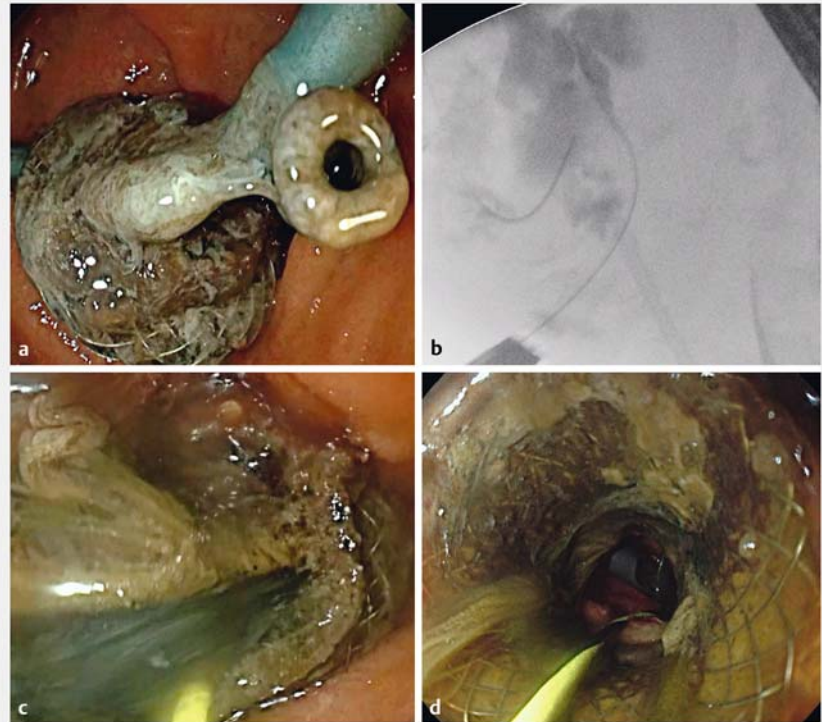


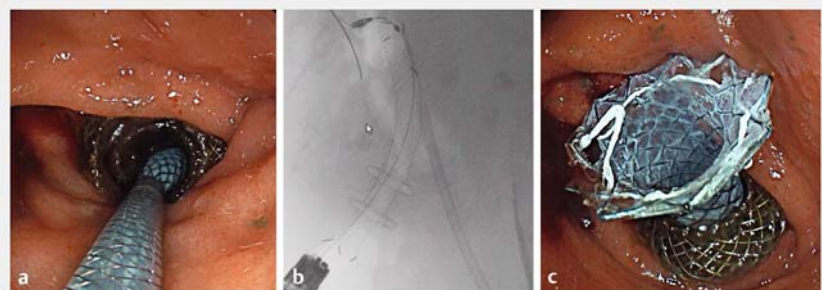
Specialized coaxial hepaticogastrostomy stent and lumen-apposing stent for salvage of dysfunctional EUS-guided choledochoduodenostomy.

Recurrent biliary obstruction after endoscopic ultrasound (EUS)-guided choledochoduodenostomy (CDS) performed using lumen-apposing metal stents (LAMSs) has become a major concern (reported in up to 26%). Its management can be challenging and reported strategies include the insertion of a coaxial plastic double-pigtail stent (DPS) or tubular self-expandable metal stents [1–3]. Here we present a case in which a specialized hepaticogastrostomy biliary stent was used.

Our patient was a 61-year-old man with inoperable pancreatic adenocarcinoma who underwent endoscopic retrograde cholangiopancreatography with plastic stent placement at another center. He was referred to our center 4 months post-operatively for the management of acute cholangitis. The transpapillary approach could not be used due to duodenal stenosis caused by the tumor. An EUS-guided CDS was performed using the 8×8-mm Hot Axios system (Xlumena, Mountain View, California, USA) and a coaxial 7-Fr×5-cm DPS (Advanix, Boston Sc, Marlborough, MA, USA). Despite initial improvement, 2 months later the patient developed cholangitis, which required hospitalization. Endoscopy revealed stent occlusion due to food impaction, which was effectively treated by endoscopic lavage and the coaxial DPS was replaced. However, 2 months later, the patient again presented with cholangitis (i.e., recurrent biliary obstruction) due to LAMS occlusion, which required repeat lavage and insertion of a second 7-Fr coaxial DPS. For a third time, 2 months later, the patient again presented with recurrent biliary obstruction with evident signs of LAMS obstruction, and partly aggravated by the duodenal obstruction (► Fig. 1). The DPS was removed and a specifically



► **Fig. 1** **a** Obstructed biliary lumen-apposing metal stent (LAMS) despite insertion of two coaxial double pigtail plastic stents. **b** Cholangiogram showing contrast retention due to food, sludge, and debris. **c** Endoscopic image of bile flow through the occluded LAMS. **d** Patent lumen after repermeabilization of the biliary LAMS.



► **Fig. 2** **a** Placement of a specialized hepaticogastrostomy stent through the biliary lumen-apposing metal stent. **b** Cholangiogram showing patent lumen with newly inserted stent. **c** Endoscopic image of the hepaticogastrostomy stent in place.



Video 1 Placement of a specialized hepaticogastrostomy stent coaxial to a lumen-apposing stent for salvage of dysfunctional endoscopic ultrasound-choledochoduodenostomy.

designed hepaticogastrostomy stent (8×80-mm, Niti-S Giobor biliary stent; TaeWoong Medical, Seoul, Korea) was inserted through the LAMS (► **Fig. 2**, ► **Video 1**). After an initial problem-free course, the patient passed away due to worsening of his terminal disease.

This case provides further evidence that biliary LAMS dysfunction routinely develops after EUS-CDS [4]. Despite the placement of two coaxial DPSSs, the patient continued to develop recurrent biliary obstruction. A tubular partially covered self-expanding metal stent was used in the hope of preventing these events. Trials are needed to give a definitive answer to this question [5].

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Competing interests

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