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Case Report

Giant Zenkers diverticulum treated with diverticulectomy plus myotomy in tertiary hospital: case report

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ABSTRACT

Zenker's diverticulum (ZD) is the most common esophageal diverticulum. Its prevalence is higher in older adults. It arises in the area called Killian's triangle, which is an area of weakness in the posterior wall of the upper esophagus, at the level of the upper esophageal sphincter (UES). This area is delimited by the fibers of the thyropharyngeal muscle laterally and by the fibers of the cricopharyngeal muscle (CPM) in the inferior. Due to its composition, it is classified as a false diverticulum because it contains mucosal and submucosal layers in its walls. The predominant symptom in 90% of patients is dysphagia, followed by regurgitation of undigested food content. We present the case of the successful diagnostic approach with tomography and esophageal-gastro-duodenal and therapeutic series with diverticulectomy plus myotomy with the use of a stapler to a patient with usual symptoms of ZD, but with an unusual size: a giant ZD.

Keywords: ZD, Dysphagia, Hypopharyngeal diverticulum, Esophageal diverticulum

INTRODUCTION

The pharyngoesophageal diverticulum, or ZD, is an acquired mucous pouch protruding from Killian's triangle, bounded by the inferior constrictor muscle of the pharynx on left and right sides and inferiorly by CPM. It is the most common type of diverticulum in esophagus.[1]

Affected individuals are usually male in 7th/ 8th decades and present with dysphagia, regurgitation of undigested

food, halitosis, aspiration pneumonia/ swelling on left side of neck with gurgling sound on palpation.[2]

The pathophysiology is not well established; however, the most accepted hypothesis indicates that the pressure in the pharyngeal region causing the protrusion of the mucosal and submucosal layer of the esophagus, may be favored by an asynchronism in the contraction of walls and the relaxation of the muscles that make up UES.

Many patients remain asymptomatic for a long time; However, when symptoms do occur, almost all patients experience dysphagia. Regurgitation is the second most common symptom and is associated with an increased risk of aspiration pneumonia.

There are two main approaches to the surgical treatment of ZD. Traditionally, ZD was treated with a transcervical or "open" diverticulectomy. However, recently, with the growing popularity of endoscopic techniques, transoral endoscopic diverticulotomy with a stapler has gained ground and has become the main treatment method recommended by the current literature. However, the treatment technique depends largely on the size of the diverticulum in question.[3]

CASE REPORT

A 75-year-old male was referred to our department due to progressive dysphagia of 4 years of evolution with the presence of regurgitation of undigested food that becomes more severe in the last 3 months, with a considerable decrease in food intake and weight loss of approximately 8 kg in 1 month, for which a gastrostomy tube is placed.

Physical examination only shows evidence of malnutrition. The pharyngeal region is without abnormalities. There are no signs of ventilatory failure.

An esophageal-gastro-duodenal series was performed, which showed dilation in the proximal third of the esophagus with a saccular appearance with a filling of approximately 7.1×9.9 centimeters in the passage of contrast medium (Figure 1 A and B).

It is complemented by computed tomography with oral contrast, which demonstrates a saccular structure dependent on the cervical esophagus that shows an airborne level of approximately 7×10 centimeters in its interior, which due to characteristics and location is compatible with ZD and with an uncommon finding of extension to the upper mediastinum (Figure 2 A).

A surgical procedure was performed by left cervical approach with dissection and diverticulectomy with a 3.5 mm linear stapler and myotomy of the CPM, finding ZD with a base of 4 cm and a length of 12 cm, which occupies from Killian's triangle and deepens to the upper mediastinum (Figure 3 A-C).

Postoperative evolution without abnormalities, performing a study with fluoroscopy and oral contrast medium, which did not show leakage or abnormality in the passage through the esophagus and through the gastroesophageal junction (Figure 4).

Patient was discharged due to improvement at home, tolerating the oral route, with a decrease in dysphagia and without regurgitation of food. Histological sections show esophagus devoid of the muscularis propria (a finding associated with traction diverticulum) associated with a dense chronic inflammatory infiltrate (Figure 5).

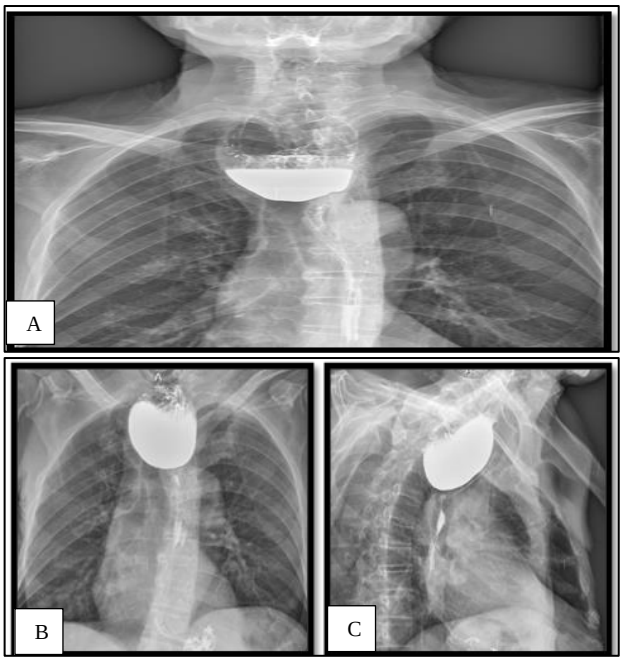

Figure 1 (A-C): Anteroposterior and lateral images of the esophagus-gastro-duodenal series that shows presence of a large ZD (>4 cm).

