

Case Report

Perforated Gastric Volvulus in Diaphragmatic Hernia Developing Opposite Side Empyema Postoperatively in Young Male

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Abstract

When the stomach undergoes torsion inside the thoracic cavity, it results in acute gastric volvulus. It could be the consequence of an undetected Congenital Diaphragmatic Hernia (CDH) or an accompanying expansion of the hiatus. We report a 14-year-old boy who came to our emergency room complaining of non-bilious vomiting and severe epigastric pain.

On further work up diaphragmatic hernia with gastric volvulus with perforation with left moderate pleural effusion with midline shift and collapsed left lung, Patient underwent emergency exploratory laparotomy found to have gastric volvulus with herniation and perforation of stomach along with herniation upper pole of spleen in left hemi thorax. Patient underwent partial gastrectomy with exploration and lavage of left hemi thorax with closure of diaphragmatic defect. After surgery, patient developed right side empyema. On postoperative Day 7 patient underwent right thoracoscopic decortication.

Keywords: Gastric volvulus; Herniation; Empyema

Introduction

Intra thoracic gastric volvulus is a rare clinical entity that can occur in both adult and paediatric age group. It occurs when the stomach rotates on itself at least 180 degrees along its transverse or longitudinal axis. Gastric strangulation is a complication that can occur after the development of acute gastric volvulus. It is a surgical emergency which requires volvulus reduction, reposition of the herniated contents into their anatomical position [1].

Case Presentation

Patient information

A 14 year old male was accompanied by his parents to the emergency room of our hospital with complaints of acute epigastric pain and five to six episodes of non-bilious vomiting.

Patient's parents also gave history of trauma to the upper abdomen during wedding celebration 24 hours before presentation.

Clinical findings

The general condition was poor. His pulse rate ranged between 170-175/minute with a blood pressure of 160/110 mm hg with SpO₂ 90%

on O₂ 6 lit/min and tachypnoea. Air entry on left side was decreased. On per abdomen examination, abdomen was tense, distended with severe tenderness in upper quadrants of the abdomen with rigidity and sluggish bowel sounds. Patient was conscious but disoriented and was intubated upon arrival in the emergency department.

On Ryle's tube insertion, 20 ml of black coloured fluid and bile was aspirated approximately with no relief of symptoms.

Diagnostic assessment

Routine blood investigations were sent, WBC counts were raised (17350 cells/cu mm) whereas the rest were within normal limits.

Contrast-Enhanced Computed Tomography (CECT) of the abdomen, pelvis and thorax was done which suggested a left diaphragmatic hernia with evidence of herniation of the stomach into the left chest cavity with possible gastric volvulus- possibility of pre-existing diaphragmatic hernia with exacerbation/spontaneous rupture of diaphragm with diaphragmatic herniation likely (Figure 1). There was also protrusion of the upper pole of spleen through the diaphragmatic defect into the left chest cavity. The diaphragmatic defect the left dome of diaphragm measured about 3.5 cm. Mediastinal shift is noted towards right side with mild to moderate right pleural effusion and gross left pleural effusion/collection.

Diagnosis

After through clinical and radiological assessment, a provisional diagnosis of diaphragmatic hernia presenting as acute gastric volvulus was made.

Therapeutic interventions

The patient underwent an emergency exploratory laparotomy under general anaesthesia on the night of presentation. Intraoperatively, there was evidence of approximately 4 cm left

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postero-lateral diaphragmatic defect with herniation of stomach and spleen with gastric volvulus with patchy gangrene with multiple perforations of stomach along greater curvature (Figure 2 and 3). Approximately 2L of bilious fluid with food particles in left thoracic cavity herniated contents were reduced to the abdominal cavity and partial gastrectomy was done.

Exploration and lavage of left hemi thorax through diaphragmatic defect done and intercostal drainage tube inserted in left hemi thorax under vision diaphragmatic defect closure with primary repair. He was later shifted to intensive care unit for further care and management. Patient had fever spikes from Postoperative day 5. On work up patient had right sided thoracic empyema with loculated collection. The patient then underwent right side diagnostic thoracoscopy with drainage of empyema with decortication as depicted below in clinical picture (Figure 4). He then showed a speedy and uneventful recovery and was discharged on post-operative day 17.



