

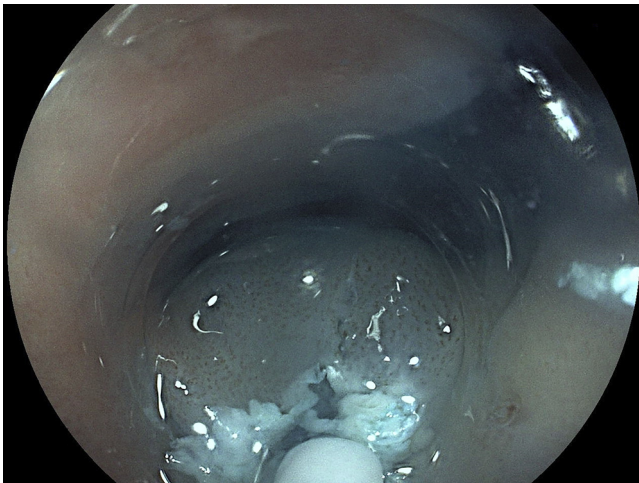


## Submucosal per-oral endoscopic myotomy for a large Zenker's diverticulum with use of a hydrodissector knife and an over-the-scope clip closure

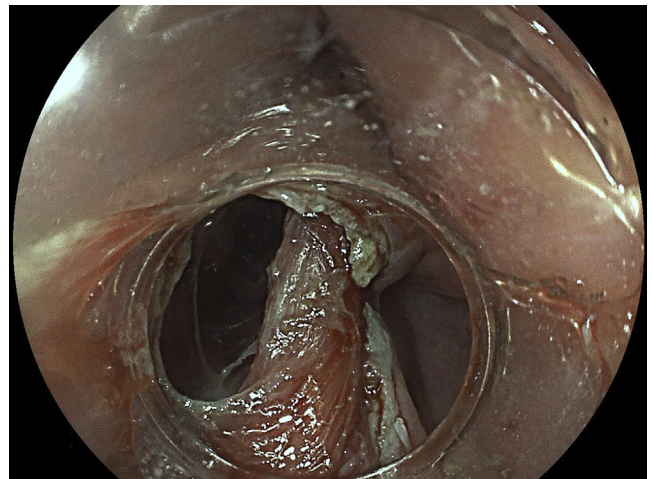
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Zenker's diverticulum (ZD) is a herniation of the posterior hypopharyngeal wall, outpouching for Killian's triangle as a consequence of decreased compliance of an upper esophageal sphincter. The standard endoscopic approach is represented by the incision of septum together with the mucosa.<sup>1-7</sup>

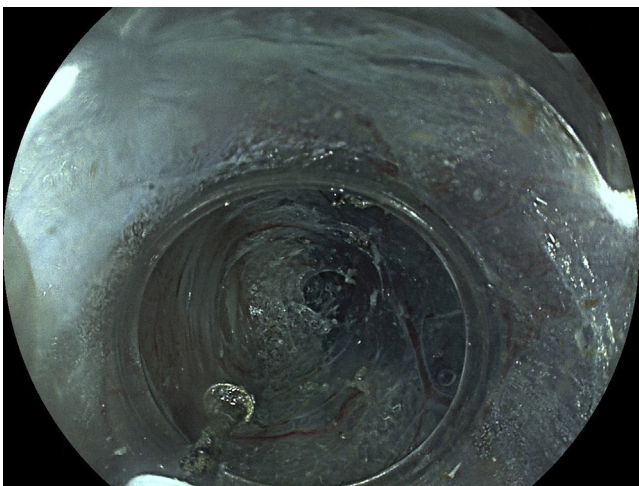
A large diverticular sac (>4 cm) and incomplete myotomy for the risk of perforation are thought to be related to symptomatic recurrence; the reported incidence ranges between 10% and 20%. Submucosal per-oral endoscopic myotomy for ZD (Z-POEM) is a recent technique that may reduce the risk of perforation and incomplete myotomy by



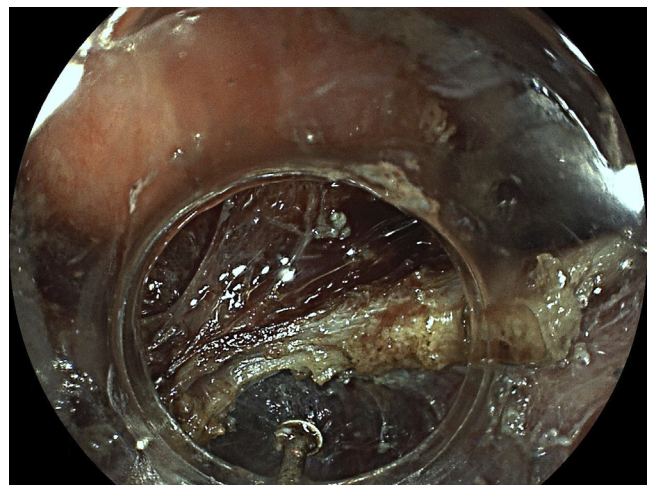
**Figure 1.** Mucosal incision.



