

# Taming type III achalasia and coexisting diverticula with complex surgical history with peroral endoscopic myotomy CME



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Epiphrenic esophageal diverticulum is a rare condition often linked to an underlying motility disorder, typically achalasia. Symptoms primarily mirror the underlying motility issue and include dysphagia, regurgitation, heartburn, and respiratory problems. Diagnosis relies on EGD and barium esophagogram, with manometry offering supplementary insights. Surgical options were previously preferred, including laparoscopic Heller myotomy with partial fundoplication. Diverticulectomy may be considered selectively.<sup>1</sup>

Peroral endoscopic myotomy (POEM) offers effective symptom relief with minimal invasiveness, particularly for patients who are ineligible for surgery. A small prospective study on 7 patients who declined surgery showed preferred results with a high safety profile.<sup>2</sup> In another retrospective study on 14 patients with esophageal diverticulum and achalasia who underwent POEM, all patients had improved postoperative Eckardt scores.<sup>3</sup> A recent meta-analysis showed that POEM is an effective and safe technique among both patients with and without Zenker's diverticulum and has better clinical success than flexible endoscopic septum division.<sup>4</sup>

## CASE PRESENTATION

We present a 71-year-old woman who underwent several procedures in the past, including laparoscopic hiatal hernia repair with conversion to open surgery and Nissen fundoplication; Heller myotomy and open Nissen removal a few months later; and a Dor fundoplication surgery, posterior rectus sheath closure with separation of the abdominal components, and open surgery for recurrent hiatal hernia after 1 year. She came to our clinic 5 years later complaining of progressive dysphagia, as well as nighttime regurgitation.

At presentation, she had an Eckardt score of 7 ([Video 1](#), available online at [www.videogie.org](http://www.videogie.org)).

A barium esophagogram showed narrowing at the gastroesophageal (GE) junction, esophageal dysmotility, and tertiary contractions in the mid- to distal esophagus, along with a 1- to 2-cm pulsion-type diverticulum in the distal esophagus. Findings of a high-resolution esophageal manometry were most consistent with type III achalasia, with an estimated hypercontractile segment of 12 cm. A pre-POEM endoluminal functional lumen imaging probe showed decreased esophagogastric junction distensibility of 2.1 mm<sup>2</sup>/mm Hg. Before the procedure, the patient received 1 dose of piperacillin tazobactam as a preprocedural prophylaxis. EGD was performed, which demonstrated an open GE junction and a nondilated, tortuous esophageal lumen with hypercontractile segments that correlated with previous manometric studies. The patient was assessed by the thoracic surgery team for possible esophagectomy. After discussing risks and benefits, the decision was made to refer the patient to a GI clinic for a POEM procedure.

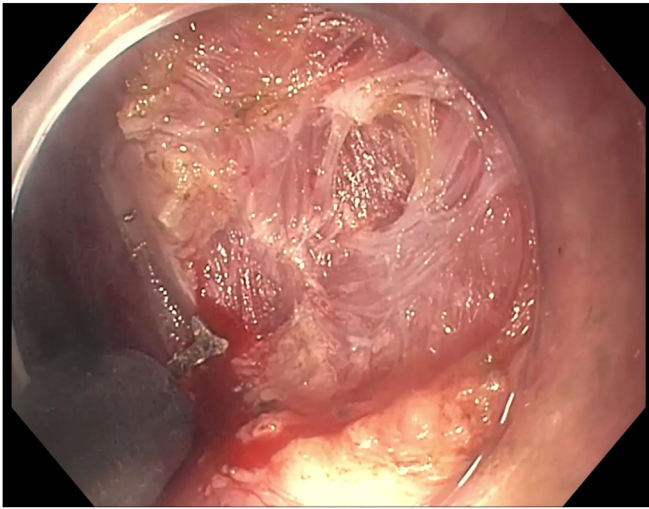
The GE junction was seen at 36 cm, with a 2-cm mucosal incision created at 18 cm on the posterior wall. We used a posterior approach because of the patient's previous history of Heller myotomy. During tunnel creation, a 2-cm pseudo-diverticulum was noted in the distal esophagus, with an additional diverticulum seen in the mid-esophagus. Esophageal tunneling was done and extended to the gastric cardia. After tunneling, the esophageal lumen was examined, with no defects noted upon inspection of the mucosa. Myotomy was performed from 18 to 37 cm, including the diverticular sites and 1 cm into the cardia ([Fig. 1](#)). It is worth mentioning that we switched from the hybrid knife to the triangular knife, as it aids in easily hooking on the muscle fibers, allowing for precise and selective myotomy. Postmyotomy and on inspection of the esophagus lumen, there was a 1-cm area of mucosotomy with additional injury seen at the diverticulum site. Because of the presence of mucosal injury at the diverticulum site, we decided to close it with an over-the-scope clip (OTSC) rather than thru-the-scope clip. We opted for the OTSC approach, as mucosotomy at the diverticulum site poses a challenge for closure with through-the-scope clips because of the tissue being drawn into the diverticulum. The OTSC allows the defect to be pulled into the cap for successful clip deployment. Although suturing the

*Abbreviations:* GE, gastroesophageal; OTSC, over-the-scope clip; POEM, peroral endoscopic myotomy.

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**Figure 1.** Part of the myotomy process at the site of the diverticulectomy is shown.

mucosotomy closure ideally involves full-thickness bites, we were not comfortable taking full-thickness bites in the esophagus. A second OTSC clip was applied to close the nearby additional superficial injury. After this, the initial mucosal incision was closed with clips in a zipper fashion. No adverse events were reported apart from the mucosotomy.

A postprocedure single-contrast esophagogram confirmed the absence of any leaks and the resolution of the diverticula (Fig. 2). The patient was observed overnight and discharged on clear liquids; she was symptom-free and tolerated oral intake 4 weeks after her procedure. A 4-month follow-up showed an improved Eckardt score from 7 to 2.

## DISCUSSION

Performing a POEM procedure after a Heller myotomy can be challenging, especially in cases with fibrosis, diverticula, and a corkscrew esophagus. The need for an extended myotomy added further complexity. However, these challenges were effectively managed with POEM, and the procedure was completed without major adverse events. The only issue encountered—a mucosotomy, likely caused by fibrosis—was successfully treated with an OTSC. Ultimately, the patient achieved a favorable outcome with a less-invasive procedure, successfully avoiding esophagectomy.

## CONCLUSIONS

In patients with type 3 achalasia, previous fundoplication, and esophageal diverticula, esophagectomy was traditionally the standard of care. This case demonstrates a



**Figure 2.** Post-POEM barium esophagogram shows no leak and resolution of the diverticula. *POEM*, Peroral endoscopic myotomy.

successful POEM in this technically challenging clinical situation. In addition, the case included a mucosectomy that was complicated by the presence of a diverticulum. This was overcome using an OTSC.

## PATIENT CONSENT

The patient in this article has given written informed consent to publication of the case details.

## DISCLOSURE

All authors disclosed no financial relationships.

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