



Drainage of gastric intramural abscesses using lumen-apposing metal stents

Russell D. Dolan, MD,¹ Thomas R. McCarty, MD,¹ David James Papke Jr, MD,²
Christopher C. Thompson, MD, MSc, FACG, FASGE, FJGES¹

BACKGROUND

Gastric intramural abscesses are rare and often related to foreign body trauma. Owing to location and general nonresponse to broad-spectrum antimicrobial therapy, endoscopic drainage is often used.

To date, there are few cases in the literature. Prior methods described for endoscopic drainage include needle-knife fenestration¹⁻³ and pigtail catheter placement.⁴ Recently, lumen-apposing metal stents (LAMSs) were designed for drainage of pancreatic fluid collections and are recommended as a first-line alternative to plastic stents.⁵ However, the use of LAMSs in drainage of a gastric intramural abscess has not previously been reported.

This video case presentation highlights an 83-year-old man with a history of diabetes mellitus and prostate carcinoma that had previously been resected and treated with taxotere. The patient presented with abdominal pain, nausea, and intermittent fever. He was found to have a leukocytosis, and CT of the abdomen/pelvis with intravenous contrast demonstrated a large gastric intramural ab-

cess refractory to broad-spectrum antimicrobial therapy (Fig. 1). Therapeutic endoscopy was arranged.

METHODS

The LAMS is designed as a biflanged radially self-expanding covered metal stent system to allow approximation of adjacent lumens or fluid collections (Fig. 2).

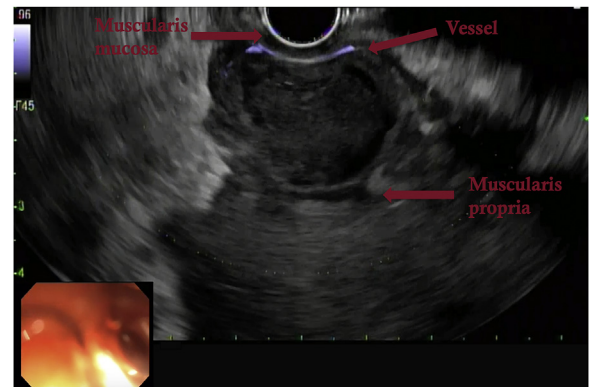


Figure 2. Lumen-apposing metal stent deployment system. Depiction of a radially expanding biflanged lumen-apposing metal stent. Adapted from Mussetto et al⁵ under Creative Commons Attribution-Noncommercial-Share Alike 3.0 Unported.



Figure 1. CT of gastric intramural abscess. Axial view of CT demonstrating a 3.4 × 3.8-cm gastric intramural fluid collection with air (arrow), consistent with gastric intramural abscess.

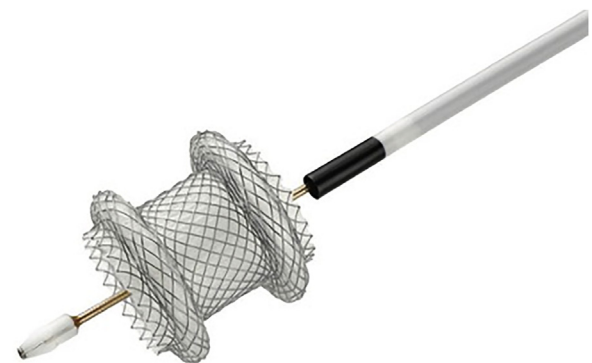


Figure 3. Endoscopic ultrasound view of gastric intramural abscess. EUS demonstration of gastric intramural abscess present between muscularis mucosa and muscularis propria with overlying blood vessel seen using color Doppler.

