ACG CASE REPORTS JOURNAL

CASE REPORT | ENDOSCOPY

Endoscopic Ultrasound-Guided Creation of a Gastrogastric Conduit After Pancreaticoduodenectomy in a Patient with Prior Roux-en-Y Gastric Bypass

Rohit Das, MD[1], Herbert Zeh, MD[2], Amer Zureikat, MD[2], Adam Slivka, MD, PhD[1], and Georgios I. Papachristou, MD, PhD[1]

[1]*Department of Gastroenterology, Hepatology, and Nutrition, University of Pittsburgh Medical Center, Pittsburgh, PA*
[2]*Department of Surgical Oncology, University of Pittsburgh Medical Center, Pittsburgh, PA*

ABSTRACT

We present a 65-year-old man with a history of a Roux-en-Y gastric bypass and an ampullary adenocarcinoma, treated initially with a Whipple operation, who developed chronic left upper quadrant pain as a consequence of retained gastric contents within a dilated gastric remnant that was no longer in continuity. This was treated successfully with the endoscopic ultrasound–guided creation of a gastrogastric conduit via a covered metal stent. This represents a unique complication of pancreaticoduodenectomy in patients with a prior Roux-en-Y gastric bypass.

INTRODUCTION

Pancreaticoduodenectomy, also known as the Whipple procedure, remains the optimum surgical management for malignancies in the head of the pancreas, ampullary region, and distal biliary tree. Over time, the procedure has become safer, with lower overall postoperative morbidity and mortality.[1] Not surprisingly, postoperative outcomes improve with greater case volume and experience.[2] Endoscopic ultrasound (EUS) has been increasingly utilized in managing complications post-pancreaticoduodenectomy, mainly in achieving rendezvous access to the main pancreatic duct.[3] Patients with prior Roux-en-Y gastric bypass surgery pose a special challenge, and pancreatic surgery in this group has been less well described.

CASE REPORT

A 65-year-old man with a history of prediabetes, hypertension, and Roux-en-Y gastric bypass surgery more than 20 years prior presented with jaundice. At an outside facility, cross-sectional imaging revealed an ampullary mass. He underwent a standard pancreaticoduodenectomy with the excluded stomach of the gastric bypass being left in discontinuity. Pathology revealed ampullary adenocarcinoma, staged as IIA (T3 N0). Approximately 1 month after the procedure, he began to experience constant left upper quadrant pain, anorexia, and weight loss. Imaging at the outside institution showed a large postoperative collection, which was considered to be the etiology of his symptoms. The collection was aspirated with EUS, which temporarily relieved his symptoms.

He then presented to our institution approximately 1 month later with similar symptoms. On presentation, his vital signs were normal. Physical examination showed tenderness in the left upper quadrant without any rebound or guarding. Laboratory evaluation revealed a high white blood cell count of 15.7 but was otherwise unrevealing. Cross-sectional imaging after intravenous contrast administration showed a 7 × 7 cm collection in the left upper

ACG Case Rep J 2018;5:e100. doi:10.14309/crj.2018.100. Published online: December 19, 2018.

Correspondence: Rohit Das, MD, Department of Gastroenterology, Hepatology, and Nutrition, University of Pittsburgh Medical Center, 5200 Centre Ave, Suite 409, Pittsburgh, PA 15232 (dasr@upmc.edu).

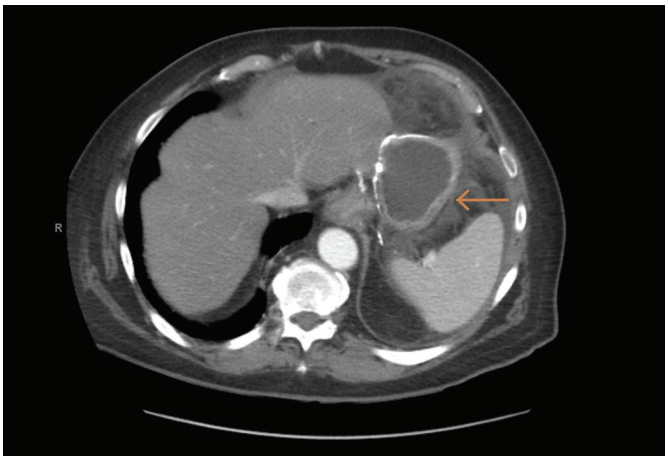

Figure 1. Computed tomography of abdomen showing the excluded stomach (arrow) with adjacent inflammation and mesenteric fat stranding.

quadrant, likely representing a dilated gastric remnant, with adjacent mesenteric fat stranding and edema (Figure 1).

