VIDEO CASE REPORT

Single-session EUS-directed transgastric endoscopic retrograde cholangiopancreatography (EDGE) and EUS-guided gallbladder drainage is safe and feasible

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INTRODUCTION

Acute cholecystitis and choledocholithiasis in patients with altered anatomy and major contraindications to surgery represent a challenging clinical scenario.[1]

We present a successful case of EUS-directed transgastric endoscopic retrograde cholangiopancreatography (EDGE) and EUS-guided gallbladder drainage in a patient with Roux-en-Y altered anatomy and failed previous percutaneous cholecystostomy tube (PTC) placement and contraindications to surgery.

CASE PRESENTATION

An 84-year-old woman with a medical history significant for Roux-en-Y gastric bypass, interstitial lung disease complicated by severe World Health Organization class II/III pulmonary hypertension, and severe aortic stenosis presented to our institution with acute right upper quadrant (RUQ) pain. CT scan demonstrated two 6-mm common bile duct (CBD) stones and thickened gallbladder wall consistent with cholecystitis (Fig. 1).

Double-balloon ERCP was attempted, but the endoscope could not intubate the afferent limb owing to severe luminal angulations. The patient underwent PTC placement; however, this resulted in ongoing RUQ pain and persistent cholestatic liver enzyme elevation. The patient was deemed a poor surgical candidate with a high risk for prolonged mechanical ventilation with any additional anesthesia exposure. In a multidisciplinary discussion of therapeutic options, the recommendation was to perform a same-day EDGE procedure with attempts at simultaneous gallbladder drainage.

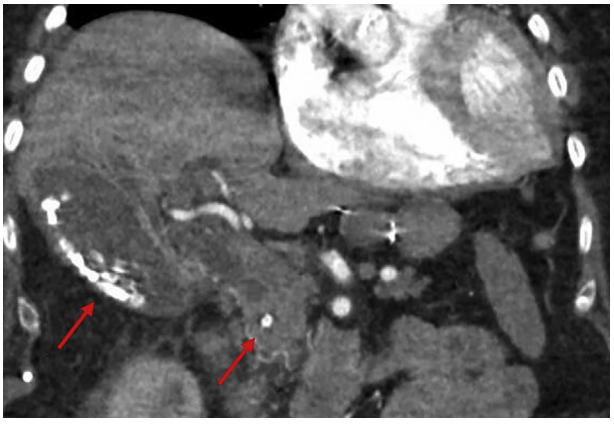

Figure 1. CT scan demonstrating cholelithiasis (*arrow*), thickened gallbladder wall, and common bile duct (CBD) stones (*arrow*).

After sedation was achieved, a therapeutic linear array echoendoscope (UIF-160, Olympus, Tokyo, Japan) was introduced and passed to the gastrojejenual anastomosis (Video 1, available online at www.giejournal.org). The previously excluded stomach was identified endosonographically, and a 19-gauge needle was inserted into the excluded stomach to infuse 500 mL of normal saline solution. Once sufficient gastric distension was obtained, a 20-mm diameter × 10-mm cautery-enhanced, lumen-apposing metal stent (LAMS, Axios; Boston Scientific, Natick, Mass, USA) was inserted into the gastric remnant through the gastric pouch, creating a gastrogastric fistula (Fig. 2). The LAMS was then gently dilated to 15 mm using a through-the-scope controlled radial expansion balloon. A duodenoscope (TJF-180V, Olympus America, Norfolk, Va, USA) was then coated, and the LAMS irrigated, with olive oil to limit friction. The duodenoscope was then advanced through the LAMS into the second portion of the duodenum, where the ampulla was visualized and cannulated (Fig. 3). A cholangiogram revealed a CBD dilated to 13 mm with multiple distal filling defects consistent with multiple 5- to 6-mm stones. Biliary sphincterotomy and papillary dilatation were performed before successful extraction of 3 CBD stones. Selective cystic duct cannulation for stent placement was attempted but unsuccessful. The PTC catheter was irrigated with contrast solution that demonstrated a distended gallbladder with numerous gallstones.