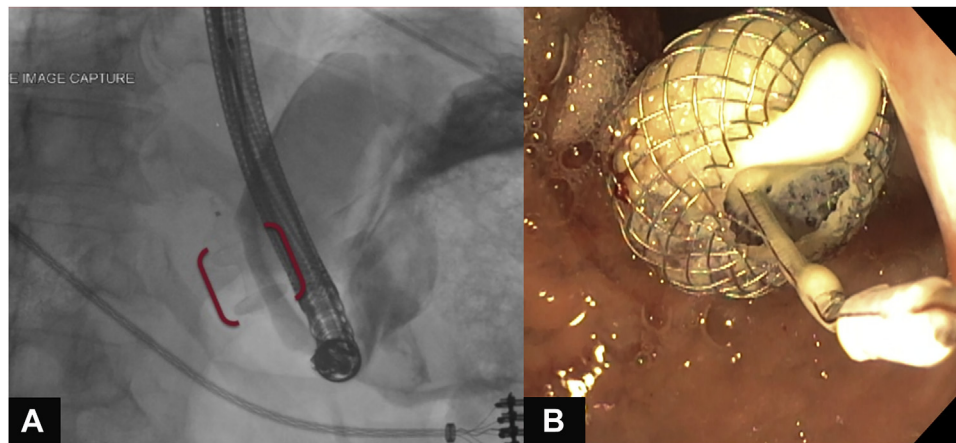


Figure 4. Deployment of initial lumen-apposing metal stent. Confirmation of lumen-apposing metal stent placement on fluoroscopic (**A**) and endoscopic (**B**) views.

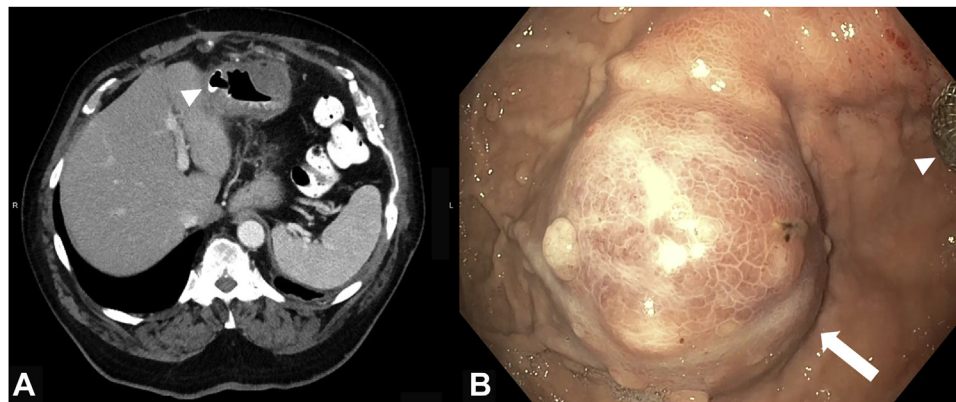


Figure 5. Presence of second gastric intramural abscess. **A**, Despite initial lumen-apposing metal stent placement (*arrowhead*), repeat CT demonstrated the presence of a gastric intramural abscess. **B**, Repeat endoscopy confirmed the presence of a second gastric intramural abscess (*arrow*) not drained by the original lumen-apposing metal stent (*arrowhead*).

Transmural deployment requires use of electrocautery with EUS and fluoroscopic guidance to ensure adequate stent position.

RESULTS

EUS demonstrated the presence of a large gastric intramural collection (Fig. 3; Video 1, available online at www.VideoGIE.org). Color-flow Doppler showed dense vascularity overlying the fluid collection, increasing the risk of bleeding with needle-knife fenestration. Contrarily, use of an LAMS allowed for direct real-time visualization of the surrounding vasculature. In addition, radial expansion of an LAMS would provide a tamponade effect if vasculature was encountered.

A 19-gauge needle was used to attempt aspiration of contents; this yielded no material owing to content viscosity, suggesting that pigtail drainage may have been less effective at providing adequate drainage. Given clear

visualization of an overlying muscularis mucosal layer and muscularis propria layer deep to the intramural collection on EUS (which should lower the risk of stent migration or perforation), the decision was made to decompress the abscess with placement of a 10- × 10-mm (lumen diameter by saddle length) LAMS (Fig. 4). Abscess decompression revealed a copious amount of purulent material; cultures tested positive for *Candida krusei* and *Enterococcus faecalis*.

Despite initial LAMS drainage of the gastric intramural abscess and antimicrobial therapy, the patient remained symptomatic. Repeat CT of the abdomen demonstrated resolution of the original collection but rapid development of a distant, second intramural fluid collection (Fig. 5). Repeat endoscopy was performed 12 days after the initial procedure and confirmed a distinct intramural fluid collection with injection of fluoridated contrast.

