



CASE REPORTS

LAPAROSCOPIC APPROACH FOR EPIPHRENIC ESOPHAGEAL DIVERTICULA

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ABSTRACT

Epiphrenic diverticula of the esophagus are rare disorders frequently associated with esophageal dysmotility that is thought to be the cause of the diverticulum and some of the symptoms. Treatment is surgery and only indicated to the symptomatic patients. The operation can be performed successfully by laparoscopy, which offers good access to the distal esophagus and the inferior mediastinum. A 68 year-old woman presented with symptoms of heartburn, regurgitation and vomiting. Two diverticula located in distal esophagus were detected with barium esophagography and endoscopy. The biggest diverticulum was resected by the endoscopy assisted laparoscopic approach.

Laparoscopic approach to epiphrenic diverticula seems to be feasible and safe provided when surgeons trained in minimally invasive procedures of the gastroesophageal junction perform it.

Keywords: Esophageal diverticula, minimal invasive surgery, laparoscopy

EPIFRENİK ÖZAFAGUS DİVERTİKÜLLERİNE LAPAROSKOPİK YAKLAŞIM

ÖZET

Epifrenik özafagus divertikülleri nadir rastlanan bir hastalık olup sıklıkla divertiküllerin ve semptomların nedeni olduğu düşünülen özafagus motor bozukluklarıyla birliktelik gösterir. Tedavisi cerrahi olup sadece semptomatik hastalara uygulanmaktadır. Ameliyat alt özafagus ve mediastende iyi görüş sağlayan laparoskopik yöntemle başarılı bir şekilde yapılabilir. Yazımızda göğüste yanma ve kusma şikayeti ile başvuran 68 yaşındaki bir kadın hasta sunulmaktadır. Baryumlu özafagografi ve endoskopisinde alt özafagusta yerleşmiş iki adet divertikül saptanan hasta intraoperatif endoskopi yardımıyla laparoskopik olarak ameliyat edildi. Epifrenik divertiküllere laparoskopik yaklaşım, gastroözafageal bölge konusunda deneyimli cerrahlar tarafından güvenle uygulanabilmektedir.

Anahtar Kelimeler: Özafagus divertikülleri, minimal invaziv cerrahi, laparoskopi

INTRODUCTION

Esophageal diverticula are rare diseases mostly classified by location and etiology. The exact prevalence of this condition is not known because asymptomatic cases are usually not discovered. Symptoms are variable. Some patients have only mild dysphagia however other patients have worsening and incapacitating symptoms like severe dysphagia, regurgitation with recurrent episodes of pneumonia due to aspiration, heartburn, cardiac arrhythmias, obstruction, weight loss, chronic cough and halitosis¹.

Diagnosis is radiological. All patients with suspicion of having epiphrenic diverticulum should undergo barium study in order to document the location of the diverticulum,

maximal diameter of the pouch, diameter of the diverticular neck, the appearance of the gastroesophageal junction and the presence of tertiary contractions. By the help of the endoscopy findings of esophagitis or those suggestive of a motility disorder can be recorded also¹.

The treatment of these diverticula is surgical. The decision must be made with regarding the patient's symptoms, operative risk and complication and the surgical expertise locally available, considering the rarity of the disease. With the introduction of minimally invasive surgical techniques esophageal diseases have been successfully treated by laparoscopic approach. Laparoscopy offers good access to the distal esophagus and the inferior mediastinum therefore it should be considered as an alternative to the

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traditional transthoracic approach and may eventually become the standard technique^{1,2}.

Here we report a case of lower esophageal diverticulum treated successfully with laparoscopic approach.

