ORIGINAL ARTICLE

Through-the-scope suturing for closure of contained leak after cricopharyngeal peroral endoscopic myotomy

Jose Antonio Navarro Almario, MD, MHS, Amit Mehta, MD, Mouen Khashab, MD

BACKGROUND

Cricopharyngeal bar peroral endoscopic myotomy (CP-POEM) is a safe and effective technique for treatment of symptomatic cricopharyngeal bar.[1-3] Before CP-POEM, treatment strategies for cricopharyngeal bar dysphagia included surgical myotomy, laser endoscopic approach, balloon dilation of the upper esophageal sphincter, and botulinum toxin injection.[1] Esophageal leaks are a rare adverse event that is typically managed conservatively, although clips and endoscopic suturing are options for closure of persistent leaks.[4]

CASE

A 69-year-old woman with a medical history of GERD presented to our practice with progressive oropharyngeal dysphagia to solids. A barium esophagram showed a large cricopharyngeal bar causing obstruction of the cervical esophagus (Fig. 1; Video 1, available online at www.videogie.org). Initial endoscopy showed a hypertrophic cricopharyngeal bar below the upper esophageal sphincter at 18 cm from the incisors (Fig. 2). CP-POEM was successfully performed without immediate adverse events or unintentional mucosal injury. The mucosal incision was completely closed with 5 through-the-scope clips (Figs. 3-5). Prophylactic antibiotics were administered during CP-POEM, as is our standard practice. The total procedure time was 32 minutes.

The patient developed a fever on postoperative day (POD) 1. A barium esophagram showed a defect in the posterior esophagus with collection of contrast concerning for a leak (Fig. 6, Video 1), which was confirmed on a CT scan. The esophageal leak was managed conservatively with a 7-day course of intravenous piperacillin-tazobactam and maintenance of nothing-by-mouth status. The patient became afebrile on POD 3; however, the patient's dysphagia and odynophagia persisted, and an esophageal leak was seen on a CT scan on POD 10 (Fig. 7, Video 1). A repeat EGD on POD 13 was notable for a dehisced mucosal incision with irregular borders, edematous mucosa, and a pant submucosal tunnel. An initial suture pattern was planned (Fig. 8, Video 1), but based on the characteristics of the defect during closure, a total of 5 tacks from 2 systems of a novel through-the-scope suturing (TTSS) system (Apollo Endosurgery, Austin, Tex) were placed sequentially in a running suture pattern. The first TTSS system was completely deployed before application of the second TTSS system. The total procedure time was 44 minutes. A repeat video fluoroscopic study was performed on POD 24, which showed no leak in the proximal esophagus (Fig. 9, Video 1). Repeat endoscopy was performed on POD 76 (Video 1). The site of prior mucosal defect was

Abbreviations: CP-POEM, cricopharyngeal bar peroral endoscopic myotomy; POD, postoperative day; TTSS, through-the-scope suturing.

2468-4481
https://doi.org/10.1016/j.vgie.2023.10.003

Division of Gastroenterology and Hepatology, Johns Hopkins Hospital, Baltimore, Maryland.

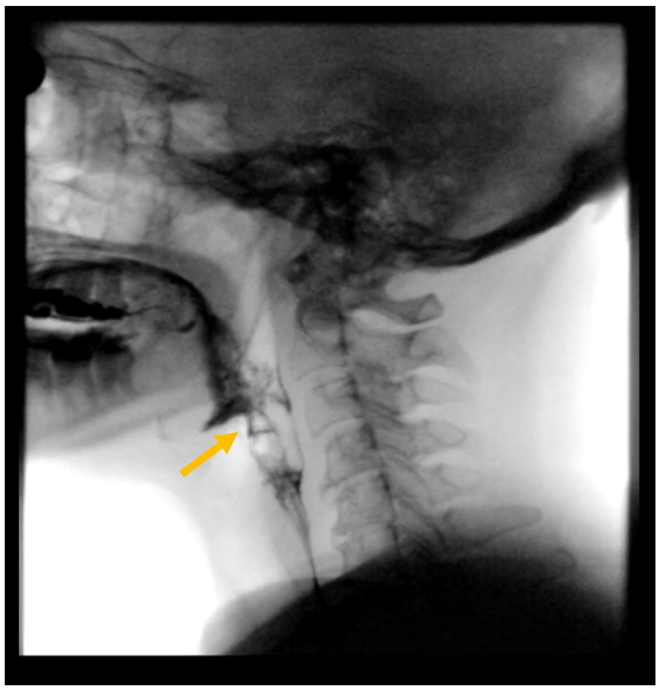

Figure 1. Baseline barium esophagram with evidence of cricopharyngeal bar.

