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Surgical Management of Spontaneous Longitudinal Gastric Rupture in Mixed-Origin Shock: A Critical Clinical Case Report

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Conflicts of Interest: Nil

Abstract

Introduction: Spontaneous gastric rupture is an extremely rare, life-threatening condition with high mortality. Mechanisms include acute gastric overdistension, impaired gastric emptying, and sudden intragastric pressure increases¹⁻⁵. Early diagnosis is challenging, particularly in critically ill patients.

Materials and Methods: We report a 65-year-old female who presented in deep coma after laryngeal and tracheal obstruction by a food bolus with massive aspiration. Clinical assessment included physical examination, laboratory tests, abdominal radiography, chest CT, esophagogastroduodenoscopy (EGD), intraoperative findings, and postoperative course.

Results: On admission, the patient exhibited severe hypoxemia, hemodynamic instability, and mixed-origin shock, with sepsis excluded. Abdominal radiography revealed massive pneumoperitoneum. EGD demonstrated a subcardial linear Mallory–Weiss mucosal tear, insufficient to explain free intraperitoneal gas. Emergency midline laparotomy revealed a 10-cm longitudinal full-thickness rupture along the lesser curvature. Two-layer gastrorrhaphy was performed using 3-0 absorbable polyglactin for the inner layer and 3-0 non-absorbable polypropylene for the outer seromuscular layer. Intraoperative leak test confirmed suture line integrity. Complete abdominal exploration revealed no additional gastrointestinal injuries. Postoperatively, the patient developed severe aspiration-induced lung injury requiring prolonged mechanical ventilation⁶⁻⁸.

Conclusion: This case illustrates the diagnostic challenges of spontaneous gastric rupture in patients with coma and mixed-origin shock. Early recognition of pneumoperitoneum, meticulous surgical technique, and prompt operative intervention are critical for survival.

Keywords: spontaneous gastric rupture; mixed-origin shock; emergency laparotomy; pneumoperitoneum; aspiration-induced lung injury

Introduction

Spontaneous gastric rupture is an exceedingly rare abdominal emergency with high mortality¹⁻³. Predisposing mechanisms include acute gastric overdistension, impaired gastric emptying, and sudden intragastric pressure increases²⁻⁵. Clinical diagnosis is often delayed in critically ill patients due to altered consciousness and severe vital function disturbances.

This report describes a case following airway obstruction by a food bolus with massive aspiration, highlighting diagnostic challenges, operative strategy, and critical analysis of surgical decision-making.

Materials and Methods

Patient Presentation and Clinical Timeline

A 65-year-old female experienced laryngeal and tracheal obstruction by a food bolus, resulting in massive aspiration. During this event, the patient had ineffective, spasmodic retching and respiratory efforts, which failed to relieve the airway obstruction, leading to loss of consciousness. Upon hospital arrival, she was in deep coma, hemodynamically unstable, and laboratory testing excluded a septic component.

Abdominal radiography revealed massive pneumoperitoneum.

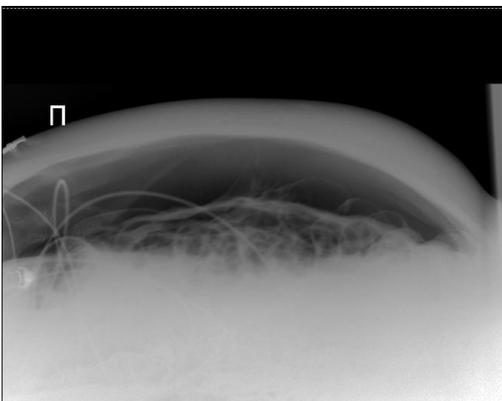


Figure 1: Horizontal abdominal X-ray showing free intraperitoneal air, characteristic of pneumoperitoneum

Chest CT confirmed aspiration-induced pulmonary injury. EGD demonstrated a subcardial linear Mallory–Weiss tear, insufficient to explain free intraperitoneal air. Surgical Technique and Rationale. Emergency midline laparotomy revealed:

- 10-cm longitudinal full-thickness rupture along the lesser curvature.
- Tissue edges were viable, without ischemia or necrosis.
- Complete exploration of the abdominal cavity, including duodenum, small intestine, colon, and omentum, revealed no additional injuries.

