



Conservative Management of Esophageal Perforation Following an Endoscopic-Retrograde Cholangio-Pancreatography: A Case Report

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Abstract

Background: Iatrogenic esophageal perforation (IEP) is a rare but life-threatening complication of upper endoscopic procedures. **Aim:** To present a case of conservative treatment of IEP following ERCP and to highlight the rationale behind non-operative management. **Case Presentation:** A 73-year-old woman underwent ERCP for the removal of a common bile duct stone. A 1-cm esophageal tear was detected intra-procedure. CT scan confirmed a contained perforation with cervical emphysema and pneumomediastinum. Conservative treatment with ceftriaxone plus metronidazole, proton pump inhibitor, total parenteral nutrition, and stepwise oral refeeding resulted in a favorable outcome without surgical intervention. **Conclusion:** This case illustrates that selected patients with contained esophageal perforation can be safely managed conservatively, provided early diagnosis, careful monitoring, and adherence to established criteria.

Subject Areas

Gastroenterology & Hepatology

Keywords

Iatrogenic Esophageal Perforation, ERCP Complication, Conservative Management, Antibiotic Therapy, Case Report

1. Introduction

Esophageal perforation is an uncommon but severe clinical condition associated with high morbidity and mortality. Most cases are iatrogenic, particularly during therapeutic endoscopy such as ERCP. Mortality rates remain high, ranging from 10% to 40%, depending on the timing of diagnosis and treatment modality. Early recognition and management are essential to improve prognosis. While surgical repair remains the standard of care for extensive or septic cases, conservative treatment is increasingly reported for selected patients with contained perforations and stable hemodynamics. This report describes a case of successful conservative management of an iatrogenic esophageal perforation following ERCP.

2. Case Presentation

It's about a 73-year-old woman, having as past medical history a biliary gallstone, without any other comorbidities. The ERCP indication was the removal of a common bile duct stone, which was causing significant obstructive jaundice and abdominal pain.

During the procedure, while introducing the duodenoscope, the operator observed a 1 cm-long tear in the esophageal mucosa, located 35 cm from the dental arches. The procedure was halted, and the scope was withdrawn.

The patient was monitored. On physical examination, she was neither pale nor drowsy. The blood pressure was 120/70 mmHg with no pulsus paradoxus. A palpable subcutaneous emphysema was present. Chest expansions were regular and symmetric. The examiner heard no reduction in the auscultation of the lung and heart. The physical examination of the abdomen showed nothing abnormal. She was afebrile. Her peripheral pulses were symmetric. On awakening, the patient showed no functional signs, notably no chest or abdominal pain.

The initial complete blood count (CBC) didn't show leukocytosis, and the coagulation status was normal.



Figure 1. Lateral left parietal defect at the lower esophagus.

A thoracic spiral CT scan with contrast was performed within two hours of the

procedure, revealed a lateral left parietal defect at the lower esophagus, 14 mm from the esophagogastric junction, measuring 9.8 mm in length and 8 mm in width (**Figure 1**) with an important dissecting emphysema of the cervical soft tissues, notably affecting the pre-vertebral, para-pharyngeal, and carotid spaces bilaterally, as well as the cellulose-fatty spaces in the basi-cervical and anterior thoracic regions, and the two axillary regions. There was also a Moderate abundance of pneumomediastinum with partitioning, involving the anterior and posterior mediastinum and dissecting the superior mediastinum (**Figure 2**).



Figure 2. Dissecting emphysema of the cervical soft tissues.

The patient was subsequently referred to the general surgery department.

The patient was placed on an NPO (nothing by mouth) diet and started on antibiotic therapy immediately with ceftriaxone and metronidazole, along with anti-acid treatment using omeprazole. Ceftriaxone (2 g/day IV) plus metronidazole (1.5 g/day IV) were chosen to ensure broad Gram-negative and anaerobic coverage, planned for a 10-day course. The patient received total parenteral nutrition (TPN) during her hospitalization. Within three days, the subcutaneous emphysema showed significant improvement. Additionally, the biological follow-up was satisfactory. The clear diet was started on Day 5 of her admission, with good clinical and biological tolerance. The patient was discharged from the hospital on a semi-liquid diet. The clinical and biological outcomes during the follow-up were perfect. Endoscopic evaluation at 4 weeks demonstrated complete mucosal healing, confirming favorable outcome after conservative management.