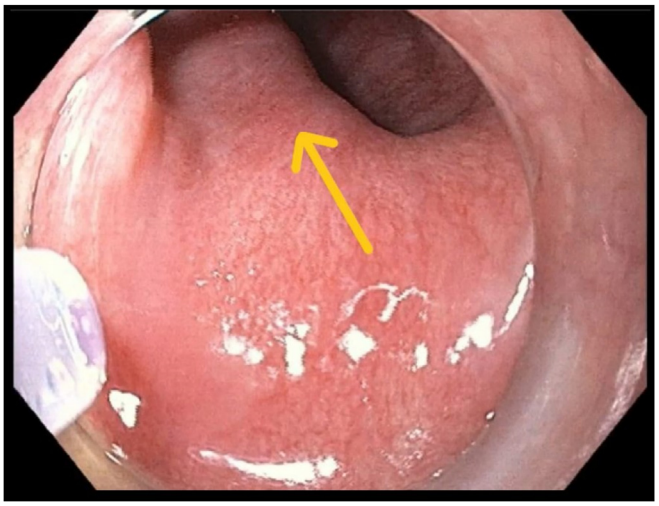

Figure 2. Endoscopic confirmation of prominent cricopharyngeal bar, highlighted by the *yellow arrow*.

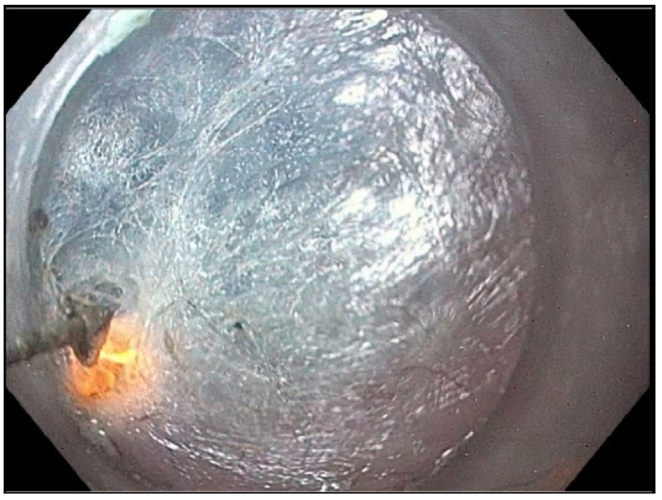

Figure 4. Submucosal tunneling with triangle-tip knife.

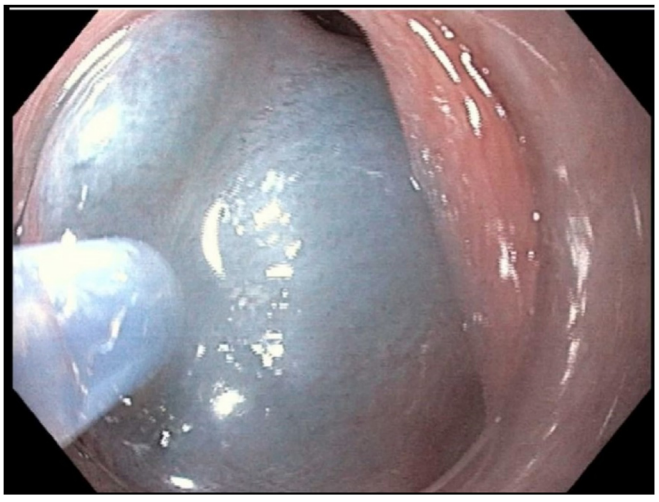

Figure 3. Submucosal injection on the top of the cricopharyngeal bar.

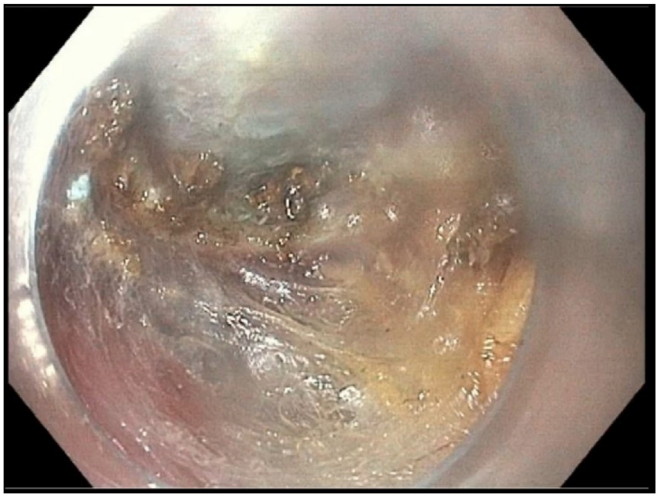

Figure 5. Full-thickness myotomy of the prominent cricopharyngeal muscle.

well healed without evidence of a persistent defect or cricopharyngeal bar. The tacks remained in place and were removed with snare mucosectomy. The total procedure time was 10 minutes. The patient subsequently had complete resolution of dysphagia, odynophagia, and globus sensation.