Repeat EUS with a linear echoendoscope revealed a dilated gastric remnant (identified by typical thick rugal folds). This was accessed with a 19-gauge EchoTip needle (Cook Medical, Bloomington, IN) through the gastric pouch (Figure 2) with special attention to ensure that the puncture site was distal to the gastroesophageal junction. An 0.035-in Jagwire (Boston Scientific, Marlborough, MA) was then coiled within the excluded stomach (Figure 3). After dilation of the tract with a Fusion 5-7-10 French push catheter (Cook Medical) and a 6-mm Hurricane RX balloon dilator (Boston Scientific), a gastrogastric conduit was created via deployment of a 10-mm by 4-cm fully-covered Viabil metal stent (Gore Medical, Flagstaff, AZ) under fluoroscopic and endoscopic guidance (Figure 4). Cloudy fluid and a small amount of debris drained through the stent into the gastric pouch after deployment.

Figure 2. EUS-Guided access from the gastric pouch into the excluded stomach with a 19-gauge EchoTip needle.

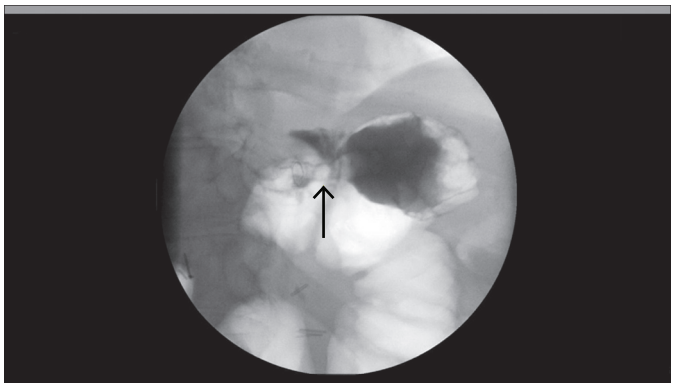

Figure 3. Fluoroscopic image after deployment of a 10-mm by 4-cm covered Viabil metal stent into the excluded stomach.

The patient did well after the procedure and was discharged after a 4-day hospitalization. He has followed up as an outpatient at our institution and remains asymptomatic for 6 months since the intervention. Follow-up imaging done approximately 7 months post-intervention showed resolution of inflammatory changes and decompression of the gastric remnant. The covered metal stent remains in place (Figure 4). He is currently receiving gemcitabine as adjuvant therapy for his ampullary malignancy. He is planned for removal of the covered metal stent in the near future.

DISCUSSION

EUS has been well described as an endoscopic means of drainage of a variety of intra-abdominal collections, including pseudocysts and walled-off pancreatic necromas, intra-abdominal abscesses, bilomas, and inflamed gallbladders in patients at high operative risk.[4-7] In patients with a prior Roux-

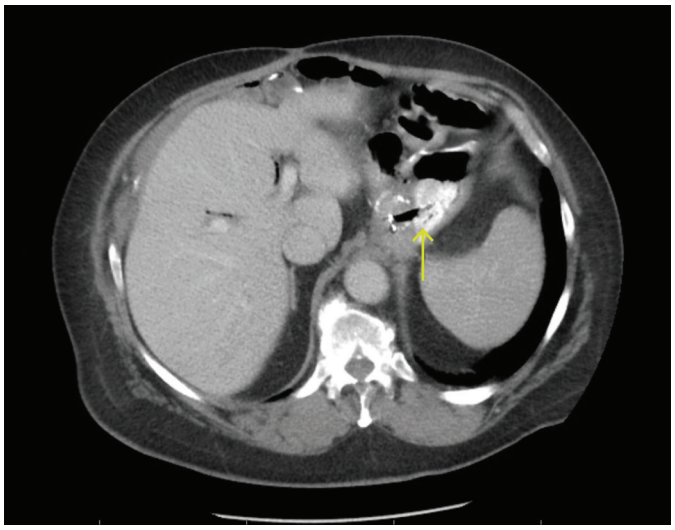

Figure 4. Computed tomography of the abdomen showing the gastrogastric conduit via a metal stent (arrow) and a decompressed gastric remnant.

