



Diverse diagnoses in esophageal perforation: comparative insights from three cases

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ABSTRACT

This case series highlights diverse etiologies and management strategies for esophageal perforation through three illustrative cases: Foreign body ingestion, achalasia cardia, and iatrogenic perforation. Data were retrospectively reviewed, including patient history, diagnostic findings, treatments, and outcomes. Each case was managed differently, based on the patient's presentation, disease severity, and long-term needs. Esophageal perforation requires prompt diagnosis and individualization to address its varied etiologies and prevent complications. This series emphasizes the critical role of timely intervention in achieving favorable outcomes.

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Introduction

Esophageal perforation is a rare but potentially life-threatening condition characterized by full-thickness disruption of the esophageal wall. Prompt diagnosis and management are critical because of the high risk of severe complications, such as mediastinitis, sepsis, and multi-organ failure. The condition can arise from various etiologies with unique clinical challenges requiring different management strategies. Common causes include traumatic injuries from foreign body ingestion, iatrogenic injuries during medical procedures, and spontaneous ruptures, such as in Boerhaave syndrome.

Despite advances in diagnostic and therapeutic techniques, esophageal perforation remains a clinical challenge because of its varied presentations and the rapid progression of associated complications. Timely recognition and appropriate intervention are essential for improving patient outcomes and reducing morbidity and mortality.

This case series aimed to highlight the diverse etiologies and management strategies for esophageal perforation in three illustrative cases. Each case provides insight into different aspects of the condition, including diagnostic challenges and treatment approaches. By examining these cases, we aimed



to underscore the importance of individualized patient care and the need for a multidisciplinary approach to patients with esophageal perforation.

Case Presentations

Case 1: A 64-year-old man with chronic obstructive airway disease was admitted for exacerbation of chronic airway disease with fluid overload. In the ward, he complained of dysphagia and chest discomfort. Before admission, his relative claimed he had a bowl of fish soup at home. Esophagogastroduodenoscopy (EGD) revealed a large, hard fish scale stuck in the distal esophageal mucosa. The tumor was removed but left a 2-cm linear esophageal tear. A gastrostomy tube was inserted with endoscopy guidance. The patient was ordered to receive strict nil oral treatment and to feed via a gastrostomy tube. Repeat EGD after 3 months showed healing of the esophageal tear, and the patient was allowed to eat orally after gastrostomy tube removal (Figure 1).

Case 2: A 34-year-old man with a history of chronic dysphagia for the past 14 years was admitted for pneumonia and right-sided thoracic empyema. Computed tomography (CT) of the thorax revealed a grossly distended esophagus with circumferential wall thickening involving the mid and lower parts and right lung empyema. EGD showed pooling saliva within the esophagus with distal esophageal perforation. Endoscopic naso-enteral tube (ENET) insertion was performed, followed by ultrasound-guided drainage of empyema. He recovered slowly but was discharged home after the removal of the chest drain. Six months later, the patient underwent a Heller cardiomyotomy (Figure 2).

Case 3: A 49-year-old female patient complaining of chronic epigastric pain and intermittent vomiting for 5 months after undergoing open surgery for a bile duct stone. Clinical examination revealed a tender mass over the epigastric region. Contrast-enhanced computed tomography of the abdomen revealed gossypiboma in the stomach. An attempt to remove the abdominal pack endoscopically was successful. Nevertheless, the patient developed chest pain, shortness of breath, and subcutaneous emphysema over the neck. CT thoracoscopic examination revealed extensive pneumomediastinum and pneumopericardium, bilateral pleural effusion, and subcutaneous emphysema. Urgent endoscopy revealed distal esophageal wall perforation with multiple erosions along the esophagus and gastric wall defects. She underwent left thoracotomy and exploratory laparotomy and received parenteral nutrition and enteral feeding after the insertion of an ENET (Figure 3).

Discussion

Different etiologies leading to esophageal perforation

Esophageal perforation is associated with various etiologies. The first case involved a 64-year-old man who developed

esophageal perforation after ingesting a large fish scale, which is a common cause in adults due to accidental ingestion of sharp objects. The second case highlighted a 34-year-old man with a 14-year history of achalasia cardia, which led to a distended esophagus and eventual perforation, demonstrating that chronic esophageal conditions can predispose patients to perforation. The third case involved a 49-year-old woman who experienced iatrogenic perforation from a retained surgical item (gossypiboma) following bile duct surgery, highlighting the risks associated with surgical procedures and the importance of surgical vigilance. Recent studies have shown that iatrogenic instrumentation is the leading cause (59%), followed by spontaneous perforation (15%) and foreign body ingestion (12%). Other etiologies include trauma, surgical injury, and tumor (1).

