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Endoscopic ultrasonography-guided bilateral drainage with antegrade stenting in patient with malignant hilar biliary obstruction after bowel reconstruction

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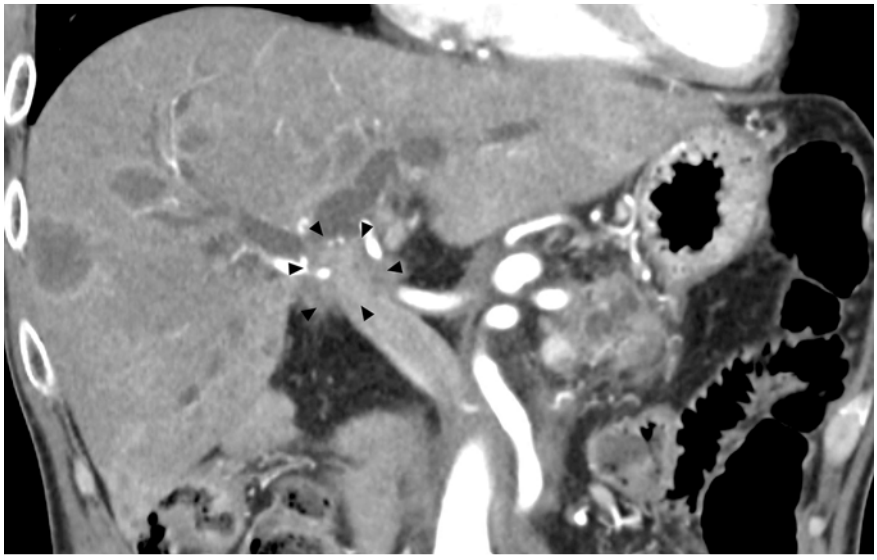
Endoscopic ultrasonography-guided hepaticogastrostomy (EUS-HGS) and uncovered self-expandable metal stent (SEMS) placement between the right and left intrahepatic bile ducts, called the bridging method, is useful for bilateral drainage in patients with malignant hilar biliary obstruction [1]. Combined EUS-HGS and EUS antegrade stenting is reported to reduce the rate of bile leakage and to prolong stent patency [2]. Access from B2 makes it easier to operate the guidewire downstream of the bile duct than from B3, and the use of a forward-viewing echoendoscope reduces the risk of transesophageal puncture [3].

A 50-year-old man who received chemotherapy for recurrent pancreatic cancer presented with jaundice. Subtotal stomach-preserving pancreaticoduodenectomy was performed with Child's reconstruction. Contrast-enhanced computed tomography showed multiple liver metastases; one metastatic lesion obstructed the hilar part of the bile duct (▶ **Fig. 1**). The bridging method and antegrade stenting using a stent-in-stent technique under EUS guidance were selected. Considering guidewire manipulability, we selected the B2 route; however, use of a curved linear array echoendoscope was associated with a risk of transesophageal puncture. Use of a forward-viewing echoendoscope (TGF-UC260J; Olympus Medical, Tokyo, Japan) enabled us to puncture B2 with a 19-gauge fine-needle aspiration needle (EZ Shot 3 Plus; Olympus Medical). Assisted by an uneven double-lumen cannula (UDC; Piolax Medical, Kanagawa, Japan), we placed two 0.025-inch guidewires (VisiGlide 2; Olympus Medical) into the jejunum and B8 bile duct (▶ **Fig. 2**). First, we placed the initial uncovered SEMS (8×60 mm, ZEOSTENT V; ZEONMEDICAL, Tokyo, Japan) using the bridging method (▶ **Fig. 3**). Subsequently, the guidewire was inserted into the jejunum through the mesh of the initial SEMS, then the second uncovered SEMS (8×40 mm, ZEOSTENT V) was placed as antegrade stenting using the stent-in-stent technique (▶ **Fig. 4**). Finally, a 7-Fr plastic stent (TYPE-IT; Gadelius Medical, Tokyo, Japan) was placed across the EUS-HGS fistula (▶ **Video 1**). There were no adverse events and jaundice improved immediately.



▶ **Fig. 1** Contrast-enhanced computed tomography showed that multiple liver metastases invaded the hilar part of bile duct (arrowheads).

▶ **Fig. 2** Assisted by the double-lumen cannula, two 0.025-inch guidewires were inserted into the jejunum from the tip lumen and into the B8 bile duct from the side lumen.

▶ **Fig. 3** An uncovered self-expandable metal stent (SEMS) was placed bridging from the right to left intrahepatic bile ducts.

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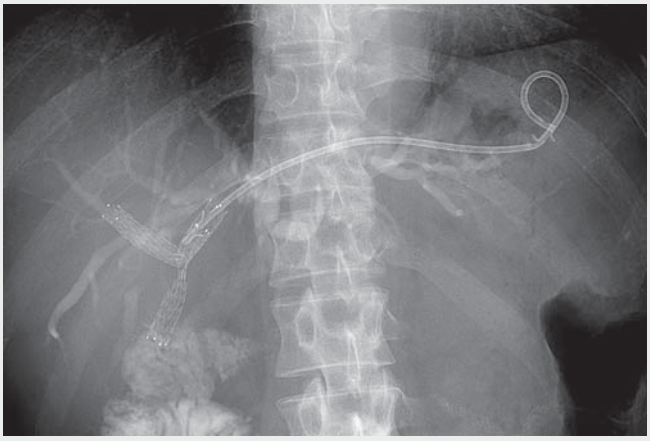
▶ **Fig. 4** A second uncovered self-expandable metal stent (SEMS) was placed through the mesh of the first uncovered SEMS into the jejunum to provide antegrade stenting.



Video 1 Endoscopic ultrasonography-guided bilateral drainage with antegrade stenting using the stent-in-stent technique in a patient with malignant hilar biliary obstruction after bowel reconstruction.

Competing interests

The authors declare that they have no conflict of interest.

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