



Management of combined malignant biliary-duodenal obstruction in Roux-en-Y gastric bypass anatomy with EUS-guided gastrogastrostomy, EUS biliary drainage, and duodenal stent placement

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CASE PRESENTATION

ERCP for patients with Roux-en-Y gastric bypass (RYGB) anatomy is technically challenging. EUS-guided gastrogastrostomy facilitates access to the pancreaticobiliary system and enables us to perform additional procedures.¹⁻⁵ Here, we describe a case of a patient with RYGB anatomy under-

going EUS-guided gastrogastrostomy followed by EUS-guided fine-needle biopsy (EUS-FNB), EUS-guided biliary drainage, and duodenal stent placement.

A 58-year-old woman with RYGB anatomy presented with abdominal pain and jaundice. A CT scan showed a hypoattenuating ill-defined mass within the pancreatic head with vascular involvement, concerning for pancreatic

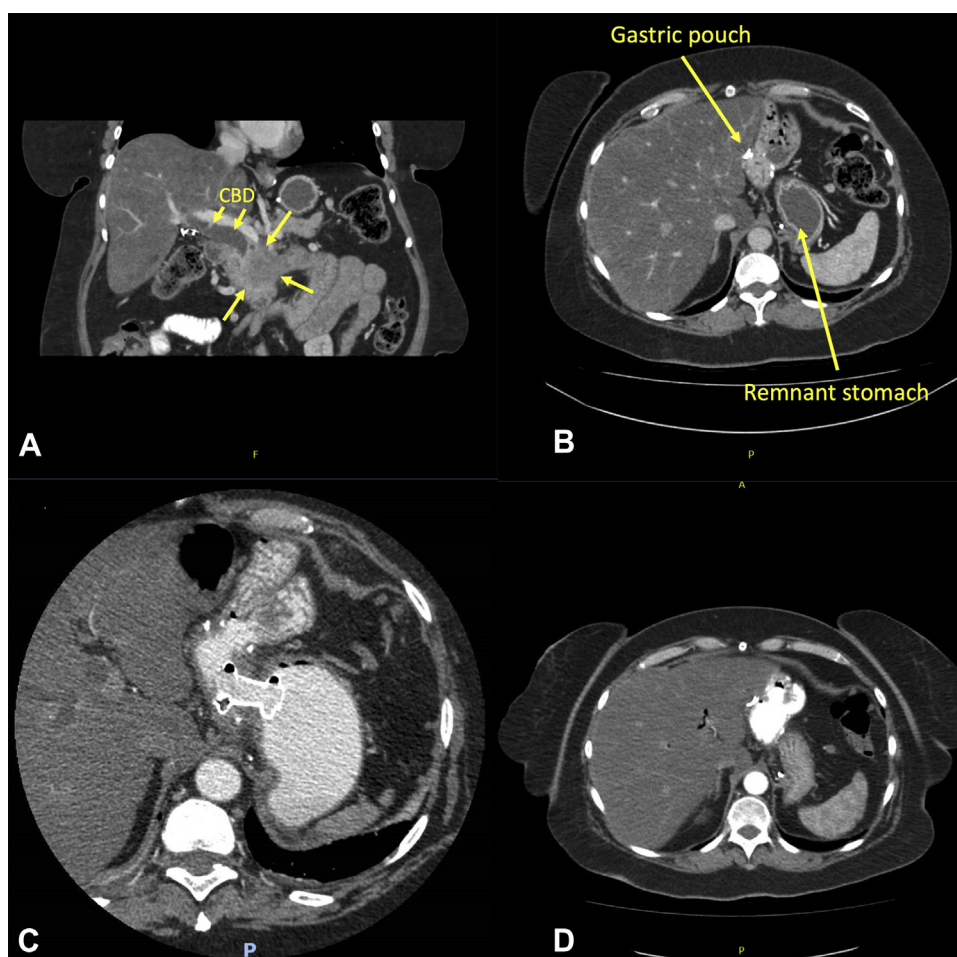


Figure 1. **A,** CT demonstrating a hypoattenuating ill-defined mass within the pancreatic head and dilated common bile duct. **B,** CT demonstrating gastric pouch and excluded stomach remnant (before EUS-directed transgastric ERCP procedure). **C,** CT demonstrating good patency of lumen-apposing metal stent for gastrogastrostomy. **D,** After the removal of lumen-apposing metal stent for gastrogastrostomy, CT demonstrated gastric pouch filled with contrast. No contrast leak was seen.

