Left thoracoscopic repair of iatrogenic esophageal rupture: a case report of an achalasia patient

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Abstract

Iatrogenic esophageal ruptures occur rarely, but they can be life threatening and have severe complications. They can lead to the development of sepsis and have high rates of morbidity and mortality. The most common cause of iatrogenic esophageal perforation is curative treatment endoscopy. This case report focuses on the case of a 62-year-old female patient presenting with acute chest pain after pneumatic dilation for achalasia, which was found to be a thoracic esophageal rupture.

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Introduction

Iatrogenic trauma of the esophagus is a rare condition, and its prognosis is associated with early diagnosis, the way of treatment, contamination or not, and co-morbid conditions.[1] With regard to thoracic esophageal rupture, the first-line treatment for patients who remain hemodynamically stable is the administration of antibiotics, total parenteral nutrition, no oral intake, PPI, and CT-guided drainage.[1] Endoscopic therapy, like clips and stents, is an acceptable non-operative management option, while in cases of quick clinical deterioration, surgery, like primary repair/diversion/drainage only or esophagectomy, is the treatment of choice.[2]

Case Report

A 62-year-old female with mild comorbidities (controlled hypertension; ASA II) presented with an esophageal perforation that occurred during endoscopic pneumatic dilation, accompanied by acute left thoracic pain. An abdominal CT with oral Gastrografin® and intravenous contrast fluid confirmed a left-sided rupture of the lower part of the thoracic esophagus (Figure 1), grade II, based on the American Association for the Surgery of Trauma (AAST) classification. The patient immediately underwent endoscopic self-expandable metallic partially covered stent placement while she was monitored in the ward. Due to clinical deterioration within the first hours, the patient was led to the operating theater for left thoracoscopic repair of the esophageal rupture.

The patient was placed in the right lateral decubitus position at a 45° angle and taped in place after table flexion. An axillary roll was placed under the chest, while the upper arm and shoulder were abducted as far above the head as possible, approximately 100° (Figure 2). Four ports were inserted (Figure 3), and primary repair of esophageal rupture was performed with a pericardial fat patch above as a buttressing flap. The operation lasted 90 minutes, while the estimated blood loss was minimal.

The postoperative length of stay was nine days, with no need for ICU. On postoperative day 5, an upper gastrointestinal (GI) series showed no leakage or outflow obstruction (Figure 4). On the same day, the patient was started on clear fluids. Surgical complications, according to the Clavien-Dindo classification, did not occur. In the fourth week after surgery, the stent was removed due to migration into the stomach.

The patient maintained good health throughout the 18-month follow-up period and continues to eat normally.

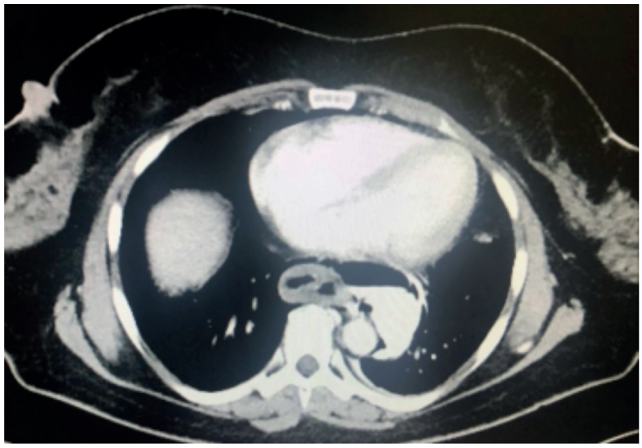

Figure 1. Axial contrast-enhanced CT scan of the abdomen (IV and oral Gastrografin) showing extraluminal contrast and free air in the mediastinum, consistent with esophageal rupture following dilation.

Figure 3. Four-port technique. Optical trocar, two working trocars, and a trocar for the thoracoscopic Allison lung retractor.

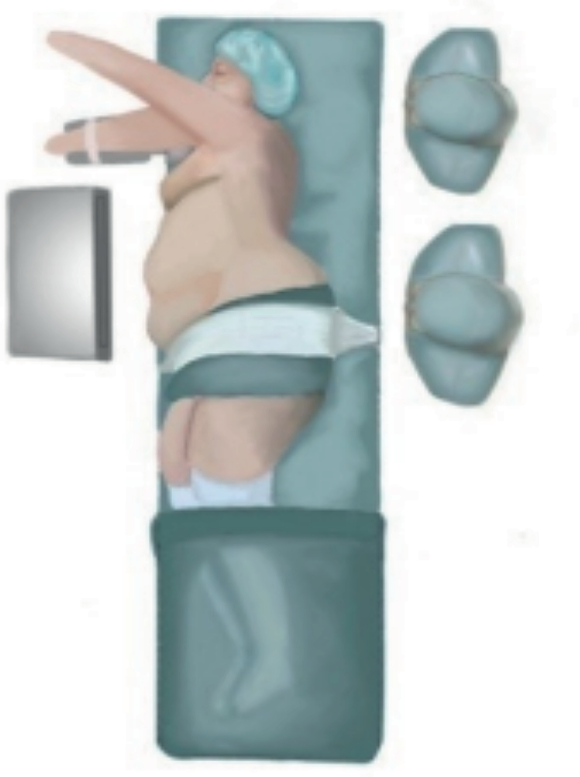

Figure 2. Set up of the operating room. Leader surgeon and assistant on the left side of the surgical bed (original illustration by Evaggelia Papadopoulou, independent artist).

Figure 4. Upper gastrointestinal series on postoperative day 5 showed no leakage and a migration of the stent in the stomach.

Discussion

Iatrogenic esophageal perforations occur infrequently, but their most dangerous complications are mediastinitis and systemic sepsis, which are related to high rates of morbidity and mortality.[3] Specialists can manage non-operatively and endoscopically the patients who have mild symptoms and minimal evidence of clinical sepsis, but when deterioration occurs, operative therapy is the treatment of choice.[4] Surgeons used to choose the open technique to repair a rupture of the thoracic part of the esophagus, performing right or left posterolateral thoracotomy. Nowadays, minimally invasive surgery, like robotic and thoracoscopic approaches, is becoming more and more prominent because of the better outcomes in patients' postoperative course. Perforations in the lower part of the thoracic esophagus more

commonly occur on the left side, thus making left thoracoscopic repair the preferred method.[4]

Primary repair of esophageal rupture is considered the gold standard therapy, but several important principles should be considered.[5] Surgeons must ensure that the tissue surrounding the perforation remains healthy; otherwise, the necrotic part needs to be excised prior to repair. Furthermore, the anastomosis should be tension-free, and the mobilization of the esophagus should be adequately addressed, with minimal manipulation.[4] In cases of delayed repair, usually more than 8 hours from injury, surgeons may use buttressing flaps like latissimus dorsi, serratus anterior, intercostal muscle, pericardium, rhomboid, diaphragm, or pleura as an extra step against the anastomotic leak.[2] Drainage tubes are always placed to treat thoracic contamination, while jejunostomy does not need to be performed.[5]

Other surgical treatments are also mentioned, such as drainage tubes only, for patients who are not suitable for major surgery. Esophagectomy is an option in cases of non-feasible primary repair and/or delayed treatment. T-tube diversion has also been described for small perforations of the lower thoracic esophagus.[5]

Conclusions

In conclusion, iatrogenic thoracic esophageal rupture constitutes a surgical emergency. The thoracoscopic approach yields improved outcomes, characterized by reduced operative time and expedited patient recovery. Furthermore, it may contribute to a decrease in mortality rates among patients.

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