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CASE REPORT | ENDOSCOPY

Single-Session Endoscopic Ultrasound-Directed Transgastric Intervention for a Fine Needle Biopsy of Pancreatic Head Mass Using Endoscopic Through-the-Scope Suturing in a Patient With Roux-en-Y Gastric Bypass Anatomy

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ABSTRACT

Endoscopic ultrasound (EUS) is a diagnostic tool used to examine pancreatic lesions. In patients who have undergone Roux-en-Y gastric bypass, lesions of the pancreatic head can be difficult to access because of altered foregut anatomy. To access the excluded stomach for better visualization of the pancreatic head, EUS-directed transgastric intervention can be used in a 2-step fashion. We present an interesting case of a 62-year-old woman who underwent a single-session modified EUS-directed transgastric intervention with a fine needle biopsy of a pancreatic head mass. A novel through-the-scope suturing system, the X-tack system (Apollo Endosurgery, Austin, TX), was used to allow for a successful single-session procedure.

KEYWORDS: pancreatic cancer; EUS-directed transgastric intervention; X-tack suturing system; fine-needle biopsy

INTRODUCTION

Roux-en-Y gastric bypass (RYGB) was first introduced in 1966 and accounts for more than 60%–70% of all bariatric surgeries in the United States.[1] With the prevalence of obesity continuing to rise in the United States, the number of people turning to bariatric surgery for obesity treatment is also expected to increase.[1,2] RYGB is a restrictive-malabsorptive surgery performed by creating a small gastric pouch on the lesser gastric curvature and then anastomosed to the jejunum.[1,2] Endoscopic ultrasound (EUS) is a diagnostic tool used to examine pancreatic tumors; however, in patients who have undergone RYGB, lesions of the pancreatic head can be difficult to access because of altered anatomy and the technical difficulty of maneuvering the duodenoscope down the Roux limb.[2–4] To access the excluded stomach for better visualization of the pancreatic head, EUS-directed transgastric intervention (EDGI) can be used. This minimally invasive endoscopic procedure uses a lumen-apposing metal stent (LAMS) to create a gastro-gastrostomy with the bypassed stomach. In nonemergent cases, this is typically performed in a 2-stage fashion to avoid stent dislodgement.[3,5] We present an interesting case using a modified EDGI procedure in a single session to biopsy a pancreatic head mass by securing the LAMS using X-Tack through-the-scope suturing (TTSS) (Apollo Endosurgery, Austin, TX) and facilitating immediate diagnosis for staging and management of pancreatic malignancy.

CASE REPORT

A 62-year-old White woman with a surgical history of RYGB presented as a transfer from an outside facility for progressive jaundice. Abdominal and pelvic computed tomography revealed intrahepatic and extrahepatic biliary ductal dilation and a pancreatic head mass. The patient was transferred to our facility for further advanced endoscopy intervention. On presentation, laboratory results revealed evidence of

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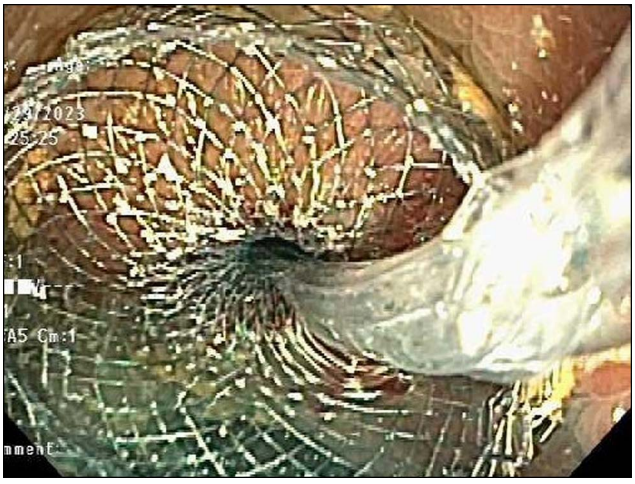

Figure 1. A 20 × 10 mm LAMS in the distal excluded stomach creating a gastro-gastrostomy. LAMS, lumen-apposing metal stent.

