

## Case Report

# Chronic Gastric Volvulus Secondary to Adhesive Band with Congenital Diaphragmatic Hernia

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## ABSTRACT

Gastric volvulus (GV) is an uncommon condition. Borchardt's triad of vomiting, epigastric pain and an inability to pass a nasogastric tube should warn clinicians to think of GV as the primary diagnosis. Congenital diaphragmatic hernia, the hiatus hernia, diaphragmatic eventration, abdominal bands or adhesions and laxity of ligaments can cause GV. GV is either an organoaxial or mesenteroaxial type of volvulus. The volvulus can present with acute onset or may present with chronic symptoms. In our case, the patient had chronic symptoms later diagnosed as GV due to a congenital diaphragmatic hernia. Here old patient came with a history of vomiting for nearly two years with gross weight loss. The patient had severe electrolyte imbalance, which was corrected before surgery. Finally diagnosed as GV by doing certain investigation. During surgery, we found GV due to an adhesive band and with morgagni diaphragmatic hernia.

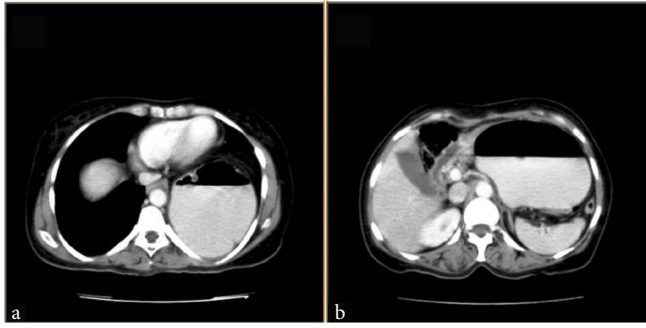
**Keywords:** Gastric Outlet Obstruction, Gastric Volvulus, Congenital Diaphragmatic Hernia, Adhesive Band

## INTRODUCTION

Gastric volvulus (GV) is a rare condition characterised by an abnormal rotation of the stomach by more than 180°, leading to a closed-loop obstruction. There are two primary types: organoaxial and mesenteroaxial. The organoaxial type, which involves rotation along the stomach's longitudinal axis, is the most common and is often associated with paraesophageal hernias. In contrast, mesenteroaxial volvulus involves rotation between the stomach's lesser and greater curvatures and is more frequently idiopathic, leading to chronic symptoms. The most common cause in adults is diaphragmatic defects, particularly Morgagni hernia, a less common form of congenital diaphragmatic hernia occurring in 5–10% of cases, predominantly in adults.

## CASE REPORT

A patient presented with severe vomiting, abdominal pain, and persistent belching unrelieved by medication. The vomitus contained bile and food particles. She had a similar episode five years ago, following which she underwent surgery (operative data unavailable). On examination, the patient was anaemic, dehydrated, and exhibited epigastric fullness with tenderness. A positive succussion splash was noted. Laboratory findings included hyponatremia, hypokalemia, and anaemia. Chest X-ray revealed an air-fluid level in the thoracic region. Endoscopy showed an inability to pass beyond the stomach body and pylorus, with visible herniation of the stomach.



**Figure 1:** (a) CT scan of the thoracic region showing dilated and herniated part of the stomach with an air-fluid level. (b) CT scan of the abdominal part showing dilated stomach with air-fluid level with upward movement of the transverse colon and splenic flexure suggestive of organ axial rotation.

CT imaging of the abdomen and thoracic regions confirmed herniation of the stomach into the thoracic cavity, with associated gastric dilatation and an air-fluid level consistent with GV. The transverse colon was displaced anteriorly over the stomach, suggesting an organoaxial volvulus. A provisional diagnosis of gastric outlet obstruction due to GV was made.

