

## Large epiphrenic diverticula: a rare case presentation

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### Abstract

A 70-year old female was admitted to hospital with heartburn and chronic halitosis since 5 years. She was on proton pump inhibitors for the same. Her complaints worsened during the last one-year. Workup comprising of esophago-gastro-duodenoscopy, esophageal manometry, 3D computed tomography scan showed right-sided epiphrenic diverticula measuring 10x10 cm with wide mouth about 5 cm with hypertensive lower esophageal sphincter. Patient underwent a video assisted thoracoscopic surgery for esophageal diverticulectomy using two 45 mm staplers. On day 5, the patient developed leak, which was managed by a covered esophageal stent placement. Patient started on oral feeds from day 3 and the esophageal leak healed completely within 2 weeks. Literature suggests that esophageal leaks treated conservatively took approximately 30-40 days on an average for healing. Literature search did not reveal esophageal leak managed by stent with faster recovery (2 weeks). This is one of the largest epiphrenic diverticuli reported in literature.

### Introduction

Esophageal diverticulum is an uncommon entity. They are classified according to their location into proximal, middle and distal types. The most common type of proximal esophageal diverticulum is Zenkers diverticulum. It is a pharyngeal diverticulum. Middle and distal esophageal diverticula are further divided as traction and pulsion.<sup>1</sup> Chronic mediastinal diseases such as tuberculosis leads to scar formation further leading to formation of traction diverticula whereas pulsion diverticula arise due to movement disorder of the distal esophagus.

Epiphrenic diverticula is a disease of the lower end of esophagus situated 4 to 10 cm above the cardia and is about 10% of all esophageal diverticula. It is a disorder due to primary motility dysfunction of the esophagus. Majority of patients are asymptomatic.<sup>2</sup> Those who are symptomatic present with severe dysphagia, gastroesophageal reflux disease, recurrent episodes of pneumonia due to aspiration, weight loss, cardiac arrhythmias and halitosis.<sup>3</sup>

Laparoscopic repair has become treatment of choice. There is a significant post-operative esophageal leak rates for which traditionally conservative management is being followed. We herein report a case of a large diverticula with a post-op leak managed effectively by a covered stent placement.

### Case Report

A 70-year old female came with symptoms of chronic gastroesophageal reflux disease and

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Key words: Epiphrenic diverticulum; achalasia; stent; leak.

Conflict of interest: the authors declare no potential conflict of interest.

Acknowledgments: this article will be incomplete if we do not acknowledge our Dean Padmashree Dr. T. P. Lahane for guidance and permission to publish this article.

Received for publication: 6 May 2015.

Revision received: 21 August 2015.

Accepted for publication: 28 September 2015.

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Clinics and Practice 2015; 5:784  
doi:10.4081/cp.2015.784

halitosis since 5 years not responding to proton pump inhibitors and antacids. There was no significant past surgical or medical history. No history of recent travel and family history of colitis or inflammatory bowel disease. On physical examination, the abdomen was soft; there was no distension or tenderness. Routine laboratory investigations including Thyroid function tests were within normal range. The findings of the primary specific investigations were: i) high-resolution com-