A second 10- × 10-mm LAMS was deployed for decompression of this area. Simultaneous removal of the initial LAMS revealed a decompressed intramural fluid collection

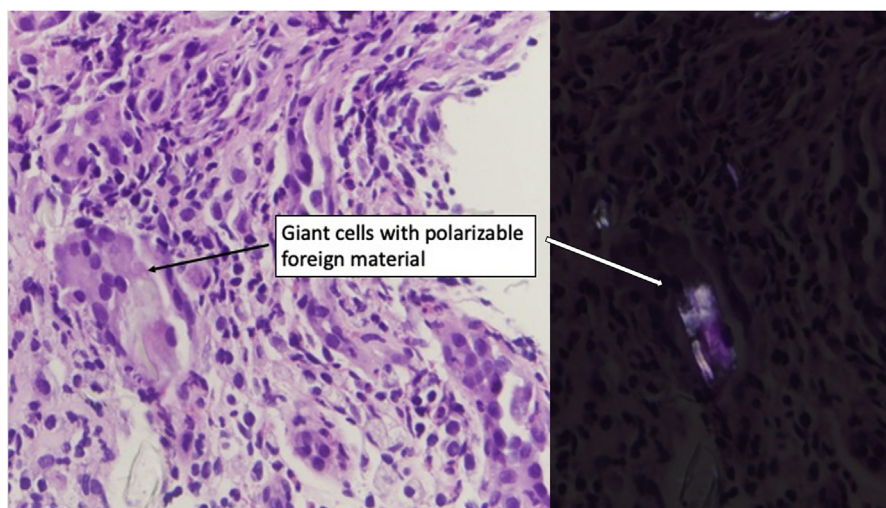


Figure 6. Foreign body material on pathology. Pathology results demonstrated the presence of necroinflammatory debris and acutely inflamed granulation tissue with foreign body giant cell reaction to polarizable material under white and polarized light.

with granulation tissue. Biopsy specimens were obtained, and pathology results showed reactive necroinflammatory debris and polarizable foreign body material (Fig. 6).

Surveillance endoscopy 2 weeks after the second stent placement allowed for removal. The patient was discharged to complete a course of antibiotics.

CONCLUSIONS

Although gastric intramural abscesses are rare, endoscopic drainage is usually required. Considerations for drainage include the risk of bleeding or perforation, adequacy of drainage for source control, and potential for stent migration. LAMSs appear to be a safe and effective alternative modality for endoscopic drainage of intramural collections. Additional approaches may include injection of contrast before LAMS placement to fully delineate the collection and ensure adequate drainage and LAMS placement over a wire in situations with a narrow window of access.

DISCLOSURE

Dr Thompson is a consultant for Apollo Endosurgery, Boston Scientific, Covidien/Medtronic, EnVision Endoscopy, Fractyl, GI Dynamics, Olympus/Spiration, and USGI Medical; does research support for Apollo Endosurgery, Aspire Bariatrics, Boston Scientific, GI Dynamics, Olympus/Spiration, USGI Medical, and Fujifilm; is an advisory board member for Fractyl and USGI Medical; has ownership interest in GI Windows; and is a general partner of BlueFlame Healthcare Venture Fund. All other authors disclosed no financial relationships. This project was

funded in part by National Institutes of Health (NIH) grants P30 DK034854 and T32 DK007533.

Abbreviation: LAMS, lumen-apposing metal stent.

REFERENCES

1. Kaneko M, Tanaka K, Naota H, et al. Successful endoscopic treatment for gastric mural abscess due to fish bone migration. *Ann Gastroenterol* 2017;30:697.
2. Lin LF, Huang PT. Education and imaging: gastrointestinal: endoscopic unroofing of intramural gastric abscess with insulated tip knife. *J Gastroenterol Hepatol* 2010;25:1901.
3. Will U, Masri R, Bossekert H, et al. Gastric wall abscess, a rare endosonographic differential diagnosis of intramural tumors: successful endoscopic treatment. *Endoscopy* 1998;30:432-5.
4. Marcos WC, Petrini BG, Xavier RL, et al. Gastric wall abscess—an uncommon condition treated by an alternative form. *Clinics (Sao Paulo)* 2010;65:819-21.
5. Baron TH, DiMaio CJ, Wang AY, et al. American Gastroenterological Association clinical practice update: management of pancreatic necrosis. *Gastroenterology* 2020;158:67-75.e1.
6. Mussetto A, Fugazza A, Fuccio L, et al. Current uses and outcomes of lumen-apposing metal stents. *Ann Gastroenterol* 2018;3:535-40.

Division of Gastroenterology, Hepatology and Endoscopy, Brigham and Women's Hospital, Harvard Medical School, Boston, Massachusetts (1), Department of Pathology, Brigham and Women's Hospital, Harvard Medical School, Boston, Massachusetts (2).

If you would like to chat with an author of this article, you may contact Dr Thompson at cthompson@hms.harvard.edu.

Copyright © 2021 American Society for Gastrointestinal Endoscopy. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

<https://doi.org/10.1016/j.vgie.2021.05.009>