

# Zenker's Diverticulum. A case report

Paola Saskia Castañeda Anaya M.D.  
 Carlos Ignacio Rafael Perez M.D.  
 Samanta Cristina Arce Oliva M.D.  
 José Alberto Villarreal Castellanos M.D.  
 Neri Ruvalcaba Contreras M.D.  
 Samuel Rodrigo Gómez Arenas M.D.

Monterrey, México

## Case Report

General Surgery



### Background

Background: Zenker's diverticulum is an acquired sac-like outpouching of the mucosa and submucosa layers located at the pharyngoesophageal junction. It has an incidence of 2 in 100,000 adults with predominance in males. The main symptom of Zenker's diverticulum is dysphagia, and surgical treatment is generally used to resolute the symptomatology. Although, Zenker's diverticulum symptomatology treatment is challenging. The main objective of this article was to present a clinical case of a patient with Zenker's diverticulum who underwent an emergent surgical treatment; diverticulopexy.

Clinical case: A 67-year-old male with Zenker's diverticulum who presented pyrosis, foreign body sensation, regurgitation, halitosis, and solid foods dysphagia. An esophagogram revealed a saccular image on the proximal third of the esophagus with no lesions in the rest of the tissue. The patient underwent cricopharyngeal myotomy plus diverticulopexy.

Conclusions: The clinical course of Zenker's diverticulum lies in an appropriate diagnosis through symptomatology and imaging study to provide the best surgical option.

**Keywords:** Zenker Diverticulum, Esophagus, Deglutition Disorders, Myotomy.

Zenker's diverticulum (ZD) is an acquired sac-like outpouching of the mucosa and submucosa layers located dorsally at the pharyngoesophageal junction through a dehiscence at Killian's triangle. ZD is a rare condition.<sup>1,2</sup> It was first described in 1764 by Ludlow, and subsequently by Zenker with a case series reporting 23 patients in 1877. It has an incidence of 2 in 100,000 adults with predominance in males around the 7<sup>th</sup> to 8<sup>th</sup> decades of life.<sup>2,3</sup>

ZD has intrigued medical professionals and has established unique challenges in the treatment of esophageal disorders. To improve patient quality of life, diverticulopexy has emerged as an innovative and effective surgical technique, offering a promising solution that reaffirms hope and relief for those who struggle with its main symptoms such as dysphagia, regurgitation, thoracic pain, halitosis, and complications such as pneumonia. Its pathophysiology is location-dependent, generally secondary to pulsion in a fragile zone known as Killian's triangle.<sup>2,3,4</sup>

### Case report

In this case report, we aim to present a clinical case of a 67-year-old male who has an 11-year history of hypertension under treatment with enalapril and metoprolol, ischemic cardiomyopathy that required open revascularization and placement of five stents in 2011, and a 40-pack-year history of smoking.

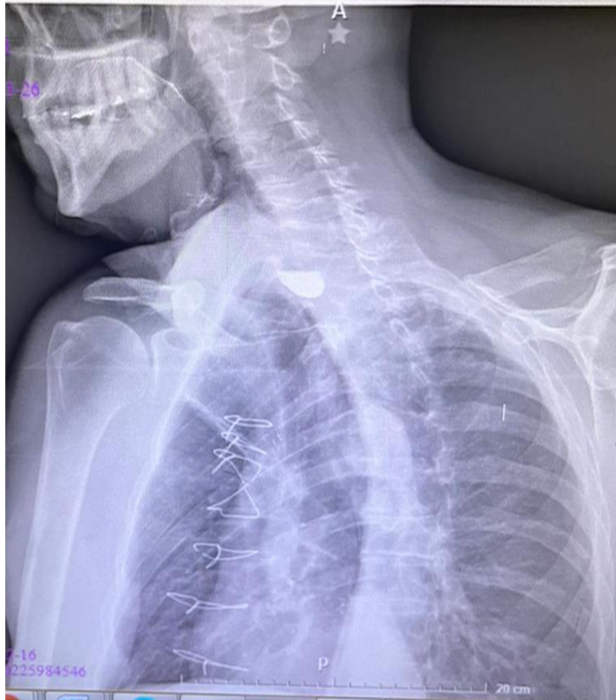
His symptoms began two years ago with the onset of pyrosis, foreign body sensation, regurgitation, halitosis, solid foods dysphagia, and recurrent upper respiratory tract infections. Due to the severity of these symptoms, the subject decided to pursue medical attention at a general hospital, and the approach was initiated. An oral contrast esophagogram performed in October 2011 reported a saccular image located at the proximal esophagus in the posterior wall with barium contrast uptake and air fluid levels that persisted in all projections of the study. The diverticulum measured 9 mm wide with a 7 mm orifice, and 2 cm length which is suggestive of ZD.

