CASE REPORT

A Rare Case of Gastric Volvulus in an Elderly Patient: Managed Laparoscopically

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Abstract

Gastric volvulus is an uncommon surgical condition, which is characterized by the abnormal rotation (torsion) of the stomach along its axis. It presents with a wide range of symptoms, which makes its diagnosis and treatment challenging. Patient presents with features of obstruction, which if left untreated, can result in complications like gangrene, necrosis, perforation, peritonitis, and ultimately, shock.

We present the case of an elderly female patient with recurrent episodes of epigastric pain, nausea, vomiting, and abdominal distension, which aggravated after meals since the past 2 months. She had similar symptoms previously and was treated for gastroesophageal reflux disease 2 years ago. On examination, there was epigastric fullness with tenderness in the epigastric region. Upper gastrointestinal (GI) endoscopy revealed a lax esophageal hiatus with abnormal gastric axis rotation, indicative of mesenteric axial gastric volvulus. Contrast-enhanced computed tomography (CT) of the abdomen confirmed a large paraesophageal hiatus hernia containing the gastric body, transposition of the gastroesophageal junction, and distended rest of stomach, consistent with mesenteric axial gastric volvulus. Laparoscopic reduction of hernia, adhesiolysis, posterior cruroplasty, and gastropexy were performed. Postoperative recovery was uneventful.

Due to the wide range of presentation of a case of gastric volvulus, it is essential for the surgeon to have a high index of suspicion for diagnosis of a case of gastric volvulus. Management of a case of gastric volvulus aims to relieve obstruction and prevent recurrence; this can be done with various approaches, including endoscopic laparoscopic, combined laparoscopic, and open procedures. As laparoscopic procedures are minimally invasive and better tolerated, they are preferred.

Gastric volvulus is a potentially life-threatening condition, which if untreated, can complicate into gastric gangrene, perforation, peritonitis, and ultimately, shock. Hence, it requires prompt diagnosis and management to minimize morbidity and mortality. Due to its rarity and vague presentation, a high degree of clinical suspicion is necessary for accurate diagnosis. For elderly patients with significant comorbidities, laparoscopic reduction and gastropexy provide a safe and effective approach with lower perioperative morbidity.

Keywords: Case report, Gastric volvulus, Gastropexy, Laparoscopic.

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Introduction

Gastric volvulus is an uncommon surgical condition characterized by the abnormal rotation (torsion) of the stomach. This rare entity can present with diverse symptoms, making its diagnosis and management challenging. The exact incidence of this condition remains unknown; however, it predominantly affects individuals over 50 years of age, accounting for 80–90% of cases, with 15–20% occurring in children under 1 year.[1,2] There is no sex predilection.[2–4] Clinical presentations range from nonspecific symptoms to severe, life-threatening conditions. Gastric volvulus commonly manifests as foregut obstruction, if untreated, can complicate into gangrene, necrosis, perforation, peritonitis, and shock, with mortality rates reaching up to 30–50% in acute cases.[2,3] This entity underscores the critical importance of early diagnosis and intervention. While gastric volvulus is traditionally managed through open surgery, alternative methods, such as endoscopic and laparoscopic approaches, have been successfully employed, particularly in elderly patients. Here, we present a rare case of chronic gastric volvulus in an elderly patient successfully treated with a laparoscopic approach.

Case Description

A 74-year-old female presented with recurrent episodes of epigastric pain, nausea, vomiting, and upper abdominal distension following meals over the past 2 months. She described her pain as epigastric discomfort accompanied by a burning sensation, which worsened after eating. She experienced multiple episodes of vomiting undigested food approximately 30 minutes post meal and reported a sense of fullness relieved by vomiting. She denied any history of loss of appetite or weight loss and had no other gastrointestinal or systemic complaints. Notably, she had experienced similar symptoms over the past 2 years, previously managed conservatively as gastroesophageal reflux disorder (GERD).

