

A Combined Rigid Endoscopic Approach for Zenker's Diverticulum

Kanika Arora¹, Naresh Kumar Panda², Manjul Muraleedharan³

ABSTRACT

From open excision of the pouch to the flexible endoscopy and division of cricopharyngeus, there are multiple options for the division of wall between esophagus and Zenker's diverticulum (ZD) depending on its size, availability of resources, and their side effects. Hereby, we report a case of 43-year-old female who presented with complaints of progressive dysphagia, regurgitation of food particles, gurgling sound on taking liquids, and dyspnea on lying down. Barium swallow and esophagogastroduodenoscopy helped in diagnosing it to be ZD. One-stage endoscopic diverticulotomy using stapler and harmonic scalpel leads to significant improvement in symptoms with no complaints even after 1 year postsurgery. Thereby, a combination of stapler and harmonic scalpel can be used for one-stage endoscopic diverticulotomy without any major complication making it a good alternative to modalities like LASER.

Keywords: Combined approach, Endoscopic, Endo-stapler, Harmonic, Zenker's diverticulum.

Key messages: A combination of stapler and harmonic scalpel can be used for one-stage endoscopic diverticulotomy for ZD without any major complication making it a good alternative to modalities like LASER.

Otorhinolaryngology Clinics: An International Journal (2021): 10.5005/jp-journals-10003-1397

BACKGROUND

Zenker's diverticulum (ZD) or hypopharyngeal diverticulum is an outpouching of the mucosa and submucosa of the pharyngo-esophageal junction through Killian's dehiscence.

The diverticula are classified on the basis of their length. Morton Bartney's classification divides them into small (<2 cm), medium (2–4 cm), and large (>4 cm). Other classifications, on comparison with cervical vertebrae, classify the diverticula as small, shorter than one vertebrae, and large, longer than three vertebrae.¹

From open excision of the pouch to the flexible endoscopy and division of cricopharyngeus, multiple options are discussed in relation to the management of ZD.

We herein report our successful attempt at a novel rigid endoscopic method using combined stapling and harmonic scalpel for a pouch measuring 3 cm.

CASE DESCRIPTION

A 43-year-old female patient visited the Department of Otolaryngology, Head and Neck Surgery, with complaints of progressive dysphagia for solids over the last 4 years, associated with foreign body sensation. She also was disturbed by regurgitation of food particles, more so on pressing the neck; gurgling sound on taking liquids; and dyspnea on lying down. She had to take food in small amounts and needed several attempts at swallowing. Subjective weight loss was present.

Physical examination and routine blood investigations were within normal limits. Barium swallow showed pooling of content with air fluid level in the upper cervical esophagus, likely a diverticulum (Fig. 1A). Esophagogastroduodenoscopy showed two openings just below the upper esophageal sphincter—one esophageal inlet and another into the diverticulum.

The patient was scheduled for one-stage endoscopic diverticulotomy using stapler and harmonic scalpel. Under general

^{1–3}Department of ENT, Postgraduate Institute of Medical Education and Research, Chandigarh, India

Corresponding Author: Naresh Kumar Panda, Department of ENT, Postgraduate Institute of Medical Education and Research, Chandigarh, India, e-mail: npanda59@yahoo.co.in

How to cite this article: Arora K, Panda NK, Muraleedharan M. A Combined Rigid Endoscopic Approach for Zenker's Diverticulum. *Int J Otorhinolaryngol Clin* 2021;13(3):139–141.

Source of support: Nil

Conflict of interest: None

anesthesia with orotracheal intubation, Weerda's diverticuloscope (Fig. 2A) was introduced such that the intervening septum



Figs 1A and B: Barium swallow. (A) Preoperative; (B) Postoperative (after 2 months)

(Fig. 2B) between the esophagus and ZD was brought in view using a telescope (Hopkins Straight Forward Telescope 0°) connected with a camera head. Division of the septum and suturing of the two edges was done using EC60A Endopath Stapler with 60 mm staple line (Ethicon Endo-Surgery) with endoscopic linear cutter reloads (blue, 3.5 mm, 6 rows).

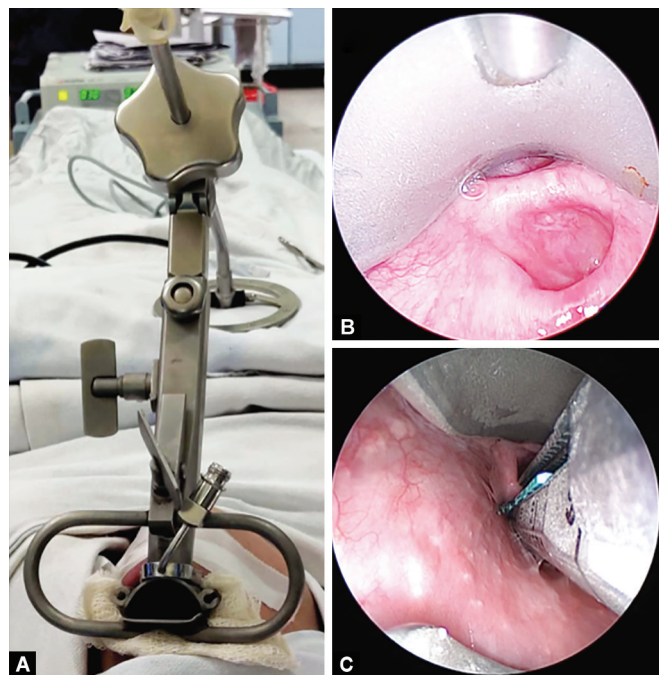
Under vision, the stapler was introduced through the diverticuloscope and placed across the proximal end of the septum. The unmodified anvil was kept into the pouch and the cartridge jaw in the esophageal lumen (Fig. 2C). The trigger was pressed after approximation of the two forks. This caused cutting and stapling of the proximal part of the septum at the same time. The cut part of the septum got retracted laterally. The remaining septum was cut and coagulated using Harmonic Ace-36 with 15 mm active blade (Ethicon Endo-Surgery). The immediate post-op was uneventful.

