biliary drainage was considered (Video 1, available online at www.giejournal.org). Dilated CHD and bilateral IHBR were observed via linear-array echoendoscope (GF-UCT 180; Olympus Ltd, Tokyo,

Japan), positioned in the duodenal bulb in the long loop position. Doppler helped evaluate and identify a safe puncture site (Fig. 2). The CHD was punctured just below the biliary confluence using a 19-gauge EUS needle (EchoTip; Cook Endoscopy, Winston Salem, NC, USA).

Aspiration of bile confirmed accurate positioning of the needle. Contrast injection showed dilated left and right intrahepatic ducts (Fig. 3). A 0.035 inch hydrophilic guidewire (GLIDEWIRE; Terumo Medical Corporation, Somerset, NJ, USA) was passed through the needle into the left hepatic duct (LHD), confirmed with EUS and fluoroscopy. Over the guidewire, a 19-gauge needle was exchanged for a 6F cystotome (G-Flex, Niveller, Belgium) to create a fistula. A 4-cm fully covered self-expandable metal stent (FCSEMS) delivery system was deployed across the CDS tract, under combined EUS and endoscopic guidance (WallFlex biliary RX fully covered stent system RMV; Boston Scientific Corp, Marlborough, MA, USA).



Figure 1. Cholangiogram on percutaneous contrast injection showed dilated left and right hepatic duct and a tight common hepatic duct stricture.

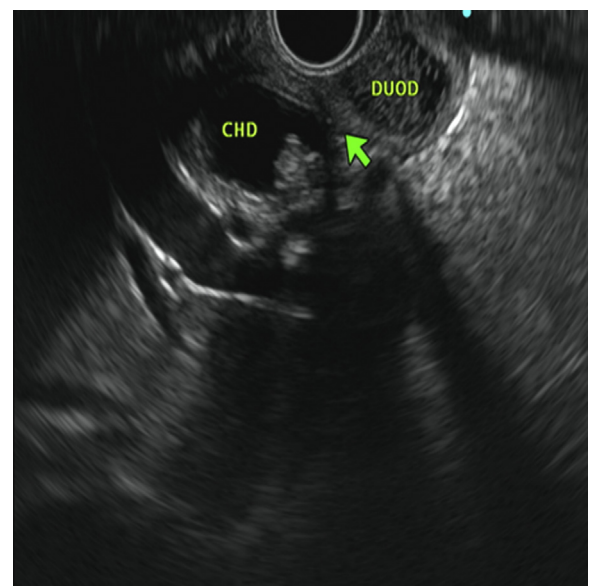


Figure 2. EUS image. Thin wall between duodenal wall and dilated common hepatic duct.

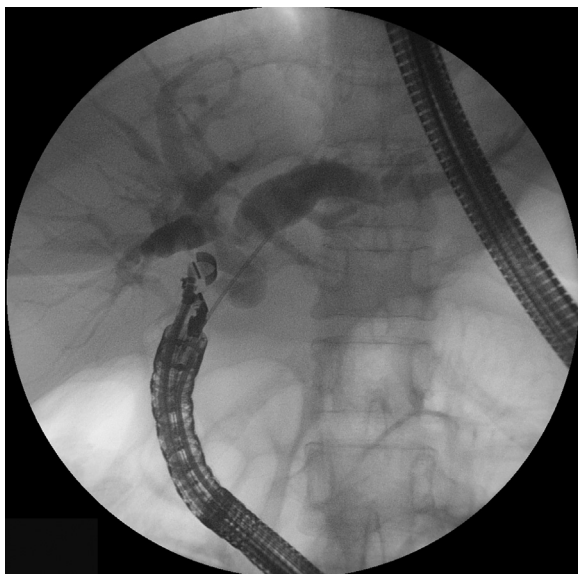


Figure 3. EUS-guided puncture of the common hepatic duct with cholangiogram showing dilated left and right hepatic duct.

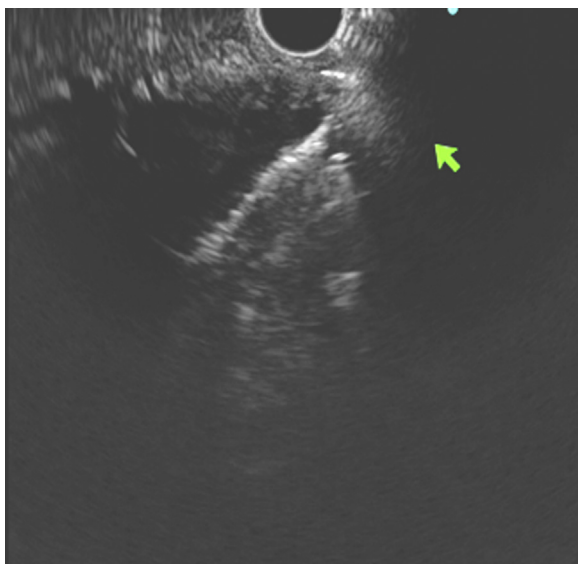


Figure 4. EUS image showing placement of fully covered self-expanding metallic stent (inner flange deployment).

