

**CASE REPORT****Diagnostic and Therapeutic challenges in Boerhaave's Syndrome****<sup>1</sup>Karanbir Singh, <sup>2</sup>Navdeep Singh Saini, <sup>3</sup>Allen Joseph***<sup>1</sup>Senior Resident, AIMS Mohali, Punjab, India**<sup>2</sup>Professor and Medical Superintendent, General Surgery, AIMS Mohali, Punjab, India**<sup>3</sup>Professor and Medical Superintendent, Cardiothoracic Surgery, CMC Ludhiana, Punjab, India***Corresponding author: Karanbir Singh**

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**Abstract**

Spontaneous perforation of the oesophagus, Boerhaave's Syndrome, can occur as a result of sudden vomiting induced increase in intrabdominal pressure. Early diagnosis remains a challenge in these patients. We present the case of a 34 years old young man with delayed presentation involving bilateral pleural effusion as the presenting feature. Based on the timing of presentation, management with T-tube drainage has been discussed.

**Introduction**

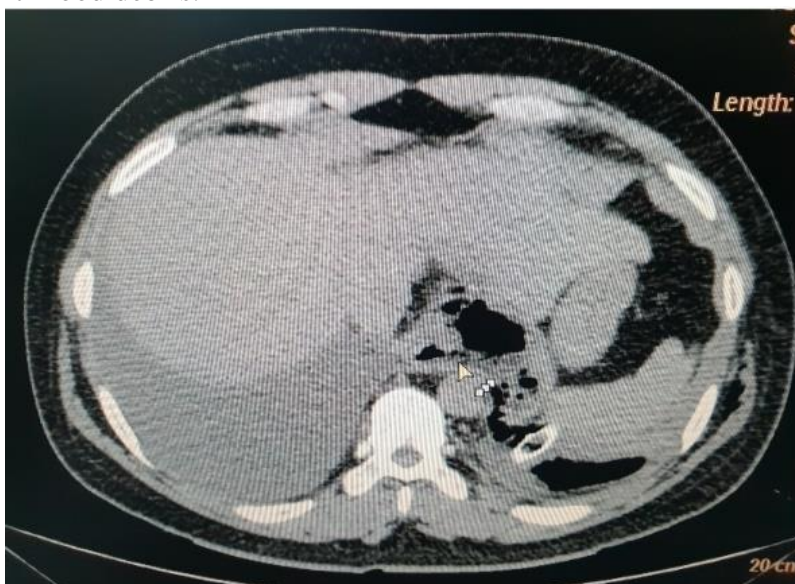
Spontaneous oesophageal perforation (Boerhaave's syndrome) is rare and carries a high mortality rate even in specialist centres.<sup>1-6</sup> If treatment is started within 24 hours of onset of symptoms, primary closure of the rupture is recommended and offers the best survival rate.<sup>7</sup> The mortality rate rises up to up to 60% if there is delay in diagnosis and initiation of optimal treatment, but this rate decreases to 10%–25% if treatment is carried out within 24 hours of perforation.<sup>8</sup> The major reason for this increase is the rapid development of necrotizing mediastinitis combined with the inability to close the perforation effectively and prevent leakage. The T-tube drainage method is technically easier and safe. It also avoids the post-operative complications associated with primary suturing or esophagectomy with primary or secondary reconstruction.<sup>9</sup>

**Case report**

34 years old gentleman presented to the emergency with breathing difficulty for 4 days. The symptoms were preceded by one bout of vomiting with no history of blood in the vomitus. Patient was not a diabetic or hypertensive. He had no recent history of alcohol consumption and no history of fever.

The patient was admitted under General Medicine with the provisional diagnosis of Bronchopneumonia, ?Pulmonary embolism with Type 1 Respiratory Failure. The patient was kept in Intensive care and was allowed soft diet orally. USG chest and erect X-Ray chest done at the time of admission were suggestive of bilateral pleural effusion (left >> right). Left intercostal drain was introduced on the same day with consequent improvement in symptoms and oxygen saturation. Right intercostal drain was introduced on the subsequent day. Due to sudden worsening of symptoms on third hospital day, the patient underwent HRCT Chest which showed Significant pneumomediastinum, Air filled left para-esophageal collection at the level of gastro-esophageal junction with slit like communication with the esophagus and bilateral pleural effusion with bilateral atelectasis. (Figure 1). Upper GI endoscopy was done to confirm the diagnosis and a 1.3 cm linear rent was seen in the distal esophagus near the

gastro-esophageal junction. The rent was seen opening into the pleural cavity which was seen contaminated with food debris.



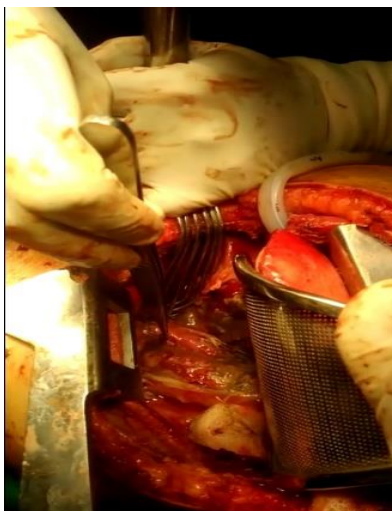
**Figure 1 - Air filled left para-esophageal collection at the level of gastro-esophageal junction with slit like communication with the esophagus and bilateral pleural effusion with bilateral atelectasis.**

Surgery was planned with the consent of the patient and family. Left posterolateral thoracotomy was done through the 8th intercostal space, raising a pedicled intercostal muscle flap. Large amount of foul-smelling pus with undigested food particles was found in the left pleural cavity along with areas of necrosis with extension into the contralateral cavity. (Figure 2).



