



Case report

Mesenteroaxial gastric volvulus in a 12 Year female child: A rare case report

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ABSTRACT

Introduction and importance: Gastric volvulus is an abnormal rotation of all or part of the stomach around one of its axes. It is a rare clinical entity and a potentially life-threatening condition. Mesenteroaxial volvulus is a less commonly encountered variant of gastric volvulus. The objective of this study was to describe a rare case of Mesenteroaxial volvulus in a 12-year-old female child.

Case presentation: A 12-year-old female child presented with a complaint of severe abdominal pain of two days duration associated with abdominal distention, failure to pass faeces and flatus, difficulty of breathing, and bloating. The vital sign was blood pressure of 90/60 mmHg, pulse rate of 130 beats per minute, respiratory rate of 29 breaths per minute, and temperature 37.8 degree Celsius. On abdominal examination, there was distension, hyperactive bowel sound, tenderness, and splenomegaly. Exploratory laparotomy was done and the intra-operative finding was gastric volvulus with Mesenteroaxial type which was slightly ischemic with poor ligamentous attachment. Decompression with a Nasogastric tube (NGT) and gastropepy was done. The child was discharged on the 6th postoperative day.

Clinical discussion: Gastric volvulus is an abnormal rotation of the stomach on horizontal or vertical axes causing various degrees of obstruction. Mesenteroaxial volvulus is most commonly seen in young children and is associated with ligamentous laxity.

Conclusion: Gastric volvulus causes grave complications and death if not recognized early or surgical intervention is taken timely. Though it is a rare clinical entity, the primary physician should be aware of the clinical presentation.

1. Introduction

Gastric volvulus is a rare clinical entity and a potentially life-threatening condition with the highest incidence peak occurring in the fifth decade of life (80–90 % of all cases) and the rest occurring in children less than one year [1]. Gastric volvulus is an abnormal rotation of all or part of the stomach around one of its axes more than 180° [2,3].

Mesenteroaxial volvulus is a less commonly encountered variant [3]. This occurs when torsion occurs around the transverse axis of the stomach [4]. In this position, the stomach lies in the vertical plane with the antrum and pylorus rotated anterior and superior to the gastroesophageal junction [1,3].

Mesenteroaxial volvulus is a rare form of volvulus. The diagnosis and treatment are challenging and hence educationally important. This is a case of mesenteroaxial gastric volvulus in a 12-year-old female child

who was managed surgically and discharge on the 6th postoperative day. The objective of the study was to describe a rare case of Mesenteroaxial volvulus in a female child. This case report has been reported in line with the SCARE criteria [5].

2. Case presentations

A 12-year-old female child presented with severe abdominal pain of two days duration associated with huge distension, failure to pass faeces and flatus, difficulty of breathing, and bloating but has no vomiting. On physical examination, the patient was acutely sick-looking. The vital sign was blood pressure of 90/60 mmHg, pulse rate of 130 beats per minute, respiratory rate of 29 breaths per minute, and temperature of 37.8 degree Celsius. Abdominal examination revealed that protuberant abdomen which moves with respiration, hyperactive bowel sound, mild

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tenderness, and splenomegaly. Subcostal and intercostal retraction on chest examination.

The patient was investigated with a complete blood cell count of a white blood cell of $13,110/\text{mm}^3$, a hematocrit of 40.3 %, and a platelet count of $270,000/\text{mm}^3$. After stabilizing and resuscitation patient was taken to the operation theatre with preoperative assessment of large bowel obstruction secondary to simple sigmoid volvulus. Rectal tube deflation attempted but not successful. Preoperatively, NGT was tried and was difficult to insert and deferred. Emergency surgery was decided at midnight immediately for fear of perforation to prevent subsequent sepsis as the x-ray machine was not functional temporarily. Broad-spectrum antibiotics were given. A written informed consent was taken from parents. Under general anaesthesia and patient in a supine position exploratory laparotomy was done. The intraoperative finding was gastric volvulus Mesenteroaxial type (Fig. 1) which was slightly ischemic (Fig. 2) with poor ligamentous attachment to transverse colon, the lesser sac was open and pancreas was visible. There was splenomegaly. No diaphragmatic defect. The stomach decompressed with nasogastric tube. There was about 500 ml of non-bilious content and gaseous NGT output.

Warm saline was applied to the ischemic gastric segment. The stomach was fixed anterolaterally by silk with abdominal wall after making sure that the ischemic segment turned pink after warm saline application. NGT was removed after 4th post-operative day when no output.

Postoperatively, she was kept nothing per os, put on maintenance fluid alternatively of normal saline, ringers lactate and 5 % dextrose in normal saline for 24 h. Broad spectrum antibiotics were given. The postoperative period was uneventful. The client was discharged on the 6th postoperative day.



Fig. 2. Intra-operative image showing ischemic -Mesenteroaxially volvulated stomach.

