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Navigating Challenges In Primary Repair of Esophageal Perforation

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INTRODUCTION

Boerhaave's syndrome (BS) is an uncommon but potentially fatal condition, which was first described by Herman Boerhaave in 1729. It is characterized by spontaneous rupture of the esophagus, mostly due to abrupt rise in intraluminal pressure secondary to episodes of vomitting. In general, it's manifestation follows the Mackler's triad, which includes vomitting, lower thoracic pain and subcutaneous emphysema. BS requires early detection and multidisciplinary management because severe complications may develop if delayed. In this case, we present the case of a patient with boerhaave syndrome in hemodynamic shock, whom is treated in our center by a minimally invasive surgery.

CASE REPORT

This is a 39 years old male, active smoker with underlying esophagitis whom defaulted follow up. He presented with sudden epigastric pain radiating to the right chest, following by episodes of vomitting. Upon presentation, he presented with Pittsburg Severity Scoring (PSS) of 10 (severe). CT scan revealed a distal esophageal perforation with right hydropneumothorax, contrast extravasation within the right thoracic cavity and right lateral chest wall subcutaneous emphysema. He was resusicitated with fluids and inotropes, and triple antibiotics was commenced (Tazocin, Fluconazole and Vancomycin). Right chest tube was inserted and around 700ml of gastric content was drained out. In view of early presentation, improvement in score after initial resuscitation and confined leak in the thorax, decision was made for the surgery.

Intraoperative, patient was placed in left lateral position. One lung ventilation is achieved by usage of bronchial blocker, aimed to minimise damage to lung parenchymal. An insufflation in the pleural space at 10mmHg was well tolerated. There was abundant contamination over the right hemithorax and abundant washout was done. Pulmonary ligament was released. Oesophageal perforation was visualised at the right lower esophagus near the cardioesophageal junction, around 1.5cm in size. Primary repair was done. One drain was left close to the perforation site in order to allow for conversion into fistula if leak happens, and another drain in the pleural cavity. Finally, a feeding jejunostomy was done for enteral feeding, which bypass the perforation site. Ryles tube was placed in esophagus for decompression.

In the immediate postoperative period, the patient was managed in intensive care unit. He was able to extubated and started on feeding gradually in general surgical ward through feeding jejunostomy and well tolerated. Inpatient rehabilitation was done. Patient was nutritionally and physically optimised.

On post-operative day 20, CT assessment was done in view of high output from the drain, which revealed distal esophageal wall defect raises suspicion of wound dehiscence, with minimal pneumomediastinum and pneumothorax. Drain was seen in the cavity next to the site of perforation. Despite the collection, patient did not developed sepsis as the collection was successfully drained and walled off by the in situ drain. The perforation site was able to convert into a fistula, and thus avoiding sepsis and frank contamination of the thorax.

Subsequently, drain was able to shortened and removed successfully. Repeated CT reassessment revealed resolution of the collection and fistula. Patient was able to tolerate orally well and discharged home.

DISCUSSION

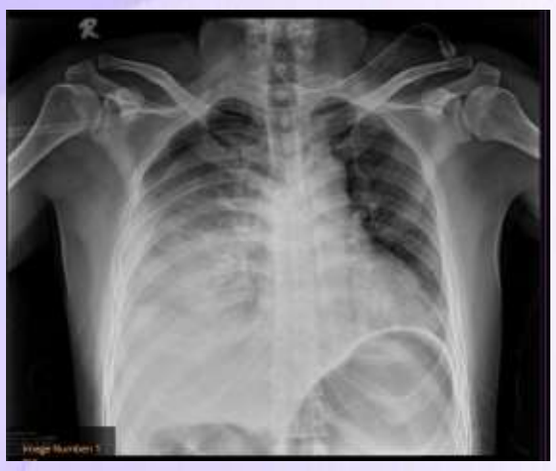
Boerhaave syndrome is a surgical emergency which can cause life threatening conditions such as medistinitis, pleuritis, sepsis and death. The aim of the surgery is to find and close the esophageal defect, adequately drain the mediastinum and pleural cavities and ensure a safe feeding route for the patient post operatively.

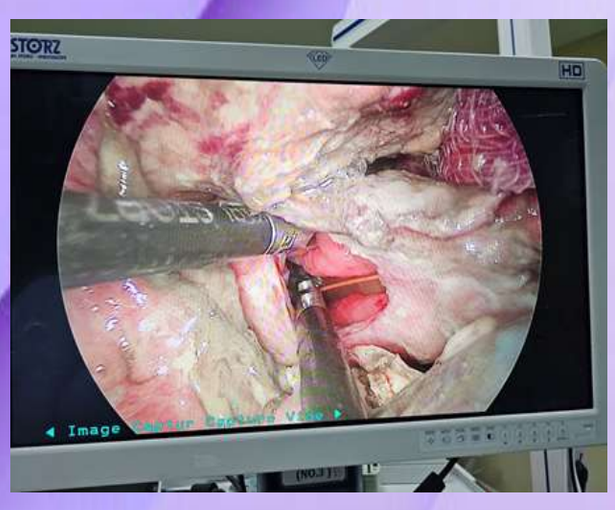
In this case, our patient presented with the PSS scoring of 10 (severe) and was resuscited well with fluids and started on triple antibiotics, which provide coverage of aerobes, anaerobes and antifungal. He is taken into operating theatre in less than 24h of hospital admission, and thoracoscopic pirmary esophageal repair was done. In view of high risk operation, leak was anticipated post-operative. Hence, drain was inserted at the site of perforation in order to convert into a fistula if leak happens. Feeding jejunostomy was performed in order to ensure patient's nourishment during the catabolic phase of sepsis and aids in the process of esophageal healing. Ryles tube was inserted for decompression purposes.

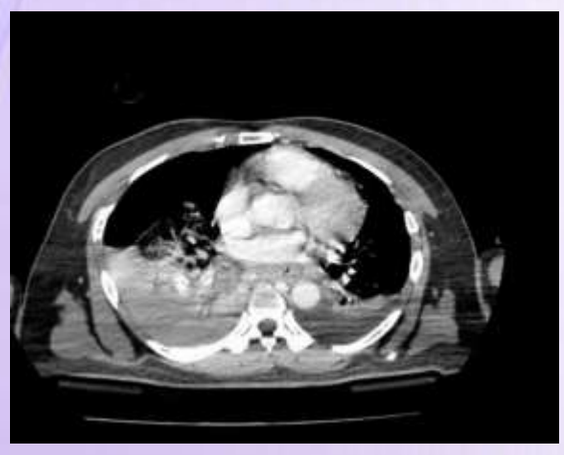
Table 1 Variables and calculation of the Pittsburgh PSS

Pittsburgh PSS variables	Score
Age >75 years	1
Tachycardia >100 BPM	1
Leukocytosis >10,000 WBC/mL	1
Pleural effusion (on CXR or CT)	1
Fever >8.5 °C	2
Noncontained leak (CT or barium swallow)	2
Respiratory compromise (resp. rate >30 or mechanical ventilation)	2
Time to diagnosis >24 hours	2
Cancer	3
Hypotension	3
Total potential score	18

PSS, perforation severity score; BPM, beats per minute; WBC, white blood cells; CXR, chest radiograph; CT, computed tomogram.







CONCLUSION

Due to its rarity and severity, early diagnosis of Boerhaave syndrome is the first key to a better prognosis. Immediate surgical treatment with primary repair of the rupture, drainage of the mediastinum and pleural cavities, and the creation of a feeding route constitute a safe and effective approach to managing esophageal perforation.

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