en-Y gastric bypass, EUS-guided creation of a gastrogastric conduit, usually via placement of a covered metal stent after obtaining access into the excluded stomach, has been described mainly to facilitate retrograde endoscopic biliary intervention.[8,9] Emerging data indicate that this technique is both safe and effective.[10]

In our case, a standard pancreaticoduodenectomy was performed for an ampullary mass in the setting of a prior Roux-en-Y gastric bypass. The excluded stomach was left in situ, no longer in communication with the gastrointestinal tract. This led to retention of gastric contents, dilation of the excluded stomach, and associated symptoms. After multidisciplinary discussion, it was decided to pursue nonoperative management due to the degree of inflammation seen on initial imaging. Our patient responded well to the EUS-guided creation of a gastrogastric conduit via a covered metal stent, with a technique similar to what has been described previously.[5,6] Ideally, after removal of the metal stent, some degree of a gastrogastric fistula will remain to allow for drainage of the gastric remnant. However, this specific complication after pancreaticoduodenectomy, and its natural history after endoscopic management, has not been described previously. This patient may ultimately have recurrent issues and may require removal of the gastric remnant for definitive management.

On the basis of this case, it is prudent to consider complete removal of the excluded stomach in patients with a Roux-en-Y gastric bypass undergoing pancreaticoduodenectomy. Studies are needed to assess the best surgical approach in this subgroup of patients. Furthermore, in symptomatic bariatric patients with an excluded stomach that is left in-situ at the time of the Whipple procedure, EUS-guided creation of a gastrogastric conduit appears to be a feasible, low-risk, salvage endoscopic technique.

DISCLOSURES

Author contributions: R. Das collected the data and wrote the manuscript, and is the article guarantor. H. Zen, A. Zureikat, and A. Slivka revised the manuscript. GI Papachristou wrote and revised the manuscript.

Financial disclosure: None to report.

Informed consent was obtained for this case report.

Received September 1, 2017; Accepted May 7, 2018

REFERENCES

1. Kneuertz PJ, Pitt HA, Bilimoria KY, Smiley JP, Cohen ME, Ko CY, Pawlik TM. Risk of morbidity and mortality following hepato-pancreato-biliary surgery. *J Gastrointest Surg*. 2012;16(9):1727–35.
2. Gooiker GA, van Gijn W, Wouters MW, et al. Systematic review and meta-analysis of the volume outcome relationship in pancreatic surgery. *Br J Surg*. 2011;98(4):485–94.
3. Kinney TP, Li R, Gupta K, et al. Therapeutic pancreatic endoscopy after Whipple resection requires rendezvous access. *Endoscopy*. 2009;41 (10):898–901.
4. Park DH, Lee SS, Moon SH, et al. Endoscopic ultrasound-guided versus conventional transmural drainage for pancreatic pseudocysts: A prospectively randomized trial. *Endoscopy*. 2009;41(10):842–8.
5. Piraka C, Shah RJ, Fukami N, Chathadi KV, Chen YK. EUS-guided transesophageal, transgastric and transcolonic drainage of intra-abdominal fluid collections and abscesses. *Gastrointest Endosc*. 2009;70 (4):786–92.
6. Kahaleh M, Wang P, Shami VM, Tokar J, Yeaton P. Drainage of gallbladder fossa fluid collections with endoprosthesis placement under endoscopic ultrasound guidance: A preliminary report of two cases. *Endoscopy*. 2005;37(4):393–6.
7. Lee SS, Park DH, Hwang CY, et al. EUS-guided transmural cholecystostomy as rescue management for acute cholecystitis in elderly or high-risk patients: A prospective feasibility study. *Gastrointest Endosc*. 2007;66(5):1008–12.
8. Wagh M, Forsmark CE. Endoscopic creation of a gastrogastric conduit for reversal of a gastric bypass. *Gastrointest Endosc*. 2011;74(4):932–3.
9. Shear W, Gaidhane M, Kahaleh M. ERCP in Roux-en-Y gastric bypass: Creation of an antegrade gastrogastric conduit using a fully covered metal esophageal stent. *Endoscopy*. 2012;44:58–9.
10. Tyberg A, Nieto J, Salgado S, et al. Endoscopic ultrasound (EUS)-directed transgastric endoscopic retrograde cholangiopancreatography or EUS: Mid-Term analysis of an emerging procedure. *Clin Endosc*. 2017;50(2):185–90.