Oral feeds were started on postoperative Day 3. Gastrografin study was done on Day 5 which revealed a small residual pouch which did not retain dye for more than a few seconds. Significant improvement in symptoms was present. Barium swallow after 2 months showed small residual, but without any symptoms (Fig. 1B). Patient is asymptomatic presently (after 1 year of surgery).

DISCUSSION

While it is generally agreed upon on that smaller than 1 cm, asymptomatic pouches can be conservatively managed, the management of bigger symptomatic pouches has seen evolution over the passage of time.²

In the transcervical approaches, the symptomatic 1 cm or less pouches were considered suitable for myotomy alone, while 1–4 cm pouches were considered suitable for myotomy with suspension or inversion. Larger pouches warrant combined diverticulotomy with myotomy.²



Figs 2A to C: Intraoperative setup and finding. (A) Weerda's diverticuloscope after positioning; (B) Endoscopic view of Zenker's diverticulum; and (C) Intraoperative view of stapler after engaging

Collard and Martin Hirsch proposed a transoral single-stage cut and suture technique using a laparoscopic stapler. The stapler usually leaves some residual pouch of about 1.5 cm. Thereby, this technique is not indicated for diverticula smaller than 3 cm. However, the end can be modified by trimming the nonfunctional end of anvil.³

Endoscopic carbon dioxide laser diverticulostomy was popularized by Van Overbeek for small- to moderate-sized diverticula or as a complementary technique for pouches which have become too small for further stapling.⁴

The drawback of the laser is that the surgeon divides the intervening septum without a safe seal and there is difficulty in determining where to stop dividing the tissue. In spite of safety precautions, laser is still associated with a risk to the patient and a remote chance of fire.⁵

Another modality for diverticulotomy is harmonic scalpel. The comparatively smaller diameter of the scalpel helps in the easy maneuverability and positioning within smaller diverticula. The cutting surface also extends till its distal end, thereby making it useful in shallow pouches (≤ 2 cm).⁵

Veivers et al.⁶ concluded that stapled diverticulotomy provided satisfactory symptom relief in patients with pouches larger than 2.5 cm, also with low complication rates. They also found that for smaller pouches, harmonic and laser-assisted procedures can play a role. This also validates our use of stapler as the first choice followed up by harmonic in the same sitting.

On comparing the CO₂ laser group, the stapler-assisted group was found to have lower rates of post-op fever, earlier intake of oral food, and a shorter hospital stay. The time interval between initial surgery and the re-surgery was lesser with stapler.⁷

Postoperatively, symptomatic improvement is considered to be a better marker for clinical success than radiology and endoscopy.⁸ However, we chose to get the radiological follow-up for documenting the success. This could be seen in our case too where the patient, during a dynamic Gastrografin study, had a small residual pouch which cleared itself in seconds and patient had symptomatic resolution.

CONCLUSION

For medium-sized diverticula, a combination of stapler and harmonic scalpel can be used for one-stage endoscopic diverticulotomy without any major complication, making it a good alternative to modalities like laser. This novel approach does away with the need for multiple sittings and revision surgeries.

REFERENCES

1. Siddiq MA, Sood S, Strachan D. Pharyngeal pouch (Zenker's diverticulum). *Postgrad Med J* 2001;77(910):506–511. DOI: 10.1136/pmj.77.910.506.
2. Mantsopoulos K, Psychogios G, Künzel J, et al. Evaluation of the different transcervical approaches for Zenker diverticulum. *Otolaryngol Head Neck Surg* 2012;146(5):725–729. DOI: 10.1177/0194599811435304.
3. Richtsmeier WJ. Endoscopic management of Zenker diverticulum: the staple-assisted approach. *Am J Med* 2003;115(3):175–178. DOI: 10.1016/s0002-9343(03)00220-1.
4. Dzeletovic I, Ekbohm DC, Baron TH. Flexible endoscopic and surgical management of Zenker's diverticulum. *Expert Rev Gastroenterol Hepatol* 2012;6(4):449–465. DOI: 10.1586/egh.12.25.
5. Fama AF, Moore EJ, Kasperbauer JL. Harmonic scalpel in the treatment of Zenker's diverticulum. *Laryngoscope* 2009;119(7):1265–1269. DOI: 10.1002/lary.20247.

6. Veivers D. Pharyngeal pouch: which technique? *J Laryngol Otol* 2015;129(S3):S30–S34. DOI: 10.1017/S0022215115000419.
7. Verhaegen VJ, Feuth T, van den Hoogen FJ, et al. Endoscopic carbon dioxide laser diverticulostomy versus endoscopic staple-assisted diverticulostomy to treat Zenker's diverticulum. *Head Neck* 2011;33(2):154–159. DOI: 10.1002/hed.21413.
8. Law R, Katzka DA, Baron TH. Zenker's diverticulum. *Clin Gastroenterol Hepatol* 2014;12(11):1773–1782. DOI: 10.1016/j.cgh.2013.09.016.