The patient's medical history included hypertension, but no significant surgical history. On examination, her vital signs were stable. Abdominal examination revealed epigastric fullness with

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Table 1: Complete blood picture of the patient showed elevated white blood count and neutrophilia

Complete blood count	*Patient values*	*Reference values*
Hemoglobin	14.0	11.1–15.9 gm/dL
Packed cell volume	43.2%	
Total count	20.37	4–11 × 10^3/μL
Neutrophils	93%	
Lymphocytes	3%	
Red blood cells	5.04	3.77–5.28 × 10^6/μL
Platelets	331	150–450 × 10^3/μL

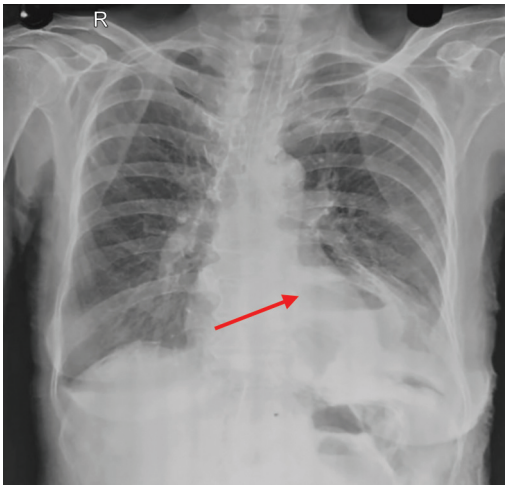

Fig. 1: Chest X-ray posteroanterior view showing gastric shadow in thoracic cavity

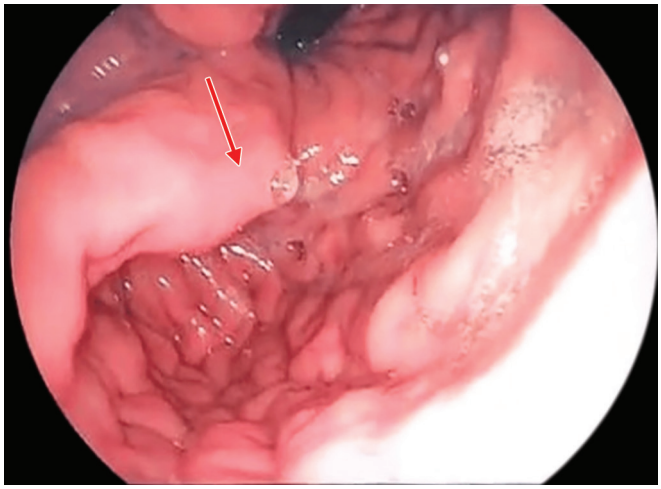

Fig. 2: Postoperative upper GI endoscopy showing hiatus hernia with abnormal gastric axis rotation

tenderness in the epigastric region, but no signs of peritoneal irritation. Laboratory findings indicated a moderately elevated white blood cell count with neutrophilia (Table 1).

A chest radiograph (Fig. 1) showed a retrocardiac mass and a dilated stomach. Upper gastrointestinal (GI) endoscopy (Fig. 2) revealed a lax esophageal hiatus with abnormal gastric axis rotation,

