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Prone Thoracoscopic Excision of Esophageal Diverticulum: Minimally Invasive Surgery

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Abstract

Introduction: Esophageal diverticula are a rare disease. The diverticula at the mid-thoracic level represent 15%. Large diverticula, or ones that are associated with motility anomalies are treated with diverticulectomy and a longitudinal extra mucous myotomy. The advantages of the thoracoscopic approach in the prone position are still being studied however it has shown a decrease in morbidity and hospital stay.

Material: We present the case of a 77-year-old female without comorbidities who presented with dysphagia, halitosis and chest pain. An esophageal motility test and CT were performed revealing a midesophageal diverticulum measuring 6cm in diameter. She underwent a prone thoracoscopic approach. A 12mm trocar was placed under the inferior angle of the scapula at the 5th intercostal space, another 12 mm trocar medial to the scapular line at the 11th intercostal space, and a 5mm trocar medial to the scapular line at the 3rd intercostal space. Adhesions were released to distinguish key anatomical structures. Once we freed the esophagus and neck of the diverticulum, we placed a 34-frame nasogastric tube to tutorize the esophagus. We cut the neck of the diverticulum with a protected endostapler. We then verified that the nasogastric tube passes through the esophageal lumen without resistance and the surgical specimen was extracted. Lastly, an intraoperative air leak test and installation of methylene blue were used to rule out a leak.

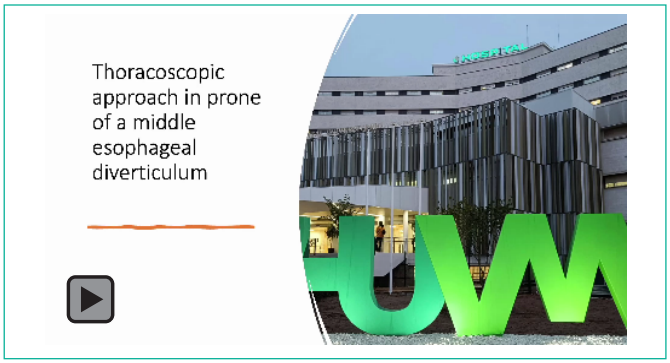
Results: The drainage was removed on postoperative day 1 and was discharged on the fourth day without complications. A follow-up visit and esophageal motility test were done after 3 months with favorable results.

Conclusions: Esophageal diverticulum are a very infrequent pathology, the majority being asymptomatic. In case of important symptoms, surgery is indicated. The outcome of the prone thoracoscopic approach is similar to the standard, however it has a lower morbidity rate.

Keywords: Prone; Thoracoscopic; Midthoracic; Diverticulum; Esophagus

Introduction

Esophageal diverticula are a rare disease that can be located anywhere in the esophagus. The diverticula at the midthoracic level represent 15% of esophageal diverticula. They are most common in the middle-aged and the elder[1]. For their diagnosis it is essential to do a gastrointestinal endoscopy, barium swallow, esophageal manometry and a 24h pHmetry. For treatment of small diverticula without esophageal motor anomalies, a simple thoracoscopic diverticulectomy can be performed [1]. In larger diverticula, or ones that are associated with motility anomalies should be accompanied by a longitudinal extra mucous myotomy. The advantages of the thoracoscopic approach in the prone position are still being studied. However, such procedure has shown a decrease in morbidity and in length of hospital stay therefore, being the preferred approach in our hospital.



Materials and Methods

We read various articles about the prone thoracoscopic approach for midthoracic esophageal diverticulum using online medical databases such us PubMed, Scopus and Web of Science. We set a range of dates from 2000 to 2023 to narrow our search for updated information. This information was then used to compare our approach with other hospitals.

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Discussion

We present the case of a 77-year-old female without comorbidities that was referred to us after being diagnosed with a midthoracic esophageal diverticulum. The woman presented dysphagia and halitosis along with chest pain. An esophageal motility test and CT were performed revealing a midesophageal diverticulum measuring about 6cm in diameter. After these studies and since the patient suffered symptoms secondary to the diverticulum, surgery was indicated, and a prone thoracoscopic approach was used. Operatively, a 12mm trocar was placed under the inferior angle of the scapula (at the 5th intercostal space), another 12mm trocar medial to the scapular line at the 11th intercostal space, and a 5mm trocar medial to the scapular line at the 3rd-4th intercostal space. Adhesions were released to distinguish key anatomical structures such as the intercostal vessels, azygous vein, the collapsed right lung, esophagus, esophageal diverticulum, trachea, the right bronchus and the vagus nerve. We then exposed and dissected the esophageal diverticulum using traction forceps and an electric cauterizer. We continued until we freed the esophagus and neck of the diverticulum, respecting the azygous vein. Once exposed, with the assistance of the anesthesiologist, a 34-frame nasogastric tube was placed to tutorize the esophagus to section de neck of the diverticulum with a protected endostapler. We then verified that the nasogastric tube passed through the esophageal lumen without resistance, and we extracted the surgical specimen using an endobag. Lastly, we did an intraoperative air leak test and installation of methylene blue to rule out a leak and placed an endothoracic tube (Surgical Video).

Results

The patient had a favorable postoperative period. The drainage was removed on postoperative day 1 and the patient was discharged on the fourth day without complications. A follow-up was done 3 months after, and an esophageal motility test was done with favorable results.

Conclusions

We can conclude that esophageal diverticula are a very infrequent pathology, the majority being asymptomatic. In case of important symptoms, surgery is indicated. The outcome of the thoracoscopic approach is similar to the standard, however it has a lower morbidity rate [2].

Disclosures

Eduardo Dominguez-Adame, Andrea Scammon Duran and Elena Guarnieri have no conflicts of interest to disclose.

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