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Salvage technique for covered metal stent migration during endoscopic reintervention after endoscopic ultrasound-guided hepaticogastrostomy

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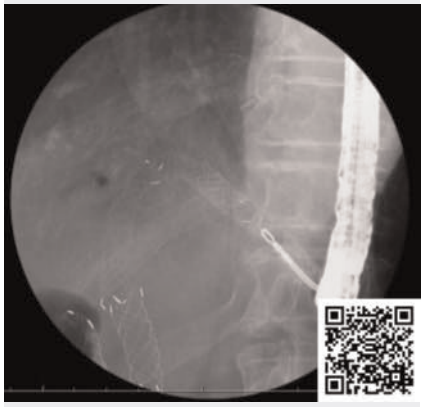
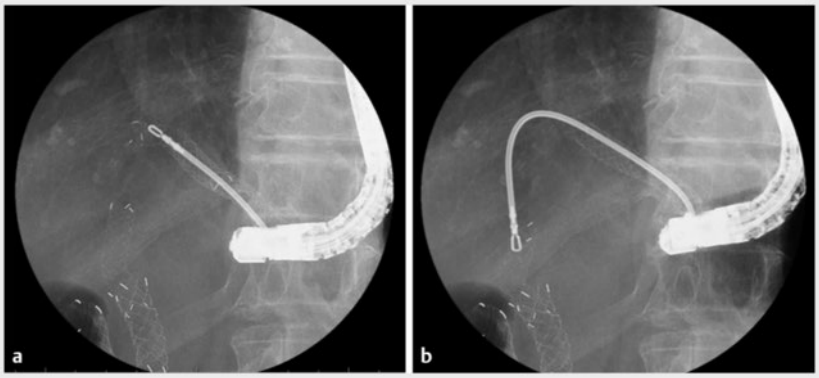


Video 1 Endoscopic removal of a migrated self-expandable metal stent (SEMS) and antegrade SEMS using grasping forceps via the hepaticogastrostomy route.

▶ **Fig. 1** Fluoroscopic image showing endoscopic reintervention for recurrent biliary obstruction. Because the partially covered self-expandable metal stent (PCSEMS) inserted for endoscopic ultrasound-guided hepatogastrostomy (EUS-HGS) was not removed, an additional SEMS (black arrow) was deployed through the stent mesh of the EUS-HGS PCSEMS, with an additional antegrade stent placed across the malignant biliary obstruction (white arrow).

▶ **Fig. 2** During a second endoscopic reintervention for self-expandable metal stent occlusion, new plastic stents were placed through the distal end of the endoscopic ultrasound-guided hepatogastrostomy (EUS-HGS) self-expandable metal stent (SEMS), after the stent mesh had been broken by argon plasma coagulation, because of the difficulty removing the EUS-HGS SEMS.



▶ **Fig. 3** Fluoroscopic images showing: **a** the migrated self-expandable metal stent (SEMS) in the left intrahepatic bile duct being grasped with grasping forceps and removed via the hepaticogastrostomy; **b** the antegrade SEMS in the common bile duct being grasped with grasping forceps and gradually removed via the hepaticogastrostomy.

Endoscopic ultrasound (EUS)-guided hepaticogastrostomy (EUS-HGS) is an alternative drainage method for malignant biliary obstruction (MBO) when endoscopic retrograde cholangiopancreatography (ERCP) has failed [1]. A partially covered self-expandable metal stent (PCSEMS) is often used for EUS-HGS, but it cannot be removed. A new metal or plastic stent is therefore placed as endoscopic reintervention following EUS-HGS [2–4]; however, troubleshooting after endoscopic reintervention remains problematic because of a paucity of reported cases.

An 81-year-old woman who had previously undergone ERCP for MBO due to pancreatic cancer presented with recurrent biliary obstruction and duodenal stricture. An EUS-HGS using a PCSEMS (EGIS biliary stent, double-covered, 8 mm × 12 cm; S&G Biotech Inc., Yongin, South Korea) and duodenal stent placement were successfully performed. After 5 months, the patient underwent endoscopic reintervention for recurrent biliary obstruction. An additional fully covered SEMS (FCSEMS; HANAROSTENT benefit, 8 mm × 8 cm; Boston Scientific Co., Tokyo, Japan) was deployed through the stent mesh of the EUS-HGS PCSEMS because of the difficulty removing the PCSEMS, along with placement of an antegrade stent across the MBO

(▶ **Fig. 1**). A second endoscopic reintervention was required for SEMS occlusion, during which new plastic stents (Through & Pass Type-IT; Gadelius Medical, Tokyo, Japan) were placed through the distal end of the EUS-HGS SEMS after the stent mesh had been broken using argon plasma coagulation (▶ **Fig. 2**).

After 2 months, the patient developed acute cholangitis due to migration of the EUS-HGS SEMS placed during the first endoscopic reintervention and cholecystitis due to the antegrade SEMS. After the plastic stents had been removed, grasping forceps (Rat Tooth; Olympus, Tokyo, Japan) were inserted via the EUS-HGS SEMS. The migrated SEMS was grabbed (▶ **Fig. 3 a**) and removed. Additionally, the antegrade SEMS was firmly grasped and gradually removed via the EUS-HGS route (▶ **Fig. 3 b**; ▶ **Video 1**). The successful removal of the two SEMSs was followed by the insertion of new plastic stents and the patient's cholangitis and cholecystitis subsequently improved.

This technique demonstrates successful troubleshooting of endoscopic reintervention after EUS-HGS.

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Conflict of Interest

The authors declare that they have no conflict of interest.

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