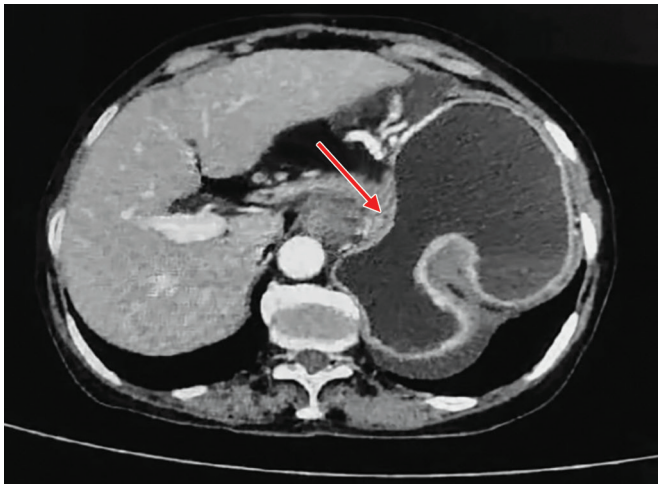

Fig. 3: Transverse segment of a CT scan showing a distended stomach

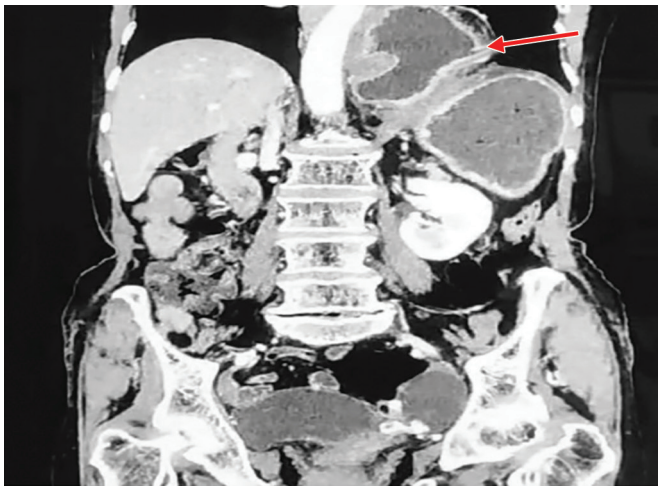

Fig. 4: Coronal segment of a CT scan showing a distended stomach, with a portion in the intrathoracic segment

indicative of mesenteric axial gastric volvulus. A biopsy from the thickened distal gastric body showed inflammatory changes. Contrast-enhanced computed tomography (CT) of the abdomen (Figs 3 and 4) confirmed a large paraesophageal hiatus hernia containing the gastric body, transposition of the gastroesophageal junction, and distended rest of stomach, consistent with mesenteric axial gastric volvulus. Additionally, irregular circumferential mural thickening with heterogeneous enhancement was observed in the distal body of stomach with width of hiatus measuring 34 mm.

The patient underwent a diagnostic laparoscopy, which revealed a large paraesophageal hernia and gastric volvulus (Fig. 5). Laparoscopic surgery was performed using one umbilical port and three 5-mm ports following pneumoperitoneal insufflation. Half of the stomach was reduced from the hernial sac, and adhesiolysis was performed. The diaphragmatic hiatal defect was closed using Vicryl 2-0 sutures. The stomach was de-rotated, and gastropexy (Fig. 6) was performed to anchor it to the diaphragm's crura and the anterior abdominal wall using laparoscopic suturing techniques. Three Vicryl 2-0 sutures secured the greater curvature of the stomach to the anterior abdominal wall, while two sutures fixed the redundant fundus to the left diaphragmatic crura after