The internal flange was deployed first under EUS guidance. Traction was applied to oppose the inner flange close to the bile duct wall (Fig. 4). The duodenal end of the flange was then deployed under endoscopic guidance. Free flow of bile was noted, along with contrast emptying from both hepatic ducts. A 7F, 5-cm-long double-pigtail stent was placed through the FCSEMS for anchoring (Fig. 5). After 6 weeks, the FCSEMS was removed, leaving the plastic stent in situ. A balloon sweep was performed, and soft calculi were removed (Fig. 6). The patient remained asymptomatic after index EUS biliary drainage without further biliary intervention.

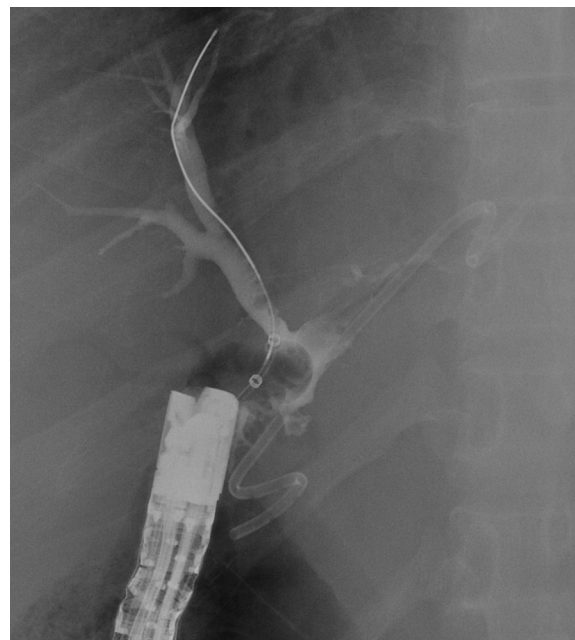


Figure 5. Fluoroscopic image (cholangiogram) showing successful cholecysto-duodenostomy after removal of fully covered self-expandable metal stent, balloon retrieved beside the plastic double-pigtail plastic stent.

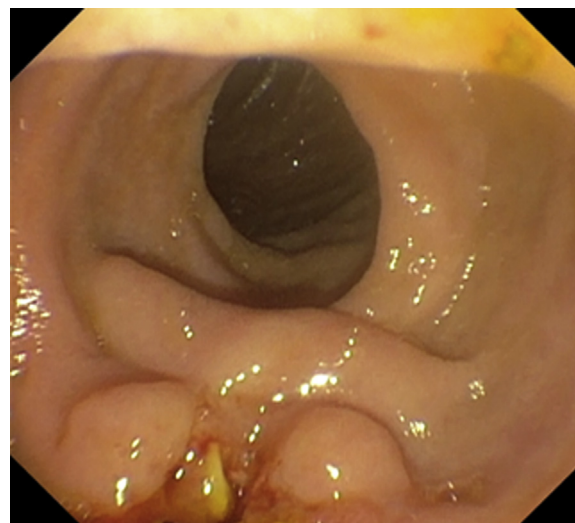


Figure 6. Six-week follow-up after stent removal; widely open neocholecysto-duodenostomy site.

About 10 months later, the double-pigtail stent was removed, and cholangiogram showed mildly dilated IHBR with free flow of contrast.

DISCUSSION

ERCP is the preferred drainage approach for benign or malignant biliary obstruction. EUS-guided biliary drainage reportedly has equivalent safety and efficacy for malignant biliary obstruction when ERCP fails.¹

PTBD is generally considered as a fallback option after failed ERCP, which is associated with significant adverse events.² Postcholecystectomy bile duct injuries are a common cause of benign biliary obstruction (BBO) that are usually addressed effectively by ERCP.³ Untreated BBO, apart from cholangitis and pruritus, carries a risk of progression to secondary biliary cirrhosis. BBO associated with surgically altered anatomy is difficult to manage by conventional ERCP and is frequently managed by PTBD or through balloon-assisted enteroscopy.⁴ EUS-guided biliary drainage is accepted for distal malignant biliary obstruction, with efficacy comparable to that of ERCP.^{5,6}

In this young patient, the surgically created choledochoduodenostomy anastomosis had completely closed, and both endoscopic and PTBD approaches failed. EUS-guided CDS using an FCSEMS was performed for a BBO, as has been previously reported.¹ The contrast from both sides of the liver drained soon after placement of the FCSEMS. There was no contralateral side obstruction despite the FCSEMS marginally projecting into the left hepatic duct. The periprocedure period was uneventful, with both technical and clinical success. The patient remained asymptomatic during the indwell phase of covered metal stent (6 weeks) up to 10 months after its removal. The new bilioenteric anastomosis remained patent in the medium term. To conclude, EUS-guided bilioenteric drainage using an FCSEMS can be considered in exceptional cases.

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DISCLOSURE

All authors disclosed no financial relationships.

Abbreviations: BBO, benign biliary obstruction; CDS, choledochoduodenostomy; CHD, common hepatic duct; FCSEMS, fully covered self-expandable metal stent; IHBR, intrabepatic biliary radicals; PTBD, percutaneous transhepatic biliary drainage.

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