**Figure 2 - Areas of necrosis in left pleural cavity with extension into the contralateral cavity**

There was a 2 cm rent on the left side of lower 1/3 of esophagus approximately 3 cm proximal to gastro esophageal junction with prolapsing mucosa. (Figure 3).



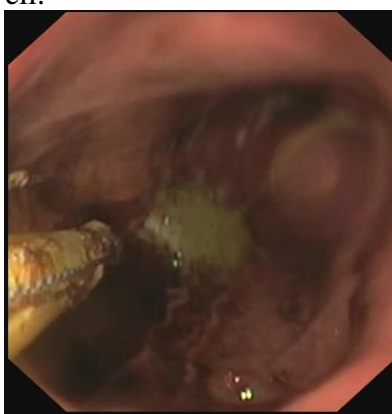
**Figure 3- 2 cm rent on the left side of lower 1/3 of esophagus approximately 3 cm proximal to gastro esophageal junction with prolapsing mucosa**

After mediastinal irrigation, a latex rubber T-tube was inserted into the site of perforation to create a controlled fistula, and the esophageal wall around the T-tube was closed by interrupted 3-0 sutures. The T-tube was brought out through the lateral chest wall and kept on suction. Thorough wash of the pleural cavity was done. A pedicled intercostal muscle flap was over sewn with single layer sutures. Bilateral intercostal drainage was kept in situ. Lung expansion was satisfactory. Thorax was closed in layers. Abdomen opened in the midline and gastrostomy and feeding jejunostomy were done for drainage and feeding purposes respectively.

FJ feeds were started on 5<sup>th</sup> post-operative day. Feeding through gastrostomy was started on Post-operative day 17. Patient was discharged on 30<sup>th</sup> post-operative day with in-situ T-tube, gastrostomy and feeding jejunostomy.

The patient presented with right posterior pyothorax on post-operative day 45 and intercostal drainage was done.

On 85<sup>th</sup> post-operative day, the patient underwent endoscopic removal of T-tube.(Figure 4). He was started on oral feeds on the same day. At present the patient is symptom free, on normal diet and is recovering well.



**Figure 4 - Endoscopic removal of T-tube**

### Discussion

Esophageal perforation is either diagnostic or due to therapeutic instrumentation of the esophagus in the majority of patients (76%).<sup>10,11</sup>

Spontaneous perforation (Boerhaave's syndrome) accounts for 15%, foreign bodies 14%, and trauma 10% of cases.<sup>12</sup>Boerhaave's syndrome is characterized by esophageal rupture due to severe vomiting against a closed glottis, which leads to mediastinitis, and is invariably fatal if left untreated.<sup>13</sup>

In the majority of cases, however, surgical repair is possible and if undertaken early (within 24 h of symptom onset) can be associated with excellent survival (100% in our series). For patients referred later than 24 h, morbidity and mortality is significant.

Unusual presentations should be kept in mind while evaluating patients with a hydropneumothorax even on the right side.

Conservative treatment should be reserved for a highly selected group of patients with minimal mediastinal or thoracic contamination, and must include large-bore drainage of the thoracic cavity. Patients should be closely monitored and undergo surgical intervention at the earliest sign of clinical deterioration.

Cameron proposed three criteria for nonoperative management: firstly perforation must be contained in the mediastinum and should be drained back into the esophagus, secondly there are mild symptoms, and thirdly there should be minimal evidence of clinical sepsis.<sup>14</sup>All patients presenting with Boerhaave's syndrome should be considered for early surgical intervention, ideally within 24 h of clinical presentation.<sup>15,16</sup>

Primary repair can be done regardless of time interval between perforation and treatment if esophageal tissue is repairable and wound edges are viable after necrosectomy, there is no distal obstruction, and the size of defect is not greater than one-third of the circumference of the esophagus.<sup>17,18</sup>

Repair over a T-tube may be useful for late cases to allow a controlled esophago-pleuro-cutaneous fistula to develop.<sup>19</sup>A gastrostomy provides excellent decompression of the stomach and obviates the requirement for long-term nasogastric tube placement.<sup>20</sup> A feeding jejunostomy allows early enteral nutrition, and avoids the potential complications of parenteral nutrition.

Postoperative management consists of broad-spectrum antibiotics, nil orally and enteral nutrition via the jejunostomy tube. The gastrostomy is left on free drainage to minimize reflux of gastric contents into the esophagus. A water-soluble contrast swallow is performed after 5–7 days to exclude a leak prior to recommencing oral intake.

Postoperatively, all patients are monitored closely for signs of sepsis, and undergo ultrasonography and/or CT to guide drainage of any new or persistent collections.

## Conclusion

The best outcome in Boerhaave's syndrome is associated with early diagnosis and surgical repair in a specialist centre. There is a high mortality rate associated with delay in diagnosis and therapeutic management. In patients referred later, conservative management appears to have a very limited role, and this group should also undergo surgical drainage and attempted repair as early as possible. Postoperatively, thoracic sepsis and persistent oesophageal leaks require aggressive multimodal treatment, including percutaneous drainage and re-operation, if necessary.

This case demonstrated that delayed thoracic esophageal perforation can be managed with a safe, simple and effective method of T-tube drainage. Though the patients receiving this method of treatment have longer hospital stay and morbidity, but the mortality approximates that seen with repair of acute perforation.

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