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Giant Midesophageal Pulsion Diverticulum: A Report of Two Operated Cases

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A giant midesophageal pulsion diverticulum is a medical rarity. Two successfully operated cases are reported. One patient had no clinical symptoms and was misinterpreted as a mediastinal tumor. Esophageal myotomy was not performed.

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Most diverticula of the midesophagus (epibronchial diverticula) are incidental findings and considered asymptomatic. They are usually less than 3 cm in length and have the same wall layers as the esophagus. These types are traditionally referred to as traction diverticula, but recent investigations indicate that motility disorders are the main causes [1]. Thus, esophagomyotomy and antireflux procedures are recommended concomitant to diverticulum extirpation [2].

Far less often, pulsion diverticula are found in the same area of the esophagus [3]. With a 10-year interval, we have observed two cases of giant midesophageal pulsion diverticula. Such cases are very rare in medical literature.

Case Reports

Patient 1

The first patient was a 67-year-old, previously healthy man. He strongly denied having any problems with swallowing or digestion, and had no pulmonary symptoms. An occasional chest radiography showed an increase in breadth on the right side of the mediastinum (Fig 1). At that time, computed tomography (CT) was not available. A barium swallow was not carried out. The final clinical diagnosis after tomography and bronchoscopy was a tumor of the mediastinum. On right-sided thoracotomy, a pulsion diverticulum the size of a large orange was found in the middle section of the intrathoracic esophagus. Proximal to the neck of the diverticulum, the esophagus was obviously dilated. The opening in the esophagus measured 2.5 × 2.5 cm and was situated 5.5 cm below the tracheal bifurcation. The lower part of the esophagus appeared normal. The diverticulum was extirpated in toto with closure of the mucosa and submucosa with two layers interrupted chromic catgut sutures. The peripheral muscle fibers were pulled over the row of sutures. A small area of the mediastinal pleura was left open for drainage. The esophageal passage was controlled with a thick gastric rubber tube inserted through the mouth. Esophageal myotomy was not performed. The diverticulum was almost full of foul smelling, decomposed quite large pieces of meat, peas, and fragments of vegetables. Histologically, the diverticular wall was composed of stratified squamous epithelium and intact submucosa. Only scattered pieces of the outer muscular coat were detected. There was considerable chronic inflammatory reaction. In the following 15 years, he still had no problems with eating and swallowing. Barium swallows showed an ordinary caliber of the esophagus with rapid passage of the contrast into a normal stomach.

Fig 1. Case 1. Right mediastinal mass discovered at routine chest radiography.

Patient 2

The second patient was an 83-year-old woman who had never been seriously ill. She had developed a remarkable

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Fig 2. Case 2. Barium swallow showing a giant midesophageal diverticulum.

thoracic kyphosis secondary to osteoporosis. When she was about 80 years old, she got increasing problems with swallowing combined with retrosternal pain at mealtimes. Finally she could only take fluid nutrition. A barium swallow revealed a giant midesophageal diverticulum (Fig 2), while the lower part of the esophagus and the stomach appeared normal. On right-sided thoracotomy, rather far back, there was a midesophageal pulsion diverticulum with the shape and size of a medium-sized lemon. Proximal to the diverticulum, the esophagus was somewhat dilated. The opening in the esophagus corresponding to the diverticular neck measured 2 × 1.5 cm and was situated approximately 6 cm below the tracheal bifurcation. The diverticulum was empty. It was extirpated using the same procedure as described in the previous case. Esophageal myotomy was not performed. The main features of the histologic picture were fairly similar to the findings in the previous case. The operation as well as the postoperative period were surprisingly uncomplicated. Swallowing gave no problems in the following nine years. Barium swallows showed rapid passage to a normal stomach without signs of stenosis or recurrence.

Comment

A review of the literature after 1925 gives the clear impression that there are only a very few scattered accounts of midesophageal (epibronchial) giant diverticula [4–11]. A precise localization of the anatomical point of origin of these giant diverticula cannot be established on the basis of the available data, but it seems to be 5 to 7 cm distal to the tracheal bifurcation. The age of 11 reported patients (our cases included) varied between 35 and 91 years with a mean of 69 years. There was no gender difference.

A convincing etiological explanation of the pulsion diverticula in this characteristic section of esophagus has not been found [7]. It has been assumed that there must be a weak point, possibly because of a congenital defect in the esophageal wall. The importance of a large and long-lasting consumption of alcohol has also been stressed [3, 9]. It is likewise an open question as to how long it takes for a giant midesophageal diverticulum to develop. The contents of these diverticula are practically never mentioned in literature [9]. Our cases indicate that the diverticulum may be empty or filled with decomposed food remains. In the literature, we have found only one case where histologic examination was performed with demonstration of an ulceration [8]. Considerable chronic inflammatory changes were found in our cases.

