CASE REPORT

Gastric perforation: An unusual complication after esophageal intubation

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ABSTRACT

Gastric perforation secondary to accidental esophageal intubation is a very rare mortal complication with only a few cases reported in the literature. In the management of this fatal complication, the early diagnosis and rapid surgical intervention are critical. In this case report, we present our experience with an unusual case, who required intubation in the intensive care unit due to acute hypoxemia and subsequently developed gastric perforation.

Keywords: Complication; esophageal intubation; gastric perforation.

INTRODUCTION

Peptic ulcer disease is the most common cause of gastric perforations; however, they can also be caused by malignancy, trauma, interventional procedures, or foreign bodies.[1] Endoscopies of the upper gastrointestinal system are the most common cause of iatrogenic perforations. Gastric perforation can occur as a result of excessive insufflation of the stomach, which can happen during cardiopulmonary resuscitation or upper endoscopy and is most usually encountered on the lesser curvature.[2] Delayed diagnosis and treatment of gastric perforation can lead to peritonitis, sepsis, and death.

Laryngeal injury, vocal cord paralysis, esophageal perforation, tracheoesophageal fistula, and tracheoarterial fistula are all possible complications of oral endotracheal intubation.[3] There are only a few case reports of gastric perforation as a result of intubation in the literature. We presented a patient who had gastric perforation after receiving a nasogastric tube in the intensive care unit following an accidental esophageal intubation in this case report.

CASE REPORT

With a history of asthma and congestive heart failure, a 72-year-old female patient was admitted to the emergency department with dyspnea. At the time of admission, the abdominal examination was normal and there was no abdominal distension. The costophrenic sinuses were obscured on the chest radiograph, but there was no free air under the diaphragm. In the standing direct abdominal X-ray, no abnormal features were visible. The patient was admitted to the intensive care unit after her examinations and testing revealed that she had respiratory failure due to an asthma attack. Hypoxemia and hypotension developed in the 4th h of her follow-up in the intensive care unit, and intubation was decided. Abdominal distension was seen shortly after the anesthesiologist intubated the patient, and it was determined that accidental esophageal intubation had been performed. Intubation of the orotracheal tube was started right away. An anesthesiologist inserted a nasogastric tube to decompress abdominal distension after the patient showed signs of peritonitis in the following minutes. A general surgery consultation was needed due to the hemorrhagic fluid flowing

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Figure 1. Abdominal computed tomography scan shows massive pneumoperitoneum and nasogastric tube in the lumen of the stomach.

from the nasogastric tube. The general surgeon discovered excessive abdominal distension, peritonitis symptoms, and active hemorrhage from the nasogastric tube (150 cc/h). Intra-abdominal massive free air was detected in the abdominal computed tomography (CT) (Fig. 1). The decision was made to do an emergency laparotomy. During intraoperative investigation, a 2 cm diameter perforation focus was discovered on the anterior surface of the lesser curvature of the stomach (Fig. 2a). Active arterial bleeding was also present from the same focus. Under the direction of intraoperative upper gastrointestinal endoscopy, the perforation focus was mostly repaired with 2/0 silk sutures, and a Roseo-Graham omental patch was applied (Fig. 2b). It was observed endoscopically that the bleeding ceased. There was no mass or ulcer at the level of the perforation focus after aspiration of the coagulum in the gastric lumen. The surgical drain was positioned at the stomach's lesser curvature. After the methylene blue test on the 3rd post-operative day, the drain was removed. The patient was transferred to the ward after a 35-day follow-up in the intensive care unit. The patient was discharged without any acute complications during the follow-up. Informed consent was obtained from the patient for this study.

DISCUSSION

Esophageal intubation accounted for 6% of all closed anesthetic malpractice claims and 18% of adverse respiratory events in the United States.[4] The majority of these procedures result in death or brain injury. Fixation error, confirmation bias, and overconfidence, according to Stiegler and Tung, are three factors that cause accidental esophageal intubation.[5] According to Chen et al.,[6] a 4 cm diameter perforation occurred in the lesser curvature of the stomach after an accidental esophageal intubation was performed in a patient with deep neck infection due to limited neck motion, pharyngeal swelling, and prominent secretion, and confirmation could not be provided. To avoid this catastrophic complication, which can be fatal if not diagnosed immediately, the precise position of the endotracheal tube should be confirmed. Bilateral breath sounds, pulse oximetry, saturation measurement, and end-tidal CO_2 monitoring can all be used to determine whether the endotracheal intubation is in the correct position; however, videolaryngoscopy and fiberoptic bronchoscopy are more reliable. In addition to endotracheal intubation, accidental esophageal intubation and gastric perforation have been linked in the literature with translarengeal jet ventilation.[7]

