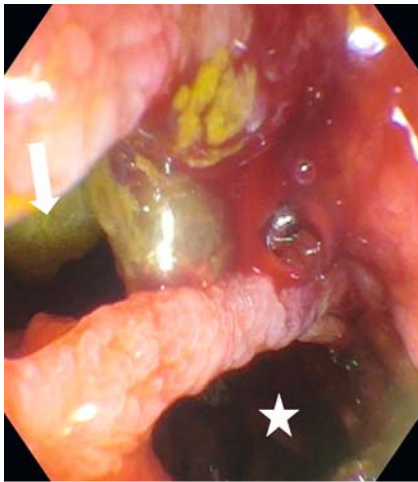


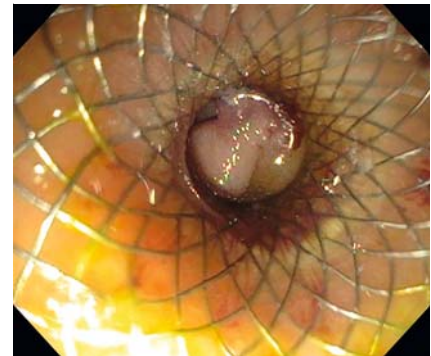
Management of a necrosed bile duct by combination of a fully covered metal biliary stent and endoscopic ultrasound-guided gastrojejunostomy



► **Fig. 1** Necrotic cavity at second portion of duodenum with visible lateral wall of indwelling biliary stent (arrow); duodenal lumen is visible separately (star).



► **Fig. 3** Placement of a coaxial fully covered metal biliary stent.



► **Fig. 4** Endoscopic ultrasound-guided gastrojejunostomy with a lumen-apposing metal stent.



► **Fig. 2** Cholangiogram demonstrating contrast extravasation through the side holes of the indwelling uncovered metal biliary stent into a contained necrotic cavity.

Endoscopic ultrasound-guided gastrojejunostomy (EUS-GJ) is an emerging procedure in the management of gastric outlet obstruction [1–5]. One potential application of EUS-GJ is to divert luminal contents away from a luminal defect in order to minimize infection and/or facilitate healing.

The patient is a 71-year-old man with a history of pancreatic adenocarcinoma and uncovered metal biliary stent placement 16 months ago who was admitted with cholangitis and bacteremia (*E. coli* and *Klebsiella*) secondary to an occluded biliary stent.

Endoscopic retrograde cholangiopancreatography (ERCP) demonstrated tumor infiltration of the medial duodenal wall with an associated necrotic debris-filled cavity (► **Video 1**). The lateral wall of the indwelling metal stent was clearly visible in the cavity, consistent with necrosis of the bile duct (► **Fig. 1**).

Cholangiogram demonstrated extravasation of contrast through the stent side holes into a contained cavity (► **Fig. 2**). To prevent further contamination of the biliary tree, a 10-mm×60-mm fully covered metal biliary stent (Wallflex; Boston Scientific, Marlborough, Massachusetts, USA) was placed within the uncovered stent (► **Fig. 3**). Repeat cholangiogram confirmed no further extravasation.

To minimize the risk of further soiling of the necrotic cavity and bile duct, EUS-GJ was pursued with the goal of diverting luminal contents away from this area. Approximately 250 cc of a dilute methylene blue/saline/contrast solution was infused into the proximal jejunum. A loop

of jejunum adjacent to the gastric wall was identified and a 15-mm×10-mm electrocautery-enhanced lumen-apposing metal stent (LAMS) (Hot Axios; Boston Scientific) was placed (► **Fig. 4**).

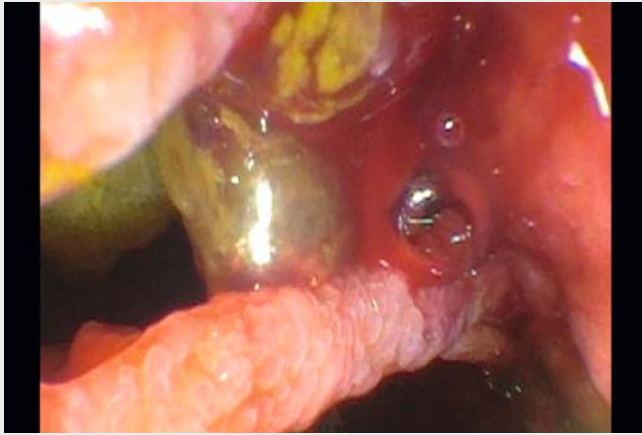
The patient tolerated the procedure well and was started on a clear liquid diet that night. He was discharged home 2 days later. At 1 month follow-up, the patient was eating a full diet and was otherwise doing well.

This case demonstrates a novel use of endoscopic ultrasound-guided gastrojejunostomy to manage a gastrointestinal luminal defect. Other potential applications may include management of gastroduodenal fistulas, perforations, and post-operative leaks.

Endoscopy_UCTN_Code_CPL_1AK_2AD

Competing interests

Dr. DiMaio is a speaker and consultant for Boston Scientific and Covidien as well as a speaker for AbbVie. Dr. Kumta is a consultant for Olympus America, Boston Scientific, Apollo Endosurgery, and Gyrus ACMI. The other authors have no interests to declare.



Video 1 Management of cholangitis from a necrotic bile duct with combined fully covered metal biliary stent and endoscopic ultrasound-guided gastrojejunostomy.

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