

## CASE REPORT

### MESENTEROAXIAL GASTRIC VOLVULUS IN AN ADULT: A CASE REPORT

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#### Abstract

We present the case of a 58-year-old female with mesenteroaxial gastric volvulus secondary to a large paraesophageal hernia. The patient underwent successful surgical treatment via median laparotomy, including adhesiolysis, gastric detorsion, cruroplasty, and Nissen fundoplication. Her postoperative recovery was uneventful. This case highlights the importance of early recognition, cross-sectional imaging, and timely surgical intervention in preventing morbidity and mortality associated with gastric volvulus.

**Keywords:** *Case report; Computed tomography; Gastric volvulus; Mesenteroaxial volvulus; Nissen fundoplication; Paraesophageal hernia.*

#### Introduction

Gastric volvulus is a rare but potentially life-threatening condition characterized by abnormal rotation of the stomach along its anatomical axes, leading to obstruction and potential ischemia. It is classified into organoaxial, mesenteroaxial, and mixed subtypes. Mesenteroaxial volvulus involves rotation along the short axis, resulting in the antrum being displaced above the gastroesophageal junction. Recent case reports confirm its presence across a wide age range, including adults, and highlight diagnostic difficulties due to nonspecific symptoms (1-4). Early diagnosis using CT or upper gastrointestinal contrast studies is essential to prevent complications such as strangulation, necrosis, and perforation (5).

#### Case Presentation

A 58-year-old female reported a 4-year history of upper abdominal discomfort, nausea, intermittent vomiting, and reduced appetite. She experienced significant unintentional weight loss of over 10 kg from March to September 2023. During the preceding three

years, she underwent three gastroscopies, the most recent in March 2023, which described a paraesophageal hernia with displacement of the antropyloric region into the thoracic cavity.

Due to worsening symptoms—persistent vomiting, inability to tolerate oral intake, and marked abdominal distension—the patient was admitted to hospital in September 2023. Laboratory tests demonstrated anemia (Hb 113 g/L) and elevated urea (15.5 mmol/L) and creatinine (229.6  $\mu$ mol/L).

Contrast-enhanced CT demonstrated a large paraesophageal hernia with mesenteroaxial gastric volvulus, with the antropyloric region positioned superior to the fundus within the thoracic cavity, consistent with recent imaging characteristics described in the literature (1,5). (Fig. 1, 2)



Figure 1. Presentation of the paraesophageal hernia containing the antropyloric part on contrast-enhanced CT in coronal plane.