The lesser curvature of the stomach is where gastric perforations most commonly occur. This could be due to the fact that this region of the stomach is less elastic, which has fewer mucosal folds, and the hepatogastric ligament is fixed.[8] Hahn et al.[9] reported that the stomach of a healthy adult individual can tolerate pressure up to 120–150 mmHg before its rup-

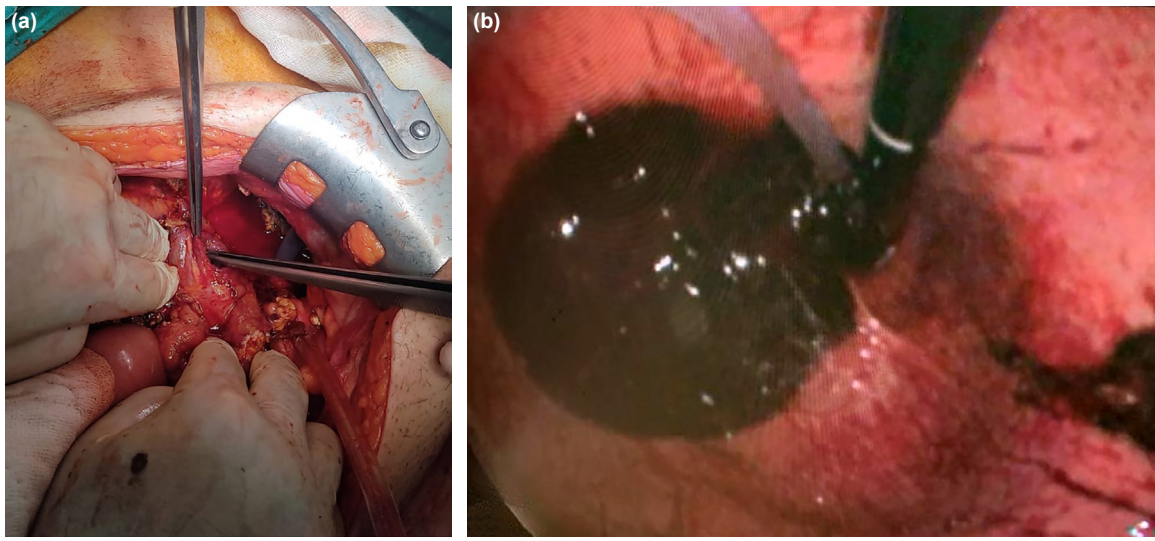

Figure 2. (a) Intraoperative image of the perforation focus in the lesser curvature of the stomach. **(b)** Intraoperative endoscopic imaging of the gastric lumen.

ture. If gastric perforation is not treated early, it can quickly lead to chemical peritonitis, then bacterial peritonitis, sepsis, and death. Laparotomy, primary repair of the gastric defect, and peritoneal lavage are the basic principles of treatment in these cases. During resuscitation, crystalloids and IV antibiotics should be utilized as well. The tension pneumoperitoneum can be decompressed before laparotomy by inserting a large needle into the abdomen through the right subcostal region. The insertion of a nasogastric tube is recommended if the diagnosis of gastric perforation is confirmed. The nasogastric tube was inserted in our case before the perforation was discovered and diagnosed, to decompress the gastric distension that formed as a result of esophageal intubation. As a result, naturally, the nasogastric tube was ineffective in resolving abdominal distension.

Conclusion

Gastric perforation is a mortal complication of accidental esophageal intubation. If possible, a videolaryngoscope should be used in cases of difficult intubation. In cases that develop abdominal distension, rebound, or defense after intubation, the clinician should consider gastric perforation.

Informed Consent: Written informed consent was obtained from the patient for the publication of the case report and the accompanying images.

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OLGU SUNUMU - *ÖZ*

Gastrik perforasyon: Özofageal entübasyon sonrası sıradışı bir komplikasyon

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Yanlışlıkla yapılan özofagus entübasyonuna sekonder gastrik perforasyon oldukça nadir görülen mortal bir komplikasyondur ve literatürde yalnızca birkaç olgu raporlanmıştır. Erken tanı ve hızlı cerrahi müdahale bu ölümcül komplikasyonun yönetiminde önemlidir. Bu olgu sunumunda akut hipokseminin nedeniyle yoğun bakım ünitesinde entübasyon uygulanan ve sonrasında gastrik perforasyon gelişen sıradışı bir olgu ile ilgili deneyimimizi sunduk.

Anahtar sözcükler: Komplikasyon; mide perforasyonu; özofageal entübasyon.

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