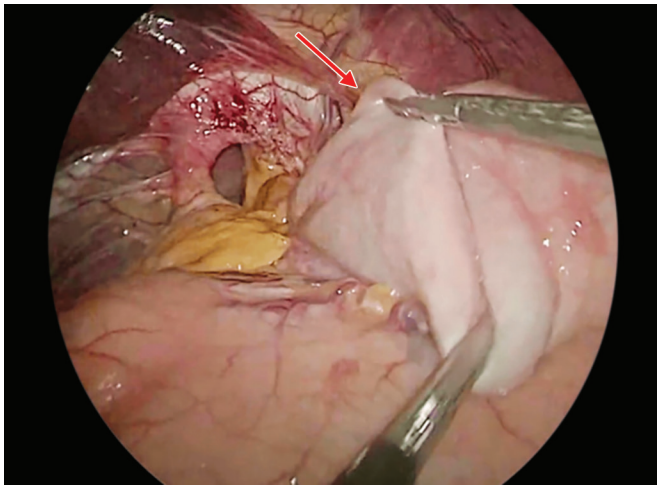

Fig. 5: Intraoperative image of paraesophageal hernia

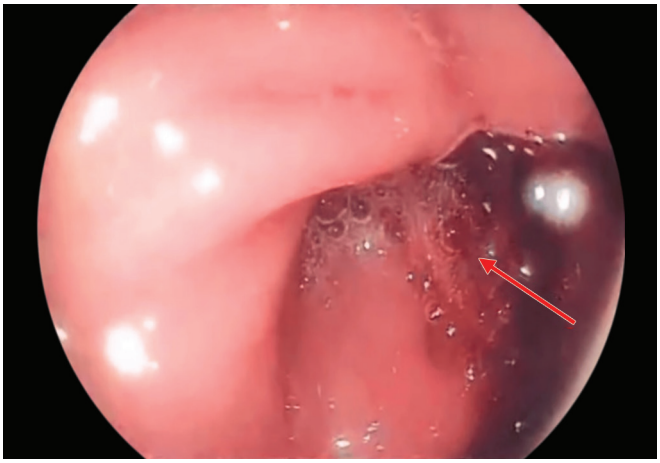

Fig. 7: Postoperative upper GI endoscopy with well-maintained stomach angulation

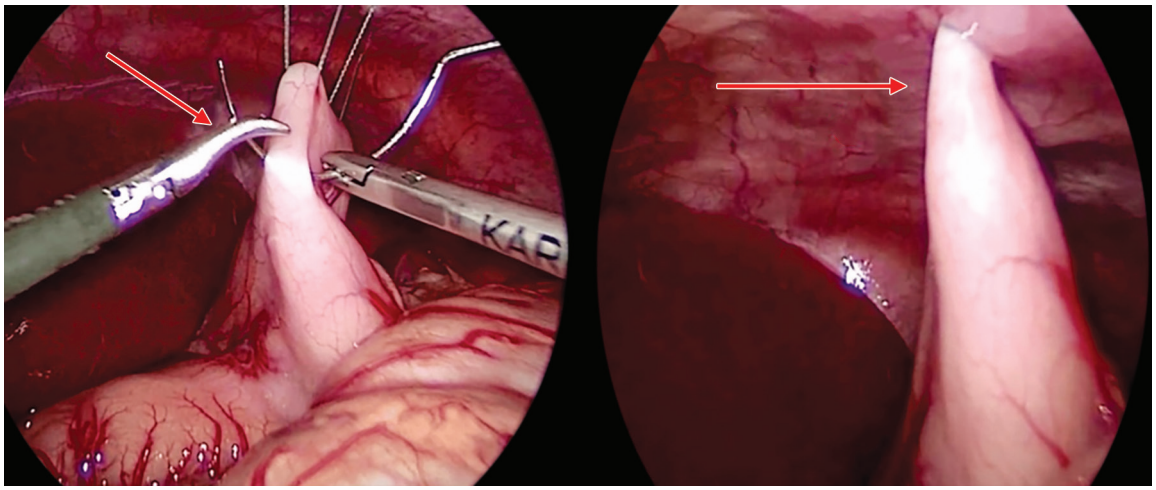

Fig. 6: Intraoperative image of gastropexy

closing the hiatal defect. Postoperative recovery was uneventful. Oral fluids were initiated 6 hours postoperatively, and the patient was discharged on the fourth postoperative day. At a 3-month follow-up, the patient demonstrated symptomatic improvement with no recurrence, as confirmed by postoperative endoscopy (Fig. 7).

Discussion

Gastric volvulus refers to the abnormal rotation of the stomach beyond 180°, resulting in a closed-loop obstruction that can lead to gastric gangrene and perforation. It can be categorized by clinical presentation (acute, chronic, or recurrent), etiology (primary or secondary), and anatomical axis of rotation (organo-axial, mesentero-axial, or a combination).[1,2] Primary gastric volvulus arises from the absence or laxity of the gastro-colic and gastro-splenic ligaments, accounting for 30% of cases.[1,2] Secondary gastric volvulus is associated with anatomical abnormalities, such as paraesophageal hernias, wandering spleen, gastric ulcers, or adhesions from gastric/duodenal carcinoma.[2,3] In this case, a large hiatal hernia with adhesions predisposed the patient to gastric volvulus.

