

Case Report

Mesenteroaxial volvulus-an unusual association of gastric volvulus with wandering spleen: a case report

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ABSTRACT

Gastric volvulus is a rare clinical entity characterised by an abnormal rotation of one part of stomach around other. Wandering spleen is also an another rare clinical entity characterised by a mobile spleen that can migrate from its normal position to any part of the abdominal cavity. Gastric volvulus had an usual association with wandering spleen. A wandering spleen itself predisposed to gastric volvulus and splenic torsion. Both are potentially life threatening if left untreated. Herein, we reported a case of gastric volvulus in a 15 year old girl associated with wandering spleen and discussed the radiological findings so as to ensure an early and accurate diagnosis.

Keywords: Gastric volvulus, Wandering spleen, Mesentero-axial volvulus

INTRODUCTION

An extremely rare surgical emergency, gastric volvulus is defined by an abnormal rotation of more than 180 degrees of one part of stomach around another.¹

The term was coined by Berti. It can be sub-classified into organoaxial and mesenteroaxial types. If left untreated, the condition can be potentially life threatening due to strangulation leading to ischemic necrosis and subsequent perforation. In such cases it carries a mortality rate of about 30% to 50%.² Wandering spleen is again a very rare clinical entity characterised by absence of spleen at its normal location in left upper abdominal quadrant which is frequently mobile and can migrate to any part of the abdominal cavity from its normal position.³

Both conditions share a common cause that is absence of intraperitoneal visceral ligaments. A wandering spleen is

a predisposing factor for splenic torsion and gastric volvulus.

CASE REPORT

A 15 years old Asian girl brought by her parents to the department of accident and emergency of Military hospital, Bathinda with complaints of intractable retching with vomiting, sudden onset severe pain in epigastric pain and left hypochondrium with abdominal distention for 2 hours. No associated complaint of fever, diarrhoea, toxic ingestion or trauma were reported. No personal or a family history of a significant medical condition was forthcoming. On a detailed physical examination, on palpation the abdomen was tender and distended with a firm round to ovoid tense mass felt in epigastrium and left hypochondrium. Per-rectal examination was normal. The central nervous system, cardiovascular and respiratory examinations were unremarkable. The blood pressure recorded to be 120/82 mmHg in supine position. The pulse was 76 /min, regular in rate and rhythm with

normal volume. The respiratory rate was 22/min. The SpO₂ was 98% at room air. The lab investigations were within the normal limits. As a protocol, plain frontal radiograph of chest and erect-supine radiographs of abdomen were done. The chest radiograph revealed an elevated dome of left hemidiaphragm with herniation of bowel loops into left hemithorax (Figure 1a). The plain radiographs of abdomen revealed a large ovoid radiolucent gaseous mass in left upper quadrant cranially herniating into the left hemithorax (Figure 1 b and c). No air-fluid levels were seen. Haustral markings were superimposed, however the gastric fundic bubble and splenic flexure couldn't be delineated separately. No other dilated bowel loops were seen. No free gas was seen in the abdominal cavity. As a part of initial management, nasogastric tube was attempted to be passed into the stomach which could be negotiated into it with difficulty. The bead of the nasogastric tube was localised in the inferior portion of this mass on a repeat radiograph of abdomen (Figure 1d).

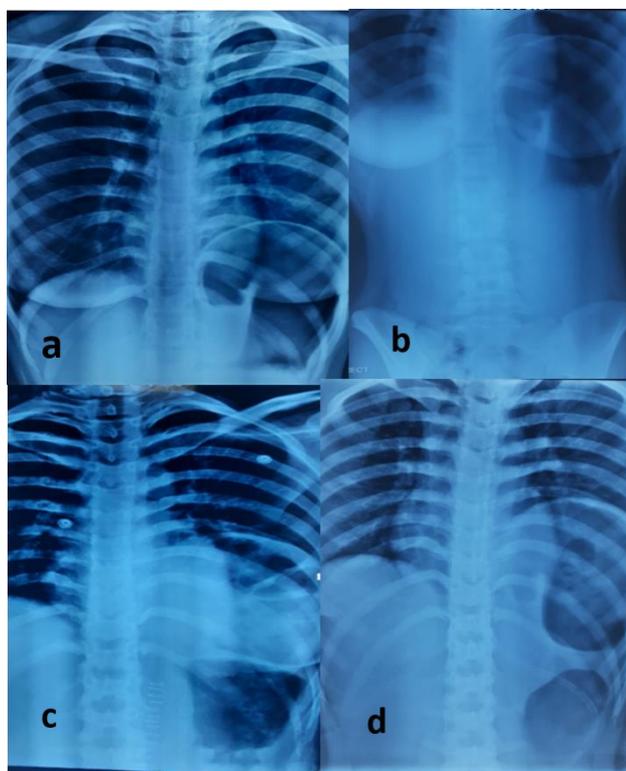


Figure 1: (a) Chest radiograph (PA view) with elevated dome of left hemidiaphragm; (b and c) erect and supine view of abdomen showing distended gaseous mass/loop herniating into the left hemithorax; (d) localisation of bead of the nasogastric tube in the inferior portion of the distended mass.

