



Gastric volvulus and a myriad of anomalies: Asplenia, jejunal diverticulosis and absent colonic attachments: A rare case report

✉ Maria Niaz Khan¹, ✉ Momina Waqar¹, ✉ Sufyan Yousaf¹, ✉ Ayesha Imran²

¹Department of General Surgery, Federal Government Polyclinic (PGMI), Islamabad, Pakistan

²Department of General Surgery, Sandemann Provincial Hospital, Quetta, Pakistan

ABSTRACT

Gastric volvulus is a rare cause of acute abdomen, and its complexity increases when associated with congenital anomalies. We report an exceptional case of gastric volvulus with perforation in a female patient, which was accompanied by asplenia, jejunal diverticulosis, and absent colonic attachments. To our knowledge, this combination has not been previously documented. This case highlights the need for further research into the mechanisms behind such rare anatomical associations.

Keywords: Gastric volvulus, asplenia, jejunal diverticulosis, absent colonic attachments

INTRODUCTION

Acute abdomen is one of the most frequently encountered surgical emergencies, caused by a diverse range of pathologies, including some that are exceedingly rare. Among these, gastric volvulus, a condition characterized by the abnormal rotation of the stomach on its transverse or longitudinal axis, represents a particularly challenging condition (1). In addition, congenital asplenia, another extremely rare condition, may either present in isolation or coexist with other congenital anomalies (2). Similarly, jejunal diverticulosis, yet another uncommon condition, can manifest with a variety of non-specific abdominal symptoms or complications, including perforation, volvulus, or obstruction (3). The concurrence of these infrequent conditions is an extraordinarily rare phenomenon. We report a case in which incidental findings of asplenia, jejunal diverticula, and absent attachments of the large intestine to the abdominal wall were noted during surgical exploration for an acute abdomen caused by gastric volvulus complicated by perforation. After performing an extensive review of available literature across PubMed, Google Scholar, and Scopus using relevant keywords and combinations, we are confident in stating that, to date, no case demonstrating the simultaneous occurrence of these anomalies has been reported.

CASE REPORT

A 35-year-old female, with no past medical or surgical history, presented to the emergency department with a complaint of severe abdominal pain for one day. The pain had worsened over the last eight hours and was associated with nausea and retching. On further inquiry, she revealed that there had been no flatus or bowel movement over the last 24 hours. However, there was no history of vomiting, urinary retention, and menstrual irregularities.

On examination, the patient was conscious, oriented, and in visible distress. The following vitals were recorded: Blood pressure 80/60 mmHg, pulse 116 bpm, temperature 100.2 °F, and oxygen saturation 97% at room air. Abdominal examination revealed gross distension with a firm to hard mass palpable in the upper quadrants, extending down to the level of the umbilicus. Diffuse tenderness to palpation

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Corresponding Author

Maria Niaz Khan

E-mail: marianiazkhan555@gmail.com

ORCID ID: orcid.org/0009-0003-7839-5532

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was noted. Bowel sounds were absent on auscultation. Digital rectal examination was unremarkable. Given the hemodynamic instability, immediate resuscitation was initiated, and steps were taken towards stabilization, including administration of analgesia and nasogastric decompression.

Initial investigations showed raised markers of inflammation (Table 1) and a negative urine pregnancy test. Abdominal X-ray showed a large gas-filled viscus occupying the upper abdomen (Figure 1). Urgent ultrasound imaging showed excessive gas shadows obscuring the viscera, resulting in a limited study; however, non-visualisation of spleen was reported. Keeping in view the worsening abdominal distension and deteriorating hemodynamic status despite the attempts at resuscitation, a decision was made for emergency surgical intervention. The possible risks were explained in detail and informed consent was obtained.

Under general anaesthesia, exploratory laparotomy was performed. Intraoperatively, gross peritoneal contamination with approximately 2300 mL of foul-smelling purulent fluid was noted. After adequate exposure, the grossly distended stomach was appreciated with a 180° rotation on its longitudinal axis (Figure 2). The stomach wall had a dusky appearance (Figure 3) and an approx. 4 cm perforation was noted along the lesser curvature (Figure 4). However, after administration of 100% oxygen and application of sponges soaked in warm saline, the stomach wall showed signs of viability with visibly improved colour. Interestingly, further exploration revealed a freely mobile large gut lacking attachments to the abdominal wall and multiple jejunal diverticula (non-inflamed, broad-based at the mesenteric border) (Figure 5). After meticulous examination, the absence of the spleen was confirmed as reported in the initial ultrasound report. The volvulus was reduced, and gastric perforation repaired in a double layer. Anterior gastropexy was performed. This was followed by colopexy; however, as the jejunal diverticula showed no signs of inflammation, they were left *in situ*. Postoperatively, the patient was shifted to the surgical intensive care unit on ventilatory support, where she was diagnosed with septic shock, and died on the first postoperative day despite persistent resuscitation.

