

Esophago-bronchocavitary fistula caused by a foreign body: the first case report in the literature

Yabancı cismin neden olduğu özofagobronkokaviter fistül: Literatürdeki ilk olgu sunumu

Yener Aydın,¹ Atilla Eroğlu,¹ Fatih Alper,² Mesut Özgökçe²

Departments of ¹Thoracic Surgery and ²Radiology, Medical Faculty of Atatürk University, Erzurum, Turkey

Esophageal foreign bodies can be seen in all age groups, particularly in childhood. A 40-year-old female patient presented with a complaint of coughing while drinking water which started six months ago. The patient was diagnosed with schizophrenia five years ago without history of a foreign body. An endoscopy detected a perforation (approximately 5 mm) of the distal esophagus. After impregnating methylene blue, bronchoscopy was made which showed that the mouth of right lower lobe basal segment was smeared with methylene blue. The right posterolateral thoracotomy revealed esophageal perforation and a foreign body in the pulmonary cavity. The esophageal perforation was repaired, and the bronchus was closed. No postoperative complication was observed. Foreign bodies rarely cause esophago-bronchocavitary fistula and they may not be visualized through esophagoscopy. In such cases, surgery is necessary for both removal of the foreign body and closure of the esophagus and the bronchus.

Keywords: Esophago-bronchocavitary fistula; foreign body; surgery.

Özofagus yabancı cisimleri, başta çocuklarda olmak üzere, tüm yaş gruplarında görülebilmektedir. Kırk yaşında bir kadın hasta altı ay önce başlayan su içer iken öksürme yakınması ile başvurdu. Hastaya beş yıl önce yabancı cisim öyküsü olmadan şizofren tanısı konulmuş idi. Endoskopide özofagus distalinde perforasyon (yaklaşık 5 mm) tespit edildi. Metilen mavisi içirilerek yapılan bronkoskopide sağ alt lob bazal segment ağzının metilen mavisi ile bulaştığı görüldü. Sağ posterolateral torakotomide özofageal perforasyon ve pulmoner boşlukta yabancı cisim görüldü. Özofageal perforasyon onarıldı ve bronş kapatıldı. Ameliyat sonrası komplikasyon gözlenmedi. Özofageal yabancı cisimler nadiren özofago-bronkokaviter fistüle neden olur ve özofagoskopi ile görülemeyebilir. Bu olgularda cerrahi hem yabancı cismin çıkartılması hem de özofagus ve bronşun kapatılması için gereklidir.

Anahtar sözcükler: Özofago-bronkokaviter fistül; yabancı cisim; cerrahi.

Esophageal foreign bodies can be seen in all age groups, especially in childhood. However, when they appear in older adults, there is a greater risk of morbidity and mortality. If sharp-edged items, such as bones, safety pins, scarf pins, fishbones, and metallic wires, are not removed in the early stages, they can cause erosion, perforation, retropharyngeal abscesses, and pulmonary complications.^[1,2] In this study, we present the first case in the literature of an esophago-bronchocavitary fistula due to an esophageal foreign body.

CASE REPORT

A 40-year-old woman presented with coughing while drinking water that had started six months earlier. The patient had been diagnosed with schizophrenia five years previously and had no history of foreign bodies, trauma, surgery, cigarette smoking, alcohol consumption, or exposure to radiation. Auscultation revealed crepitant rales in the basal region of the right lung, and a neurological examination found that she was conscious and oriented neurologically.



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Correspondence: Yener Aydın, M.D. Atatürk Üniversitesi Tıp Fakültesi Göğüs Cerrahisi Anabilim Dalı, 25240 Erzurum, Turkey.

Tel: +90 535 - 784 89 70 e-mail: dryeneraydin@hotmail.com

Her complete blood count (CBC) and renal and hepatic function tests were all within normal limits, and an electrocardiogram (ECG) showed normal sinus rhythm. In addition, her blood pressure was 110/70 mmHg.

A posteroanterior (PA) chest radiograph of the right lung middle zone detected that the radiopaque appearance of the extending hilum, and oral contrast-enhanced computed tomography (CT) in the prone position revealed a cavitary lesion across from the esophagus along with adjacent subsegmental bronchial dilatation (Figure 1). Furthermore, an endoscopy detected a perforation of the distal esophagus that measured approximately 5 mm in length. After make to drink, a methylene blue bronchoscopy was performed in which the mouth of the right lower lobe basal segment was smeared with methylene blue. Following this, the patient underwent a right wide posterolateral thoracotomy. We entered the pleural cavity through the bed of the seventh rib and found an esophageal perforation and a foreign body in the pulmonary cavity (Figure 2). The patient had swallowed a 35 mm, semi-circular-shaped, hard object that had perforated the esophagus, resulting in parenchyma. In addition, the foreign body had also caused a cavity to form as well as an esophago-bronchocavitary fistula.