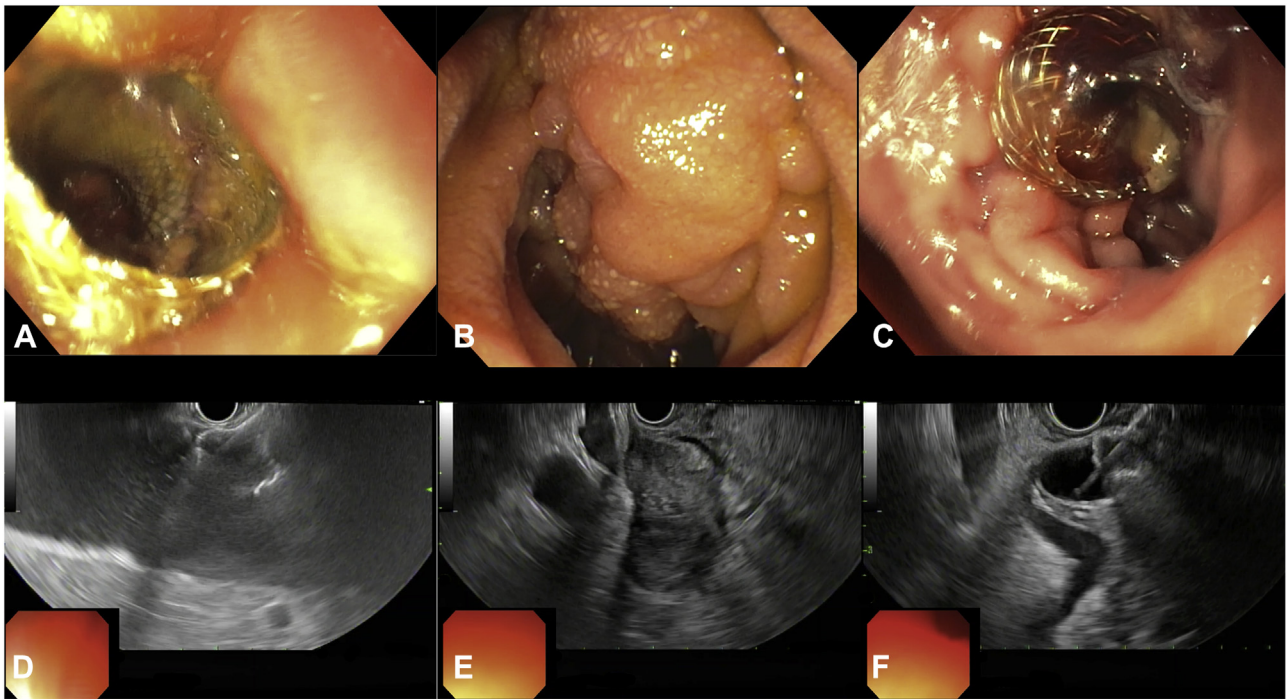


Figure 2. **A**, Endoscopic view of deployed lumen-apposing metal stent (LAMS) for gastrogastrostomy. **B**, Endoscopic view of infiltrated ampulla. **C**, Endoscopic view of deployed LAMS for choledochoduodenostomy. **D**, Deploying LAMS for gastrogastrostomy. **E**, Hypoechoic and heterogeneous mass. **F**, Deploying LAMS for choledochoduodenostomy and biliary drainage.