Secondary to the degree of intracholecystic stones and possible ongoing cholecystitis, the decision to create a duodenocholecystostomy was made. The LAMS was dilated again to a maximum of 16.5 mm to facilitate passage of a therapeutic linear echoendoscope into the duodenal bulb. The gallbladder was visualized sonographically in a semi-short position and punctured with a 15-mm × 10-mm cautery-enhanced LAMS (Fig. 4). The LAMS was confirmed to be in good position along the duodenal sweep with spontaneous passage of several small

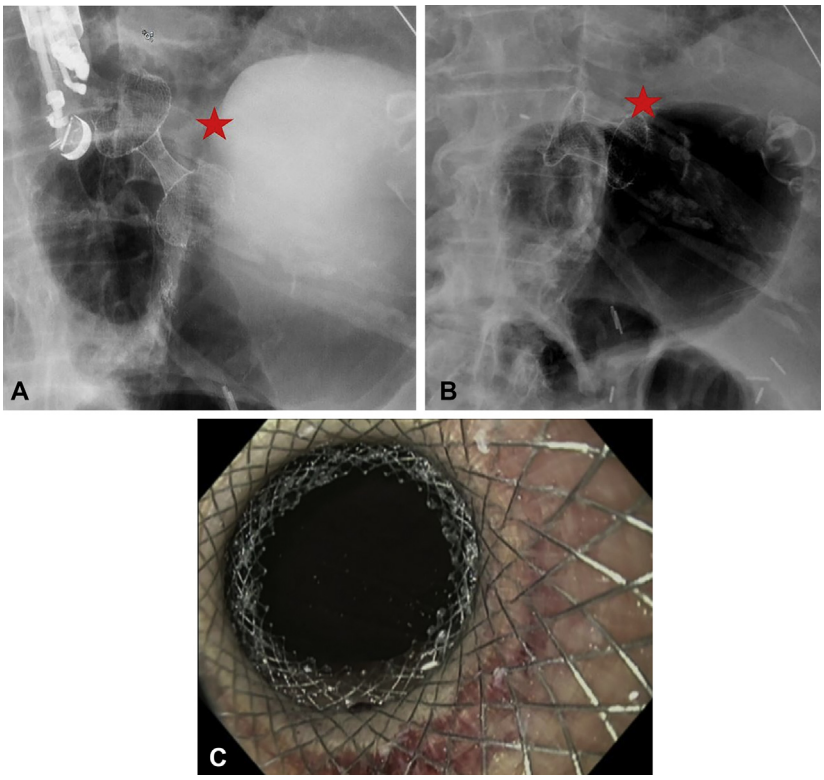

Figure 2. A, Fluoroscopic imaging depicting successful creation of gastrogastrostomy using a 20-mm × 10-mm lumen-apposing metal stent. Note orientation mimicking traditional esophagogastrojunction orientation. **B,** Fluoroscopic appearance of gastrogastrostomy stent status after endoscopic dilatation. **C,** Endoscopic appearance of gastrogastrostomy stent status after endoscopic dilatation.