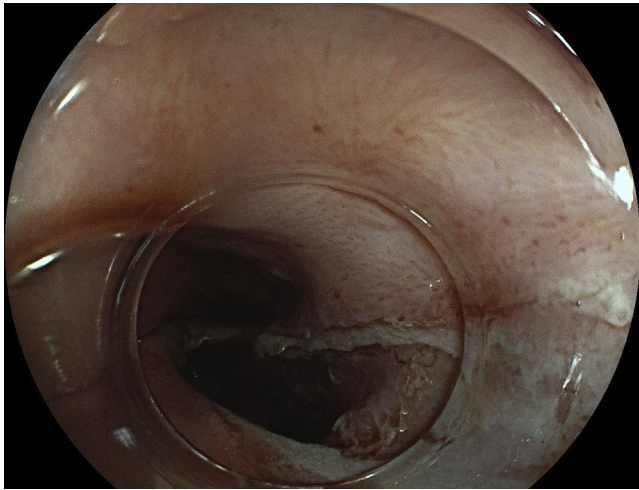
**Figure 3.** Exposure of septum.



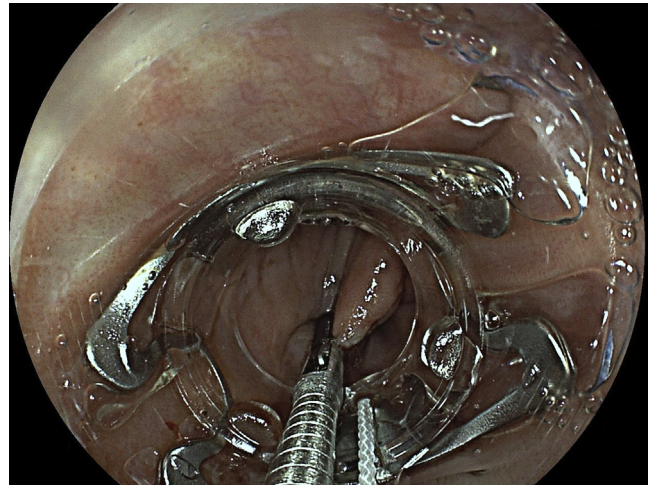
**Figure 2.** Submucosal tunneling.



**Figure 4.** Myotomy.



**Figure 5.** Final result.



**Figure 6.** Closure with over-the-scope-clip.

separating the mucosa of the esophagus and diverticular sac from the cricopharyngeal septum with the use of submucosal tunneling, similarly to per-oral endoscopic myotomy for achalasia (Video 1, available online at [www.VideoGIE.org](http://www.VideoGIE.org)).

A 77-year-old man with a large ZD (6 cm of sac) and moderate cognitive impairment came to our attention. Z-POEM was scheduled after 7 days of exclusive nasogastric tube feeding and suspension of anticoagulant agents. With the patient under general anesthesia, a hybrid knife T-type connected to a VIO 3 electro-surgical unit (Erbe Elektromedizin GmbH, Tübingen, Germany) and a 3.8-mm operative channel gastroscope with a transparent/conic distal attachment (ST-Hood; Fujifilm, Tokyo, Japan) were used.

Four procedure milestones were identified: mucosal incision, submucosal tunneling, septum division, and mucosal closure. Mucosal incision was performed above the septum lateral insertion to the esophageal wall (Fig. 1). Two communicating submucosal tunnels were created to separate the mucosal flap from the septum (Figs. 2 and 3).

After septum division (Figs. 4 and 5) and confirmed hemostasis, the mucosal entry was sealed with a 9-mm over-the-scope clip (Fig. 6), which was preferred to a standard clip because of the shape and the position of the mucosal incision. Furthermore, low compliance of the patient with a fluid diet was expected.

The postoperative course was uneventful; symptoms and barium swallows confirmed a complete clinical response 1 month after the Z-POEM. The clip was well tolerated until spontaneous detachment, which was confirmed by standard chest radiographs 3 months after the procedure.

In conclusion, Z-POEM was safe and effective in a preliminary experience. A complete myotomy of the septum after exposure from a mucosal flap may reduce the risk of recurrence after endoscopic diverticulotomy. Further

experience and consideration of cost effectiveness are necessary.

#### DISCLOSURE

*All authors disclosed no financial relationships relevant to this publication.*

*Abbreviations: ZD, Zenker's diverticulum; Z-POEM, Submucosal per-oral endoscopic myotomy for ZD.*

#### REFERENCES

1. Chandran S, Shimamura Y, Teshima C. Novel endoscopic scissors for the treatment of Zenker's diverticulum. *VideoGIE* 2017;2:67-8.
2. Sakai P, Sakai CM, Furuya CK Jr. Flexible endoscopic Zenker's diverticulotomy using endoscopic hood, overtube, and hook knife. *Vid J Encycl GI Endosc* 2013;1:73-4.
3. Hondo FY, Uemura RS, Maluf-Filho F. Endoscopic Zenker's diverticulotomy with a harmonic scalpel. *Vid J Encycl GI Endosc* 2013;1:54-5.
4. Tang S-J. Flexible endoscopic Zenker's diverticulotomy using needle knife. *Vid J Encycl GI Endosc* 2013;1:75-8.
5. Brahmabhatt B, Bartel MJ, Bhurwal A, et al. Novel technique for flexible endoscopic repair of Zenker's diverticulum. *VideoGIE* 2016;1:51-2.
6. Allamneni C, Ergen W, Herndon S, et al. Flexible endoscopic management of Zenker's diverticulum. *VideoGIE* 2017;3:43-4.
7. Di Mitri R, Mocciaro F, Pecoraro GM, et al. Transoral endoluminal treatment of a Zenker's diverticulum with a laparoscopic vessel tissue sealer. *VideoGIE* 2016;1:29-30.

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