



Multi-bypass with the use of lumen-apposing metal stents to maintain luminal continuity of the GI tract in a patient with altered anatomy

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The goal of endoscopic palliative therapies is to provide improvement in quality of life with minimal morbidity and mortality. Surgery has been the primary treatment for malignant obstruction, although surgical morbidity is higher in emergency scenarios. Stent placement is commonly used in malignant and benign GI obstruction with established efficacy and safety.^{1,2} Lumen-apposing metal stents (LAMSs) represent an evolution in endoscopic stents and are considered a disruptive change in therapeutic endoscopy. A LAMS is a saddle-shaped stent that achieves lumen apposition because of its bilateral anchoring flanges, pulling together 2 nonapposing lumens, providing both drainage and expansion. The large diameter (10-20 mm) provides a conduit to pass endoscopes and devices across lumens not previously accessible. Additionally, its shape decreases the risk of migration.^{3,4} LAMSs are FDA approved for pancreatic fluid collections; however, they are increasingly used in the management of benign GI stricture and for creating anastomosis in malignant obstructions due to the antimigratory lumen-apposing design and the larger diameter providing a conduit for food and fluids.⁴⁻⁷

EUS-guided gastrojejunostomy (EUS-GJ), also known as EUS-guided gastroenterostomy (GE), is a novel endoscopic procedure that has recently emerged as a new treatment for some benign and malignant etiologies. LAMSs have also been used in the treatment of afferent loop syndrome, creation of a directed transgastric access to perform ERCP after Roux-en-Y gastric bypass (RYGB), and dilation of gastrojejunal anastomosis (GJA) stenosis.^{2,4-7} In this video report, we demonstrate the use of LAMSs in 3 different situations in a patient with metastatic disease (Video 1, available online at www.VideoGIE.org). This video is a follow-up to a previous case report (without video).⁸

CASE REPORT

A 44-year-old woman who had undergone RYGB 10 earlier subsequently underwent radical cytoreductive surgery for metastatic ovarian cancer, including hysterectomy, left colectomy, and distal gastrectomy of the remnant stomach (Fig. 1). One month after surgery, she experienced

significant abdominal pain. CT demonstrated considerable dilation of the remnant stomach. She was thought to be a poor surgical candidate, and the superior location of the remnant stomach excluded the possibility of radiologic drainage. She was then referred for endoscopic evaluation. An EUS-guided gastrogastic (GG) anastomosis with LAMSs was performed (Fig. 2). At 3 months, she reported improvement of symptoms, and stent removal was performed. One year later, postprandial nausea and emesis returned. She was again referred for endoscopic evaluation. During upper-GI endoscopy, a large amount of food was found fermenting in the remnant stomach. At that time, an EUS-GE was performed (Fig. 3) via the GG anastomosis to improve drainage of the remnant stomach.

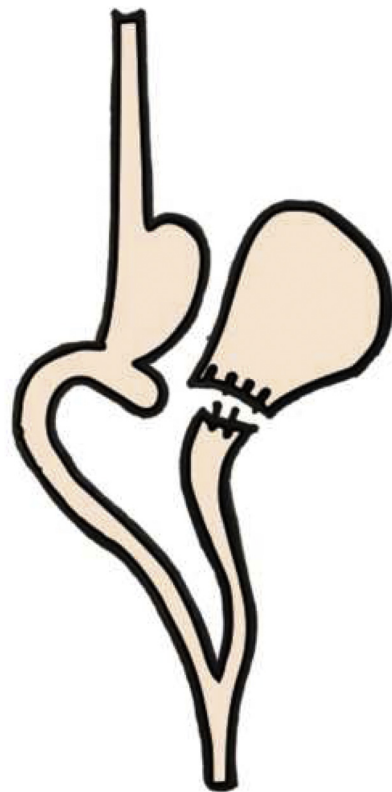


Figure 1. Distal gastrectomy of remnant stomach after Roux-en-Y gastric bypass.