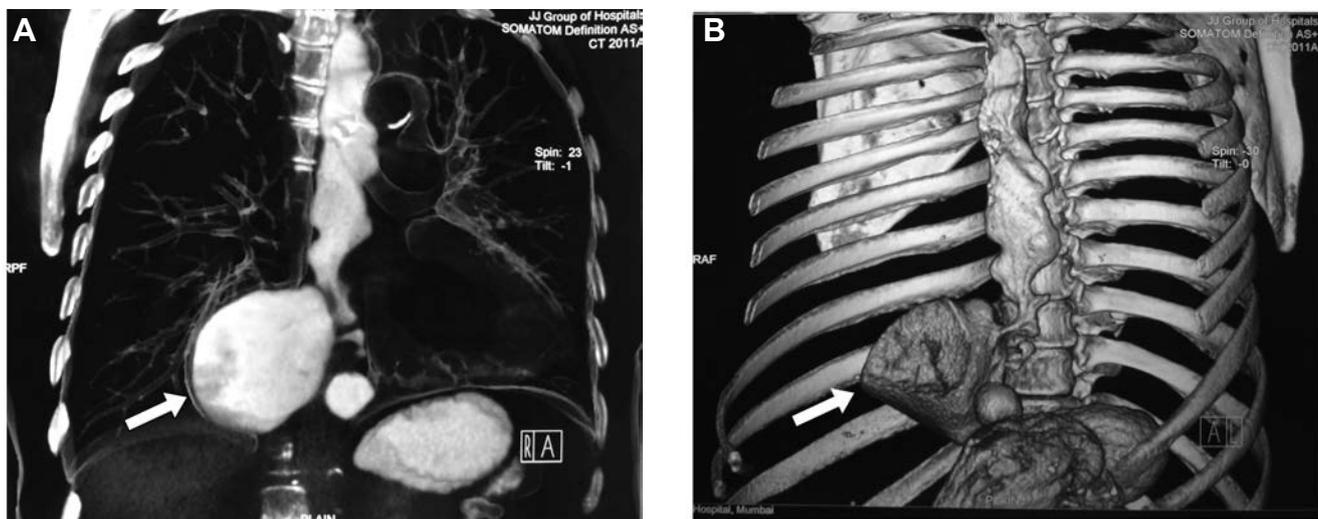


Figure 1. A) High resolution computed tomography (CT) scan of thorax showing right sided epiphrenic diverticulum (arrow); B) 3D CT scan of thorax revealed a right-sided epiphrenic diverticula measuring 10x10x5.0 cm with maximum wall thickness being 3 mm.

puterized tomography (CT) (Figure 1A) and 3D contrast CT (Figure 1B) of the chest and abdomen revealed a right sided epiphrenic diverticula measuring 10x10x5.0 cm with maximum wall thickness being 3 mm. There was a segmental collapse with bronchiectasis of the medial segment of the right middle of right lung; ii) esophago-gastro-duodenoscopy revealed an out pouching of the esophagus on the right side measuring 10x10 cm and its mouth measuring about 5x5 cm approximately containing food materials. It was 6-7 cm from the gastro-esophageal junction (Figure 2); iii) esophageal manometry was suggestive of motility disorder *i.e.* achalasia cardia with lower esophageal sphincter pressure being increased.

Patient was then consented for surgical intervention and underwent a 2 staged operation: i) laparoscopic repair of the achalasia by Heller's cardiomyotomy with anterior Dors 180° wrap was done; ii) after 6 weeks patient underwent a second stage video assisted thoracoscopic surgery (VATS) for esophageal diverticulectomy using two 45 mm staplers (Figure 3A) with esophago-gastro-duodenoscopic guidance. The intra operative picture after stapler application is shown in Figure 3B.

On gross examination of specimen was a solid firm well delineated hollow pouch of size 10x10x5.0 cm light brown in color on the outside and cut section revealed pale greyish white appearance. Microscopic sections of the histopathological specimen showed esophageal histology and no evidence of malignancy.

The operated diverticulum developed a leak on 5<sup>th</sup> postoperative day, which was promptly treated by total parenteral nutrition and endoscopic esophageal stent placement. The fistula showed resolution of symptoms and patient started on oral diet 5<sup>th</sup> day post stenting, a much faster recovery reported.

## Discussion

There has been considerable improvement in the diagnostic studies such as manometry and imaging, still epiphrenic diverticula remains a rare entity to detect.<sup>4</sup> Causative factors which are established in the development of the diverticula are achalasia cardia, hypertensive lower esophageal sphincter, diffuse esophageal spasm, nut cracker esophagus and non-specific motor disorders.<sup>5</sup>

The patient in the present study was subjected to esophageal manometry and a hypertensive lower esophageal sphincter was found, pressure being 30-35 mmHg.

