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January 2006

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Recommended Citation

Fatimi, S., Sheikh, S., Ali, A. (2006). Primary repair of an esophageal rupture using pleural flap. *Journal of College of Physicians and Surgeons Pakistan*, 16(4), 309-310.

Available at: https://ecommons.aku.edu/pakistan_fhs_mc_surg_cardiothoracic/82

PRIMARY REPAIR OF AN ESOPHAGEAL RUPTURE USING PLEURAL FLAP

Saulat Hasnain Fatimi, Sadaf Sheikh and Asif Anwar Ali

ABSTRACT

Esophageal perforation remains an important thoracic emergency. Aggressive operative therapy remains the mainstay for treatment. A case of esophageal perforation, consequent upon impacted food bolus, is presented. An 80 years old female, with multiple comorbidities, presented with dysphagia and right sided chest pain, who had a distal esophageal tear, secondary to accidental meat ball ingestion. Rigid esophagoscopy showed complete occlusion of the distal esophagus with a meat ball. Right thoracotomy was performed, which showed perforated esophagus with large meat ball protruding from it. Endoscopic removal of the food particles was done, and the rupture was repaired using a pleural flap. The entire postoperative stay was uneventful and the patient was discharged on the ninth post-operative day.

KEY WORDS: *Esophageal rupture. Repair. Pleural flap. Meat bolus.*

INTRODUCTION

Esophageal perforation can be caused by any instrument, device, or foreign body reaching the hypopharynx. If esophageal perforation is suspected, Gastrografin swallow study, eventually followed by barium swallow study, is the most useful diagnostic test. Outcome is determined by the cause and location of the injury, the presence of concomitant esophageal disease, and the interval between perforation and initiation of therapy. The overall mortality, associated with esophageal perforation, can approach 20%, and delay in treatment of more than 24 hours after perforation can result in a doubling of mortality. Surgical primary repair, with or without reinforcement, is the most successful treatment option in the management of esophageal perforation and reduces mortality by 50% to 70% compared with other interventional therapies.¹ If diagnosed early, cervical or thoracic esophageal perforations can sometimes be treated conservatively, if there are no signs of systemic sepsis. Local tissue flaps can reinforce the closure, particularly after delayed operation, thereby often avoiding the necessity for a reoperation or an esophageal exclusion.

CASE REPORT

The patient was an 80 years old female, known diabetic and hypertensive, presented to the emergency room early morning with overnight complains of obstruction in throat, retrosternal pain and pressure over the chest in the area of sternal angle. She also had recurrent episodes of non-bilious, nonprojectile vomiting, just comprised of saliva. These complaints had started after the ingestion of meat bolus, 2-3 cm in length, in the dinner after which she could not eat anything. There was

no history of fever, dyspnea, abdominal pain or diarrhoea. The physical examination was unremarkable, including the vital signs. A lateral chest radiograph revealed air fluid levels at manubrosternal junction. An otolaryngological consultation was sought. On esophagoscopy, food particles were seen stuck in the distal third of esophagus, hence, could not be taken out all at once, but in pieces. The instrument which could only go upto 32 cm was admitted 42 cm, when food particles were taken out. Postoperatively, barium studies revealed a leakage from the distal third of the esophagus and the patient also developed right pneumothorax. For that, right thoracostomy was done and patient was taken to operation room for the repair of the ruptured esophagus. Right posterolateral thoracotomy was performed through sixth intercostal space and a 2 cm linear tear with good edges on posterolateral aspects of lower 3 cm of esophagus was observed (Figure 1).



Figure 2: Primary repair of an esophageal rupture following ingestion of a meat bolus using a pleural flap.

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Received June 15, 2005; accepted: March 20, 2006.

Pus flake was also found in pleural cavity. Edges were freshened; esophagus was repaired in two layers in interrupted fashion with vicryl 3-0. A pleural flap was raised from costal edge of the rib and spread over the repair as an on-lay patch in continuous fashion. Postoperatively, the patient was kept in Intensive Care Unit for 3 days with assisted ventilation and inotropic support. After 4 days of total parenteral nutrition administration and antibiotics (Tazocin 4.5g and Meropenem 1g 8-hourly intravenously), a contrast study was conducted which demonstrated an intact esophagus. The postoperative inpatient stay remained, otherwise, unremarkable.

DISCUSSION

The esophagus lacks a serosal layer and is, therefore, more vulnerable to rupture or perforation. Early diagnosis, prompt surgical treatment and prevention of postoperative complications results in improved treatment outcome.¹ Foreign bodies tend to impact in the esophagus by virtue of the passive, distensible and accommodating nature of the organ.² Esophageal peristaltic activities may be inadequate to prevent retention of swallowed objects. History of foreign body ingestion, dysphagia and odynophagia are usually presented by the patients.³ Food impaction, resulting in an obstructed esophagus, is an urgent problem and the bolus should be removed within hours.⁴ Clinical sequelae of foreign bodies depend on the characteristics of the foreign bodies and the duration of impaction.⁵ The most common site of impaction is at the level of the cricopharyngeus followed by the other areas of anatomical narrowing.³ Historically, the factor most often associated with high mortality is delay in diagnosis. A delay in diagnosis results in extensive tissue destruction leading to mediastinitis. These factors may impede a successful primary repair, and the mortality under these circumstances can exceed 50%, often as a result of uncontrolled sepsis, or multi-organ failure.⁶ Complications of retained foreign bodies range from acute perforations with mediastinal sepsis to delayed esophago-tracheal fistula. A rare and potentially fatal complication is an aorto-esophageal fistula.⁵ Once a perforation (full-thickness tear in the wall) occurs, retained gastric contents, saliva, bile, and other substances may enter the mediastinum, resulting in necrotizing mediastinitis. This leads to mediastinal emphysema and compromise of the parietal pleura with resulting hydropneumothorax. In the majority of patients, with a history of ingestion of a foreign body, the plain chest radiograph confirms the presence. This diagnosis mandates immediate removal under direct vision to avoid complications.⁷ Diagnosis relies on confirmatory radiographic findings. Urgent posteroanterior and lateral chest and upright abdominal X-ray films should be ordered to look for hydropneumothorax, pneumomediastinum, subcutaneous emphysema, mediastinal widening without emphysema,

subdiaphragmatic air and pleural effusions. Barium esophagram following plain radiography may be performed to look for extravasation of contrast and location and extent of rupture. Standard management includes admission to medical or surgical ICU, nothing by mouth, parenteral nutritional support, nasogastric suction, broad-spectrum antibiotics and narcotic analgesics. Patients with persistent pain (requiring narcotic analgesics), leukocytosis, fever, and retention or trapping of barium in the mediastinum tend to require early surgical therapy. Surgical techniques used for esophageal rupture include drainage alone, drainage and repair, drainage and diversion and esophageal resection.⁸ Primary repair can be carried out in most cases of thoracic esophageal perforation, regardless of time of presentation, with a low mortality rate.⁹ The choice of surgical operation and postoperative morbidity and mortality as well as inpatient stay depends on the extent of leak and pleural and mediastinal contamination.¹⁰ Urgent surgical treatment should be considered because delay in repair alters the surgical approach and increases the mortality rate. Mediastinitis, intrathoracic abscess, sepsis, respiratory failure and shock are the lethal complications of an untreated esophageal rupture. Whether the chronically retained foreign body should be removed endoscopically or by a thoracotomy, depends entirely on the feasibility and safety of retrieval at esophagoscopy.⁸

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