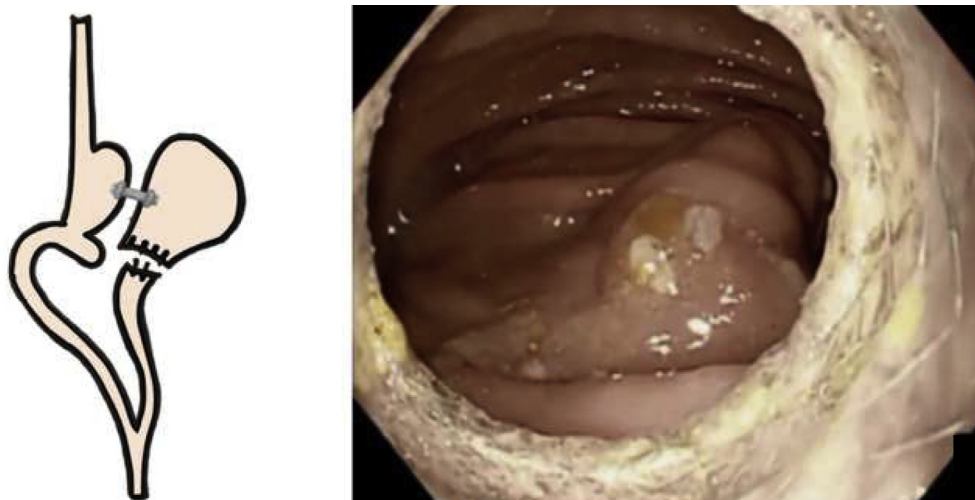


Figure 2. Illustration and endoscopic view of gastrogastric anastomosis with lumen-apposing metal stents.

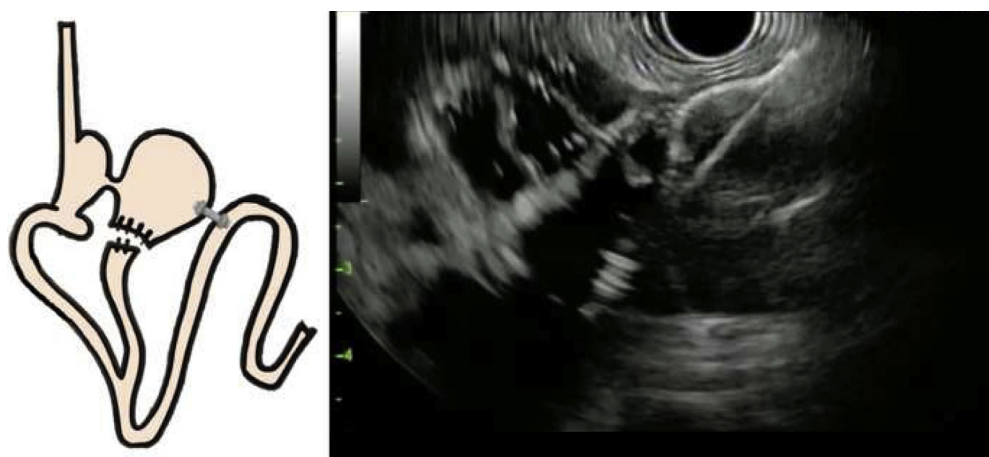


Figure 3. Illustration and EUS image of remnant gastroenteral anastomosis with lumen-apposing metal stents.

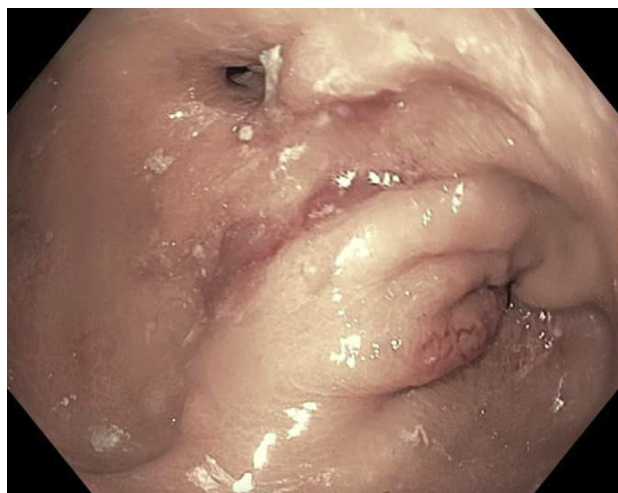


Figure 4. Endoscopic image showing stenosis of gastrogastric and gastrojejunal anastomoses.



Figure 5. Endoscopic image showing patent gastroenteral lumen-apposing metal stent with breakdown of the covering and tissue ingrowth.