Figure 1: CECT of Abdomen depicting herniation of stomach into left thoracic cavity.

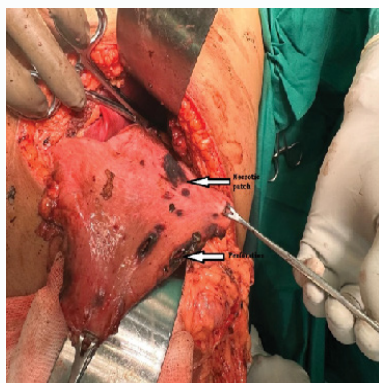


Figure 2: Intra-operative findings of necrotic patches (upper arrow) and perforations of stomach along greater curvature (lower arrow).

Discussion

Incomplete fusion of the pleuroperitoneal canal is known as congenital diaphragmatic hernia. The intra abdominal structures may herniate into the thorax due to this lack of fusion, and most people present with this condition early rather than later in life. But some adults may have a congenital hernia that maybe missed when they were younger [1,2].

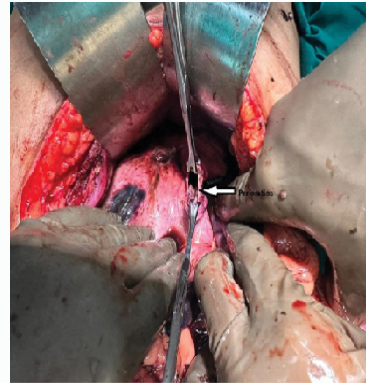


Figure 3: Intra operative finding of perforation of stomach.

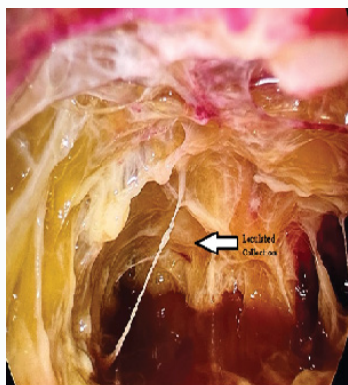


Figure 4: Presence of empyema and loculated collection (arrow) in right sided thoracic cavity as shown during diagnostic thoracoscopy.

A group of symptoms described as the "Borchardt triad"- epigastric distension, ineffective retching, and difficulty passing a nasogastric tube-present in about 75% of the affected patients [3]. These three symptoms matched those of our patient. Hematemesis may also be observed as a result of mucosal tears after retching or mucosal sloughing brought on by ischemia [4]. Imaging studies such as plain pulmonary roentgenogram, radiological studies of the gastrointestinal system with contrast material, computerized tomography and magnetic resonance imaging are usually helpful in its diagnosis [5].

Reducing the volvulus, preventing recurrence, and correcting any risk factors, such as diaphragmatic abnormalities, are the main goals of surgery. While open surgical reduction with gastropexy was thought to be the standard of care [4], like with most treatments, more sophisticated procedures can now be carried out with minimally invasive methods thanks to improvements in laparoscopic tools and laparoscopic technique development.

In individuals with isolated gastric volvulus, less invasive methods now used include laparoscopic surgery or endoscopic reduction with percutaneous gastrostomy tube insertion [6,7]. The patient in our instance was hemodynamically unsuitable for a laparoscopy. Thus, we had to perform a laparotomy.

Gastric volvulus is a complicated condition that is best diagnosed and treated by an interdisciplinary team consisting of an intensivist, general surgeon, gastroenterologist, radiologist, and emergency department physician. Treatment or diagnosis delays might be lethal.

While conservative treatment, such as stomach decompression, may be used to manage certain patients, surgery is usually beneficial for the majority of them. Patients with strangulated stomach volvulus require close observation in an intensive care unit due to fatality rates exceeding thirty percent. Patients may experience difficulties even after surgery, which could make recovery take longer. For most people, the results are cautious.

Conclusion

Based on this scenario, we wish to underline the importance of quick diagnosis, early surgical intervention and inter departmental team effort. This case report highlights the unusual presentation of Gastric volvulus within a Bochdalek hernia in a teenager.

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