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Case Report

Navigating management dilemmas in late-presenting Boerhaave's syndrome: a case report and literature review

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ABSTRACT

Boerhaave's syndrome is a serious surgical emergency, especially when patients present late (typically defined as more than 24 hours after the onset of symptoms). The best management approach in these situations is debated, as it involves weighing the need for effective decortication through a thoracic approach against the conventional practice of esophagectomy. This case report explores the challenges related to choosing between thoracic and abdominal methods, the sufficiency of decortication, and the choice to preserve the oesophagus instead of opting for resection in cases of lower esophageal rupture. We present a case involving a patient with a late-presenting lower esophageal rupture due to Boerhaave's syndrome and septic shock. The preoperative strategy focused on preserving the oesophagus, which led to the early preparation of an intercostal muscle flap (created before the placement of Finochietto retractors). A left thoracotomy was conducted to enable thorough decortication of the infected pleural cavity and to support a careful, multilayer primary repair of the oesophagus under magnification. This approach resulted in a watertight and airtight closure, leading to a swift resolution of sepsis and successful preservation of the oesophagus.

Keywords: Boerhaave's syndrome, Esophageal rupture, Thoracotomy, Decortication, Esophageal preservation, Intercostal muscle flap

INTRODUCTION

Boerhaave's syndrome, characterized by a spontaneous, full-thickness perforation of the oesophagus, is a rare but serious condition that carries significant risks of morbidity and mortality. Its estimated incidence is as low as 1 in 1,000,000 per year.[1] Unlike malignancies of the oesophagus where patients have the luxury of time to select a high-volume centre or an experienced surgeon, Boerhaave's syndrome presents as a dire emergency. Most patients initially present to emergency departments or cardiology services with non-specific symptoms that mimic myocardial infarction. Diagnosis is often delayed by 12-24 hours or more.[2,3] When recognized, prompt referral to a thoracic centre becomes critical.

However, even tertiary centres and thoracic surgeons may lack substantial experience with Boerhaave's syndrome due to its rarity. Literature on this condition is largely composed of case reports and small series.[4] This case illustrates such a scenario, emphasizing not only the technical considerations but also the cognitive dilemmas faced by experienced surgeons.

CASE REPORT

A middle-aged male patient presented to our centre in florid septic shock, approximately 24 hours after the onset of symptoms. He had initially visited a cardiology centre due to severe retrosternal pain and vomiting. After extensive cardiac workup, a CT scan revealed a lower

esophageal perforation with mediastinal air and left pleural effusion, consistent with Boerhaave's syndrome. The patient was referred immediately.

On arrival, the patient was in shock, on vasopressors, and showing signs of respiratory compromise. A traditional route would have been to proceed via a trans hiatal esophagectomy with cervical oesophagostomy and feeding jejunostomy. However, this approach would have left the mediastinal cavity inadequately debrided and the patient with a high-morbidity stoma, facing complex future reconstructions.

After internal deliberation and considering the lower third location of the rupture, we opted for a left thoracotomy through the 7th intercostal space. Anticipating the possibility of primary repair, we first raised an intercostal muscle flap-a vital step that must be executed prior to entering the pleural space, as retraction and exposure significantly compromises the viability and vascularity of the intercostal flap once the retractors are fitted in place.

Intraoperatively, copious turbid fluid, food debris, and necrotic material were evacuated from the pleural cavity. Meticulous decortication and irrigation were performed. The site of rupture was exposed along the lower third of the oesophagus. To accurately define the extent of the mucosal tear (which often exceeds the visible muscular rent), the esophageal muscle was incised longitudinally above and below the rent.[8] This allowed full visualization and assessment.

The mucosal edges were gently debrided and approximated using 4-0 Vicryl, with particular care to invert the mucosa and avoid "pouting," which would otherwise hinder healing. A second and third muscular layer were then closed sequentially. Intercostal muscle flap was rotated to reinforce the repair site. Surgical loops were used throughout to ensure precision at sub-millimetre level. Finally, nasogastric tube was positioned proximal to the repair and placed on continuous suction for five days to minimize stress on the suture line.