### Diagnostic assessment

A new esophagogram was performed, which revealed a saccular image 38.1 x 17.7 mm on the proximal third of the esophagus along its posterior wall (Figure 1), apparently without the presence of a fistula. The rest of the esophagus presented small and regular walls. Additionally, a chest and abdominal computed tomography with oral contrast was performed and reported no lesions in the esophagus.

### Surgical intervention

The subject was scheduled for surgery, and a series of procedures were conducted, including



**Figure 1.** Esophagogram shows a sacular image on the proximal third of the esophagus.

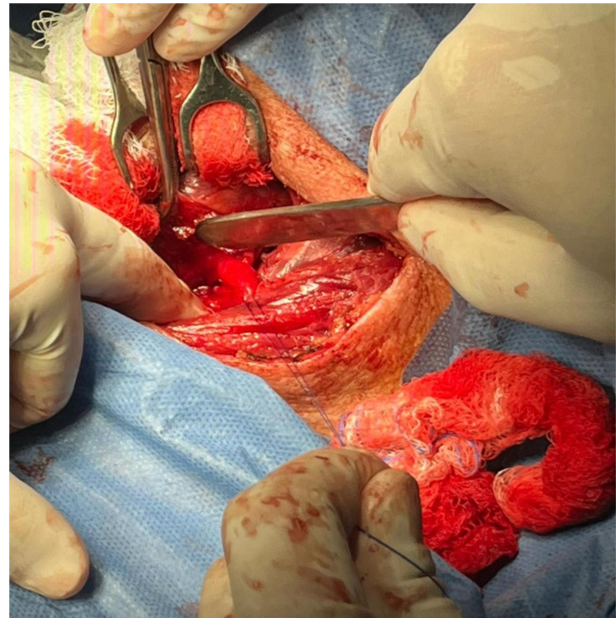
cricopharyngeal myotomy plus diverticulopexy vs diverticulectomy.

The surgical procedure commenced by making an incision along left cervical region on the anterior edge of the sternocleidomastoid muscle and dissection by planes. The platysma muscle was subsequently sectioned followed by the omohyoid muscle. Afterwards, the middle thyroid vein and lower thyroid artery were sectioned, and the thyroid gland was partially dislocated. The recurrent laryngeal nerve was identified and preserved.

The esophagus was then cannulated with an orogastric cannula. The cricopharyngeal muscle was identified, and the lateral and posterior wall of the esophagus was dissected. The prevertebral fascia was visualized along with an approximately 1 x 2 cm diverticulum. Longitudinal and circular muscle fibers were dissected, sectioning 2 cm cephalad to the diverticulum and 4 cm caudally to it (Figure 2). Esophageal mucosa was exposed, the diverticulum was fixed towards the prevertebral fascia with a 2-0 vascular prolene suture. Satin hemostatic and Penrose drains were placed.

The surgical procedure lasted 115 min. During this period, a total blood loss of 5 cc was observed. To address this, the subject did not require the administration of neither packed red blood cells, fresh frozen plasma no platelets.

Following the surgical procedure, the medical team identified the existence of rigid neck, esophageal diverticulum above Killian's triangle area with 1 x 2 cm dimensions (Figure 3).



**Figure 2.** Zenker's diverticulum in a 67-year-old male.

Perioperative course occurred without complications.

After successful surgical intervention, the patient was able to tolerate liquids on the first postoperative day, and the barium swallow test was not performed. The subject was discharged on the second post-operative day without any complications.