A probable diagnosis of gastric volvulus was made on the basis of plain radiographic findings. To confirm the exact nature and cause, the patient underwent a contrast enhanced computed tomography of chest and abdomen subsequently. The computed tomographic findings suggested an overdistended stomach herniating into the

left hemithorax. The stomach was found to be rotated around its short axis from lesser to greater curvature, perpendicular to cardio-pyloric axis (Figure 2 a and b). The bead of nasogastric tube was localized in caudal portion of stomach. No diaphragmatic defect was noticed. Another interesting finding was that spleen was enlarged and was absent at its normal expected position in left upper abdomen. It was seen in the midline and on the right abutting the left hepatic lobe anteriorly. It showed normal post contrast heterogeneous enhancement. No diaphragmatic defect was seen.

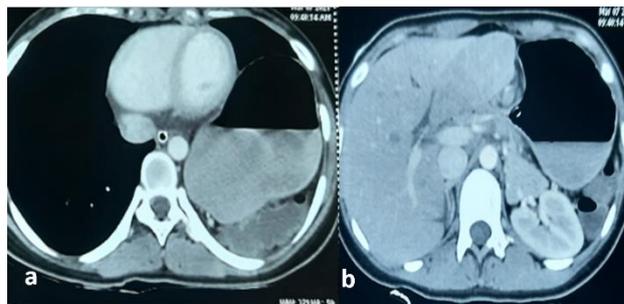


Figure 2 (a and b): Contrast enhanced axial sections of abdomen showing intra-thoracic stomach and midline spleen in epigastric region.

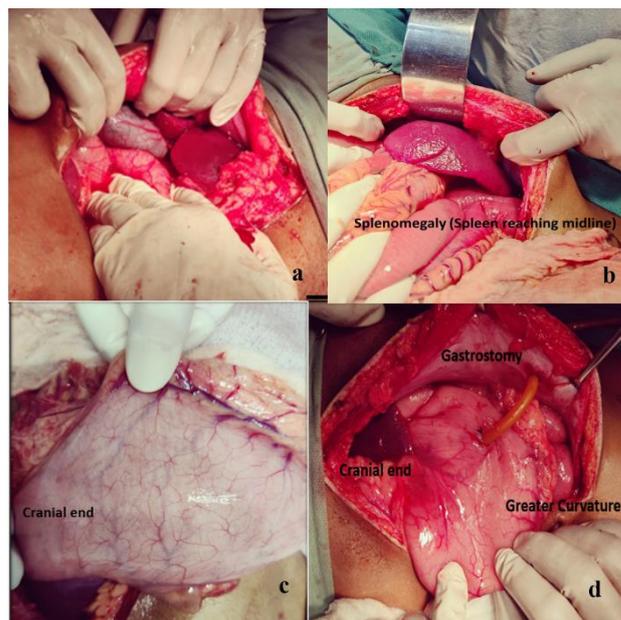


Figure 3: (a and b) Per-op images, midline laparotomy with midline positioned spleen in epigastrium; (c and d) per-op images showing de-rotation of stomach and gastrostomy.

An urgent exploratory laparotomy with midline incision under general anaesthesia was done. The spleen was found to be free floating in midline epigastrium and towards right (Figure 3 a and b). The per-op findings revealed an overdistended twisted stomach. A diagnosis of mesenteroaxial gastric volvulus was confirmed per-op. An anterior gastropexy was performed after detorting and

decompressing the stomach with gastrostomy and a feeding jejunostomy (Figure 3 c and d).

The post-operative period was un-eventful and the patient was discharged on day 7th. She was followed-up after a month where the patient was found to be asymptomatic and comfortable. The follow up chest radiograph reveals normal position of left hemidiaphragm (Figure 4). A follow up ultrasound of abdomen was also done which shows normal position of spleen in left upper abdominal quadrant (Figure 5).



Figure 4: Post-op chest radiograph PA view shows normal position of left hemidiaphragm.

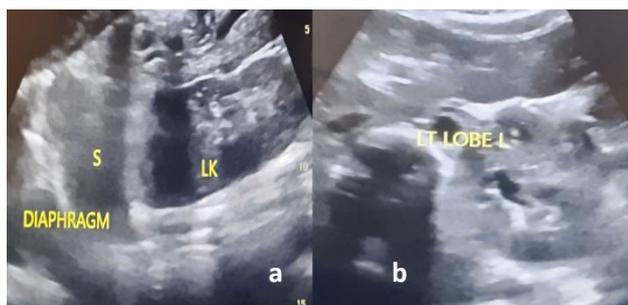


Figure 5 (a and b): Post-op US reveals normal position of spleen and left lobe of liver.