The esophageal perforation was then repaired by suturing each mucosal and muscular plane with 3/0 polyglactin (Vicryl; Ethicon, Inc., Somerville, NJ), and the primary repair was buttressed with mediastinal pleura. Next, the open subsegmental bronchial mouth was closed, and the cavity was quilted with

2/0 polyglactin (Figure 3). A nasogastric tube was then inserted, and the thorax was closed with two drains in the thoracic cavities. The patient started an oral diet on the fourth postoperative day. No complications were observed postoperatively, and she was discharged on the seventh postoperative day.

DISCUSSION

Seventy percent of esophageal foreign bodies were retained in the thoracic entrance at the level of the cricopharyngeus muscle while 15% were located in the thoracic esophagus and 15% in the gastroesophageal junction.^[1] Many gastrointestinal foreign bodies pass through the intestine spontaneously without causing any damage. However, 10-20% need nonoperative interventions, and 1% or less need surgical intervention.^[1] Sharp objects may get stuck anywhere in the esophagus, with hard-edged metallic objects, bones, toothpicks, and dentures providing an especially high risk of perforation.^[3]

Despite technical advances in the removal of foreign bodies, serious complications such as retropharyngeal abscesses, local ainfctions, and pulmonary complications are still seen, with complication rates of 12.6% for adults and 4.6% for children having been reported.^[4] Pulmonary complications are the most common issue in children while retropharyngeal abscesses are seen most often in adults.

An esophageal perforation is a life-threatening condition with a mortality rate of approximately 20%.^[2] The choice of treatment depends on the cause and location of the injury, diagnosis time, underlying

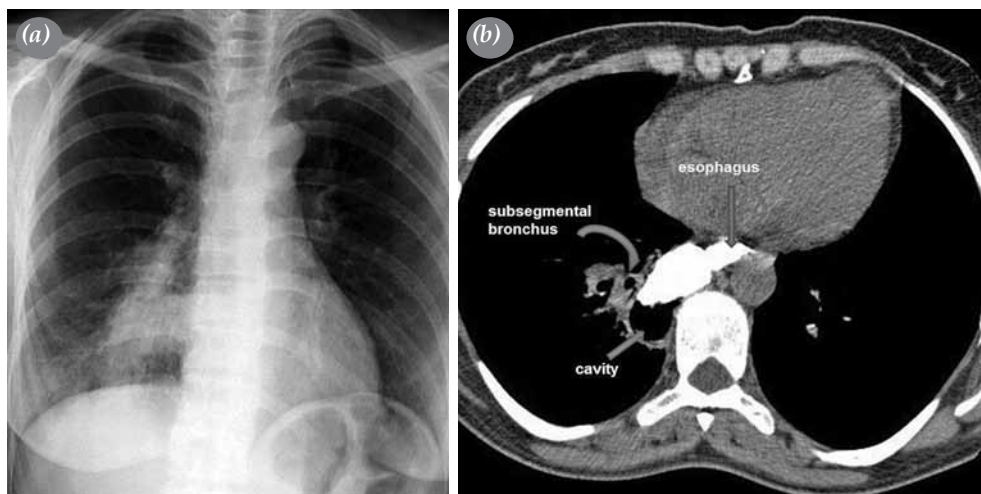


Figure 1. (a) Posteroanterior chest radiograph of the right lung middle zone showing the extending hilum with a radiopaque appearance and reticulonodular opacities in the adjacent lung parenchyma. (b) Oral contrast-enhanced computed tomography in the prone position revealing a cavitary lesion across from the esophagus along with adjacent subsegmental bronchial dilatation.

