Patient with gastric rupture due to bag ventilation underwent conservative treatment combined with endoscopic observation

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Accepted 25 January 2021

DESCRIPTION

An 81-year-old woman was brought to our hospital with septic shock due to severe acute cholangitis. Her blood pressure was 61/39 mm Hg, and her SpO₂ was 99% with 6 L/min oxygen administration. CT showed common bile duct stones and abscess formation in the liver bed. We decided to perform urgent endoscopic biliary drainage because her blood pressure and SpO₂ improved with an intravenous drip. We administered 1.0 mg of midazolam to achieve sedation. Subsequently, the patient became hypoxic. We replaced a nasal oxygen cannula with an oxygen mask and administered 0.5 mg of flumazenil. Nevertheless, her SpO₂ decreased below the sensitivity limits of the pulse oximeter. We started bag ventilation at a rate of 10–12 bpm. We continued bag ventilation for approximately 10 min because her hypoxia did not improve until intubation. After her hypoxia was improved, we performed endoscopy, which showed bleeding from a gastric laceration on the lesser curvature (figure 1A). We first conducted biliary stenting because X-ray images did not show free air. After successful biliary stenting, we attempted endoscopic suturing; however, we abandoned this procedure because her systolic blood pressure decreased below 60 mm Hg. We completed endoscopy and placed a nasogastric tube. After the procedure, CT revealed free air in the abdominal cavity (figure 1B). We diagnosed the patient with gastric rupture due to bag ventilation. We considered that she was unsuitable for surgery because of the risk of death during surgery. We conducted conservative treatments including gastric decompression via a nasogastric

tube and administration of proton pump inhibitors, antibiotics and many blood transfusions. One week later, the gastric bleeding stopped spontaneously with improvement in cholangitis. One month later, endoscopy revealed spontaneous closure of the gastric laceration and discolouration of the gastric mucosa (figure 2A). We considered that discolouration occurred as a result of gastric ischaemia. Two months later, endoscopy showed scarring of the gastric laceration (figure 2B). The discolouration of the gastric mucosa was recovered. The patient was discharged after successful endoscopic removal of common bile duct stones.

Gastric rupture is a rare complication of bag ventilation¹ and is considered to be caused by gastric distention due to air inflow. Glossoptosis or bronchial foreign bodies during ventilation often cause distention of the stomach. Stomach distention causes twisting of the cardia and pylorus, making it difficult to discharge gas from the stomach and further increasing intragastric pressure. Gastric rupture could occur if the gastric pressure exceeds 120–150 mm Hg.² To prevent gastric rupture, reliable airway management and prompt tracheal intubation after bag ventilation are required.³ When gastric rupture occurs, emergency surgery is generally performed, but conservative treatment can be an option because gastric laceration may close

Patient's perspective

I had spent 2 weeks in intensive care unit, but recovered with conservative treatment. When I was discharged, I was very well without any symptoms.

Figure 1 (A) Endoscopic view of the stomach after bag ventilation and intubation. Bleeding from a gastric laceration on the lesser curvature is shown (arrowheads). (B) CT after the endoscopic procedure. Free air in the abdominal cavity is shown.

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To cite: Harima H, Kaino S, Sanuki K, et al. *BMJ Case Rep* 2021;**14**:e240116. doi:10.1136/bcr-2020-240116

Figure 2 Endoscopic views of the stomach after conservative treatment for gastric rupture. (A) One month later. Spontaneous closure of the gastric laceration is shown (arrowheads). Discolouration of the gastric mucosa due to ischaemia is also shown. (B) Two months later. Scarring of the gastric laceration is shown (arrowheads). Recovery of the discolouration of the gastric mucosa is also shown.

Learning points

- ▶ Although rare, bag ventilation could cause gastric rupture.
- ▶ When gastric rupture occurs, emergency surgery is generally performed, but conservative treatment can be an option.
- ▶ A gastric laceration immediately after the rupture was observed accidentally.

spontaneously with effective treatment of the underlying disease.⁴ In the present case, the gastric laceration closed spontaneously with improvement in cholangitis. It is extremely rare to observe gastric lacerations immediately after rupture and spontaneous closure of the lacerations endoscopically.

Contributors All authors certify that they have each made a substantial contribution as to qualify for authorship as follows: HH and KS performed the endoscopic observation. SK and IS performed critical manuscript editing. All authors approved the final documents.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent for publication Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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