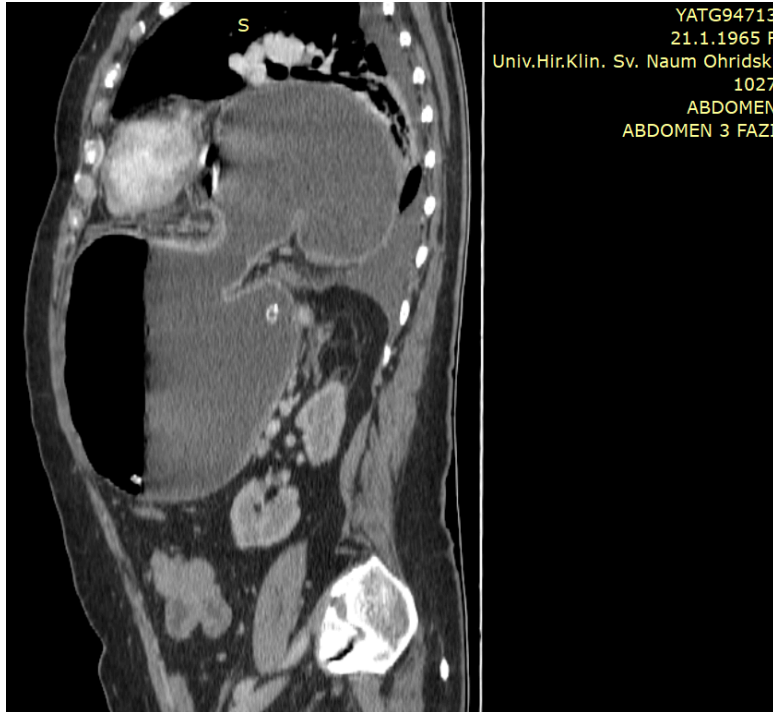


Figure 2. Presentation of the mesenteroaxial volvulus of the stomach on contrast-enhanced CT in sagittal plane with the antropyloric part positioned superiorly and gastro-esophageal junction positioned inferiorly.

Nasogastric tube (NGT) placement aspirated approximately 6 liters of stagnant gastric content and resulted in temporary clinical improvement. Two days later, recurrent distension prompted repeat CT imaging showing similar findings. Gastroscopy demonstrated inversion of the antropyloric segment with mucosal erosions.

Given persistent volvulus and failure of conservative management, surgical intervention was performed on September 13, 2023. A median laparotomy revealed an incarcerated paraesophageal hernia caused by adhesions of the greater omentum to the left diaphragmatic crus and a mesenteroaxial volvulus, in accordance with intraoperative findings described in recent case reports (3,4). Adhesiolysis, gastric detorsion, cruroplasty, and Nissen fundoplication were performed. Postoperative CT confirmed normal anatomical positioning of the stomach beneath the diaphragm (fig.3).



Figure 3. Postoperatively, a follow-up CT

## Discussion

Mesenteroaxial gastric volvulus in adults is uncommon and often presents diagnostic challenges due to its intermittent and nonspecific course. Recent literature further supports its association with paraesophageal hernias as a major predisposing factor (1,2,5).

Based on the imaging and intraoperative findings, the patient presented with a Type III paraesophageal hernia, which represents a mixed form in which both the gastroesophageal junction and the fundus of the stomach herniate into the thoracic cavity. In the standard hiatal hernia classification, Type I refers to a sliding hernia with migration of the gastroesophageal junction alone, while Type II describes a true paraesophageal hernia in which the gastroesophageal junction remains in its normal position and the fundus herniates alongside the esophagus. Type III, as seen in this patient, combines features of both Type I and II. This was evidenced by the intrathoracic displacement of the antropyloric portion and the superior position of the herniated stomach relative to the fundus on CT imaging. Additionally, Type IV hernias, the most complex form, involve herniation of other abdominal organs such as colon, spleen, or small bowel, which were not present in this case. The intraoperative finding of an incarcerated hernia with adhesions involving the greater omentum further supports the Type III classification. Type III hernias are strongly associated with secondary gastric volvulus, consistent with the mesenteroaxial rotation identified in this case.

NGT decompression may provide temporary symptom relief but rarely resolves the volvulus. Endoscopic detorsion may be considered, particularly in patients without evidence of ischemia or in high-risk surgical candidates, as demonstrated in contemporary endoscopic case reports (6). However, in this case, the presence of an incarcerated paraesophageal hernia made surgical intervention necessary.

Cross-sectional imaging remains the gold standard for diagnosis, as confirmed in recent radiological studies of gastric volvulus (5). Surgical management aims to reduce volvulus, repair the diaphragmatic defect, and stabilize the stomach using gastropexy or fundoplication.

Acute gastric volvulus carries a complication rate of 30–50% if untreated, with gastric necrosis occurring in 10–20% of cases. Mortality in untreated volvulus historically reaches 30–50%, primarily due to strangulation and perforation (7). With prompt surgical treatment, mortality decreases to 10–15%, and elective or minimally invasive repair in stable patients has mortality rates below 5%.

## **Conclusion**

This case underscores the importance of considering mesenteroaxial gastric volvulus in patients with chronic upper gastrointestinal symptoms and paraesophageal hernias. Early CT-based diagnosis and timely surgical correction remain essential to reducing morbidity and preventing life-threatening complications.

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