Symptoms differ from patient to patient. Many patients are asymptomatic and few show symptoms of mild dysphagia and reflux disease. Barium swallow revealing a diverticulum is an incidental finding in these patients in the course of investigations. Other patients have worsening and disturbing symptoms like severe dysphagia, regurgitation, obstruction, heartburn, chronic cough, recurrent aspiration and pneumonia, cardiac arrhythmias, weight loss and halitosis.<sup>4</sup> Some case reports are of bleeding, carcinoma and/or perforation have also been reported.<sup>6</sup>

Effective treatment for the diverticula is surgery. It is associated with significant mortality and morbidity.<sup>5-7</sup> Surgery is indicated for

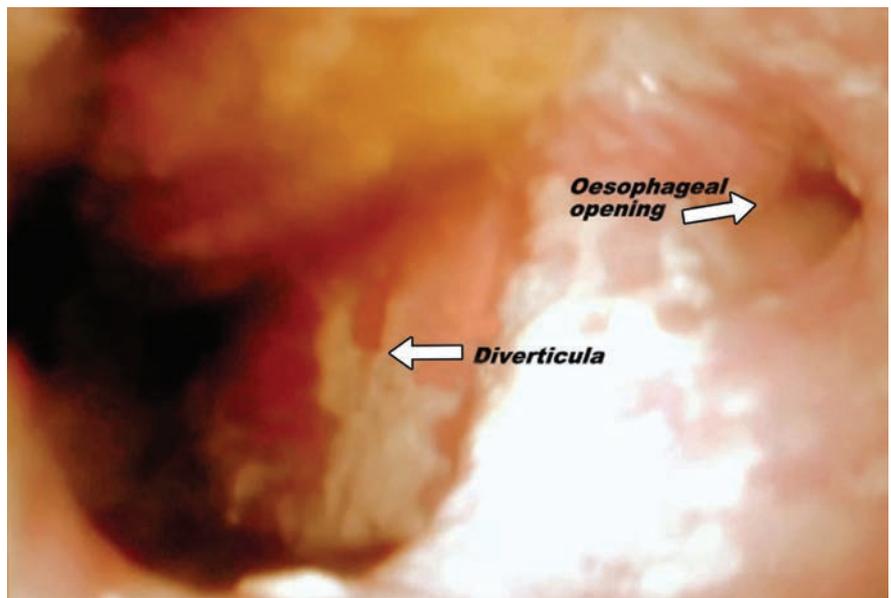


Figure 2. Esophago-gastro-duodenoscopic picture showing esophageal opening and diverticulum.

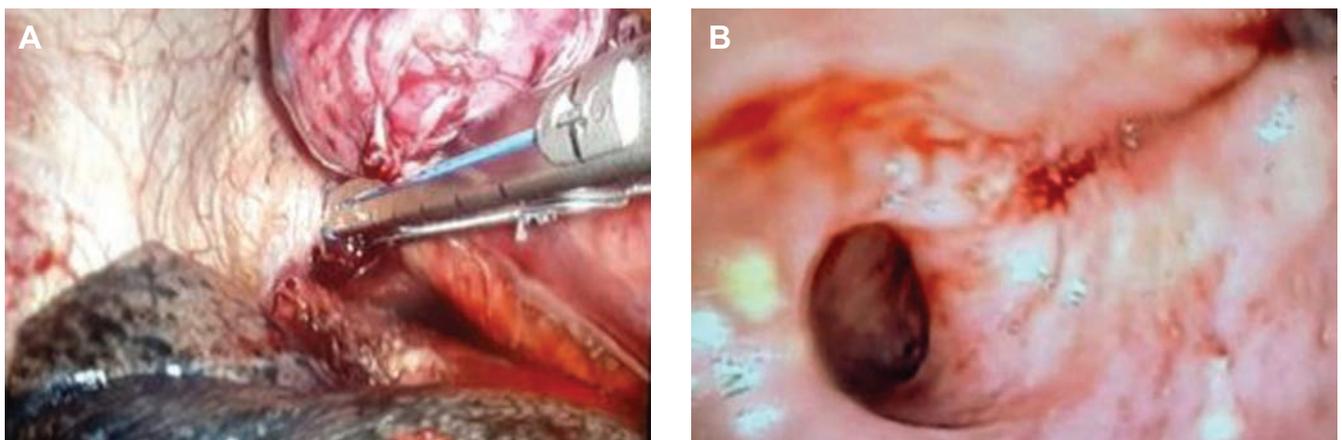
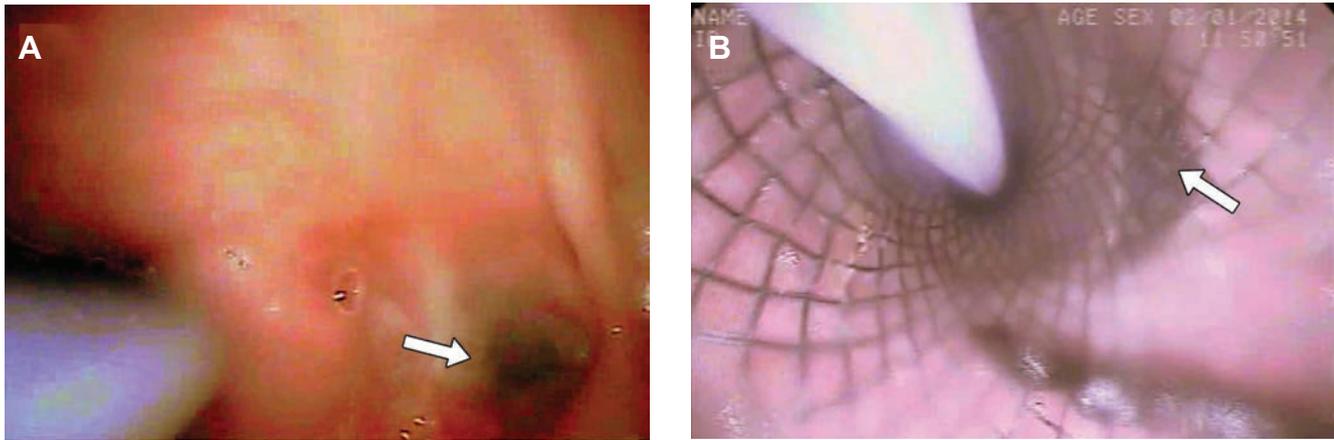