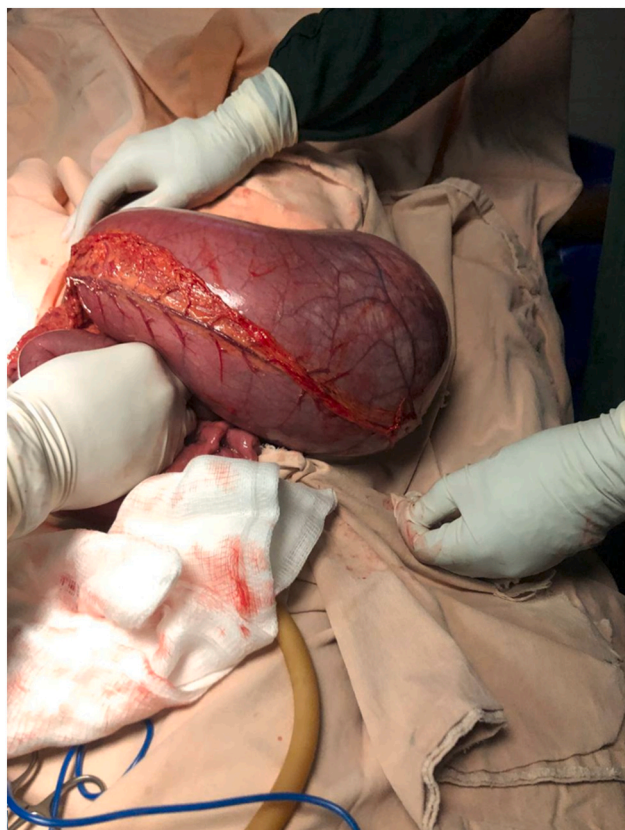


Fig. 1. Intra-operative image showing Mesenteroaxially volvulated stomach.

3. Discussion

Gastric volvulus is an abnormal rotation of the stomach on horizontal or vertical axes causing various degrees of obstruction. A rotation greater than or equal to 180° leads to a complete gastric obstruction [1,3].

Gastric volvulus is classified based on etiology, axis of rotation, and course of clinical presentation. It can be primary (idiopathic) and secondary according to the etiology, organoaxial, mesenteroaxial, and combined type of volvulus based on the axis of rotation [2], and acute and chronic based on the clinical presentation [3,4].

The third and rarest form of gastric volvulus is when the stomach rotates about both the organoaxial and mesenteroaxial axes resulting in a combined volvulus. About 60 % of cases of gastric volvulus are Organo-axial followed by mesenteroaxial [3,6].

Primary or idiopathic gastric volvulus results from abnormalities of the gastric ligaments which include agenesis, elongation, or disruption from neoplasia, adhesions, or skeletal deformity. Secondary gastric volvulus arises from gastric and adjacent structures' anatomical abnormalities such as the spleen and diaphragm [1,3]. Congenital and traumatic conditions also contribute to the secondary causes [6]. Paraesophageal hernia, diaphragmatic hernia [6], diaphragmatic eventration, and phrenic nerve paralysis are the associated conditions [2,3,7]. Wandering spleen which resulted from abnormal laxity or absence of peritoneal attachment due to congenital abnormalities is the reported congenital cause [8].

Mesenteroaxial volvulus results when torsion occurs around the transverse axis of the stomach. It is most commonly seen in young children and is associated with ligamentous laxity [9]. The stomach is held in place by the fixation of the abdominal wall by four ligaments; gastrocolic, gastrohepatic, gastrophrenic, and gastrosplenic. These

ligaments together with the pylorus and the gastroesophageal junction provide anchorage and therefore prevent malrotation. The absence or distension of these ligaments is necessary for volvulus to occur [1,3,6].

Though gastric volvulus is a rare clinical entity, primary physicians should be aware of the presentation. Patients with gastric volvulus mostly presented with features of gastrointestinal obstruction such as vomiting, abdominal pain, and distension [4]. Other acute symptoms include pain in the epigastrium or chest, nausea, and bloody vomiting. Difficulty in place a nasogastric tube is also a symptom. Patients could have also sub-acute and chronic symptoms including upper abdominal pain, difficulty of swallowing, bloating, early satiety, heartburn, and passage of black tarry stool [1,10].

Gastric volvulus can be diagnosed with the help of an erect chest radiograph, barium swallow, computed tomography (CT) scan, upper gastrointestinal endoscopy, abdominal radiograph, and abdominal ultrasound but a computed tomography scan is the choice of imaging [2,6,7]. Surgery is the mainstay of management for gastric volvulus and could be open or laparoscopic [2,11]. Volvulus reduction and gastropexy, partial or total gastrectomy in case of persistent ischemia and necrosis [10,12], reintegration of the stomach into the abdominal cavity in cases of intrathoracic migration, and correction of underlying factors are the options of surgical management according to the intraoperative findings [2,7]. The initial management of a patient with gastric volvulus includes hemodynamic stabilization, fluid and electrolyte correction, and decompression with a nasogastric tube [1,10].

It causes grave complications and death if it is not recognized early or surgical intervention is taken timely [3,11,13]. Complete gastric obstruction could result in strangulation which can lead to ischemia, necrosis, perforation, hypovolemic shock, and sepsis [10,11]. Early diagnosis and timely interventions are therefore important to avert the complications and associated death [3,13]. The limitation of this study was abdominal radiography and abdominal computed tomography scan were not done since the patient arrived midnight and emergency operation was warranted and the machine was not functional temporarily.

4. Conclusion

Mesenteroaxial gastric volvulus is a rare clinical condition that necessitates a high level of suspicion for diagnosis, relying on clinical presentation and imaging studies. The preferred treatment approach involves immediate surgical intervention, either through open surgery or endoscopy. Timely diagnosis and surgical intervention effectively prevent complications, resulting in minimal morbidity and a shorter hospital stay.

Informed consent

Written informed consent was obtained from the patient's parents for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in Chief of this journal on request.

Ethical approval

Ethical Clearance was obtained from the Research and Ethics Review Committee of College of Medicine and Health Sciences, Mizan-Tepi University. Here is the Reference no: RCSD/CMHS/1165/23. Date: 21/11/2023

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Author contribution

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Involved in the conception and design of the study, drafting and revising of the article and final approval of the version to be submitted.

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Conflict of interest statement

No potential conflict of interest relevant to this article was reported.

Availability of data and materials

The authors of this manuscript are willing to provide any additional information regarding the case report upon official request.

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