CASE REPORT
Paraesophageal mediastinal drainage with diversion for delayed presentation of esophageal perforation

V K THAPAR, R Y PRABHU, A SINGH, C DESAI, K GEORGE, A N SUPE
Department of Surgery, Seth G S Medical College and K E M Hospital, Mumbai 400 012

Esophageal perforation is a serious condition; a delay of more than 48 hours in initiation of treatment leads to increased morbidity and mortality. Management of such patients is a surgical dilemma. We successfully managed 4 patients (2-iatrogenic, 1-tuberculous, 1-Boerhaave's syndrome) with delayed presentation of esophageal perforation by esophageal exclusion and paraesophageal mediastinal drainage, achieving good control of mediastinal sepsis, healing of perforation and at the same time avoiding thoracotomy and subsequent second surgery. [Indian J Gastroenterol 2000;19:133-134]

Key words: Mediastinal sepsis

Esophageal perforations are associated with high morbidity and mortality rates.1 Delay in the treatment for more than 48 hours has been associated with higher morbidity and mortality.2,3 Irrespective of treatment modality. We present 4 cases with delayed presentation of esophageal perforation treated successfully by diversion and paraesophageal mediastinal drainage.

Case Reports

Between November 1997 and June 1999, four patients were referred with diagnosis of esophageal perforation, which had occurred more than 48 hours earlier (Table). All patients had clinical signs of mediastinal sepsis with elevated WBC count (16,000-18,000/mL). Esophagography with iodic contrast medium in one case 48 hours after perforation (Case 3) and thin diluted barium sulphate (Microbar; Eskay Chemicals, Mumbai) in 3 cases after 72 hours showed evidence of free leak into the mediastinum in all the patients.

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Age/Sex</th>
<th>Etiology</th>
<th>Delay (days)</th>
<th>Level of perforation</th>
<th>CECT findings</th>
<th>Paraesophageal drainage modality</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>54/M</td>
<td>Intronic (diagnostic endoscopy)</td>
<td>7</td>
<td>Upper I/3</td>
<td>Superior and anterior mediastinal abscess</td>
<td>Cervical approach</td>
</tr>
<tr>
<td>2</td>
<td>32/M</td>
<td>TB mediastinal abscess with secondary rupture</td>
<td>3</td>
<td>Middle I/3</td>
<td>Caseating mediastinal nodes</td>
<td>Cervical approach</td>
</tr>
<tr>
<td>3</td>
<td>50/M</td>
<td>Boerhaave's syndrome</td>
<td>2</td>
<td>Lower I/3</td>
<td>Bilateral hydro pneumothorax with oral contrast leak</td>
<td>Transhiatal approach with bilateral intercostal drains</td>
</tr>
<tr>
<td>4</td>
<td>55/F</td>
<td>Chicken bone endoscopic extraction</td>
<td>3</td>
<td>Middle I/3</td>
<td>Mediastinal abscess</td>
<td>Cervical and transhiatal mediastinal drainage with lavage</td>
</tr>
</tbody>
</table>

CECT: Contrast-enhanced CT scan

Copyright © 2000 by Indian Society of Gastroenterology

After initial stabilization, all patients were subjected to esophageal exclusion with paraesophageal mediastinal drainage. A cervical loop esophagostomy was done via a left cervical incision along the anterior border of the sternomastoid muscle. Through the same incision, a finger was introduced in the superior mediastinum staying close to the esophagus in Cases 1, 2 and 4. The mediastinal abscess was entered blindly, drained and a 12F drain was left in the abscess cavity. A midline abdominal incision was then made, the esophageal hiatus was identified and a drain similarly introduced into the mediastinum in Cases 3 and 4.

Intraoperative gravity lavage was given in Case 4. A decompressive gastrostomy using a 34F Malecot's catheter and a feeding jejunostomy were done prior to abdominal closure. The gastrostomy was not ligated in any patient. Suction was applied to the cervical drain. The distal end of the esophagostomy was packed with Vaseline roller gauze (other end of gauze secured with a clip to prevent slippage) so as to prevent saliva contamination of the mediastinum.

Postoperatively, all patients were started on parenteral antibiotics (a third-generation cephalosporin, an aminoglycoside and metronidazole initially, and later based on culture and antibiotic sensitivity reports). Enteral nutrition through the jejunostomy tube was instituted by the third postoperative day. Repeat contrast-enhanced CT chest showed resolution of the mediastinal abscess (Fig) by median day 8 (days 5-10) and the mediastinal drains were subsequently removed.

Esophagography on the 11th postoperative day showed no leak of contrast in the mediastinum in any patient. Subsequently, oral feeds were instituted with an occasion dressing applied over the cervical esophagostomy. Leak through the esophagostomy decreased gradually with spontaneous closure of the esophagostomy site by days 17 to 24 postoperative. The patients were discharged within four to six weeks after admission, after removal of the jejunostomy and gastrostomy tubes. The patients were followed up for a mean period of 4 months (3-12 months) and had no complications.

Discussion

Delay in diagnosis and institution of treatment in patients with esophageal perforation is associated with higher mortality and morbidity.2,3 This is attributed...
to the presence of widespread mediastinitis, severe tissue necrosis and edema and sepsis. Primary repair/reinforced closure is technically difficult because of necrosis and edema of the esophageal layers. Attempting esophageal resection in such a setting is associated with significant morbidity and mortality and is reserved for those with malignant obstruction or massive esophageal necrosis. Urschel and others have advocated diversion and exclusion by constructing a loop/end-cervical esophagostomy and suture ligation/stapling/division of the gastroesophageal junction. This however commits the patient to a second major operation and creates a stagnant pool of saliva in the distal esophagus that can act as a source of mediastinal sepsis.

Our method included esophageal exclusion by constructing a cervical loop esophagostomy with distal packing and decompressive gastrostomy, so as to prevent saliva and gastric contents being siphoned off into the chest because of the negative intrathoracic pressure. This avoids the need for a second operative procedure and at the same time avoids a stagnant pool in the distal esophagus.

Inadequately drained mediastinal sepsis is a major cause of morbidity and mortality in patients with delayed presentation. Doing a thoracotomy in such patients compounds the surgical stress and decreases respiratory compliance. We approach the mediastinal abscess according to its location — via a cervical or transhiatal route or both. It is presumed that removing the cause of sepsis in such patients would improve results and prevent patients from going into multi-organ dysfunction syndrome.

Nutrition in these patients merits the same attention as control of sepsis and is taken care of by feeding through a feeding jejunostomy. Since the esophagus is completely rested and saliva and gastric contents diverted, the perforation heals within 7-14 days and oral feeding can be commenced. The cervical esophagostomy closes on its own without formal surgery.

The hallmark of our approach is achieving good control of mediastinal sepsis, maintaining enteral nutrition and ensuring healing of perforation, at the same time avoiding emergency thoracotomy or second surgery.

References

Correspondence to: Dr Supe, Professor
Received October 13, 1999. Received in final revised form January 6, 2000. Accepted January 15, 2000

134 Indian Journal of Gastroenterology 2000 Vol 19 July - September