Figure 3. A) Intra-operative picture showing stapling of the diverticulum being done; B) intra-operative esophago-gastro-duodenoscopic view showing stapling of the diverticulum being done.



**Figure 4.** A) Esophago-gastro-duodenoscopic (OGD) picture showing post operative leak through lowermost part of the staple line (arrow); B) OGD view of the esophagus showing stent placement done to seal off the leak site post operatively (arrow).

symptomatic patients only. Whether to operate or not is an issue subjected to debate but as per the recent advances of minimal access surgery and staplers surgery is an emerging option for this entities. An isolated finding of a diverticulum is not a valid indication for an operative intervention, as one has to calculate the benefit-risk ratio for each individual.

Literature suggests the percentage of symptomatic diverticula with a surgical indication is between 0% and 40%.<sup>5,7</sup> In our opinion, only the presence of severe dysphagia, regurgitation, gastro-esophageal disease and halitosis not responding to medications is a proper indications for surgical intervention. The average size of diverticula mentioned is 47 mm in maximum dimensions mentioned in the literature.<sup>8</sup>

Size of diverticula in the present study is about 10x10x5.0 cm, which is the largest present till date to our knowledge this is the largest diverticulum in literature.

Considering the non-resolution of symptoms of the patient with medical line of treatment decision was made for operative.

Laparoscopic Hellers cardiomyotomy and an anterior Dor's 180° wrap was done. Inferior margin was dissected trans-hiataly but was unsuccessful due to the size and high location of about 6-7 cm from the gastro-esophageal junction. Symptoms of the patient were still unresolved and a decision was taken to do a 2<sup>nd</sup> stage operation considering the need for one lung ventilation and age of the patient.

VATS was done and diverticula were dissected free and two endostaplers 45 mm was applied across its mouth, which did a divertic-

ulectomy. Patient developed a leak on 5<sup>th</sup> day post op (Figure 4A), which was managed by total parenteral nutrition and covered stent placement (Figure 4B) across the leak. Literature also states the commonest complication of his surgery being leak at the stapler site. Furthermore the leaks have been managed by keeping patient nil by mouth and on total parenteral nutrition.<sup>7,9</sup> Average time required for conservative management was approximately 30-40 days.

None of the case reports have mentioned the role of stent in the management of such leaks. This is the first case report in which a covered stent placement is used for the recovery of the patient and is found to be of great importance in accelerating the healing rates of the leak site. Patient was again put on oral feeds immediately 5 days after stenting and discharged after 10 days.

## Conclusions

A covered stent is effective in the management of such leaks with faster recovery and decreased morbidity of the patient considerably as compared to conservative management.

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