Similarities in clinical presentation

Regardless of etiology, mechanism, and extent of injury, there were similarities in clinical presentations. All three patients were admitted with dysphagia, a common symptom of esophageal perforation due to obstruction, inflammation, or structural damage. Each case also involved chest discomfort

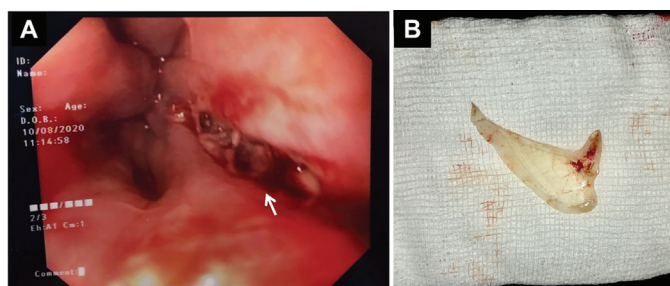


Figure 1. (A) Linear tear at the distal esophageal, measuring 2 cm after removal of fish scale. (B) Hard fish scale retrieved by endoscopy



Figure 2. CT thorax post-drainage; showing residual right lung empyema with mega-esophagus
CT: Computed tomography

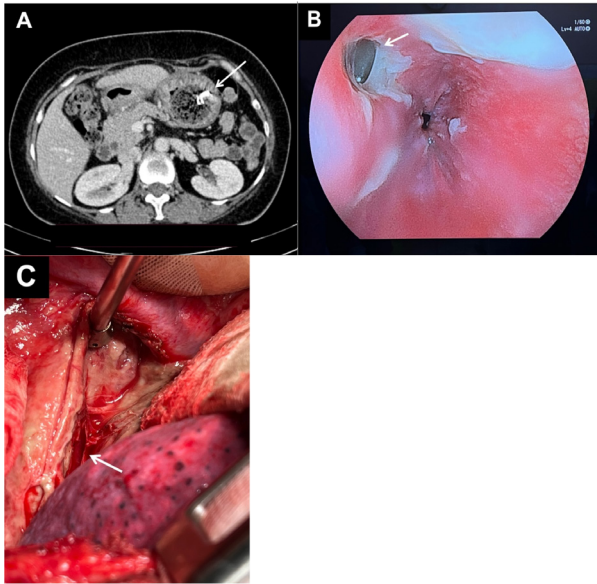


Figure 3. (A) Spongiform-like mass with hyperdense linear structure in the stomach. (B) Left distal esophageal wall perforation, 1 cm in diameter with surrounding slough 2 cm from cardioesophageal junction. (C) Distal esophagus perforation 1 cm in diameter with localized pus collection. Slough surrounded the left lower lobe of the lung

or pain, reflecting the severe irritation and possible mediastinal involvement typical of esophageal perforation. Other symptoms related to esophageal perforation include subcutaneous emphysema, epigastric pain, fever, and tachycardia (2). Symptoms may be masked by medical problems like respiratory infections or cardiac diseases. A high index of suspicion is crucial for subtle complaints or clinical findings. Chronic complaints should not be overlooked, and a thorough assessment is needed to lead to a diagnosis. Early diagnosis is critical, and a delay from perforation diagnosis to diagnosis may increase the mortality rate and worsen patient outcomes.

Differences in diagnostic challenges and management strategies

Due to various clinical presentations and etiologies, diagnosis remains a challenge, and management will differ on a case-by-case basis. In cases of foreign body ingestion, the diagnostic challenge lies in identifying the foreign body and its removal, which can be managed effectively with endoscopy. Post-removal care focused on preventing infection and ensuring esophageal healing through strict oral and gastrostomy tube feeding. In the case of esophageal perforation due to chronic illness, the challenge was to distinguish between chronic achalasia symptoms and acute perforation. The management involved addressing both the acute perforation with ENET insertion and empyema drainage and the underlying achalasia with subsequent Heller cardiomyotomy. The third case scenario was challenging because the diagnostic challenge was multifaceted and involved initial identification of the gossypiboma and subsequent complications (pneumomediastinum, pneumopericardium). The management required a combination

of endoscopic and surgical interventions, followed by careful post-operative care with parenteral and enteral nutrition.

Clinical implications

The diversity of etiologies necessitates a high index of suspicion for esophageal perforation in patients presenting with chest pain and dysphagia. Prompt and accurate diagnosis is crucial because delays can lead to significant morbidity and mortality. This series highlights the importance of individualized management strategies tailored to the specific cause and clinical scenario.

Challenges and considerations

Management strategies are challenging, depending on the etiology, severity of injury, and patient condition. The principle of managing esophageal cancer is to eliminate the source of infection, drainage contamination, anti-biotics, nutritional support, and restoration of the continuity of the alimentary tract (3).

Conclusion

Esophageal perforation requires prompt, tailored management (4). This case series emphasizes the importance of early diagnosis and appropriate intervention for ensuring optimal patient outcomes. Further research is required to establish standardized protocols for managing diverse presentations.

Ethics

Informed Consent: Consent form was filled out by all participants.

Footnotes

Authorship Contributions

Surgical and Medical Practices: M.T.Y., M.N.MdH., H.A.R., Consept: M.T.Y., Data Collection or Processing: M.T.Y., H.A.R., Analysis or Interpretation: M.T.Y., M.N.MdH., H.A.R., Literature Search: M.T.Y., M.N.MdH., Writing: M.T.Y.

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