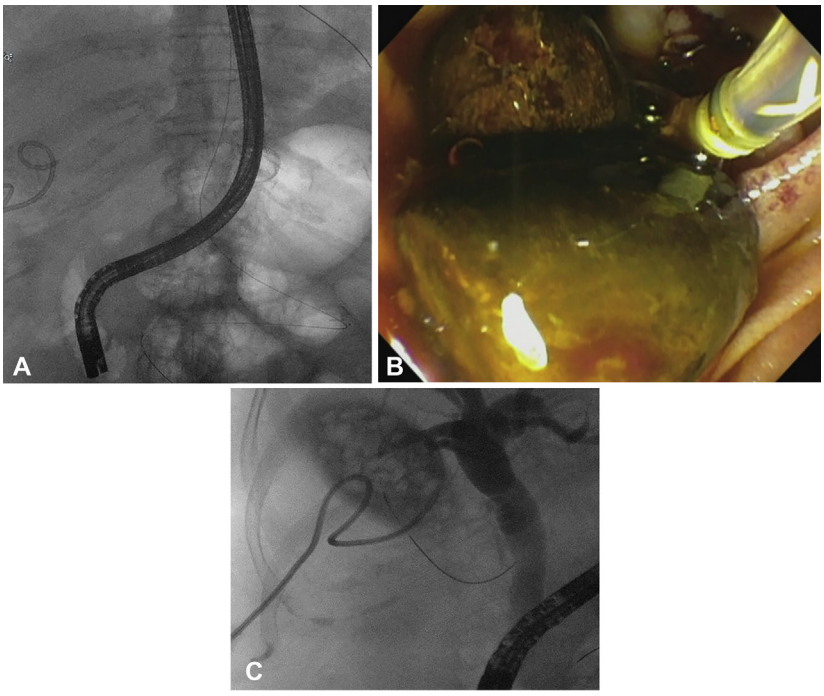

Figure 3. A, Successful advancement of duodenoscope across the gastrogastrostomy stent to appropriate location for biliary duct cannulation. **B,** Successful common bile duct stone extraction after sphincterotomy and papillary balloon dilation. **C,** Occlusion cholangiogram depicting numerous cholelithiasis. Note inability for the guidewire to advance past the cystic duct despite retrograde attempts through the percutaneous drain.

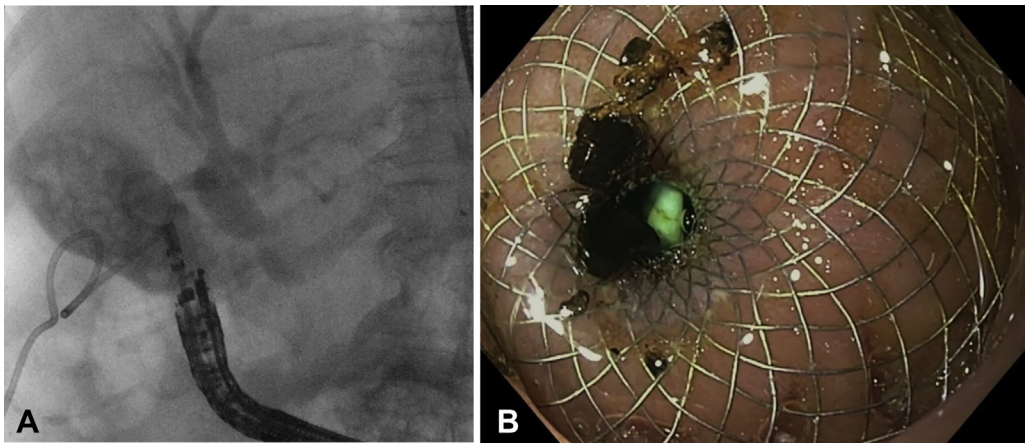

Figure 4. A, Fluoroscopic image depicting endosonoscope location before cholecystoduodenostomy creation. **B,** Status after creation of successful cholecystoduodenostomy. Note spontaneous passage of cholelithiasis and the presence of intracholecystic stent.

choleliths. The postoperative course was uncomplicated, with immediate improvement in RUQ pain and liver tests. The patient remained symptom-free 60 days after the procedure without significant noted weight gain.

LAMS dislodgment is a common adverse event, limiting adoption of same-session EDGE procedures.[2] Several features, including utilization of the larger 20-mm LAMS,[3] LAMS lubrication to reduce friction, and utilization of the pouch-remnant approach in a traditional anatomic orientation, may have minimized the risk of stent dislodgement and facilitated successful completion of a single-stage procedure in our patient. Other options including utilization of a pediatric duodenoscope or LAMS fixation have been reported.[4] Comparative studies would be of value.

DISCLOSURE

All authors disclosed no financial relationships.

Abbreviations: CBD, common bile duct; LAMS, lumen-apposing metal stent; PTC, percutaneous cholecystostomy tube; RUQ, right upper quadrant.

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