

Perforated gastric ulcer within a para-oesophageal hernia

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Summary

Perforation of a gastric ulcer within a para-oesophageal hiatal hernia is rare and potentially life-threatening. We present a 65-year-old female with rheumatoid arthritis on chronic nonsteroidal anti-inflammatory therapy who presented with acute epigastric pain and clinical features of peritonitis. Computed tomography demonstrated intrathoracic herniation of the stomach through the oesophageal hiatus with associated pneumoperitoneum suggestive of perforated viscus. Laparoscopic reduction of the hernia, repair of gastric perforation, posterior cruroplasty and Nissen fundoplication was successfully performed with minimal morbidity. Our case highlights the rare coexistence of gastric perforation within a para-oesophageal hiatal hernia and the feasibility of definitive laparoscopic management in selected patients.

Keywords: para-oesophageal hiatal hernia, gastric perforation, peptic ulcer disease, laparoscopy, Nissen fundoplication

Case report

A 65-year-old female with longstanding rheumatoid arthritis treated with chronic nonsteroidal anti-inflammatory drugs presented with sudden onset severe epigastric pain associated with signs of generalised peritonitis.

On admission the patient was hemodynamically stable, with a blood pressure of 132/65 mmHg and a pulse rate of 83 beats per minute. Laboratory investigations revealed anaemia with a haemoglobin level of 8 g/dL (range 11.5–15.5 g/dL), and two units of packed red blood cells were transfused. Inflammatory markers were elevated with a C-reactive protein level of 64.1 mg/L (range 0–5.0 mg/L), while the white cell count remained within normal limits at $6.2 \times 10^9/L$ (range $4.0\text{--}11.0 \times 10^9/L$).

A chest radiograph demonstrated gastric air above the diaphragm, suggestive of an intrathoracic stomach (Figure 1). Computed tomography (CT) of the chest, abdomen and pelvis revealed a para-oesophageal hiatal hernia with intrathoracic stomach (Figure 2), a large ulcer crater along the lesser curvature of the stomach with surrounding inflammatory changes, free fluid and pneumoperitoneum (Figure 3). A nasogastric tube was inserted, and the patient was taken urgently to theatre for surgical intervention.

Laparoscopy revealed four-quadrant peritoneal contamination. A type II para-oesophageal hiatal hernia involving the body of the stomach was identified, associated with a large hernia sac. The distorted anatomy made identification of the perforation initially challenging. The herniated stomach was reduced into the abdominal cavity and the hernia sac excised. Following reduction and mobilisation of the stomach, a 2 cm perforation was identified along the lesser curvature (Figure 4). The perforation was repaired using the Cellan-Jones omental patch technique. Peritoneal contamination was suctioned and a leak test confirmed integrity of the repair. Posterior cruroplasty was performed followed by a Nissen fundoplication to restore normal

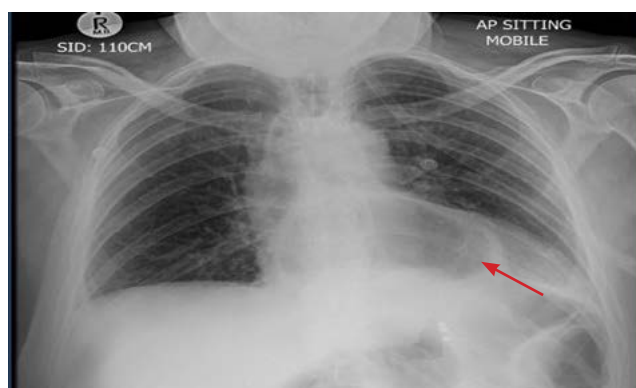


Figure 1: Chest radiograph demonstrating an intrathoracic air–fluid level (red arrow) consistent with intrathoracic migration of the stomach within a para-oesophageal hiatal hernia

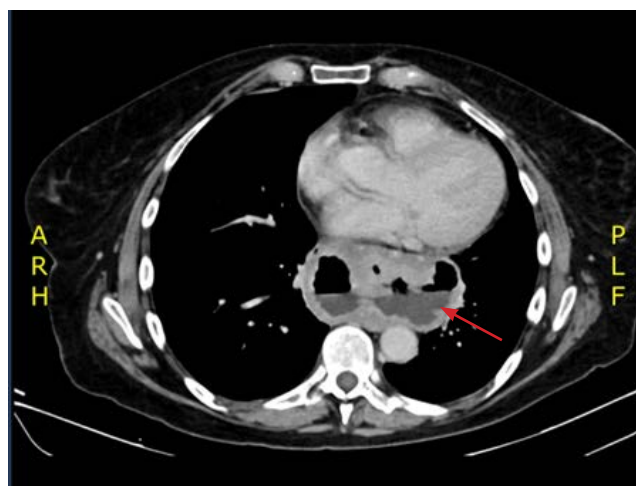


Figure 2: Axial CT chest demonstrating intrathoracic herniation of the stomach (red arrow) through the oesophageal hiatus



Figure 3: Axial CT abdomen demonstrating a focus of intraperitoneal free air anterior to the liver, consistent with perforated viscus (red arrow)

