

Esophageal Perforation Caused By Compressed Air (Case Report)

SIKIŞTIRILMIŞ HAVANIN YOL AÇTIĞI ÖZOFAGUS PERFORASYONU (OLGU SUNUMU)

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Summary

Accidental esophageal rupture due to barotrauma is a rare entity and remains a difficult diagnostic and management problem with controversial recommendations regarding its treatment. Esophageal perforation is potentially lethal if untreated. We report a case of distal esophageal perforation caused by compressed air. The patient had admitted to our clinic 5 days after esophageal injury and received conservative treatment. Early diagnosis and repair reduces the morbidity and mortality.

Key Words: Esophageal perforation, Barotrauma

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Özet

Baro travma ile oluşan özofagus rüptürü halen tartışmalı olan tedavisi ile birlikte tanısı ve tedavisi güç olan, nadir karşılaşılan bir durumdur. Özofagus rüptürü tedavi edilmediğinde öldürücüdür. Sıkıştırılmış havanın aniden serbest kalması ile oluşmuş distal özofagus rüptürlü bir olguyu sunduk. Olgu, özofagus travmasından 5 gün sonra kliniğimize sevk edildiği için 5inci günden sonra konservatif tedavi altına alınarak tedavi edildi. Özofagus perforasyonunda erken tanı ve tamir ile mortalite ve morbidite azalır.

Anahtar Kelimeler: Özofagus perforasyonu, Barotravma

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The esophagus is subject to various forms of accidental trauma; penetrating, operative, blunt and chemical. Most cases are iatrogenic due to complications of esophagoscopies or attempts to introduce objects into the esophagus for therapeutic purposes.

Spontaneous perforation (Boerhaave's syndrome) and foreign bodies are the other causes of esophageal perforation. Traumatic pneumatic disruption of the esophagus is a rare entity (1). A case is presented with distal esophageal perforation due to explosion of a compressed industrial oxygen tube.

Case Report

A 21-years-old male patient was admitted to our hospital five days after a barotrauma to his face and cervical area due to explosion of a high-pressure (200 bar) industrial oxygen tube. He was working in an oxygen tube-filling unit. The accident has occurred while he was filling an oxygen tube. At admission, there were bilateral chest tubes because of bilateral pneumothorax, and he had an empyema in his left hemithorax.

Chest X-ray, a computed tomography, and esophageal passage graphy with water-soluble contrast revealed esophageal perforation at 1/3 lower part of the esophagus (Fig. 1). The site of perforation was determined with

endoscopic examination on 33-34 cm of esophagus The cause of the perforation was barotrauma due to the explosion of a high-pressure oxygen tube. A sample of empyema material was sent for the diagnosis of causative agent however there was no evidence of microorganisms in culture. Laboratory findings revealed, white blood cell count is 15.000 cells/mm³, protein level is 2.8 g/dl, pleural fluid glucose is 45 mg/dl, lactic dehydrogenase is 1100 IU/L, and pH is 7.120.

The oral intake was stopped. A nasogastric tube was placed and simple mechanical cleaning is applied. Total parenteral nutrition (TPN) and antibiotic therapy were started. Right-sided chest tube was removed in the 4th day of hospitalization. Patient underwent a gastrostomy operation at 30th day of admission. Left-sided chest tube was removed at 45th day of admission. The esophagoscopy and esophageal passage graphs with water-soluble contrast were repeated for reassessment (Fig.2). An endoscopic examination was ruled out and spontaneous healing of esophageal rupture was observed at the end of 6 weeks, and oral alimention was started by gradually. In the follow-up there were no complications after 4th month postoperatively. Oral intake (both fluid and solid foods) were normal. There were no weight loss.

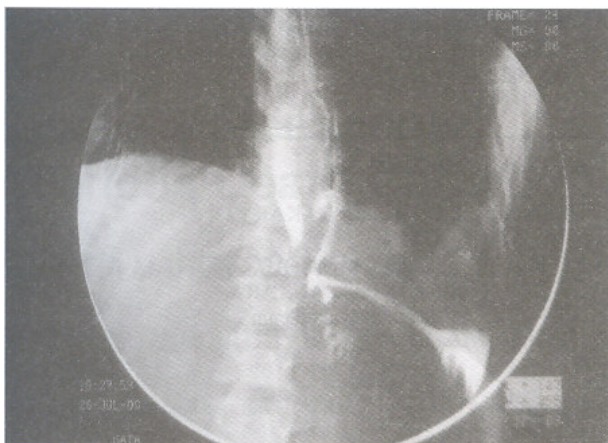


Fig. 1. Esophageal passage graphy with water-soluble contrast shows perforation in the 1/3 distal part of the esophagus.



Fig. 2. Esophageal passage graphy shows dilatation in distal part of esophagus after spontaneous healing.

kind of blunt trauma can cause to spontaneous rupture of esophagus. Postemetic (Boerhaave's syndrome) esophageal perforation is also a well-known entity in thoracic surgical practice, but accidental pneumatic rupture is uncommon. We found only twelve accidental esophageal ruptures in literature, reported by Gelfand and associates (1). In our case patient faced to compressed air with a pressure of 200 bars.

A high index of suspicion will often lead to diagnosis of esophageal perforation. The diagnosis may be suspected on plain chest x-ray by the finding mediastinal emphysema. An associated pleural effusion (usually left sided empyema) or an air-fluid level may be seen. A contrast study is essential for definitive diagnosis of perforation. Endoscopic examination of esophagus is also essential to determine the exact site of perforation in such cases whether a surgical treatment is planned or not. Both endoscopy and contrast study were performed in our case for diagnosis and assessment of esophagus after conservative treatment. Perforation of the esophagus is a mortal injury that requires skilful management for survival (3). Direct surgical repair is indicated if the diagnosis is established within 12 hours after injury. Mean mortality rate is 51 % (1). Mortality is high in patients diagnosed at a late stage. Surgical treatment must be carried out. Immediate thoracotomy, closure of the perforation, and drainage of mediastinal and pleural space should be done. If the treatment has been delayed, closure of the esophageal injury may be contraindicated; conservative measures can be used for this kind of patients (1,3-6).

The ultimate goals of therapy are to re-establish esophageal integrity, to eradicate the infection, and to eliminate or palliate the effects of concurrent esophageal disease. The objectives by which the goals are accomplished vary considerably. A key component to the management of all patients with perforation is the aggressive delivery of nutritional support and broad-spectrum antibiotics. Enteral or parenteral nutrition should be initiated as soon as possible following the completion of the primary therapy. In anticipation of the patient's need to remain without oral intake for a prolonged period of time, a secure method for delivery of nutrition (jejunostomy or gastrostomy) is best (2).

Because the diagnosis of esophageal perforation was established on 5th day of injury a conservative therapy was planned. Appropriate drainage, antibiotic and hyperalimentations are essential components of conservative treatment.

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Discussion

Sudden increase of the intraluminal pressure within the esophagus may result rupture of esophageal wall. Any

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