DISCUSSION

Gastric volvulus can be subtyped into organoaxial and mesenteroaxial varieties where the former was seen far more commonly as compared to the latter subtype.^{1,2} In organoaxial volvulus, stomach rotated along its long axis. In this subtype, the greater curvature displaced superiorly and the lesser curvature came more caudally in the abdominal cavity. Gastric volvulus in adults was seen

commonly in a setting of diaphragmatic injury and paraesophageal hernias.^{2,3} It was rarely seen in paediatric age group and often was seen in association with congenital diaphragmatic hernia like Bochdalek hernia and diaphragmatic eventration.³

The mesenteroaxial volvulus was seen less common and usually presented as a surgical emergency.² It carried a significant mortality rate if left untreated. It was characterised by rotation of stomach along its short axis, perpendicular to cardiopyloric axis thus bringing gastric antrum cranially and gastro-esophageal junction caudally in the abdomen.⁴ Congenital absence or underdevelopment of intraperitoneal visceral ligaments like gastrophrenic, gastrohepatic, gastroduodenal and gastrosplenic ligaments. In abdomen was the root cause for predisposition for this type.⁵ Congenital maldevelopment of these ligaments inturnallows approximation of proximal and distal ends of the stomach when it was full and thereby predisposing to this condition.

Wandering spleen was again a rare clinical entity characterised by absence of spleen at its normal expected position in left upper quadrant of abdomen.⁶ The spleen was mobile and can migrate into any part of abdominal cavity owing to maldevelopment of visceral splenic ligaments. It was attached only at its vascular pedicle. For this reason, the splenic pedicle had an increased risk of axial torsion that can lead to splenic congestion and ultimately to splenic infarction.⁴ Gastric volvulus and wandering spleen shared a common cause that was congenital absence or poor development of intraperitoneal visceral ligaments. Wandering spleen was itself a predisposing condition for splenic torsion and gastric volvulus thus both clinical entities showed an unusual or rare association.⁵ If left untreated, gastric volvulus can be potentially life threatening owing to gastric ischemia and perforation that may lead to death.^{6,7}

The patient may clinically present with features of intractable retching with or without vomiting, sudden onset severe epigastric pain and abdominal distension. Inability to pass a nasogastric tube into stomach was frequently encountered.^{5,7}

The diagnosis of this condition was at times very challenging. Radiological investigations as a part of initial management assumed clinical significance since if left untreated this condition could turn to be potentially fatal.^{2,3} A plain frontal radiograph of chest and an erect radiograph of abdomen may demonstrate an upside down distended stomach in left upper quadrant and epigastrium herniating into thorax.³ Barium swallow was considered to be a gold standard in diagnosing this condition. It had a high sensitivity and specificity. It may demonstrate a distended stomach in left upper quadrant extending into thorax, the stomach may appear inverted and may show beaking at the point of twist. In acute volvulus, contrast material may not be able to enter the stomach. The

computerised tomographic appearance of gastric volvulus depends on the subtype, extent of thoracic herniation and point/zone of torsion.⁶ It may demonstrate a normal or overdistended stomach with antro-pylorus projecting cranially to gastric fundus. Entire stomach may be seen within the thorax with retrocardiac or retro-mediastinal air-fluid level. Infrequently a non-enhancing or a hypoenhancing linear band or septum may be appreciated which corresponds to the zone or level of torsion. Gastric ischemia may be demonstrated by regional lack of enhancement in post-contrast images. Pneumatosis may be seen in association in cases with ischemic necrosis of gastric wall.

In cases with associated wandering spleen, a mobile spleen may be seen anywhere in the abdominal cavity. Spleen was frequently not seen at its expected position in left upper quadrant in abdomen. An ultrasound of abdomen may show wandering spleen, being absent at its normal abdominal location. A Doppler study may be done to rule out splenic torsion.⁴

The approved surgical management mandated an open or laparoscopic detorsion of stomach with an anterior gastropexy. A call for total or subtotal gastrectomy may be taken perioperatively depending on the vascularity of stomach.⁶ If a wandering spleen was found at surgery then a splenopexy may be done in the same setting to prevent splenic torsion in future.⁷

CONCLUSION

A high index of suspicion is must for ensuring an early and accurate diagnosis. It is to be suspected in every patient presented with intractable retching with or without vomiting, sudden onset severe upper abdominal pain and abdominal distension. An upside down distended stomach in plain radiograph of abdomen which may extend cranially into thorax may be a vital pointer towards diagnosing gastric volvulus. Barium swallow and contrast enhanced computerised tomography of chest and

abdomen may be done for confirmation. A prompt surgical evaluation is vital in the management since if left untreated, this condition may turn out to be potentially fatal.

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