



## Management of a refractory leak after sleeve gastrectomy: the endoscopic armamentarium

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Leaks after sleeve gastrectomy are serious postoperative adverse events with significant morbidity. The timing of presentation and the chronicity of the leak affect management strategy, with acute/early (<6 weeks) leaks typically treated differently from late/chronic (>6-12 weeks) leaks.<sup>1,2</sup> Ultimately, once a leak has matured and contains a fibrous septum, a septotomy may be necessary for definitive treatment. We present our approach to a refractory gastric sleeve leak managed with various endoscopic modalities.

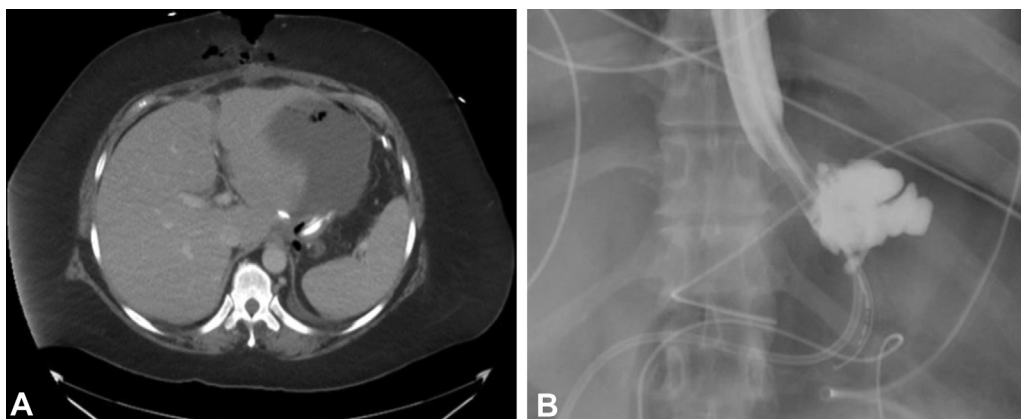
A 48-year-old woman was transferred to our hospital 2 weeks after sleeve gastrectomy with fever, tachycardia, and hypotension. She was found to have pneumoperitoneum and underwent an exploratory laparotomy with the concomitant placement of percutaneous drains into an abscess cavity. Follow-up imaging demonstrated a large-volume leak from the proximal aspect of her gastric sleeve (Fig. 1A and B). Upper endoscopy confirmed a 3-cm defect along the proximal staple line in communication with a perigastric abscess cavity (Fig. 2; Video 1, available online at [www.VideoGIE.org](http://www.VideoGIE.org)). Severe stenosis of the distal lumen was also noted. Given the thick tenacious material within the leak cavity, which did not readily pass through the percutaneous drains, the decision was made to place 10F × 3-cm double-pigtail stents to provide internal drainage of the cavity through the gastric lumen. Pneumatic dilation with a 30-mm diameter balloon to 20 pounds per square inch was also performed distal to the leak site to decrease the pressure gradient and promote healing.

Despite these interventions, the leak persisted with ongoing drainage through the laparotomy incision, resulting in skin breakdown at the abdominal wall. Repeated endoscopy 6 weeks after the index surgery was performed, at which point the abscess cavity was debrided and a covered self-expandable metal stent was placed. Twelve weeks after the index surgery, the stent was removed, and a chronic fibrous septum was found (Fig. 3). Owing to the patient's inability to tolerate oral intake, the decision was made to perform a septotomy.

The septotomy was performed with an insulated cutting knife (Fig. 4). The septum was divided, with care being taken to avoid injury to the leak cavity wall. Foreign material was removed to promote healing, and bleeding was treated with the insulated cutting knife and argon plasma coagulation (APC).

The patient was discharged the following day. Subsequent imaging demonstrated resolution of her fluid collection (Fig. 5). She was able to advance her diet without further symptoms.

