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Successful Management of Delayed Esophageal Rupture with T-Tube Drainage Using Video-Assisted Thoracoscopic Surgery

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Spontaneous perforation of the esophagus after forceful vomiting is known as Boerhaave syndrome, a rare and life-threatening condition associated with a high rate of mortality. The management of Boerhaave syndrome is challenging, especially when diagnosed late. Herein, we report the successful management of late-diagnosed Boerhaave syndrome with T-tube drainage in a 55-year-old man. The patient was transferred to our institution 8 days after the onset of symptoms, successfully managed by placing a T-tube, and was discharged on postoperative day 46 without complications.

Key words: 1. Esophagus, perforation
2. T-tube
3. Boerhaave syndrome
4. Delayed diagnosis

Case report

A 55-year-old man with hypertension was admitted to a local hospital with a 2-day history of persistent nausea, myalgia, and epigastric pain following vomiting after drinking alcohol. He had been receiving anticoagulant medication due to thrombosis of the portal vein, superior mesenteric vein, and splenic vein and had a history of admission 3 months prior due to acute pancreatitis. A chest computed tomographic (CT) scan performed 5 days later revealed a suspicious wall defect on the left side of the lower esophagus with an adjacent extraluminal air bubble and a large left pleural effusion.

The patient was transferred to Severance Hospital 8 days after the onset of symptoms. Upon arrival, his blood pressure was 148/81 mm Hg and his heart rate was 137 bpm, and he had a fever of 38°C. Laboratory tests revealed a low hemoglobin level of 9.6 g/dL, a leukocyte count of 18,250/μL, an elevated prothrombin time of 19.7 seconds, and an elevated international normalized ratio of 1.72. Chest radiography revealed total opacification of the left chest (Fig. 1). He underwent an emergency operation under the suspicion of esophageal rupture.

On the operating table, upper gastrointestinal endoscopy revealed an ulcerative fistula lesion measuring approximately 2.5 cm at the gastroesophageal junction. The left side was approached by video-assisted thoracoscopic surgery (VATS). The pleural cavity was filled with food material and a foul-smelling fluid. After decontamination with saline irrigation, a 2.5-cm transmural perforation of the esophagus was identified 2 cm above the diaphragm (Fig. 2A). After the

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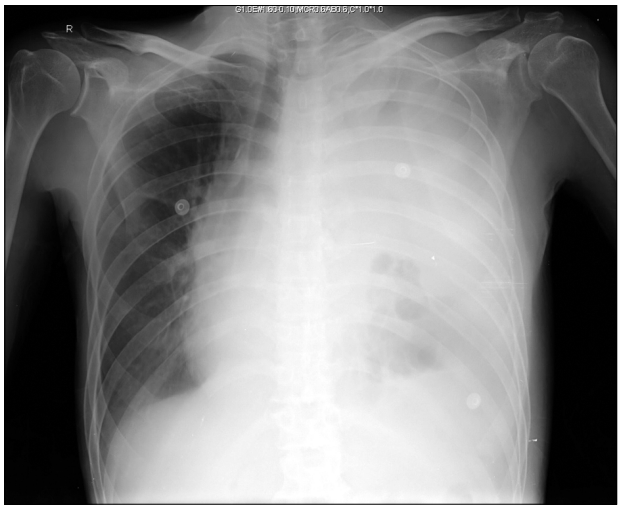

Fig. 1. Chest radiography on admission. Total opacification of the left chest.

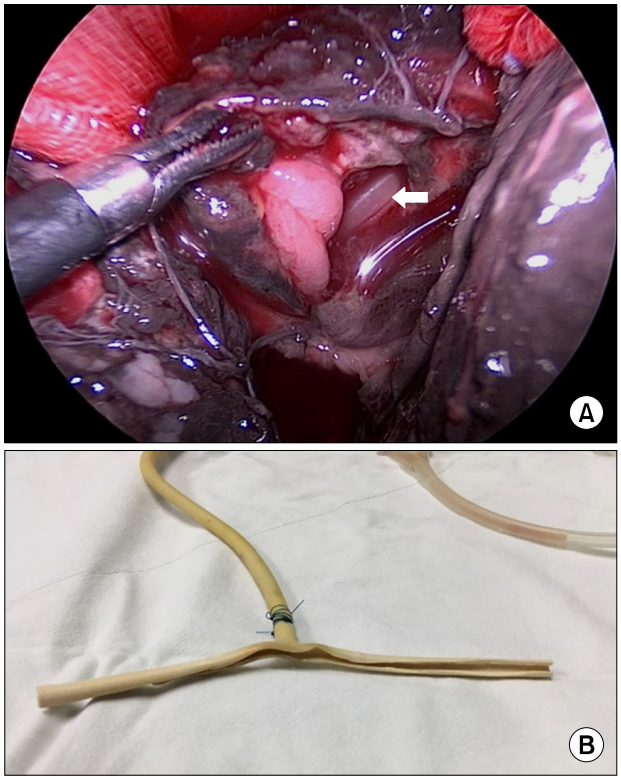

Fig. 2. (A) Ruptured esophagus. Levin tube placed inside the ruptured esophagus (white arrow). (B) T-tube, removed from the patient.

defect was debrided, a rubber T-tube (16 Fr), generally used for biliary tree disease, was positioned into the rupture and the esophageal wall was closed with polypropylene sutures (Prolene; Ethicon, Somerville, NJ, USA). The T-tube was then brought out through the lateral chest wall and connected to a drain. Two drainage tubes were placed in the left pleural cavity and mediastinum. In addition, a Jackson-Pratt drain was placed next to the lower esophagus for irrigation. A feeding jejunostomy was also performed through a mini-laparotomy. After surgery, the patient was transferred from the operating room to the intensive care unit. The total operation time was 220 minutes, and the total anesthesia time was 290 minutes.

