Right-sided EUS-guided hepaticogastrostomy with delayed stent migration treated with surgical removal (with video)

Thanawat Luangsukrerk¹, Krit Kitisin², Prooksa Ananchuensook³, Kulwadee Vitudangden⁴, Kamin Harinwan³, Pradermchai Kongkam¹⁺

¹Department of Medicine, Gastrointestinal Endoscopy Excellence Center, Faculty of Medicine, Chulalongkorn University and King Chulalongkorn Memorial Hospital, Thai Red Cross Society, Bangkok, Thailand; ²Department of Surgery, Faculty of Medicine, Chulalongkorn University and King Chulalongkorn Memorial Hospital, Thai Red Cross Society, Bangkok, Thailand; ³Department of Medicine, Division of Gastroenterology, Faculty of Medicine, Phramongkutklao Hospital, Phramongkutklao College of Medicine, Bangkok, Thailand; ⁴Department of Medicine, Pancreas Research Unit, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand

A 66-year-old man presented with obstructive jaundice. Abdominal computed tomography (CT) showed an ill-defined mass at hepatic segment IVa, causing bilateral intrahepatic duct (IHD) dilatation. Clinical diagnosis was hilar cholangiocarcinoma with hilar obstruction. ERCP with the placement of two self-expandable metal stents (SEMSs) to segment VII and VIII was successfully performed 1 month ago [Figure 1]. Unfortunately, the patient developed post-ERCP cholangitis. CT showed right-sided IHD dilatation. EUS-guided hepaticoduodenostomy (EUS-HDS) was planned but unable to target the dilated IHD. Right-sided EUS-guided hepaticogastrostomy (EUS-HGS) to dilated IHD in the segment V was performed [Video 1]. Because of short intrahepatic placement distance, a 10 mm × 60 mm fully-covered SEMS with distal flare was used. However, since the length was too short, another 10 mm × 80 mm fully-covered SEMS without distal flare was inserted inside the former one [Figure 2]. No intra procedural adverse events were observed.

Figure 1. Endoscopic retrograde cholangiopancreatography with placement of two self-expandable metal stents to segment VII and VIII

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Seven days after the procedure, the patient developed fever with peritonitis. CT showed the migrated distal end of both SEMSs into the peritoneal cavity with surrounding fluid collection [Figure 3]. Surgical removal of the SEMSs with the placement of intraoperative biliary drainage (IBD) was performed. A gastrostomy tube was placed through the right-sided EUS-HGS stents to create IBD [Figure 4], and then, the stents were removed [Figure 5]. Two additional percutaneous transhepatic biliary drainages were consequently inserted into the right and left IHDs, respectively. The total bilirubin declined from 22.9 to 10.39 mg/dL. Two months after the procedure, the patient passed away due to progression of infiltrative liver masses.

In general, EUS-HGS bridges left IHD with gastric lumen. Transmural drainage of the right IHD, either EUS-HGS with bridging technique or EUS-HDS, was previously reported. To our knowledge, this was the first case reporting the direct right-sided EUS-HGS. The procedure was technically successful, but both SEMSs subsequently migrated out of the stomach because the combined length of both SEMSs was still too short. Surgical hepaticogastrostomy was recently reported as an EUS-HGS stent migration management. Unfortunately, the surgical hepaticogastrostomy was not possible because of the short remaining length of SEMSs outside the liver. In conclusion, right-sided EUS-HGS is possible, but the length of SEMS should be carefully chosen, and the hybrid SEMS which has uncovered and covered parts to prevent blockade of intrahepatic bile ducts and leakage between junctions, respectively, should be considered.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal.

![Figure 2](image1.jpg)

Figure 2. Two self-expandable metal stents were placed by stent in stent technique for right-sided EUS-guided hepaticogastrostomy

![Figure 3](image2.jpg)

Figure 3. Abdominal computed tomography showed migrated distal end of both self-expandable metal stents into the peritoneal cavity (arrow) with surrounding fluid collection (arrow head)

![Figure 4](image3.jpg)

Figure 4. A gastrostomy tube was placed through the right-sided EUS-guided hepaticogastrostomy stents to create intraoperative biliary drainage

![Figure 5](image4.jpg)

Figure 5. Removed stent
patient understands that his name and initials will not be published and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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Conflicts of interest
There are no conflicts of interest.

REFERENCES
1. Ogura T, Sano T, Onda S, et al. Endoscopic ultrasound-guided biliary drainage for right hepatic bile duct obstruction: Novel technical tips. *Endoscopy* 2015;47:72-5.
2. Park SJ, Choi JH, Park DH, et al. Expanding indication: EUS-guided hepaticoduodenostomy for isolated right intrahepatic duct obstruction (with video). *Gastrointest Endosc* 2013;78:374-80.
3. Mukai S, Itoi T, Tsuchiya T, et al. EUS-guided right hepatic bile duct drainage in complicated hilar stricture. *Gastrointest Endosc* 2017;85:256-7.
4. Sodarat P, Luangsukrerk T, Kongkam P, et al. Surgical hepaticogastrostomy as a method for resolving stent migration in endoscopic ultrasound-guided hepaticogastrostomy. *Endoscopy* 2020. DOI: 10.1055/a-1290-7221. Online ahead of print.