Table 1. Laboratory findings of the patient

Parameters	Measured values	Normal values
Hematocrit	38.1%	35-49%
Hemoglobin	13.0 g/dL	12.0-15.0 g/dL
Platelets	235x10 ³ /mL	150-400 x10 ³ /mL
WBC	20.1x10 ³ /mL	4-11.0 x10 ³ /mL
Neutrophils	84.2%	40-70%
CRP	86.4 mg/dL	<0.7 mg/dL

CRP: C-reactive protein, WBC: White blood cell



Figure 1. Abdominal X-ray showing a large gas filled viscus occupying the upper abdomen.

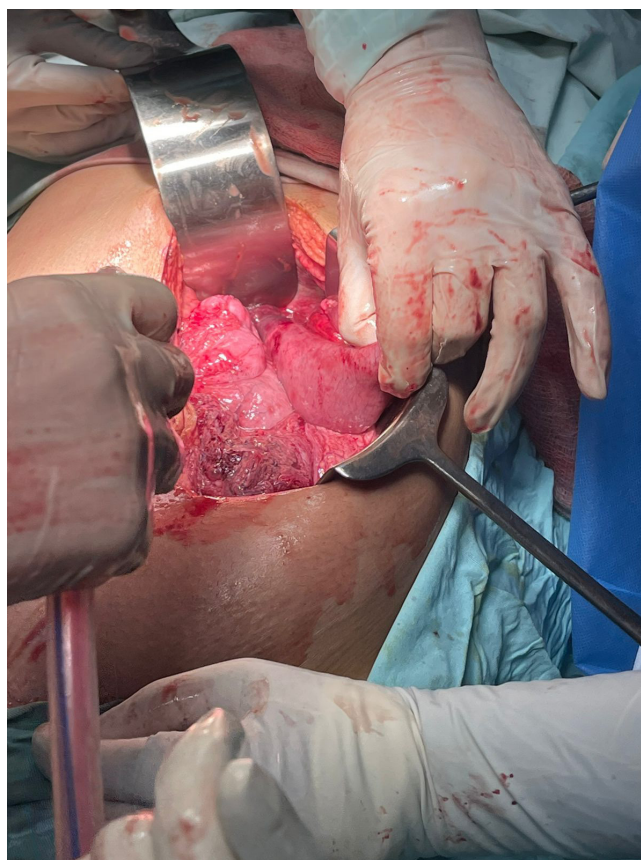


Figure 2. Intra-operative photograph demonstrating gastric volvulus.

DISCUSSION

Acute gastric volvulus is an exceedingly rare condition, and its exact incidence remains unknown (4). The highest incidence of gastric volvulus is observed in individuals during the fifth

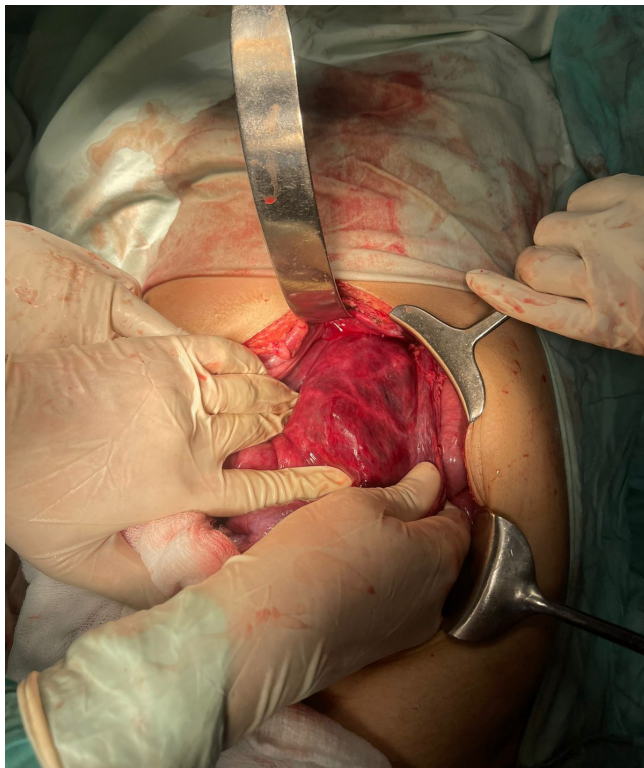


Figure 3. Intra-operative photograph demonstrating dusky stomach wall.

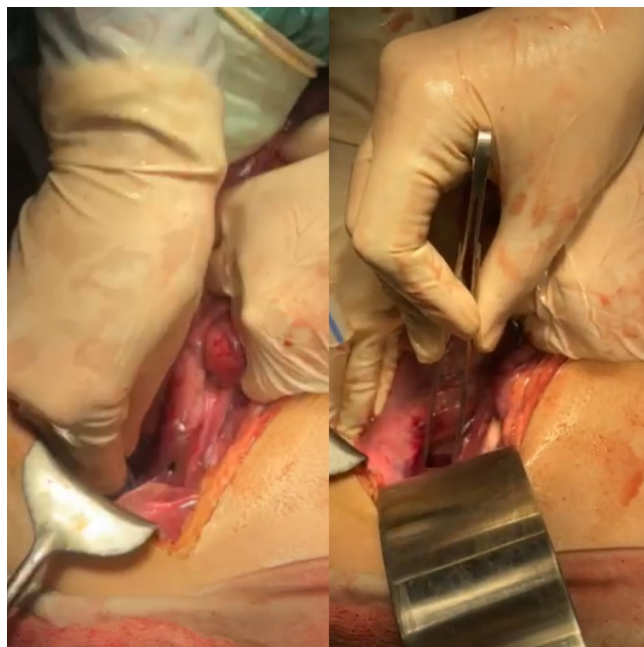


Figure 4. Intra-operative photograph showing gastric perforation.

