

Transjejunal ERCP, EUS-guided gallbladder drainage, and cholecystoscopy with direct electrohydraulic lithotripsy with large gallstone removal in Roux-en-Y anatomy

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CASE PRESENTATION

A 61-year-old man presented with intermittent right-upper-quadrant pain, nausea, and vomiting. A CT scan of the abdomen revealed choledocholithiasis and large cholelithiasis. His medical and surgical history included severe obesity, Roux-en-Y gastric bypass, bowel perforation complicated by extensive resection and short gut syndrome, rheumatoid arthritis, chronic kidney disease, and urothelial carcinoma. He was deemed to be at high surgical risk and was referred for endoscopic management.

EUS was used to identify the excluded stomach from the Roux limb, and a contrast saline mixture with methylene blue was injected into it. Next, a cautery-enhanced 15- × 10-mm lumen-apposing metal stent (LAMS) was deployed (Fig. 1). Prompt egress of methylene blue-tinged contrast material confirmed the correct placement and creation of the jejunogastrostomy.

The patient returned 3 weeks later, and ERCP via jejunogastrostomy was performed with biliary sphincterotomy and successful removal of 2 common bile duct stones (Fig. 2). Subsequently, linear EUS was advanced through the jejunogastrostomy, and EUS-guided gallbladder drainage was performed (Fig. 3). A cautery-enhanced 15- × 10-mm LAMS was then used to accomplish a cholecysto-duodenostomy. Prompt egress of bile and small stones confirmed placement. The patient was brought back after 4 weeks for elective direct cholecystoscopy, electrohydraulic lithotripsy, and removal of the large cholelithiasis (Video 1, available online at www.giejournal.org). Electrohydraulic lithotripsy was performed under continuous irrigation with the fragmentation of the stone.

Abbreviation: LAMS, lumen-apposing metal stent.

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Figure 1. Cautery-enhanced 15- × 10-mm lumen-apposing metal stent was deployed using EUS to create jejunogastrostomy.

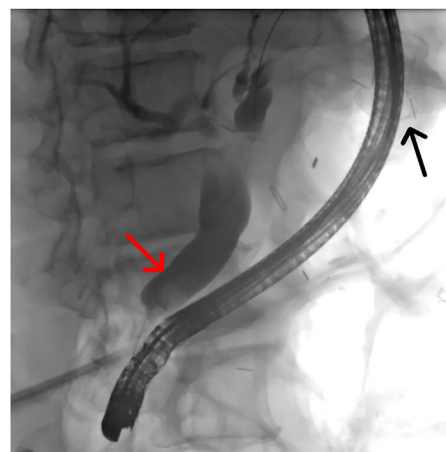


Figure 2. ERCP via jejunogastrostomy (black arrow) was performed with biliary sphincterotomy and successful removal of common bile duct stones (red arrow).

The gallstone fragments were completely removed with a basket and a retriever net.

At the end of the procedure, both LAMSs were removed, and the jejunogastrostomy fistula was treated with mucosal denudation with argon plasma coagulation (Fig. 4) to allow fistula closure. The patient's follow-up upper GI series at 6 weeks confirmed complete closure of the jejunogastrostomy fistula. A repeat CT scan of the abdomen with oral contrast conducted 3 months after the procedure revealed no opacification of the remnant stomach, and contrast was also shown to flow into the



Figure 3. EUS-guided gallbladder drainage through the jejunogastrostomy.



Figure 4. Mucosal denudation being performed with argon plasma coagulation.

small intestine, indicating fistula closure. The patient has been monitored for more than a year with no adverse consequences.

DISCUSSION

Cholelithiasis and choledocholithiasis are more frequently seen after bariatric surgery, with Roux-en-Y gastric bypass carrying a higher risk than sleeve gastrectomy.^{1,2} Accessing the biliary system with traditional endoscopic methods like balloon enteroscopy carries a reported technical success rate of 60% to 70%.^{2,3} Our patient had a unique scenario of concomitant choledocholithiasis and large (>3 cm) cholelithiasis posing a risk for gallbladder cancer, Mirizzi syndrome, and recurrent choledocholithiasis.^{4,5} He was at high surgical risk, and the percutaneous route would have required a hybrid approach for large gallstone removal and probably an additional percuta-

neous transhepatic approach for management of choledocholithiasis.⁶ Furthermore, prolonged percutaneous drains add to the morbidity from adverse events like pain, dislodgement, leaks, and infection.⁵ Therefore, EUS-guided gallbladder drainage and EUS-directed transgastric ERCP were performed to treat his cholelithiasis and choledocholithiasis.

Our case demonstrates that EUS-guided biliary intervention in patients with altered anatomy is safe and feasible in experienced hands. To our knowledge, we present the first reported case of EUS-guided jejunogastrostomy, cholecystoduodenostomy with direct cholecystoscopy, and electrohydraulic lithotripsy in a patient with Roux-en-Y gastric bypass anatomy. There are significant emerging data on the safety and efficacy of EUS-guided intervention for acute cholecystitis.⁷ As illustrated by our case, indications can be further expanded to include cholelithiasis with concomitant choledocholithiasis and/or biliary pancreatitis.

DISCLOSURE

Dr Chahal is a consultant for Medtronic and Boston Scientific. All other authors disclosed no financial relationships.

CONSENT

Informed consent was obtained from the patient for the publication of their information and video imaging.

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