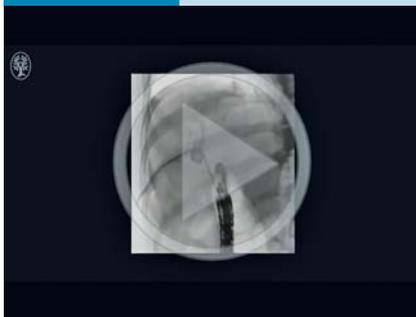


## Percutaneous transhepatic biliary drainage-assisted, endoscopic ultrasound-guided hepaticoduodenostomy for isolated complete right intrahepatic duct obstruction



**Fig. 1** Radiographic view showing a percutaneous transhepatic biliary drainage-assisted, endoscopic ultrasound-guided hepaticoduodenostomy being created by transmural metal stenting.

### Video 1



Percutaneous transhepatic biliary drainage-assisted, endoscopic ultrasound-guided hepaticoduodenostomy is performed with transmural metal stenting; the fistula tract is shown to be patent 6 months after removal of the stent.

Endoscopic ultrasound (EUS)-guided biliary drainage has emerged as an alternative modality for an obstructed intrahepatic duct (IHD). However, isolated right IHD obstruction has not been considered suitable for EUS-guided intervention because the right IHD may not be immediately adjacent to the duodenal wall or because the portal vein could be close to the route of approach [1]. We report our experience of

percutaneous transhepatic biliary drainage (PTBD)-assisted, EUS-guided hepaticoduodenostomy for isolated complete right IHD obstruction.

A 43-year-old woman presented with epigastric pain and cholestatic liver dysfunction after open cholecystectomy. Magnetic resonance cholangiopancreatography (MRCP) showed an abrupt cut-off of the right anterior segmental bile duct, suggesting a transection injury following the cholecystectomy. When a transection injury has occurred, surgical reconstruction with biliary enteric anastomosis is indicated [2,3]. PTBD was initially performed for biliary decompression. As the remaining bile duct was too short to be connected to the jejunum, the surgeon suggested segmental liver resection instead of hepaticojejunostomy; however, the patient refused surgical management, so we performed EUS-guided drainage with the assistance of PTBD.

An echoendoscope was positioned close to the blind end of the transected bile duct, with the PTBD catheter being used as the target. An EUS-guided puncture (19-gauge needle; Boston Scientific) was performed into the blind end of bile duct, which was confirmed by contrast injection. A 0.025-inch hydrophilic guidewire was introduced through the needle (Fig. 1; Video 1); a needle knife and 4-mm balloon catheter were then used for tract dilation. A fully covered self-expanding metal stent (6 mm in diameter, 7 cm in length; M.I. Tech, Seoul) was introduced and positioned in the right anterior IHD. A new anastomosis between the transected IHD and the duodenum was therefore successfully created. The PTBD catheter was removed 3 days later after it had been confirmed that the stent was functioning well (Fig. 2; Video 1).

The metal stent was removed 11 months later. A retrograde cholangiogram through the fistula tract 6 months after the removal of the stent showed durable patency (Fig. 3; Video 1).

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**Fig. 2** Antegrade cholangiogram performed 3 days after transmural stenting via the percutaneous transhepatic biliary drainage catheter showing the functioning endoscopic hepaticoduodenostomy.



**Fig. 3** Contrast injection through the fistula tract (inset) performed 6 months after removal of the stent showing that the hepaticoduodenostomy tract had remained patent.

**Competing interests:** None

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