Most patients with giant midesophageal diverticulum have chest pressure and discomfort as the main symptom [5, 7, 8, 10, 11]. Abdominal pain and dyspepsia may occur [4, 6]. Like our second case, dysphagia and loss of weight have also been reported [9]. Our first case allegedly had no symptoms, and was misinterpreted as a mediastinal tumor. A similar case has been observed [10].

In addition to our cases, we have found another four successfully operated cases of giant midesophageal pulsion diverticulum in the literature [5, 8, 10, 11]. Prophylactic myotomy was only performed in one of these cases [10]. In our cases, too, we were surprised at the peaceful postoperative course with return to normal swallowing function without signs of esophageal motor dysfunction, cardiospasm, reflux problems or recurrence 12 and 9 years respectively after the operation. These facts are in contrast to our experience with the more frequent epiphrenic pulsion diverticula, which are usually associated with functional motor disturbances demanding myotomy. The same applies to the surgical treatment of the midesophageal diverticula of the so-called traction type. In our opinion, it is questionable whether myotomy should be performed as a routine in the surgical treatment of the midesophageal pulsion diverticulum. Preoperative esophageal manometry may probably indicate the optimal surgical procedure.

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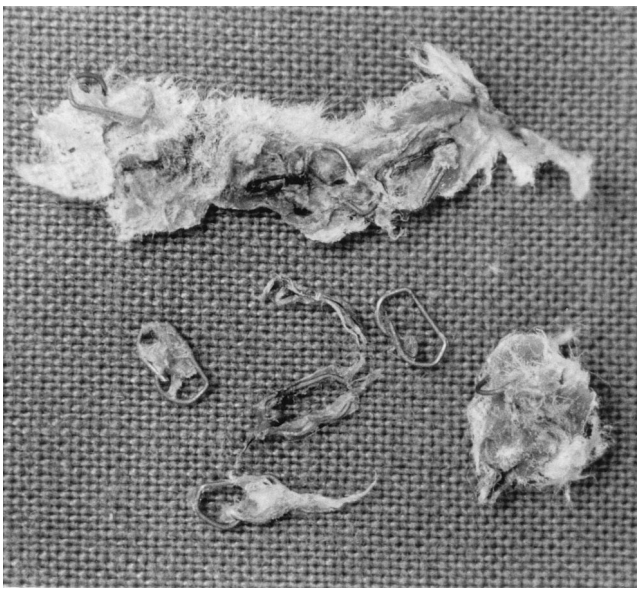

Fig 1. Mass that was expectorated containing Peri strip with titanium staples.

Metalloptysis: A Late Complication of Lung Volume Reduction Surgery

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We describe three cases where patients expectorated titanium staples many months after lung volume reduction surgery (LVRS). The possible mechanisms and technical implications of this rare complication are discussed.

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Foreign bodies have been found to migrate in lung tissue. A case has been described where a bullet eroded a bronchus [1]. The patient developed hemoptysis 3 months after his injury and finally expectorated the bullet. We report three cases out of our total experience of 48 patients, where clips, from staple cartridges applied on the periphery of the lung, have migrated and finally have been expectorated.

Case Reports

Patient 1

A 55-year-old patient underwent video-assisted thoracoscopic (VAT) LVRS without immediate complications. Bilateral upper lobe lung reduction was performed using both the EZ45 stapling gun (Ethicon Endo-Surgery, Cincinnati, OH) and the endoGIA 30 stapling gun (Autosuture, Norwalk, CT). All staple lines were buttressed with dry bovine pericardial strips (Peri Strips, Bio-Vascular, St. Paul, MN). Eight months after surgery she started to cough up staples. In a period of 6 months, she had 7 episodes during which she coughed up 2 to 14 staples, with a total of 71 staples. She remains otherwise well. Her forced expiratory volume in one second (FEV1) increased from 25% pred before surgery to 33% pred at 1 year post surgery. Her SF36 scores showed an improvement in 2 of the 8 health domains.

Patient 2

The second patient is a 58-year-old patient who underwent bilateral VAT LVRS. Lung reduction was performed using the EZ45 stapling gun on both sides, again all buttressed with dry bovine Peri strips. Postoperative stay was uneventful. Twenty months later she started to cough up staples. She had 3 episodes during which she coughed up a mass containing Peri strip with staples (Fig 1). A computed tomography (CT) scan showed an inflammatory mass at the site of the staple line. During one of these episodes she was admitted to hospital with a chest infection.

Patient 3

The last case is a 57-year-old patient who underwent bilateral LVRS. The EZ45 stapling gun was used with dry bovine Peri strips to buttress the staple lines. Postoperatively he spent three weeks in the intensive therapy unit (ITU) due to respiratory failure. For an increasing air leak, a second drain was inserted which was not removed until 4 weeks post surgery. Five months later, he required readmission to ITU with an infective exacerbation of chronic obstructive pulmonary disease. At nine months post surgery, he coughed up a small amount of phlegm containing a few staples.

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