Figure 2: Sagittal image of computed axial tomography shows ZD with extensión from the cervical región to the upper mediastinum.

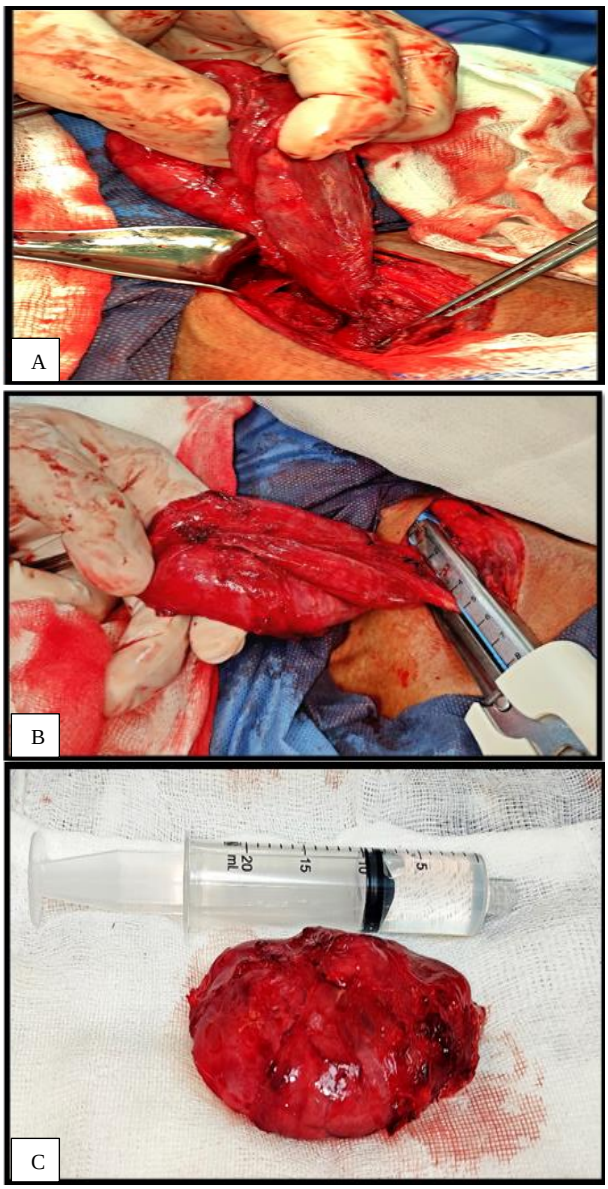

Figure 3 (A-C): Dissected ZD with exposure of fiber from the cricopharyngeus muscle. Diverticulectomy with linear stapler and 3.5 mm cartridge and surgical piece resected and sent for histopathological study.

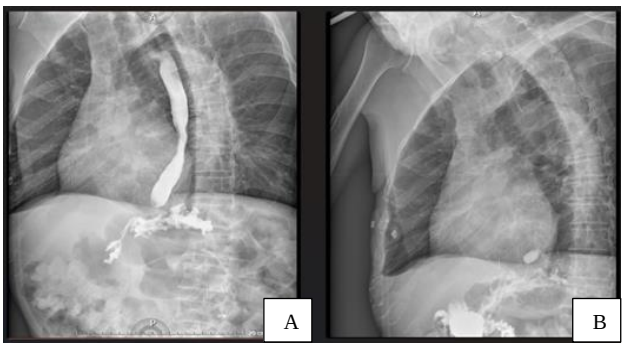

Figure 4 (A and B): Post-operative fluoroscopic study that shows correct passage of contrast médium through the esophagus and gastroesophageal junction with no evidence of leak.

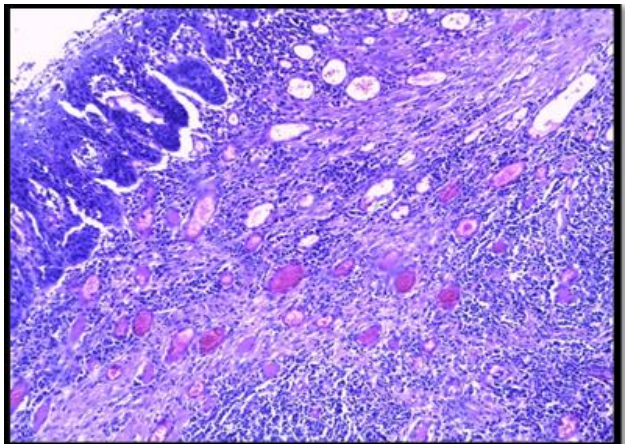

Figure 5: Histological sections that shows the absence of muscular layer propria associated with chronic inflammatory tissue.