Ryle's tube decompression removed over three litres of gastric contents, and the patient's electrolyte imbalances and anaemia were corrected. During exploratory laparotomy, an adhesive band causing GV and herniation of the stomach into the thoracic cavity was identified, likely due to a Morgagni hernia. The adhesive band was released, and the herniated stomach was reduced back into the abdominal cavity. The diaphragmatic hernia was repaired using non-absorbable sutures, and an intercostal drainage tube was placed in the left thoracic region. The postoperative course was uneventful, and the patient was discharged on the 10th day post-operation [Figure 1].

## DISCUSSION

GV is a rare condition that presents with epigastric pain, retching and vomiting. GV was first described by Berti in 1866.<sup>[1]</sup> In 1904, Borchartd described the classic triad of GV, which is severe epigastric pain, retching with vomiting and the inability to pass a nasogastric tube, was described by Borchartd in 1904.<sup>[2]</sup> Classically, Borchartd's triad has been reported to occur in 70% of cases.<sup>[3]</sup> In GV, the aetiology of the rotation is either primary or secondary. Primary refers to the absence of diaphragmatic defects or intra-abdominal abnormality causing the volvulus, and also it may be seen in children of different ages.<sup>[4]</sup> The laxity of the ligaments, which anchors the stomach in place within the abdominal

cavity, is a common cause. The precipitating factors are usually due to abnormal laxity of the gastrosplenic, gastroduodenal, gastrophrenic and gastrohepatic ligaments. Lengthening of the ligaments due to stretching gives rise to abnormal rotation of the mesentery. In 30% of gastric volvuli, there is a primary cause. Secondary GV has alternative causes, including Congenital or traumatic diaphragmatic hernias, hiatus hernias, diaphragmatic eventration, abdominal bands or adhesions.<sup>[4]</sup> In adults, diaphragmatic defects do present as a GV.<sup>[5]</sup> The three basic types of congenital diaphragmatic hernias are posterolateral bochdalek hernia, anterior Morgagni hernia and hiatus hernia. When the patient presents with acute symptoms or incarceration.<sup>[6]</sup> Currently, CT can lead to an immediate diagnosis with all the anatomical details and confirm the diagnosis. Plain pulmonary roentgenogram, radiological studies of the gastrointestinal system with contrast material, computerised tomography and magnetic resonance imaging studies are helpful in its diagnosis.<sup>[7]</sup> Most surgeons make an approach with laparotomy. So that the abdominal contents can be inspected adequately to know the viability of the stomach and to correct the cause of volvulus. Minimally invasive approaches are currently



**Figure 2:** (a) Showing entry of scope, visualisation of herniated part of the stomach and other pictures, a scope may not negotiate towards body and pylorus. (b) Showing on adhesive band because of previous surgery. It is organo-axial rotation with Morgagni congenital diaphragmatic hernia causing hernia of stomach into the thorax.

being explored via video-assisted thoracoscopic or laparoscopic means.<sup>[8]</sup> Laparoscopy provides an excellent route for both the diagnosis and the repair of a Morgagni's hernia. The defect is repaired either by primary suture or by the use of a prosthetic mesh. In adults, a prosthetic non-absorbable mesh polytetrafluoroethylene (PTFE, Polypropylene) repair is preferred to reconstruct or cover the defect [Figure 2].

## CONCLUSION

GV is a condition that leads to gastric outlet obstruction and can present either acutely or chronically. It is commonly associated with Borchardt's triad. In our case, both the adhesive band and the congenital diaphragmatic hernia were the definitive causes of GV. Surgical intervention is the primary treatment modality, and addressing the underlying causes is crucial for preventing recurrence. Laparoscopic surgery provides a minimally invasive, effective, and safe approach, particularly for the repair of Morgagni's hernia.

## Author Contributions

All the author as we mentioned were involved in this case report.

## Ethical approval

Institutional Review Board approval is not required.

## Declaration of patient consent

Patient's consent not required as patients identity is not disclosed or compromised.

## Financial support and sponsorship

Nil

## Conflicts of interest

There are no conflicts of interest.

## Use of Artificial Intelligence (AI)-Assisted Technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-Assisted Technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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