CASE PRESENTATION

A 68 year-old woman presented at our clinic with symptoms of heartburn, regurgitation and vomiting. The duration of symptoms was six months. The diagnostic work-up consisted of barium esophagography and endoscopy. She did not have any signs during the endoscopy suspecting a gastro-esophageal reflux so we did not perform pH monitoring. Barium study showed two diverticula located in the distal third of the esophagus. The average sizes of the pouches were 4 cm and 2 cm (figure 1). The diverticula were located 6-7 cm above the cardia measured by endoscopy and a hiatal hernia was also diagnosed. No findings suggestive of primary esophageal motility disorder like dilatation of the esophagus, retained food, and resistance at the level of gastroesophageal junction or tertiary contractions were recorded during endoscopy so the symptoms of the patient were thought to be related with the compression of the larger diverticulum to the distal esophagus. Following a complete preoperative evaluation, the patient was scheduled for laparoscopic operation. The position of the patient, surgeon and the trocar sites were the same as for the laparoscopic treatment of functional diseases of the esophagogastric junction.

The patient was placed on the operating table in the lithotomy position with a 30° reverse

Trendelenburg. The surgeon was standing between the legs. Pneumoperitoneum was established and five operating ports were placed as usual from the abdomen. A 30°-angled scope was used. After dividing phreno-esophageal membrane, the diaphragmatic crura were exposed. The esophagus was isolated and completely encircled with a rubber tape for traction. Blunt dissection was carried out in the mediastinum until 8-10 cm above the diaphragmatic crura staying close to the esophageal surface. At the same time the larger diverticular pouch was identified by endoscopy and isolated up to the superior margin of its neck and then resected with a linear endoscopic stapler with the nasogastric tube inside the esophageal lumen. Intraoperative endoscopy was used in order to avoid the narrowing of the lumen by the stapler and to detect an incomplete resection, also to check the stapled suture line for any leak. Endoscopically there was no evidence of leak at the suture line therefore suture of the esophageal musculature was not performed (figure 2). The smaller diverticulum was not resected because of being asymptomatic. A Toupet fundoplication was chosen for the repair of the hiatal hernia. The procedure was finished after 95 minutes. The postoperative course was uneventful. She had check-up swallow radiography with water-soluble contrast medium on the 6th postoperative day and no leakage was shown. She resumed oral intake on the same day and discharged on day 8. She has been totally asymptomatic during a 10 months follow-up period.

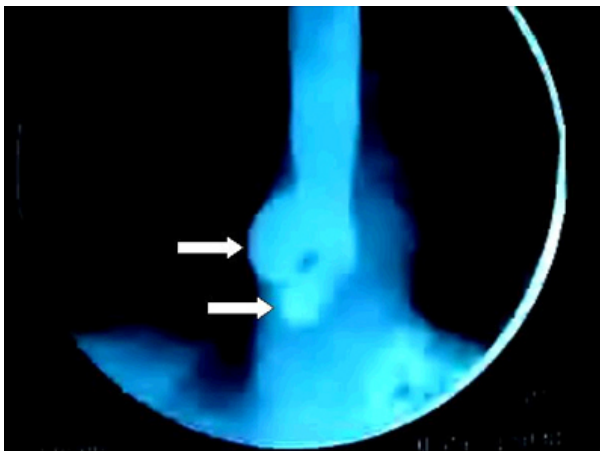


Figure 1: Barium study images showed the diverticula located in the distal third of the esophagus.

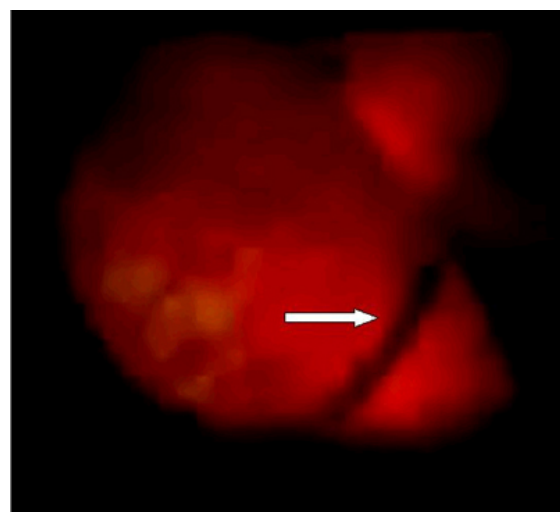


Figure 2: Endoscopically there was no evidence of leak at the suture line



DISCUSSION

Esophageal diverticula are rare. The true incidence is unknown. The etiology, symptoms and therapeutic requirements suggest a categorization in three forms: pharyngo-esophageal (Zenker diverticula), parabronchial and epiphrenic diverticula.