#### Follow-up and outcomes

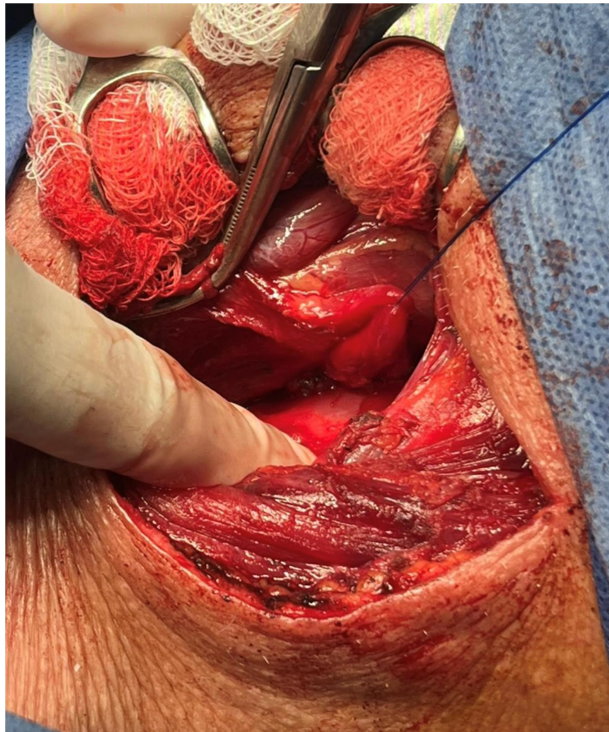
The patient attended subsequent appointments to follow-up at the Digestive and Endocrine Surgery Department outpatient consultation on the 2<sup>nd</sup> week and 1<sup>st</sup> month postoperative. The subject reported adequate diet toleration and was symptom free.

Follow-up will be made for one year with appointments scheduled three, six, and 12 months postoperative to evaluate possible new onset of symptoms and general evolution.

#### Discussion

Zenker's diverticulum is a relatively uncommon condition, but it is the most prevalent type of diverticulum found in the upper gastrointestinal tract.<sup>6</sup> It is generally recommended that surgical treatment of Zenker's diverticulum is reserved for symptomatic patients, with gradually increasing dysphagia as the primary and most common symptom, with or without complications.<sup>7,8,9</sup> Literature describes Zenker's diverticulum as capable of reaching up to 15 cm. Although, they are more frequently observed to be less than 4 cm in length. According to Morton Bartney's classification, the present case integrates into the category of a small diverticulum, as it measures less than 2 cm.<sup>6</sup> The patients presented





**Figure 3.** Rigid neck, esophageal diverticulum above Killian's triangle.

symptoms and exhibited complications. These factors along the size of the diverticulum made the patient an ideal candidate for the cricopharyngeal myotomy plus diverticulopexy procedure.

Surgical intervention is the primary therapeutic approach,<sup>4</sup> with the cricopharyngeal myotomy serving as its mainstay.<sup>10</sup> Open surgery has demonstrated resolution of symptoms in 90-95% of patients.<sup>5</sup> However, there is currently no high-quality evidence from randomized controlled trials demonstrating the efficiency of cricopharyngeal myotomy plus diverticulopexy versus diverticulectomy. The advantage of diverticulopexy following myotomy is the preservation of intact mucosa, mitigating risks such as fistulation and stenosis. This technique is replicable and seems to be efficient which ensures long-term symptom alleviation that is the primary goal of the treatment.<sup>11</sup>

The eat 10 assessment is utilized to monitor the resolution of symptoms post-treatment, demonstrating an excellent success rate, with immediate result: 2 points, 2 weeks post operative: 1 point, 1 month: 0 points, which supports impact on the quality of life of our patient.

## Conclusion

Zenker's diverticulum is rare condition. Its diagnosis is based on clinical manifestations -with gradually increasing dysphagia as the primary and most common symptom- and confirmed by a contrast

imaging study. The clinical course of this condition lies in an appropriate diagnosis and size classification to provide the best surgical option, and therefore obtain the resolution of the symptoms to improve quality of life.

## Conflicts of interests

The authors declare no conflict of interest.

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Paola Saskia Castañeda Anaya  
Digestive and Endocrine Surgery Department  
Unidad Médica de Alta Especialidad No. 25  
Monterrey, México.