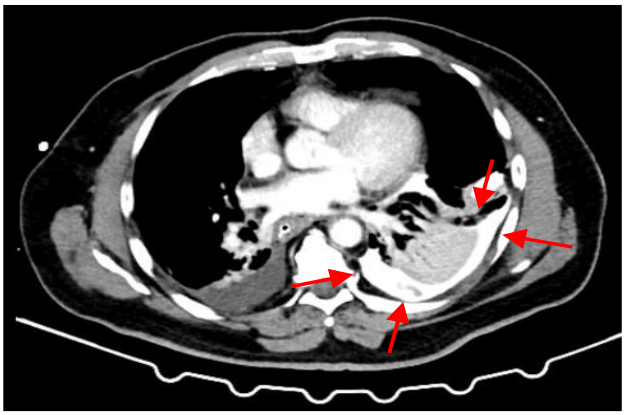

Figure 1: CT scan showing contrast extravasation in the mediastinum indicative of lower esophageal perforation (Red arrows).

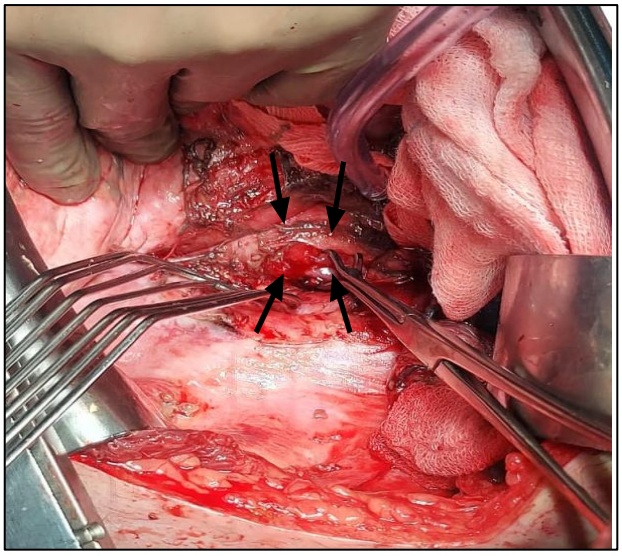

Figure 2: Intraoperative view demonstrating the full extent of the mucosal tear after longitudinal muscle incision (Black arrows).

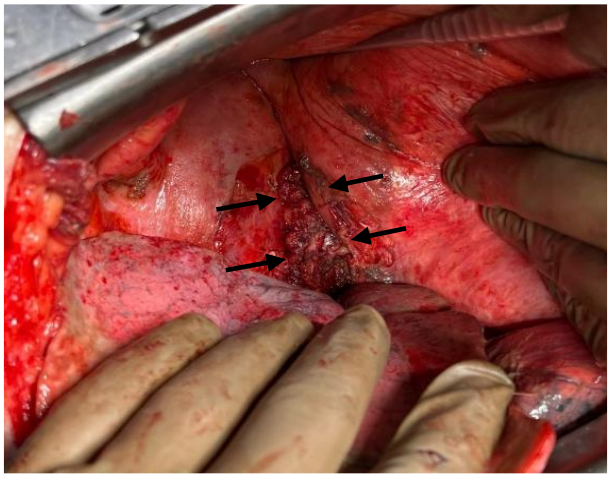

Figure 3: Repaired oesophagus following meticulous multi-layered closure under magnification (Black arrows).

