Case Report

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Minimally invasive approach to a symptomatic giant mid esophageal diverticulum

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ABSTRACT

Mid esophageal diverticula are a rare entity and are most commonly of pulsion variety. Though rarely symptomatic, they can result in dangerous complications like aspiration, bleeding, fistulisation and malignancy especially when they are large. They have been traditionally approached by open surgery. With the advent of minimally invasive approaches, thoracoscopic resections have been increasingly performed offering several advantages. We have described a case report of a symptomatic giant mid esophageal diverticulum successfully managed by minimally invasive approach.

Keywords: Diverticula, Giant, Mid esophagus

INTRODUCTION

Esophageal diverticula are divided into three types -Zenker's, Mid esophageal and epiphrenic based on their location. In 1840, Rockitansky classified esophageal diverticula into two types - traction and pulsion based on the etiology.1

Mid esophageal diverticula are rarely symptomatic since they are small, with wide neck and sac situated at higher level than the neck. Aspiration and pulmonary complications are the most common. Chronic stasis and irritation may lead to ulceration, bleeding, fistulisation and rarely malignancy.^{2,3}

Minimally invasive approach is more advantageous compared to open procedure with respect to morbidity, hospital stay and can be combined with endoscopy. Hence we report a case of mid esophageal diverticulum successfully managed by thoracoscopic approach combined with intraoperative endoscopy.

CASE REPORT

A 68-year-old male with no comorbidities presented with heartburn and regurgitation occurring about 20 minutes after food intake and associated with foul smell of 8 months duration, which worsened over the past 1 month. However, he had no dysphagia or vomiting and no loss of weight or appetite. He was a non-smoker and nonalcoholic. His vitals were stable and abdomen examination was essentially normal. Blood tests including hemogram, renal and liver function tests were within normal limits. Upper GI endoscopy revealed a diverticulum arising from the esophagus on the right side at 30cms with food stasis. Barium swallow confirmed the presence of a diverticulum (Figure 1). A CT chest was done to define the topographic anatomy of the diverticulum and it revealed a 3.5 x 3.5 x 5.5 cm diverticulum in the subcarinal, retrocardiac region on right side with contrast pooling and there was no evidence of any mediastinal lymphadenopathy (Figure 2).

A manometry was done to rule out any motility disorder and it was normal.

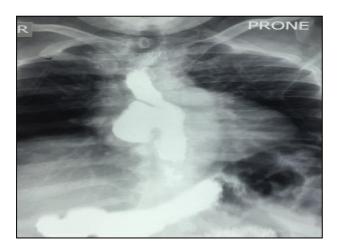


Figure 1: Barium swallow showing diverticulum on the right side.



Figure 2: CT chest revealed a 3.5 x 3.5 x 5.5 cm diverticulum in the subcarinal, retrocardiac region on right side with contrast pooling.

A diagnosis of large symptomatic mid thoracic esophageal diverticulum with no associated motility disorder was made and a thoracoscopic resection was planned. The patient was positioned in prone position with sandbag under the chest and hips. Double lung ventilation was employed. Ports were introduced in the right fifth, seventh and ninth intercostal spaces. Additional ports introduced in 7th and 9th intercostal spaces to release adhesions between the lung and pleura. The mediastinal pleura was incised and azygos vein double ligated and divided. The esophagus was mobilized and diverticulum was identified and defined with the help of intraoperative endoscopy and peridiverticular dissection was done separating it carefully from carina, lung and inferior pulmonary veins and lifted up (Figure 3). An endo GI stapler was introduced via the 9th intercostal space port and diverticulum transected at the mouth from the esophageal wall and specimen removed (Figure 4).

The post-operative period was uneventful. Oral diet was resumed on the 3rd day and right ICD tube was removed on the fifth day. Barium swallow done showed absence of residual pouch or leak. The pathological examination of the specimen revealed it to be a pulsion diverticulum. The patient improved symptomatically and was discharged.

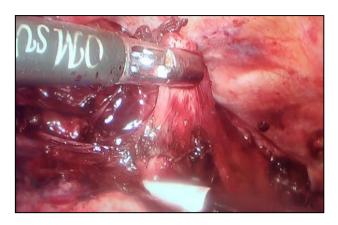


Figure 3: Diverticulum was identified and defined and lifted up.



Figure 4: An endo GI stapler was introduced via the 9th intercostal space port and diverticulum transected at the mouth from the esophageal wall.

DISCUSSION

Mid thoracic esophageal diverticula defined as those occuring within 5 cms above or below the carina constitute about 15% of all esophageal diverticula. They commonly occur in the 6th to 7th decade with a male preponderance.⁴ The incidence of true diverticula containing all the layers of the esophageal wall is on the decline. These were commonly associated with mediastinal inflammation and scarring due to tuberculosis and histoplasmosis.^{5,6} Currently, most of the mid esophageal diverticula are of the pulsion variety lacking a muscular wall and associated with an inherent motility disorder in 80 to 100% of cases. They may also be associated with fixed mechanical obstruction or rarely secondary to alkali ingestion.⁷

Nearly two thirds of mid esophageal diverticula are asymptomatic remaining stable in more than 90% of them. Patients with a diverticulum 5 cm or greater in width and those with preferential filling of the diverticulum with barium on swallowing studies are more likely to develop symptoms.4 Commonly encountered symptoms include regurgitation, dysphagia, weight loss, chest pain, halitosis. Pulmonary retrosternal complications related to aspiration of regurgitated food contents can occur in 24% to 45% of these patients. Other complications that have been reported include ulceration with bleeding and malignancies such as squamous cell carcinoma and rarely adenocarcinoma secondary to food stasis and irritation.

Treatment is reserved for symptomatic patients and surgery is the mainstay. The procedure of choice is diverticulectomy with or without concurrent esophagomyotomy and an anti-reflux procedure, if there is an associated motility disorder. Myotomy is performed on the same side of the diverticulopexy or on the opposite site of the diverticulectomy. Diverticulopexy previously described for medium sized diverticula has been discouraged.

Recently minimally invasive approach by thoracoscopic route has become popular. It allows safer dissection between the diverticulum and the pleura and the vagus nerve. It is the primary modality in patients with mid-ED who are at too high risk to undergo thoracotomy and who suffer mainly from aspiration and regurgitation of the diverticula content. Moreover thoracoscopic route is advantageous over laparoscopic route as it allows access to diverticula located more than 12 cm above the GEJ. Early results with minimally invasive surgery are promising and comparable with those achieved by standard thoracotomy with leak rates of 0 - 18%.8

Earlier myotomy was advocated for all mid esophageal diverticula but with better detection of oesophageal dysmotility, it may be possible to minimise the myotomy by correlating it with the manometric findings. There has also been a recent report of successful management of a midesophageal diverticulum by endoscopic diverticulectomy using a needle knife. The midesophageal diverticulectomy using a needle knife.

CONCLUSION

Treatment is reserved for symptomatic patients and surgery is the mainstay. The procedure of choice is diverticulectomy with or without concurrent

esophagomyotomy and an antireflux procedure, if there is an associated motility disorder. Minimally invasive approach is more advantageous compared to open procedure with respect to morbidity, hospital stay and can be combined with intra op endoscopy.

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