3. Discussion

Esophageal perforation (EP) encompasses a broad spectrum of conditions defined by the full-thickness disruption of the esophageal wall. Most esophageal perforations (approximately 60%) are iatrogenic, typically occurring during diagnostic or therapeutic procedures. Less common causes include surgical and external trauma, malignancies, foreign body ingestion, and caustic substance ingestion [1].

Despite advancements in the surgical and medical management of esophageal perforations, the condition remains a significant clinical challenge, carrying high rates of morbidity and mortality. Diagnosing esophageal perforation can be particularly difficult, especially in cases of spontaneous perforation, as its nonspecific symptoms often mimic those of other conditions such as myocardial infarction, ulcer perforation, pneumonia, or spontaneous pneumothorax. The clinical presentation varies depending on the cause, location, extent of the perforation, degree of mediastinal contamination, and the time elapsed from perforation to diagnosis. Common symptoms include severe chest or epigastric pain, dysphagia, and dyspnea [2].

Physical examination frequently reveals signs such as subcutaneous emphysema and pneumothorax. To prevent delays in treatment, a high index of suspicion is crucial, particularly when these clinical signs emerge following endoscopic procedures.

Cervico-thoracoabdominal computed tomography (CT) is the gold standard for the diagnosis [3].

EP could be managed non-operatively, endoscopic, or operatively. The determinants of therapy are the aetiology, the site, and the severity of the perforation, as well as the time, passed since the occurrence [4].

The primary goals of treatment for esophageal perforation are to prevent the spread of contamination, eliminate infection, restore esophageal integrity, and ensure proper nutritional support [5]. Conservative management is rarely reported outside of case studies and is generally reserved for patients with well-contained perforations and minimal mediastinal or pleural contamination. This approach is particularly suitable for cases with delayed diagnosis and mild symptoms [2].

The literature outlines specific criteria for selecting a non-operative approach:

- 1) Early diagnosis or a contained leak in delayed cases.
- 2) Leakage confined to the neck, mediastinum, or between the mediastinum and visceral lung pleura.
- 3) Evidence of drainage into the esophageal lumen on contrast esophagography.
- 4) Absence of injury involving neoplastic tissue, the abdomen, or a site proximal to an obstruction.
- 5) No clinical signs or symptoms of sepsis.
- 6) Availability of contrast imaging and an experienced thoracic surgeon [5]-[7].

Our patient fulfilled all criteria for non-operative management: early diagnosis, contained cervical and mediastinal leak, absence of sepsis, no associated obstruction or neoplasia, and availability of close monitoring and thoracic surgical expertise.

In a non-operative approach to esophageal perforation, the patient should remain NPO (nothing by mouth) and receive total parenteral nutrition (TPN) for at least 48 to 72 hours. Clear fluids may be introduced once clinical improvement is observed. Broad-spectrum antibiotic therapy should be initiated and continued for 7 to 14 days. If mediastinal or pleural fluid collections are present, they should

be drained using chest tubes or CT-guided drainage catheters [8]. In our case, this step was unnecessary as no fluid collections were detected. According to the literature, non-operative management of esophageal perforation has shown a mortality rate of 18%, ranging from 0% to 33%, although near 100% survival rates have also been reported [6]. Generally, conservative treatment involves antibiotic therapy and percutaneous abscess drainage, making it a reasonable option, particularly for patients diagnosed more than 48 hours after perforation who are not septic. However, if patients managed conservatively develop signs of sepsis, immediate surgical intervention is recommended without hesitation [9] [10].

This report is limited by its single-case design; larger prospective series are needed to validate and standardize conservative protocols for esophageal perforation.

4. Conclusion

In summary, the management of esophageal perforation requires careful consideration of the patient's clinical status and timing of diagnosis, with a tailored approach that balances conservative measures and surgical options to optimize outcomes. Effective communication among the healthcare team is essential to ensure timely interventions and improve patient survival rates, as delays in treatment can significantly impact overall prognosis.

5. Mains Points

- 1) Iatrogenic esophageal perforation is a serious complication of upper endoscopy procedures that can be effectively managed with conservative treatment when diagnosed early.
- 2) The case report illustrates successful non-operative management of a patient with IEP, emphasizing timely diagnosis and close monitoring.
- 3) Key components of conservative treatment include nutritional support, antibiotic therapy, and careful observation of the patient's clinical status.
- 4) Early identification of contained leaks is crucial for selecting a non-operative approach, potentially leading to favorable outcomes with lower morbidity and mortality rates.
- 5) Collaborative communication among healthcare professionals is vital to ensure prompt and effective treatment, improving patient survival rates in cases of esophageal perforation.

Conflicts of Interest

The authors declare no conflicts of interest.

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