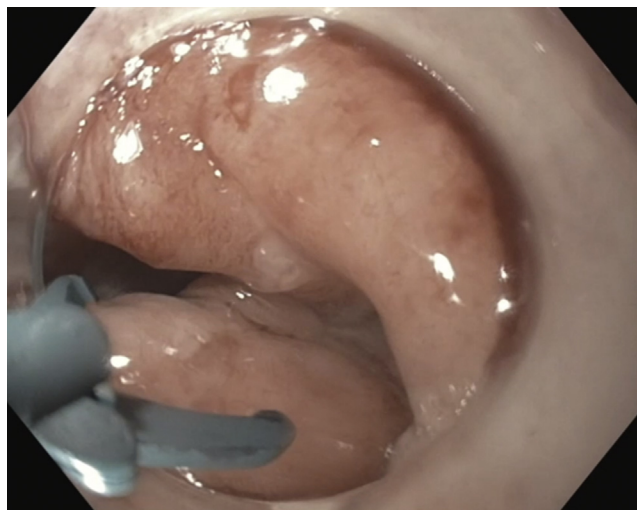
Sleeve gastrectomy has rapidly become a popular bariatric surgery option, representing 59% of all bariatric procedures performed in the United States in 2017.<sup>3</sup> Although this procedure is less morbid than other bariatric surgery options, staple line leaks are estimated to occur in 1% to 7% of patients after sleeve gastrectomy.<sup>2</sup> The proposed mechanism includes mechanical disruption of the staple line, relative ischemia resulting from



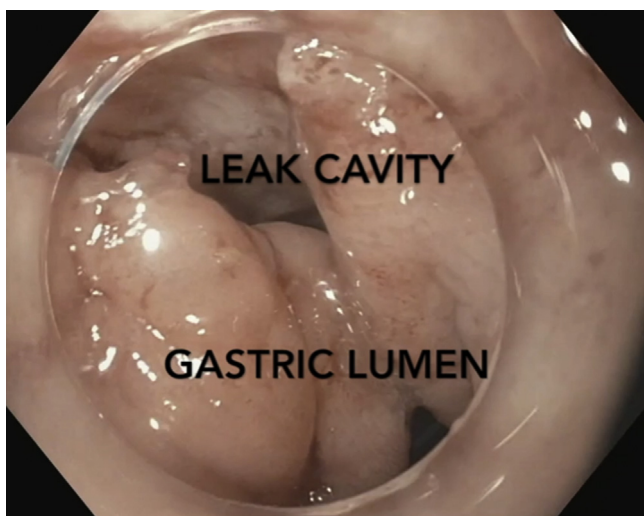
**Figure 1.** A, CT scan demonstrating perigastric fluid collection. B, Upper-GI series demonstrating leak from the proximal aspect of the gastric sleeve.



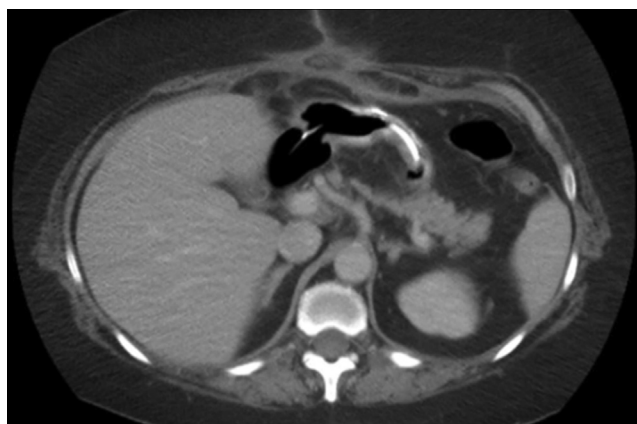
**Figure 2.** Initial endoscopy revealing a 3-cm defect at the proximal staple line.



**Figure 4.** Septotomy with an insulated cutting knife.



**Figure 3.** Repeated endoscopy demonstrating a fibrous septum separating the leak cavity and the gastric lumen that extended 3 cm distally.



**Figure 5.** Follow-up CT scan demonstrating resolution of the perigastric collection and leak.

the takedown of the short gastric arteries, and increased intraluminal pressure.<sup>4</sup> Simultaneous distal sleeve stenosis may be present.<sup>4</sup>

Septotomy with needle-knife, APC, or both has been reported for the successful treatment of late or chronic leaks to completely expose the lumen of the leak cavity and to equalize pressures between the gastric lumen and perigastric collection.<sup>2,5-7</sup> Available published reports have described a mean of 2.3 to 5 septotomy procedures to completely divide the septum.<sup>2,7</sup> The current case demonstrates the novel use of an insulated cutting knife with APC to safely perform the septotomy in a single session. Removal of foreign body

material and pneumatic dilation of the distal sleeve remain important adjunctive strategies for the successful endoscopic management of chronic sleeve leaks.

## DISCLOSURE

*Dr Schulman is a consultant for Apollo Endosurgery, Boston Scientific, and Microtech. The other author disclosed no financial relationships relevant to this publication.*

*Abbreviation: APC, argon plasma coagulation.*

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