CONCLUSION

The narrow lumen of the proximal esophagus and irregular mucosal borders seen in this persistent leak made potential closure with through-the-scope clips, over-the-scope clips, and over-the-scope suturing challenging. TTSS has been shown to be safe and effective as a primary or adjunct tool to achieve complete defect closure throughout the upper and lower GI tract, with high technical success.[5,6] Here we demonstrate the successful closure of a persistent esophageal leak after CP-POEM with a novel TTSS system.

DISCLOSURE

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

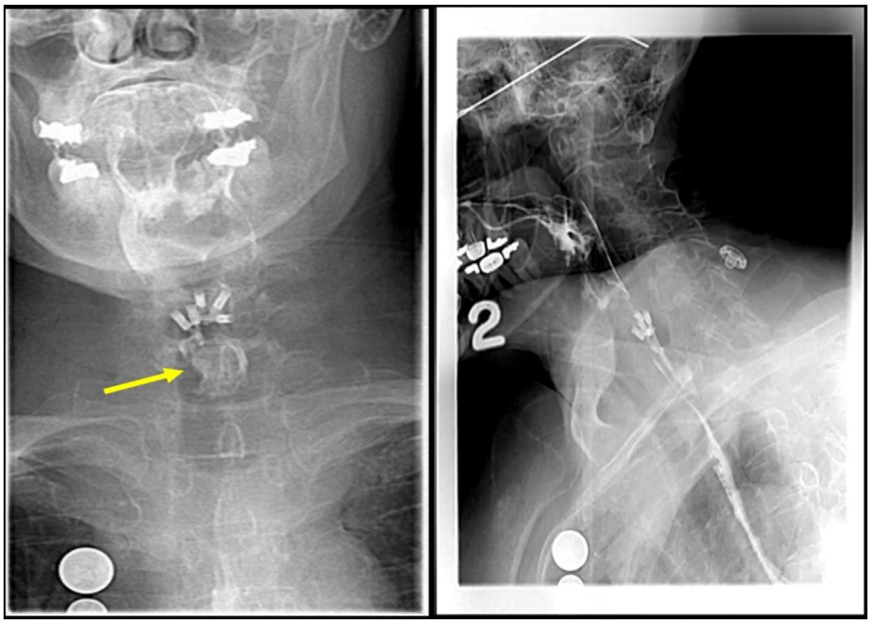

Figure 6. Esophagram performed on postoperative day 1 with evidence of contained esophageal leak, highlighted by the *yellow arrow*.

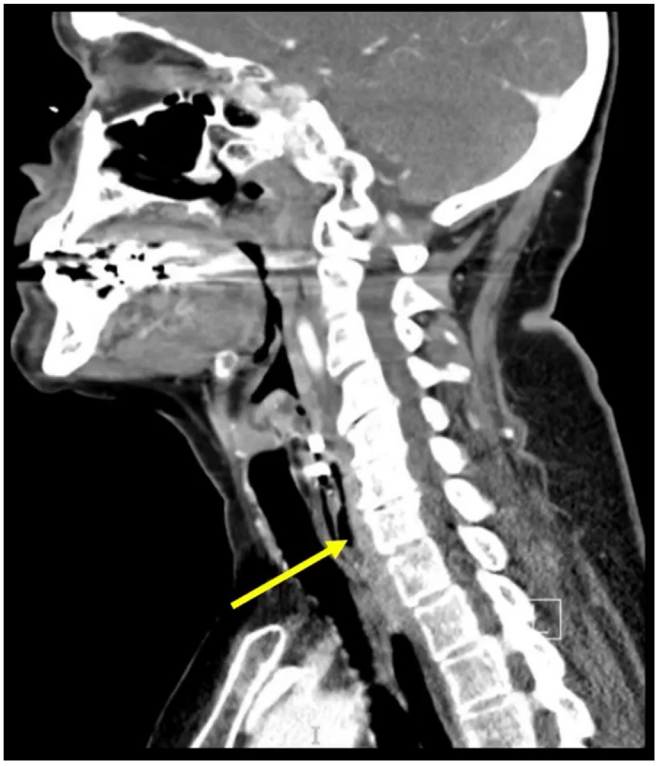

Figure 7. CT scan on postoperative day 10 with the *yellow arrow* demonstrating a persistent contained esophageal leak.