Based on the axis of rotation, gastric volvulus is classified into four types, of which type I is organo-axial where the stomach twists along its long axis (esophagogastric junction to pylorus), comprising about 60% of cases, type II is mesentero-axial where the stomach rotates along its short axis, often presenting as chronic volvulus, type III is a combination of organo-axial and mesentero-axial rotation, representing the least common form (2% of cases), and type IV are unclassified cases, accounting for approximately 10%.[2]

The clinical presentation depends on the rapidity of onset and the degree of obstruction. Acute gastric volvulus often presents with Borchardt's triad: epigastric pain with distension, retching, or vomiting, and an inability to pass a nasogastric tube, which occurs in 70% of cases.[1,2] Chronic gastric volvulus, on the other hand, typically manifests with nonspecific symptoms, such as chest pain, intermittent epigastric pain, bloating, or dysphagia, often misdiagnosed as GERD, as seen in this case.[3–5]

A high index of clinical suspicion is essential for diagnosing gastric volvulus, given its rarity and variable clinical presentation. Chest radiographs may reveal a retrocardiac air-filled mass, but these findings are not definitive. Barium studies are highly diagnostic but not routinely performed as an initial imaging modality.[4,5] Abdominal CT scans are highly accurate for diagnosing volvulus and identifying complications such as ischemia or perforation, which occur in 5–28% of cases, with a mortality rate of up to 50%.[6–8] Upper GI endoscopy is recommended for both diagnostic and therapeutic purposes and allows for the evaluation of complications like mucosal ischemia.[9,10]

Management of gastric volvulus depends on the severity of gastric obstruction, the presence of ischemia, and patient comorbidities. Definitive treatment aims to relieve obstruction and prevent recurrence. Options include endoscopic, laparoscopic, combined laparoscopic, and open procedures. Minimally invasive techniques, such as laparoscopic surgery, are increasingly preferred due to reduced hospital stays and postoperative morbidity.[9–14]

In elderly patients with comorbidities, chronic volvulus may be managed conservatively with fluid resuscitation and nasogastric decompression, though recurrence is high.[5,15] Advances in therapeutic endoscopy, including reduction with gastropexy or percutaneous gastrostomy tube placement, have shown promising results in managing gastric volvulus in elderly patients with significant comorbidities.[8–10] Definitive surgical or laparoscopic detorsion with gastropexy is highly recommended to prevent recurrence of gastric volvulus.[9–12,14,16] Addressing underlying causes is critical in secondary volvulus cases.[1,13]

Controversy exists regarding the addition of antireflux procedures to de-rotation and gastropexy in cases of gastric volvulus associated with paraesophageal hernias. Some advocate for antireflux procedures, while others caution against their use due to increased perioperative risk, particularly in elderly patients with comorbidities.[1,12–14,17] In our case, laparoscopic reduction and de-rotation of the stomach, repair of the hiatal hernia, and gastropexy were performed without an antireflux procedure due to advanced age and comorbidities of patient. We found that the surgical outcome was satisfactory in our case, with no symptoms of recurrence clinically and radiologically during the follow-up period of 1 year.

Conclusion

Gastric volvulus is a potentially life-threatening condition requiring prompt diagnosis and management to minimize morbidity and mortality. Due to its rarity and vague presentation, a high degree of clinical suspicion is necessary for accurate diagnosis. The choice of treatment depends on three key factors: The presence of gastric ischemia, the presence of a paraesophageal hernia, and the patient's perioperative risk profile. Laparoscopic paraesophageal hernia repair remains the mainstay treatment for most patients with acute and chronic gastric volvulus. For elderly patients with significant comorbidities, laparoscopic reduction and gastropexy provide a safe and effective approach with lower perioperative morbidity.

Ethical Approval

Institutional ethical clearance: BLDE (deemed to be university) issued approval – BLDE (DU)/IEC/670/2023-2024. After scrutiny, the following research project has been accorded ethical clearance.

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