Epiphrenic diverticula arise within the distal 10 cm of the thoracic esophagus. The exact prevalence of this condition is not known because asymptomatic cases are usually not discovered. It seems to occur less frequently than Zenker's diverticula with a ratio of 1:5². Most of these are found in middle aged- elderly patients and male gender has a slight predominance.

Pathophysiology of the epiphrenic diverticulum is still unclear. The herniation of the mucosa and submucosa through a defect in the muscular layer is probably caused by a longstanding impairment of the esophageal motor activity. However the associated motor disorder is not always recognized and diagnosed.

Symptoms are variable. Many patients do not have any symptoms and some have only mild dysphagia. In these patients diverticulum is an incidental finding on barium swallow done for unrelated reasons. However other patients have worsening and incapacitating symptoms like severe dysphagia, regurgitation with recurrent aspiration and pneumonia, heartburn, cardiac arrhythmias, obstruction, weight loss, chronic cough and halitosis¹. Bleeding, spontaneous perforation and also carcinoma have been noted³.

Diagnosis is radiological. All patients with suspected epiphrenic diverticulum should undergo barium study. Exact identification of the diverticulum is of crucial importance for a successful procedure. Therefore endoscopy-supported visualization of the diverticulum has been recommended⁴. Manometry is mandatory to define associated motility disorders. If gastro-esophageal reflux is suspected, a 24-hour pH study can also be performed.

The treatment of these diverticula is surgical. However, the presence of a diverticulum is not an indication for surgery. There is almost a consensus that surgery should be preserved for symptomatic patients⁵. The decision must be balanced between the patient's symptoms, the complication and operative risk. Patients with minimal symptoms should be managed conservatively^{5,6}. If symptoms are incapacitating an operation should be advised. Neither size nor

location of the diverticulum is correlated with symptoms². The traditional surgical treatment for an epiphrenic diverticulum consists of an esophageal myotomy, diverticulectomy or diverticulopexy and an anti-reflux procedure usually through a thoracotomy. Using conventional techniques diverticula in the lower portion of the esophagus can be operated with morbidity and mortality rates of 33% and 9% respectively². With the introduction of minimally invasive surgical techniques, esophageal diseases have been successfully treated by laparoscopic approach. Because thoracoscopic surgery can have some troubles especially in dissection and placing the stapler, laparoscopic route is chosen to minimize the risk of incomplete resection and narrowing of the passage by the stapled suture line. Simultaneous endoluminal visualization can be used in order to accelerate the procedure, to allow proper placement of the stapler and finally giving opportunity to check the suture line for any leak. All pathophysiologic problems of this disorder can be solved by laparoscopy: the removal of the diverticulum, the treatment of the motor disorder and the reflux. But the procedure is still a matter of discussion while it has been stated that diverticulectomy alone is enough if no motor abnormality is detected^{7,8}. If there is motor disturbance in esophagus then myotomy should be added⁹. Also the relationship between the motility abnormality and the development of the diverticulum is described to be more likely around 60% by Streitz et al⁷. In our patient no motor abnormality was recognized so myotomy was not performed. We do recommend the use of a partial wrap of fundus if the patient has reflux on preoperative workup, because total fundoplication can create an obstacle for the esophageal flow and this may result in leakage from the suture line or recurrence of a diverticulum.

In conclusion, laparoscopic approach to epiphrenic diverticula seems to be feasible and safe provided when surgeons trained in minimally invasive procedures of the gastroesophageal junction perform it.

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