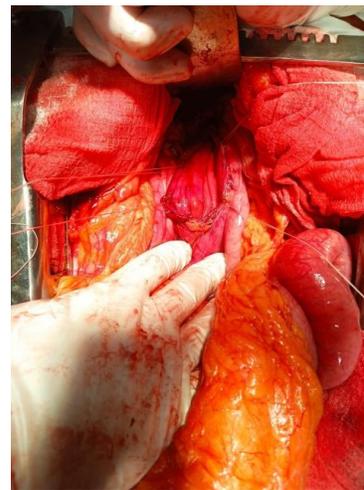


Figure 2: Intraoperative view of a gastric rupture along the lesser curvature measuring 10 × 5 cm with clearly visualized defect margins.

Repair technique:

1. Inner layer: mucosa and submucosa approximated with interrupted.
2. Outer layer: seromuscular closure with interrupted 3-0 non-absorbable polypropylene sutures, ensuring inversion and tension-free approximation.
3. Intraoperative leak test confirmed watertight closure.
4. Abdominal lavage with warm saline; drains placed in lesser sac and subhepatic space.

Rationale: Two-layer closure with intraoperative confirmation of suture integrity ensures mechanical strength, minimizes leak risk, and justified omission of gastrostomy or jejunostomy due to intact distal gastric outflow and favorable tissue condition.

Results

Postoperatively, the patient developed severe aspiration-induced lung injury, requiring prolonged mechanical ventilation consistent with ARDS criteria⁷. Hemodynamic stability gradually improved. Imaging confirmed intact gastric repair and resolution of pneumoperitoneum. No intra-abdominal infection or suture line leakage occurred.

Discussion

Spontaneous gastric rupture remains an exceedingly rare surgical emergency. Most previously reported cases involve rupture of the gastric body or greater curvature, usually triggered by acute gastric overdistension or distal obstruction¹⁻⁵. In contrast, our case demonstrates a longitudinal rupture along the lesser curvature, an uncommon site associated with higher localized stress during abrupt intragastric pressure increase.

The mechanism in our patient is highly unusual. Unlike typical cases, the rupture resulted from laryngeal and tracheal obstruction by a food bolus with massive aspiration, producing ineffective, spasmodic retching and abrupt intragastric pressure elevation. Although Mallory–Weiss tears are reported under proximal gastric stress⁶, the combination of airway obstruction and aspiration leading to a full-thickness lesser curvature rupture is extremely rare. Few previous reports describe this specific mechanism, highlighting the uniqueness of our case.

Diagnostic challenges were pronounced. Classical signs of gastric perforation—acute abdominal pain or muscular guarding—were absent due to deep coma and hemodynamic instability. The decisive diagnostic clue

was massive pneumoperitoneum on imaging, emphasizing the need for vigilance in atypical presentations⁴.

Surgical decision-making was guided by intraoperative assessment and literature. Two-layer gastrorrhaphy with careful evaluation of tissue viability and confirmation of watertight closure is considered standard to minimize leakage risk²⁻⁵. In comparison with other reports, gastrostomy or jejunostomy was not required, as distal gastric outflow was intact and tissue condition favorable. Complete abdominal exploration ensured no additional injuries were missed.

This case contributes to the literature by highlighting:

1. Rare rupture location (lesser curvature) compared to typical sites.
2. Unusual mechanism (airway obstruction + aspiration).
3. Diagnostic challenge in unconscious, hemodynamically unstable patients.
4. Evidence-based surgical decision-making, including two-layer repair with intraoperative verification of suture integrity and avoidance of unnecessary enteral access.

In conclusion, this case emphasizes the importance of critical assessment of individual patient anatomy, mechanism of injury, and clinical status to optimize outcomes in rare spontaneous gastric ruptures.

Conclusion

Spontaneous gastric rupture should be suspected in patients presenting with pneumoperitoneum following airway obstruction and aspiration. Early recognition, meticulous two-layer repair with verified watertight closure, complete intraoperative assessment, and prompt postoperative management are critical to improving outcomes.

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