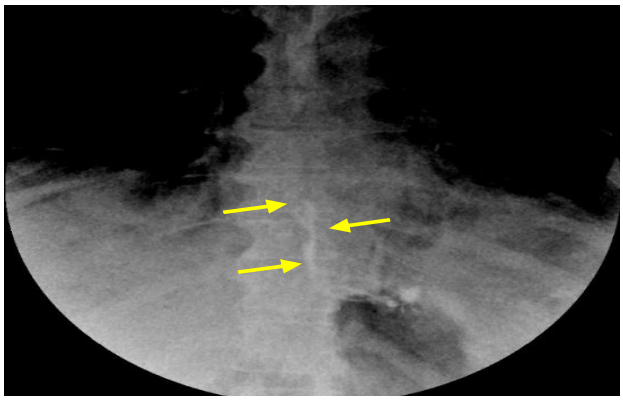

Figure 4: Postoperative barium swallow study showing no contrast leak across the repaired segment (yellow arrows).

Postoperative course

The patient responded well to intensive care and antibiotic support. He remained hemodynamically stable and showed no signs of leak. The nasogastric suction was continued until the fifth postoperative day. On day seven, a barium swallow showed no contrast leak. Oral feeds were resumed gradually. The feeding jejunostomy was removed at three weeks, and the patient was discharged in stable condition.

DISCUSSION

Boerhaave's syndrome remains one of the most lethal surgical emergencies, with reported mortality rates ranging from 30% to 50% even in diagnosed cases. When diagnosis is delayed beyond 24 hours, especially in the presence of sepsis, mortality can approach near 100% if definitive surgical intervention-such as thoracic debridement or esophageal exclusion-is not performed promptly. The rarity of the disease, coupled with its misleading initial presentation and lack of specialized thoracic facilities in many centres, often compounds this fatal delay. Timely recognition and referral to an equipped centre are thus critical to patient survival.

Management of Boerhaave's syndrome is complex, especially when the presentation is delayed. Traditionally, esophagectomy has been considered the standard of care in such scenarios. However, our case demonstrates that a thoughtful, patient-specific strategy can permit esophageal preservation.[11]

The location of the perforation significantly influences the surgical approach. Lower esophageal tears are best approached through the left thorax. In our case, this facilitated both adequate access for debridement and direct visualization of the tear.[12]

An essential surgical pearl is that the full mucosal extent of the perforation is usually larger than the external muscular defect. If this is not accounted for, the risk of missed mucosal rents and postoperative leaks increases substantially. We believe it is imperative to open the muscle layer longitudinally to fully reveal the tear and facilitate a multi-layered repair.[13]

A watertight, airtight closure is critical. We echo the surgical dictum that "if you can't ensure a leak-proof anastomosis, you shouldn't attempt one." Use of magnification is strongly advocated. Even a microscopic leak in the oesophagus can have catastrophic consequences.[14]

Equally vital is drainage hence the pleural cavity must be thoroughly irrigated and drained. In our case, we kept two inter-costal drains in the left pleural space and we irrigated the left thoracic cavity with suitable antibiotics twice every day. Additionally, continuous nasogastric aspiration placed proximal to the repair helped decompress the upper oesophagus and reduce the risk of anastomotic disruption.[10]

Another critical element is flap reinforcement. An intercostal muscle flap offers robust coverage and vascular support to the repair. However, it is essential to raise this flap prior to entering the thoracic cavity. Once thoracotomy is done and retractors are placed, harvesting the flap becomes exceedingly difficult.[7]

Ultimately, the success of surgical management hinges on thoughtful planning, technical precision, and an understanding that each case of Boerhaave's syndrome is unique. Our experience supports that primary repair, even in delayed presentations, is not only possible but preferable in carefully selected patients.

CONCLUSION

In cases of late-presenting Boerhaave's syndrome, a left thoracotomy provides direct access for complete decortication and facilitates a precise primary repair. Success depends on meticulous preoperative planning, including preparation of an intercostal muscle flap and the use of magnification to ensure a flawless multilayer closure. Given the complexity of these cases, involving thoracic surgical specialists is advisable. Timely thoracic access, thorough decortication, and meticulous closure at a well-equipped centre significantly improve outcomes. Further research is needed to refine treatment protocols for this challenging condition.

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