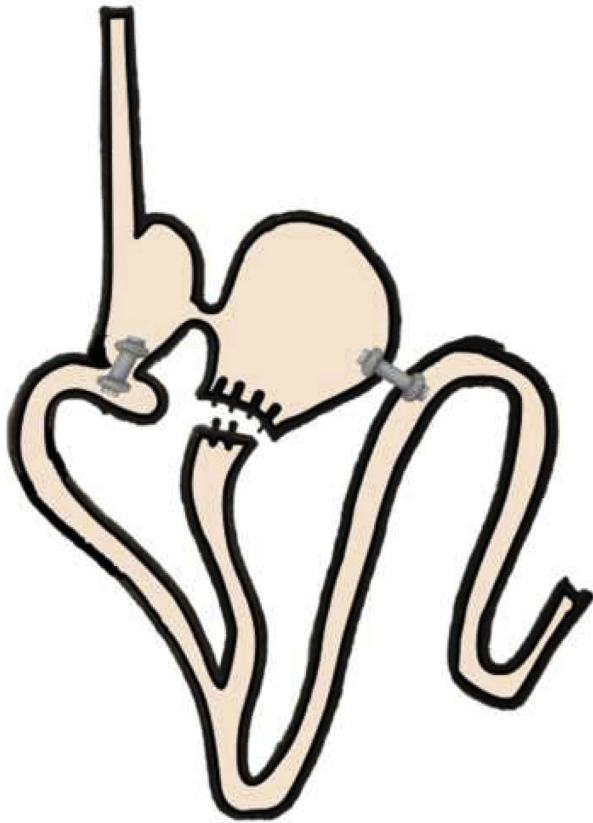


Figure 6. Final anatomy after endoscopic interventions.

After this procedure, the patient again had improvement of symptoms, allowing for regular ingestion of food and weight maintenance. Two years after this procedure, postprandial nausea and emesis recurred, and an upper-GI endoscopy was again performed. At this point, stenosis of both the GG and the surgical (RYGB) GJA were diagnosed (Fig. 4). Balloon dilation of the GG anastomosis was performed, and a clean remnant stomach with a patent remnant-enteral LAMS with visible tissue ingrowth were seen (Fig. 5). Because of her symptoms, a LAMS was placed to dilate the GJA (Fig. 6). At her 1-month follow-up visit, she had no symptoms and was eating soft food. Unfortunately, the patient died 2 months after the last visit as a result of disease progression.

CONCLUSION

The frontier of endoscopic palliative therapies is expanding, improving the quality of life of patients with lower

morbidty and mortality in comparison with surgical approaches. LAMSs can be successfully used in a variety of endoscopic procedures; however, stent covering breakdown is a risk that should be considered if long-term placement is likely.

DISCLOSURE

Dr Thompson is a consultant for Boston Scientific and Olympus. All other authors disclosed no financial relationships relevant to this publication.

Abbreviations: GG, gastrogastric; GJA, gastrojejunal anastomosis; LAMS, lumen-apposing metal stent; RYGB, Roux-en-Y gastric bypass.

REFERENCES

- Ribeiro IB, Bernardo WM, Martins BDC, et al. Colonic stent versus emergency surgery as treatment of malignant colonic obstruction in the palliative setting: a systematic review and meta-analysis. *Endosc Int Open* 2018;6:E558-67.
- de Moura DTH, Sachdev AH, Thompson CC. Endoscopic full-thickness defects and closure techniques. *Curr Treat Options Gastroenterol* 2018;16:386-405.
- Wallace MB, Wang KK, Adler DG, et al. Recent advances in endoscopy. *Gastroenterology* 2017;153:364-81.
- Jain D, Patel U, Ali S, et al. Efficacy and safety of lumen-apposing metal stent for benign gastrointestinal stricture. *Ann Gastroenterol* 2018;31:425-38.
- Dawod E, Nieto JM. Endoscopic ultrasound guided gastrojejunostomy. *Transl Gastroenterol Hepatol* 2018;3:93.
- Brewer Gutierrez OI, Irani SS, Ngamruengphong S, et al. Endoscopic ultrasound-guided entero-enterostomy for the treatment of afferent loop syndrome: a multicenter experience. *Endoscopy* 2018;50:891-5.
- Kedia P, Tyberg A, Kumta NA, et al. EUS-directed transgastric ERCP for Roux-en-Y gastric bypass anatomy: a minimally invasive approach. *Gastrointest Endosc* 2015;82:560-5.
- Schulman AR, Thompson CC. Endoscopic reconstruction of Roux-en-Y gastric bypass with placement of gastrojejunal and remnant-jejunal lumen-apposing metal stents. *Gastrointest Endosc* 2018;87:890-1.

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