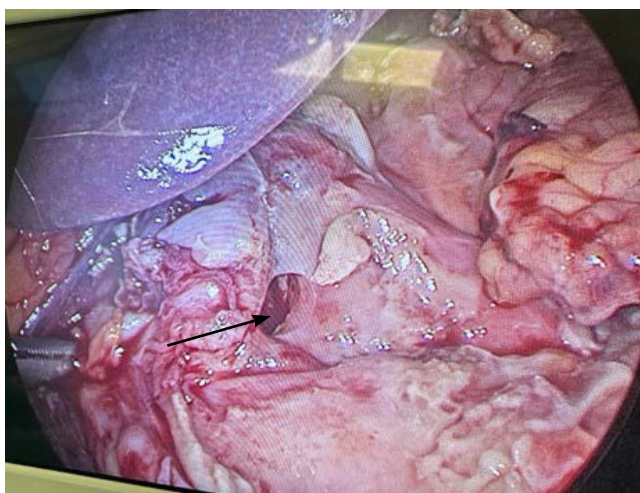


Figure 4: Laparoscopic view demonstrating perforated gastric ulcer on the lesser curvature of the stomach

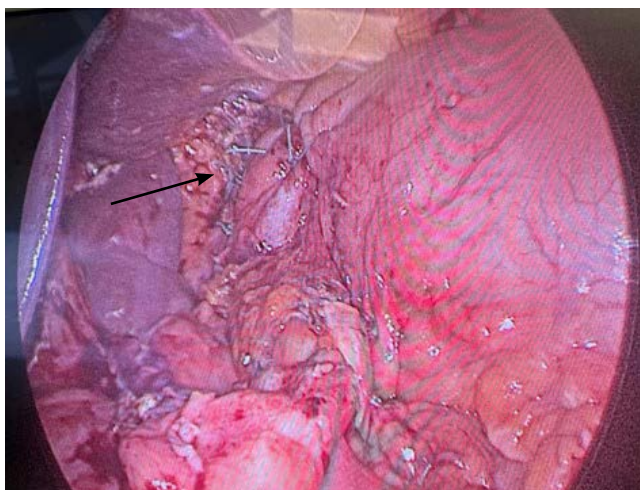


Figure 5: Laparoscopic view following repair demonstrating posterior cruroplasty and Nissen fundoplication

anatomy and reduce the risk of hernia recurrence (Figure 5). A surgical drain was left in situ. The patient was extubated postoperatively and admitted to high care for monitoring. She showed clinical improvement and was transferred out of intensive care on postoperative day three. On postoperative day seven, the patient developed a controlled enterocutaneous



Figure 6: Gastroscopy follow up showing repaired perforated ulcer and Nissen fundoplication

fistula which was documented on ultrasound illustrating a tubular echogenic collection between the pylorus, duodenal region and the previous drain tract. Conservative management was instituted with subcutaneous octreotide (50 mcg three times daily) and local wound care. The fistula output gradually decreased and resolved, allowing discharge home in stable condition. Follow-up consisted of a planned gastroscopy and a rheumatology consultation to assist in optimising the arthritis treatment, particularly the steroids dose. Repeat gastroscopy was offered to the patient in 6 weeks, which showed a healed ulcer with a suture on the previous ulcer area and the Nissen fundoplication wrap is also illustrated (Figure 6).

Discussion

Perforated peptic ulcer disease remains a surgical emergency associated with significant morbidity and mortality, particularly in elderly patients with comorbid disease, despite the declining incidence in the proton pump inhibitor era.¹⁻³ A hiatal hernia is a laxity of the oesophageal and phreno-oesophageal membrane wherein the intra-abdominal contents, most commonly the gastric cardia, herniates into the thorax. It is classified into four types (type I to IV) according to the location and degree of herniation. The most common is a type I sliding hiatal hernia, in which the gastro-oesophageal junction moves into the chest. Types II–IV are true para-oesophageal hernias, contain a sac and require surgical correction, if symptomatic. Type II para-oesophageal hernias are less common and involve a portion of the stomach herniating through the oesophageal hiatus while the gastro-oesophageal junction remains in the native position, similar to that of our patient. In a type III para-oesophageal hernia, the most common type of para-oesophageal hernia, both the gastro-oesophageal junction and a portion of the stomach herniates through the diaphragm and into the chest. Type IV para-oesophageal hernias are more complex and severe. These involve herniation of the stomach with other additional abdominal viscera (colon, small bowel and spleen) in the hernial sac.⁴ Para-oesophageal hiatal hernias represent a minority of hiatal hernias but are associated with a higher risk of acute complications compared with sliding hernias. Gastric perforation occurring within such hernias is rare and has only been described in isolated case reports,⁵ furthermore there are limited reports describing definitive

laparoscopic management of this condition, with most published cases managed via an open approach.

CT is the imaging modality of choice in such cases as it accurately delineates hernia anatomy and associated complications such as perforation or intraperitoneal free air.⁵⁻⁷ In this case CT imaging was critical in guiding operative planning.

Laparoscopic repair of perforated peptic ulcer has demonstrated reduced postoperative pain and shorter hospital stay compared with open surgery in haemodynamically stable patients,¹⁻³ which was ideal for our patient who remained stable and was elderly with possible poor wound healing. In selected cases, concurrent cruroplasty and fundoplication may restore normal anatomy and reduce recurrence risk.⁵⁻⁷

Chronic nonsteroidal anti-inflammatory drug exposure is a recognised risk factor for ulcer formation due to inhibition of prostaglandin-mediated mucosal protection.^{8,9} Patients with rheumatoid arthritis may be at additional risk owing to systemic inflammation and corticosteroid exposure.

The development of an enterocutaneous fistula in this case was likely multifactorial and may have been related to severe intra-abdominal contamination, local inflammatory response at the repair site and the underlying inflammatory disease.^{8,9} Early recognition and conservative management allowed successful resolution without the need for further surgical intervention.

This case demonstrates that definitive laparoscopic management, including repair of the gastric perforation and reconstruction of the hiatal anatomy, can be safely performed in carefully selected patients presenting with this uncommon surgical emergency.

Conflict of interest

The authors declare no conflict of interest.

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Ethical approval

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

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