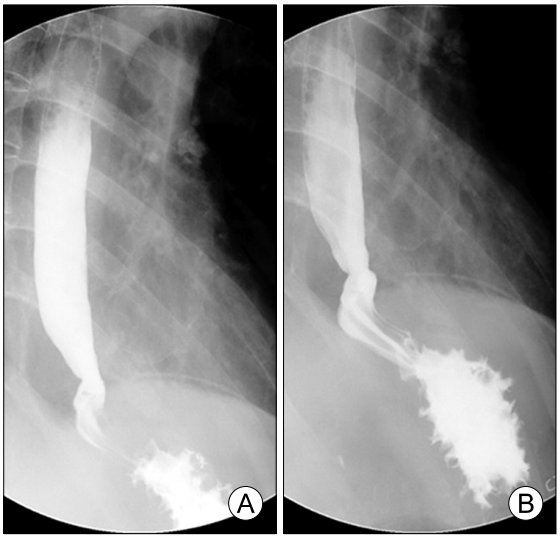

Fig. 3. (A, B) Esophagogram on postoperative day 94 showing no leakage.

Postoperatively, the patient received broad-spectrum antimicrobials and supportive care. On postoperative day (POD) 1, the patient was weaned from a mechanical ventilator and transferred to the general ward on POD 8. He started feeding through a feeding jenunostomy on POD 2. He was discharged on POD 41 with a T-tube and a Jackson-Pratt drainage in good general condition. After confirming the absence of discharge through the Jackson-Pratt drain on POD 68, the T-tube was gradually withdrawn every week and finally removed on POD 98 in an outpatient clinic (Fig. 2B). An esophagogram on POD 94 showed no leakage but a slightly stenotic appearance (Fig. 3). On POD 94, he restarted an oral diet, and the feeding jejunostomy was removed on POD 129 at an outpatient clinic.

Discussion

Prompt decision-making in the management of Boerhaave syndrome is crucial because it is a life-threatening condition characterized by the disruption of the distal esophagus due to a barotrauma, resulting in the contamination of the mediastinum and pleural cavity with gastric contents. Left untreated, the mortality rate exceeds 90%, and has been reported to be as high as 40% even after appropriate surgical intervention [1,2].

Patients with Boerhaave syndrome complain of a tearing substernal or epigastric pain, which may radiate to the left chest, shoulder, or back. However, some patients present with atypical symptoms such as shock or respiratory distress, and physical exam findings are often non-specific [3]. Unfortunately, the condition is often misdiagnosed as a perforated peptic ulcer or pancreatitis, which can lead to a delay in receiving appropriate treatment [4]. Further evaluation with a chest X-ray, contrast-enhanced CT scan, or gastrointestinal endoscopy should be performed in any patient suspected to have Boerhaave syndrome.

It is clear that primary surgical repair within 24 hours of spontaneous esophageal perforation reduces mortality. Some authors have reported that good outcomes can be obtained with surgical repair, even after 24 hours [5]. However, delayed management of Boerhaave syndrome is clearly associated with an increased risk of mortality.

Sulpice et al. [6] compared T-tube repair and primary repair for the management of Boerhaave syndrome and found no difference between the 2 treatment strategies, even though the time from symptom onset to surgery was longer for T-tube repair. In our case, surgical management was performed 8 days after symptom onset and the mucosa appeared too friable to hold sutures. For that reason, we inserted a T-tube and closed the esophagus wall around it for the purpose of controlling salivary drainage, with the hope that the patient could be managed successfully.

In addition to surgical drainage and debridement, adequate postoperative nutritional support is important for the management of Boerhaave syndrome. In this case, placement of a feeding jejunostomy was essential to provide nutritional support.

Previously, open thoracotomy was considered the only option for the surgical management of Boerhaave syndrome. However, recent advances and experiences in VATS has led to VATS being used to treat Boerhaave syndrome. Specifically, Haveman et al. [2] showed that VATS can be used as the first choice for Boerhaave syndrome. Indeed, VATS is a safe procedure associated with a lower rate of complications and similar results in comparison with open surgery. In the present case, we performed VATS to minimize additional surgical trauma for an already critically ill patient.

In conclusion, by inserting a T-tube into the ruptured esophagus, we successfully managed a late-diagnosed case of Boerhaave syndrome.

Conflict of interest

No potential conflict of interest relevant to this article was reported.

References

1. Duehring GL. *Boerhaave syndrome*. Radiol Technol 2000; 72:51-5.
2. Haveman JW, Nieuwenhuijs VB, Kobold JP, van Dam GM, Plukker JT, Hofker HS. *Adequate debridement and drainage of the mediastinum using open thoracotomy or video-assisted thoracoscopic surgery for Boerhaave's syndrome*. Surg Endosc 2011;25:2492-7.
3. Van der Weg G, Wikkeling M, van Leeuwen M, Ter Avest E. *A rare case of oesophageal rupture: Boerhaave's syndrome*. Int J Emerg Med 2014;7:27.
4. Connelly CL, Lamb PJ, Paterson-Brown S. *Outcomes following Boerhaave's syndrome*. Ann R Coll Surg Engl 2013; 95:557-60.
5. Kim KD, Chung KY, Kim CS, Park HG. *Delayed primary repair of esophageal rupture*. Korean J Thorac Cardiovasc Surg 1998;31:46-51.
6. Sulpice L, Dileon S, Rayar M, et al. *Conservative surgical management of Boerhaave's syndrome: experience of two tertiary referral centers*. Int J Surg 2013;11:64-7.