DISCUSSION

ZD is a rare esophageal disorder with an annual incidence of only 2 per 100,000.[4] It is the most common diverticulum of the upper gastrointestinal tract. ZD is usually seen in the elderly population between 70 and 80 years of age and is rare in adult life.[5]

In most cases, it is lateralized to the left side (90%), but sometimes it can be found on the right side (10%).

It is known that it is a pathology related to a dysfunction of the UES. The anatomical boundaries of the pharyngoesophageal segment include the medial and inferior constrictors superiorly, the CPM, and the circulus and longitudinal esophageal muscles inferiorly. The fibers of the CPM are sphincters and a major contributor to the high-pressure zone known as the UES.[6]

It would be related, on the one hand, to a defect in the coordination of muscle relaxation during swallowing, which would cause a defect in the opening of the UES and an increase in pressures in the area proximal to the latter. In this way, the diverticulum would be formed by preferential drive in the area of anatomical weakness of the Killian triangle.[1]

Other pathophysiological mechanisms have been proposed, such as the absence of cricopharyngeal relaxation (achalasia). hypertension isolated from it and influence of gastroesophageal reflux, which causes cricopharyngeal spasm, taking into account that hiatal hernia with reflux is associated with the diverticulum in a proportion ranging from 39 to 50%.[7]

DZ is lined with stratified squamous epithelium and a cancerous change in the sac has been reported very rarely (0.3-7% of cases), secondary to chronic irritation and inflammation over many years. Carcinoma in situ or small carcinomas are difficult to diagnose radiologically

and even go undetected on endoscopic examination.[5] High clinical suspicion is essential to detect a malignant transformation. To make a definitive diagnosis, a microscopic surgical excision examination is needed.[8]

The 80 to 90% of patients have dysphagia. Regurgitation of undigested food, halitosis, and hoarseness may be associated. Cervical borborygmus can be heard and is pathognomonic of DZ. 30 to 40% of patients report chronic cough and some with aspiration pneumonia.[2]

While medical history is in many cases indicative, physical examination is often unremarkable, especially in patients with small Zenker's diverticula. Large diverticula may present as a palpable mass in the neck, and cervical borborygmus may also occur. There are some bibliographies that try to correlate some of the symptoms with the size of the diverticulum; indicate that dysphagia and asphyxia are significantly associated with the presence of medium or large pharyngeal pouch. In addition, the presence of dysphonia was found to correlate with a ZD <1 cm, suggesting that timely and appropriate fluoroscopic evaluation should be considered in those patients in whom no other clear cause of dysphonia is evident.[9]

The diagnostic test of choice for all Zenker diverticula, regardless of size, is the esophagogram with water-soluble contrast medium or barium. Contrast tomography is usually complementary; however, CT is not necessary for the pure diagnosis of ZD and X-ray contrast swallowing examination is the examination method of choice.[10] Today, diverticula up to 2 cm are often referred to as small, those 2 to 4 cm in size medium, and >4 cm as large diverticula.

Treatment of ZD should be reserved for symptomatic patients. The purposes of treatment are to provide symptomatic relief and improve quality of life. The treatment consists of sectioning the CPM and eliminating the reservoir bag of food and secretions, thus preventing them from accumulating.

Treatment options include: open diverticulectomy, diverticulopexy, endoscopic myotomy, and esophageal diverticulum anastomosis with transoral myotomy using endoscopic stapler.[7]

Treatment is increasingly becoming the domain of interventional endoscopy and flexible septotomy. This is mainly due to the well-known advantages of endoscopic treatment, such as a shorter hospital stay, less invasiveness, and low complication rates.[11]

In particular, small to medium-sized diverticula (up to 5 cm) are best treated endoscopically, with ZDs up to 3 cm better manageable by flexible endoscopy, while very large diverticula may benefit from open surgical excision, especially in younger surgical candidates.[12] The transcervical approach can be applied effectively, regardless of the size of the sac and should not be discontinued. The advantages of direct bag visualization and handling outweigh technical challenges.[13]

The biggest concern for the cervical approach to ZD is complications, such as injury to the nerves that control swallowing and speech, and a noticeable skin scar.[14]

CONCLUSION

ZD is a rare pathology worldwide. Older adults correspond to the most frequent age of presentation. The clinical picture of diverticulum is insidious, with a tendency to chronicity and evolution. A small ZD may go unnoticed or give mild symptoms. But large diverticula present with severe symptoms, these of progressive onset as the size of the sac increases. They can cause regurgitation with aspiration pneumonia. Our patient presented with symptoms that altered his quality of life, which were progressive and improved to almost zero after the surgical procedure. The size of our patient's diverticulum is uncommon and its extension to the upper mediastinum is a unique finding, however, this did not represent difficulties at the time of traction and dissection of the diverticulum for the surgical resolution of the pathology.

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