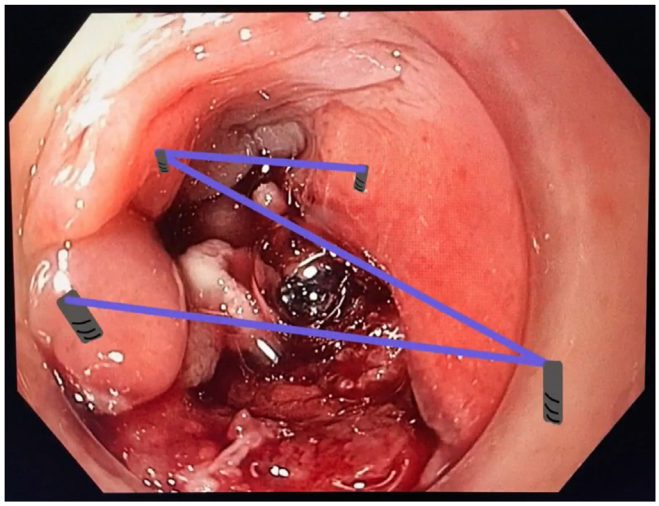

Figure 8. Proposed closure pattern with the through-the-scope suturing kit.

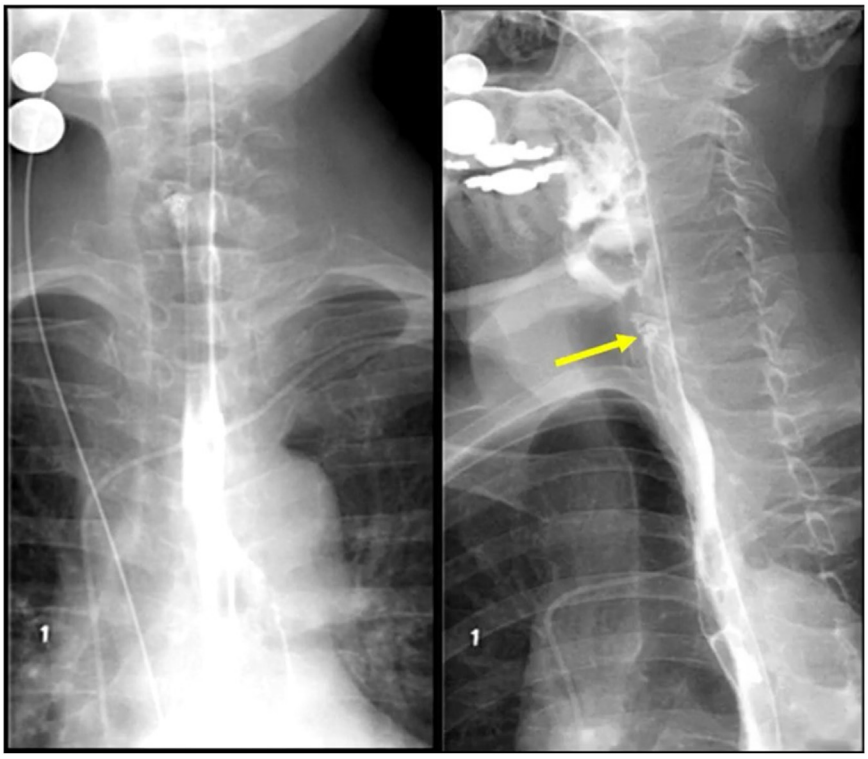

Figure 9. Barium esophagram performed on postoperative day 24 confirming resolution of contained leak. The *yellow arrow* demonstrates the position of the tacks from the through-the-scope suturing kit.

REFERENCES

1. Kelly JH. Management of upper esophageal sphincter disorders: indications and complications of myotomy. Am J Med 2000;108:43-6.
2. Shaker R, Belafsky PC, Postma GN. Principles of deglutition: a multidisciplinary text for swallowing and its disorders. New York: Springer; 2013.
3. Al Ghamdi SS, Bejjani M, Hernández Mondragón OV, et al. Peroral endoscopic myotomy for management of cricopharyngeal bars (CP-POEM): a retrospective evaluation. Endoscopy 2022;54:498-502.
4. Elmunzer JB, Moran RA. Peroral endoscopic myotomy for cricopharyngeal bar. Video GIE 2020;5:378-9.
5. Mahmoud T, Wong Kee Song LM, Storm AC, et al. Initial multicenter experience using a novel endoscopic tack and suture system for challenging GI defect closure and stent fixation (with video). Gastrointest Endosc 2022;95:373-82.
6. Bi D, Zhang LY, Khashab MA. Novel through-the-scope suture closure of colonic EMR defects (with video). Gastrointest Endosc 2023;98:122-9.