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Combined ERCP and endoscopic ultrasound-guided antegrade stenting for hilar biliary obstruction in a patient after pancreatoduodenectomy

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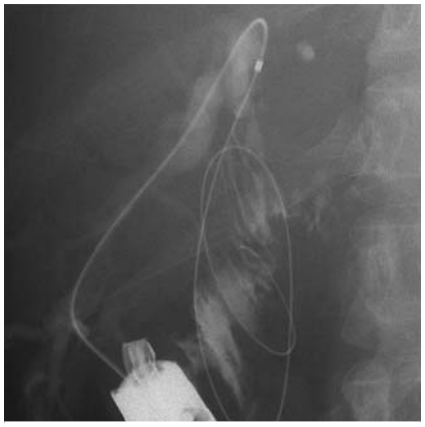
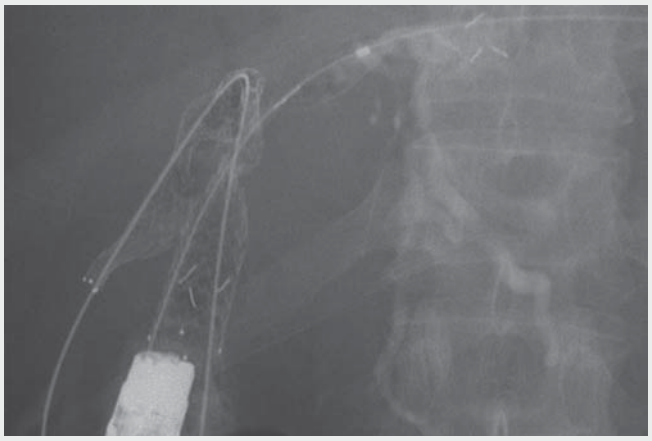
▶ **Fig. 1** Computed tomography showed a hepatic mass in the anterior segment causing dilation of the intrahepatic bile duct (arrowhead).

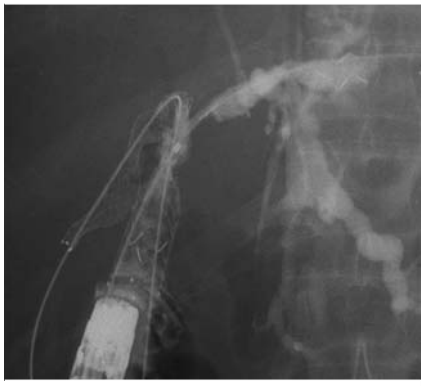


▶ **Fig. 2** Cholangiography revealed that the posterior bile duct was obstructed near the hepaticojejunostomy anastomosis. A guidewire was advanced through the obstruction and coiled within the jejunum.



Video 1 Combination of endoscopic retrograde cholangiopancreatography and endoscopic ultrasound-guided antegrade stenting for hilar biliary obstruction after pancreatoduodenectomy.

▶ **Fig. 3** A metal stent was placed from the posterior bile duct to the jejunum in an antegrade manner.



▶ **Fig. 4** The second metal stent was deployed through the first stent from the hepaticojejunostomy to the left hepatic duct using a partial stent-in-stent technique.

Biliary drainage of hilar biliary obstruction (HBO) after surgical biliary reconstruction, including pancreatoduodenectomy, is challenging because recurrent tumors hamper access to the hepaticojejunostomy anastomosis (HJA) [1]. Although endoscopic ultrasound (EUS)-guided hepaticogastrostomy is an alternative, biliary drainage of both hepatic lobes is still difficult [2–4]. We report a case in which multiple metal stents were placed across an unrecognizable HJA using a partial stent-in-stent technique with EUS-guided antegrade stenting.

A 66-year-old woman with a 2-year history of pancreatoduodenectomy for distal biliary cancer presented with cholangitis. Contrast-enhanced computed tomography revealed a dilated intrahepatic bile duct due to a hepatic mass occupying the anterior segment and involving the hepatic hilum and jejunal limb near the HJA (▶ **Fig. 1**). Biliary drainage via the HJA by endoscopic retrograde cholangiopancreatography using a colonoscope failed; tumor invasion prevented HJA detection (▶ **Video 1**). Therefore, we planned to place a metal stent from

the right posterior bile duct to the HJA by EUS-guided antegrade stenting from the jejunum, followed by additional stenting through the metal stent from the HJA to the left hepatic duct.

A forward-viewing echoendoscope was advanced into the afferent limb, the dilated posterior bile duct was punctured using a 19-gauge needle, and the hilar biliary obstruction was confirmed by cholangiogram. A 0.025-inch hydrophilic guidewire was inserted beyond the obstruction site, toward the jejunal limb (▶ **Fig. 2**). After exchanging this for a 0.035-inch extra-stiff guidewire (Revowave ultra hard; Piolax Medical Devices, Kanagawa, Japan), an uncovered metal stent (diameter 10 mm, length 10 cm; Zilver, Cook Medical, Bloomington, Indiana, USA) was deployed across the HJA in an antegrade manner (▶ **Fig. 3**). Thereafter, the echoendoscope was retrieved, leaving the guidewire in place. Subsequently, the colonoscope was advanced into the jejunum along the guidewire; this was a landmark for reaching another guidewire in the left hepatic duct. Another metal stent was deployed using the stent-in-stent technique (▶ **Fig. 4**). No adverse events occurred. The patient was discharged 5 days postoperatively.

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Competing interests

The authors declare that they have no conflict of interest.

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