direct hyperbilirubinemia and a CA 19-9 of 14,000 units/mL. Interventional radiology was initially consulted for the placement of a percutaneous transhepatic biliary drain for biliary decompression with brush biopsies to aid in diagnosis. Cytology reports from the brush biopsies revealed atypical cells suspicious for malignancy but were not diagnostic. The interventional gastroenterology and surgical oncology teams were both consulted to help obtain repeat biopsies. Owing to the patient's altered foregut anatomy, a non-traditional approach was needed to obtain tissue. After a discussion of the risks and benefits with the patient, the decision to proceed with a modified EDGI with a fine needle biopsy of the pancreatic head mass was made. Initial endoscopic examination revealed evidence of a Roux-en-Y gastrojejunostomy with a healthy appearing mucosal tissue. An EUS was performed, and the excluded remnant of the stomach was visualized endosonographically and punctured using a 19-gauge needle and filled with a mixed solution of contrast, saline, and methylene blue. Under fluoroscopic guidance, the excluded stomach was distended. The distal portion of the excluded stomach was punctured using a 20 × 10 mm LAMS creating a gastro-gastrostomy (Figure 1). The stent was balloon dilated up to 18 mm, and using TTSS, the metal stent was safely tacked into place (Figures 2 and 3). Then, the linear EUS system was used to advance into the remnant stomach and duodenum to visualize the pancreatic head mass. A 30 × 20 mm irregular pancreatic mass was identified with evidence of upstream pancreatic ductal dilation and parenchymal atrophy. Color Doppler imaging was used to confirm the absence of significant vasculature, and fine needle biopsy was performed with a 22-gauge needle using a transduodenal approach (Figure 4). An adequate tissue sample was obtained and sent to pathology for analysis. The patient tolerated the procedure well and returned to the medical floor for ongoing care. Final pathology reports revealed pancreatic adenocarcinoma. She was then discharged home in stable and improving condition 2 days later with close follow-up with medical oncology for neoadjuvant chemotherapy. The plan was to repeat the procedure in 2 weeks to exchange the percutaneous drain with an endoscopic fully covered metal biliary stent and remove the LAMS with spontaneous closure of the fistula.

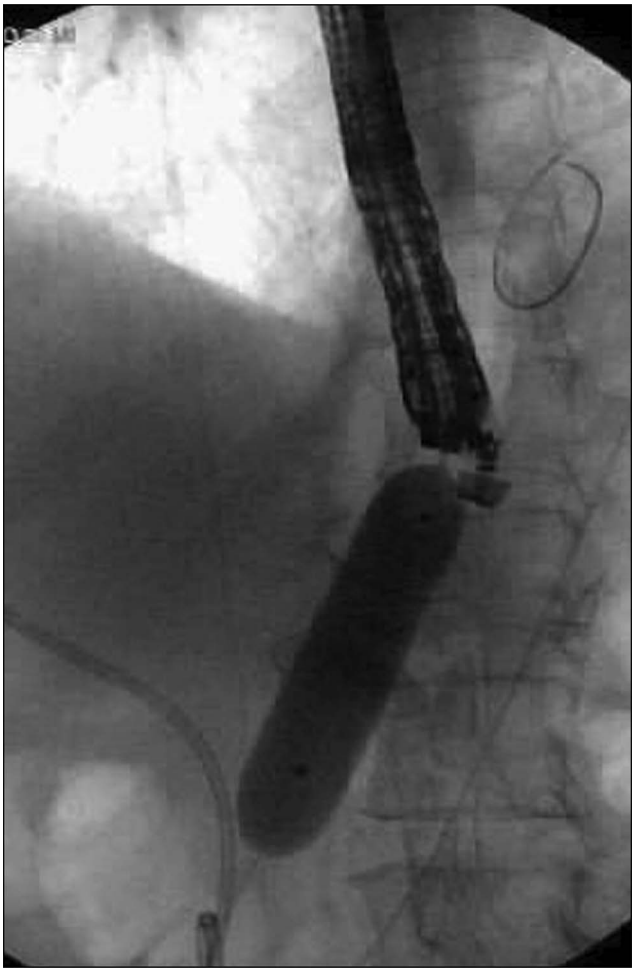

Figure 2. Balloon dilation of the LAMS up to 18 mm as visualized under fluoroscopy. LAMS, lumen-apposing metal stent.