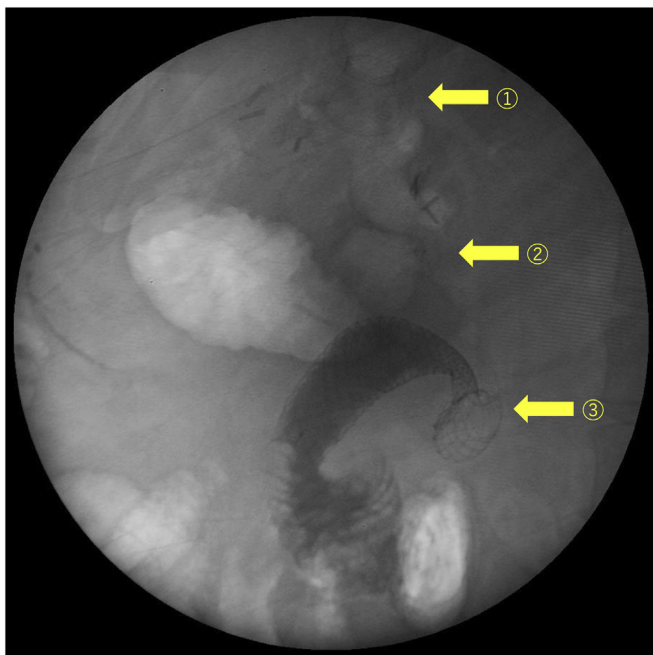


Figure 3. Abdominal radiograph after second session of EUS-directed transgastric ERCP. ①Lumen-apposing metal stent for gastrogastrostomy, ②lumen-apposing metal stent for choledochoduodenostomy, ③duodenal stent.

adenocarcinoma, a dilated common bile duct (CBD), and evidence of duodenal obstruction just distal to the papilla (type III duodenal obstruction). The total bilirubin level

was 96 $\mu\text{mol/L}$ (reference range: 0-23 $\mu\text{mol/L}$), and CA19-9 was 526 U/L (reference range: 0-35 U/L).

Treatment strategies were discussed with the patient, and a 2-session procedure was chosen to facilitate EUS-FNB, biliary decompression, and duodenal stent placement. In the first session, we performed a gastrogastrostomy to access the excluded stomach from the gastric pouch by placing a lumen-apposing metal stent (LAMS). The stomach remnant was dilated as a result of the duodenal obstruction and was easily visualized with EUS. Under EUS guidance, a 20- \times 10-mm electrocautery-enhanced LAMS (Hot AXIOS; Boston Scientific, Marlborough, Mass, USA) was directly deployed between the gastric pouch and the excluded stomach body. The stent was then dilated up to 15 mm using a balloon, and a gastroscope was introduced into the stomach remnant and duodenum. This confirmed duodenal obstruction just distal to the papilla. The appearance was that of malignant infiltration.

The first session was then terminated to avoid stent dislodgement. A second session that included EUS-FNB and biliary decompression was scheduled after a 4-day interval. This interval was deemed appropriate based on the presumed stability of the stent based on its trajectory, balanced with the patient’s ongoing symptoms. First, the duodenoscope was advanced through the LAMS to the second part of the duodenum. Initially, a standard ERCP was attempted. Despite more than 5 minutes of attempted biliary cannulation time and use of the double-wire technique, biliary cannulation was unsuccessful. Precut

sphincterotomy was believed to be too risky owing to tumor infiltration of the major papilla obscuring the anatomy. Accordingly, ERCP was aborted and we proceeded with an EUS-guided approach.

A linear echoendoscope was inserted into the excluded stomach. A 3-cm hypoechoic, heterogeneous, and ill-defined pancreatic head mass was observed and EUS-FNB was performed (3 passes) using the 22-gauge FNB needle (Shark Core; Medtronic Corp, Boston, Mass, USA). The CBD was dilated to 19 mm and easily visualized from the first part of the duodenum. An EUS-guided choledochoduodenostomy was then performed using an 8- × 6-mm electrocautery-enhanced LAMS (Hot AXIOS), which was deployed between the first part of the duodenum and the CBD. Excellent bile drainage was observed endoscopically.

Finally, a duodenal metal stent (WallFlex duodenal stent; Boston Scientific) was deployed across the duodenal stricture using a standard duodenoscope. The procedure was then terminated. A third unplanned procedure was performed 5 days later to assess the biliary LAMS, which was patent. During that procedure, the LAMS across the gastrogastrostomy was dislodged and therefore removed. We did not attempt to close the fistula.

Pancreatic ductal adenocarcinoma was confirmed by histologic analyses of the EUS-FNB. The patient improved symptomatically, and her liver biochemistry normalized after the procedure. Chemotherapy was started 2 weeks after the second endoscopic procedure.

In conclusion, EUS-guided gastrogastrostomy is an effective method allowing for endoscopic access in patients with RYGB anatomy and thereby facilitating the full spectrum of endoscopic evaluation and treatment for patients with pancreatic cancer (Figs. 1-3; Video 1, available online at www.VideoGIE.org).

DISCLOSURE

All authors disclosed no financial relationships.

Abbreviations: EUS-FNB, EUS-guided fine-needle biopsy; CBD, common bile duct; LAMS, lumen-apposing metal stent; RYGB, Roux-en-Y gastric bypass.

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