decade of life, with no significant gender predilection (5). In approximately 30% of cases, it occurs as a primary event, while in the majority of instances, it is secondary to an underlying condition (4). Organoaxial volvulus, accounting for about 60% of cases, involves rotation of the stomach along its long axis between the gastroesophageal junction and the pylorus. In contrast, mesenteroaxial volvulus entails rotation around the short axis between the greater and lesser curvatures. A more complex pattern may occur, combining features of both organoaxial and mesenteroaxial rotations (6).

The clinical presentation of gastric volvulus varies depending on the extent of rotation, the degree of obstruction, and the type of volvulus. It typically presents with a classic triad of symptoms; epigastric pain, retching, and an inability to pass a nasogastric (NG) tube (referred to as Borchardt's triad), which is observed in approximately 70% of adults with gastric volvulus (7). Complications associated with gastric volvulus include ulceration, intestinal obstruction, perforation, hemorrhage, pancreatic necrosis, and omental avulsion. The mortality rate for acute gastric volvulus ranges between 30% and 50%. The management typically involves initial nasogastric decompression, followed by surgery to assess gastric viability, resect any gangrenous tissue, and perform de-rotation, along with gastropexy. Although emergent laparotomy remains the most widely used surgical approach, laparoscopic techniques have also been described (8).

Jejunal diverticulosis is another rare medical entity with incidence documented up to 1.25%. Jejunal diverticula are



Figure 5. Intra-operative photograph showing one of the many jejunal diverticula.

typically multiple, located in the upper jejunum, and most commonly found along the mesenteric border, where the blood vessels enter the bowel. The surgical complications associated with these diverticula include diverticulitis, which may lead to perforation, abscess formation, band adhesions, and intestinal obstruction. Hemorrhage and volvulus are also recognized as potential complications (9).

Congenital anomalies affecting colon fixation, resulting in absent or incomplete peritoneal attachments, predispose individuals to vague abdominal symptoms. Interestingly, the literature suggests that it may be associated with colonic motility disorders, potentially mediated by a deficiency of interstitial cells of Cajal, the gut's pacemaker cells responsible for coordinating peristalsis (10). Currently, no standardized clinical guidelines exist for the long-term management or screening of colonic malfixation, and treatment strategies remain individualized, focusing on symptomatology and the presence of complications.

The association between gastric volvulus and asplenia is well-documented in the literature, with multiple studies reporting gastric volvulus and other anomalies in patients with an absent spleen. Aoyama and Tateishi (11) described three children with asplenic syndrome who presented with gastric volvulus. Similarly, Marhuenda et al. (12) reported a case of acute gastric volvulus in an 18-month-old child with asplenic syndrome. In another case, Ibáñez et al. (13) described a 10-year-old boy with Smith-Lemli-Opitz syndrome who presented with organoaxial volvulus associated with asplenia. However, to the best of our knowledge, there has not been a single reported case documenting the synchronous presence of gastric volvulus, asplenia, jejunal diverticula, and absent colonic attachments to the abdominal wall. This makes our case a unique and exceptional presentation, contributing valuable insights into complex gastrointestinal malformations and raising the possibility of a common embryological origin rooted in developmental abnormalities. During embryogenesis, failure of proper rotation and fixation of the embryonic gut, along with anomalies in splenic development, may point toward a broader spectrum of congenital malformations—possibly part of a subtle heterotaxy or visceral malposition syndrome. Although isolated cases such as this are extremely rare, they underscore the need for a deeper investigation into potential genetic or syndromic associations that may predispose individuals to such combined anomalies. Further research and accumulation of case studies are necessary to develop evidence-based recommendations for both the management and potential screening of patients and at-risk relatives.

CONCLUSION

This case represents a unique presentation of the concurrent occurrence of gastric volvulus, asplenia, jejunal diverticulosis, and

absent colonic attachments to the abdominal wall. While each of these conditions may have been documented individually in the literature, their simultaneous presentation in a single patient is unprecedented. Further research and detailed case reports are needed to better understand the pathophysiological mechanisms underlying such rare associations.

Ethics

Informed Consent: The possible risks were explained in detail and informed consent was obtained.

Footnotes

Author Contributions

Concept - M.N.K., M.W., A.I.; Data Collection or Processing - M.N.K.; Literature Search - M.W., S.Y., A.I.; Writing - M.N.K., S.Y.

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