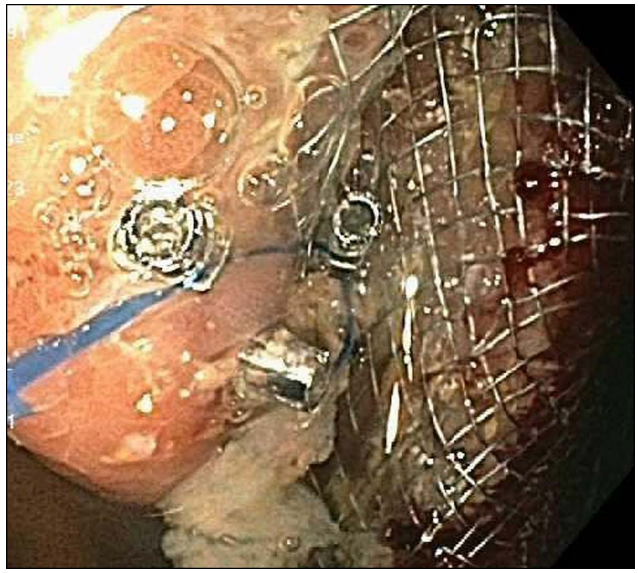

Figure 3. Successful suturing of the LAMS using TTSS without stent dislodgement. LAMS, lumen-apposing metal stent; TTSS, through-the-scope suturing.

Figure 4. A 22-gauge needle was used for a transduodenal biopsy of the irregular pancreatic head mass.

DISCUSSION

The increasing number of patients with surgically altered upper gastrointestinal anatomy has created challenges for endoscopists in the management of pancreaticobiliary disease. The EDGI procedure is a minimally invasive procedure used to manage pancreaticobiliary tract diseases in patients with RYGB anatomy. Although there have been similar cases reported in the literature, this case uses a novel TTSS to allow for a safe single-session procedure without dislodgement of the LAMS.

EDGI has proven to be an effective and safe procedure with a technical success rate of 100% and a clinical success rate of 91%.[6,7] Most of these cases used either over-the-scope suturing or over-the-scope clips to secure the LAMS with adverse effects such as stent migration, misdeployment, and perforation reported in 18% of cases.[8] LAMS migration is usually asymptomatic but can cause serious consequences such as perforation, bleeding, and bowel obstruction.[9] As seen above, the novel TTSS can be used successfully to anchor the LAMS in place and allow for a safe single-session EDGI. Although not widely reported in the literature, TTSS was first approved in 2020 for the approximation of soft tissue including closure and healing of large and deep submucosal and intramuscular tissue defects in the gastrointestinal tract, fistulas, perforation, and leaks.[10] The added advantage of TTSS is that it avoids endoscope withdrawal before applying therapy making it a time-efficient tool when requiring large distant defect closure and in tight places such as securing a LAMS to create a gastro-gastrostomy.[10] Furthermore, TTSS is also more cost-effective because only 1 tack and suture device is required to close defects of all sizes costing approximately $695 in the United States. Over-the-scope suturing can cost $1,000 per device, and over-the-scope clips range from $438 to $600 based on defect size, with additional costs for grasping and anchoring tools.[11]

Single-session EDGI procedures have typically been reserved for emergent cholangitis cases. We hope to offer patients a safe and minimally invasive approach to allow for the immediate diagnosis of pancreatic lesions by successfully securing the LAMS in place through this novel TTSS method.

DISCLOSURES

Author contributions: R. Bassi: involved in writing the manuscript, obtaining patient consent, and submission of the manuscript, and is the article guarantor. FI Macedo: performed a literature review, assisted in writing the manuscript, and was involved in patient care. Y. Perbtani: assisted in obtaining endoscopy images, writing the manuscript, and assisted in the endoscopy procedure. TS Brar: oversaw the case and was involved in the final editorial process of the manuscript. Also performed the endoscopy procedure.

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