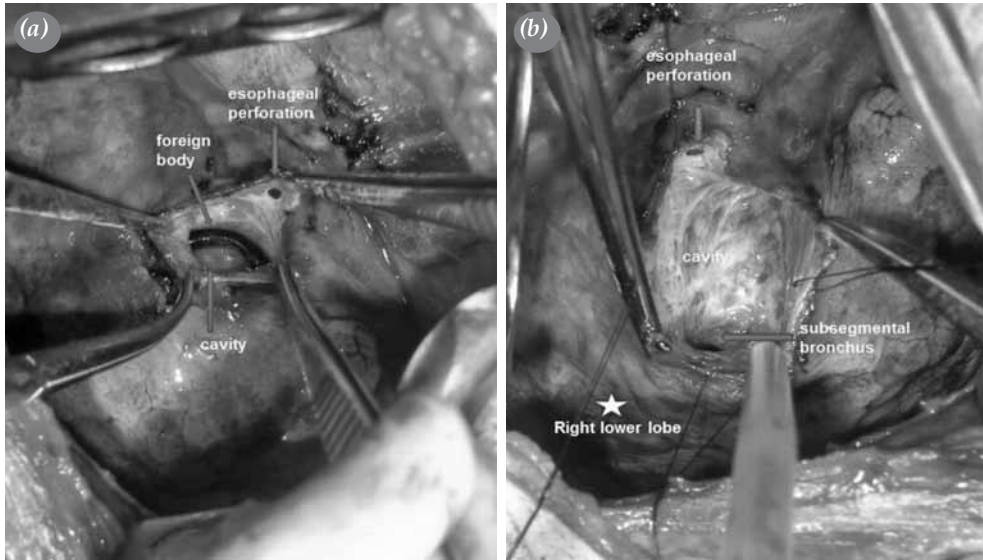


Figure 2. (a) Intraoperative view during the right posterolateral thoracotomy showing the esophageal perforation and foreign body in the pulmonary cavity. (b) Intraoperative view showing the relative positions of the esophageal perforation, pulmonary cavity, and subsegmental bronchus.

esophageal disease, and interval between the injury and initiation of treatment,^[2] with the latter being most important predictor of survival. In addition, the severity of the perforation, localization, and surgeon's experience also play a role.^[5,6]

The management of an esophageal perforation consists of the draining of any air or fluid from the pleural and mediastinal cavity, parenteral nutrition, maintenance of oral alimentation, and use of broad spectrum antibiotics to overcome any infection.^[2] The choice of surgical procedure depends on the degree of

contamination, length and location of the laceration, and condition of the esophagus.

In our case, the etiology of the esophageal perforation could not be determined preoperatively because we did not take into consideration the presence of a foreign body in the radiological imaging since the patient no previous history of this problem. Because there was no mediastinal contamination, we made the decision to proceed with exploratory surgery. During this procedure, the plastic foreign body was encountered when the cavity was opened. It had

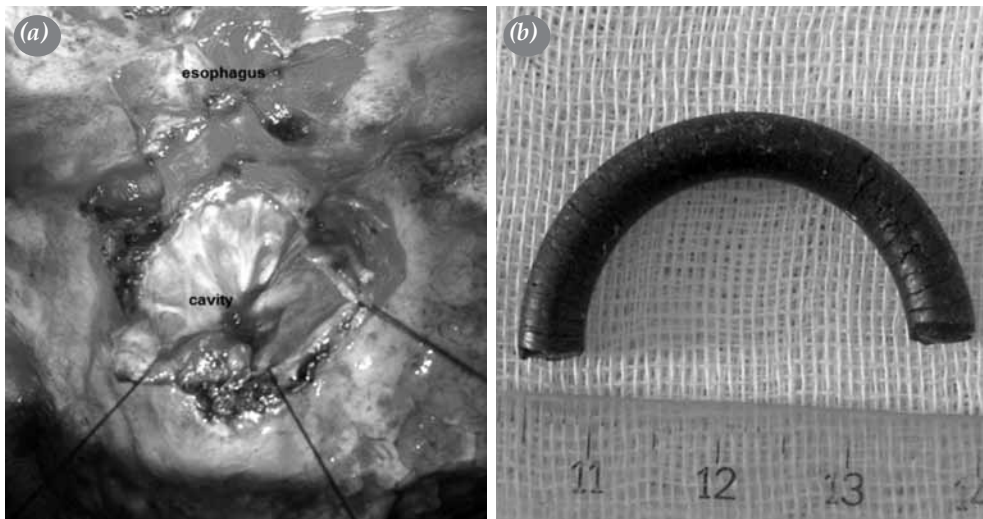


Figure 3. (a) The esophageal perforation was repaired, and the bronchus was closed. (b) Photo of the foreign body.

perforated the esophagus and passed into the lung parenchyma, causing a cavity. The patient also had an esophago-bronchocavitary fistula due to this object. To the best of our knowledge, this is the first reported case of this kind in the literature.

Especially with primary repairs that take place after the first 24 hours, the success rate may be lower and a fistula complication can occur. In our case, a period of six months had passed after the perforation and the cavity was present in the lung parenchyma while the mediastinum remained intact. The perforation had not yet opened into the pleural space, and for this reason, subcutaneous emphysema, which occurs in two-thirds of all patients with esophageal perforations, was not observed in our patient. In addition, mediastinal air, mediastinal widening, pneumothorax, and pleural effusion, which are seen in more than half of these cases on a radiological examination, were also not present.

Primary repair is the most widely used method for treating esophageal perforations, and when this is performed early, the success rate is higher. In addition, for patients who undergo this procedure, any necrotic tissue should also be removed.^[7] As with our case, the perforation must be closed in two layers, and the area around it must be supported with a muscle flap or pleura.

In conclusion, in adults, sharp-edged esophageal foreign bodies are seen more often than those with smooth edges. On rare occasions, these foreign bodies cause esophago-bronchocavitary fistulas that may not be visible via an esophagoscopy. When this occurs, surgery is required, both for removing the foreign body and closing the esophagus and bronchus.

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