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Gastric Volvulus as a Surgical Emergency: A Rare Case Report

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Abstract: Gastric volvulus is a rare surgical emergency caused due to twisting of stomach around its own axis .If untreated it may progress to a catastrophic event leading to perforation, ischemia and necrosis of the stomach. Surgical management in an appropriate manner is preferred modality of treatment. Here we report a rare case of acute gastric volvulus in an 18 year old female.

Keywords: Gastric volvulus, Mesentero-axial, Organo-axial, Retrocardiac, Gastropexy, Detorsion.

INTRODUCTION

Gastric volvulus is an extremely rare clinical entity first described by Berti in 1866 [1]. The stomach is a relatively uncommon site of volvulus. Patients with acute gastric volvulus typically present with epigastric pain, nausea and vomiting. A useful clinical triad for identifying gastric volvulus, the Borchardt triad consists of sudden epigastric pain, intractable retching and inability to pass a nasogastric tube into the stomach [2]. Acute gastric volvuli carry a mortality rate of 42–56% secondary to gastric ischaemia, perforation or necrosis [3]. Gastric rotation can occur on its longitudinal (organoaxial) or transverse (mesenteroaxial) axis [4]. Organo-axial volvulus is the most common type in the world literature and it has the highest rate of predisposition to visceral strangulation. Anterior rotation of the major gastric curvature usually occurs, and this moves the posterior face of the stomach to an anterior position [5]. Gastric volvulus may be associated with anatomic defects of gastric ligaments (idiopathic or primary gastric volvulus), with abnormalities of gastric anatomy and function, or with abnormalities of adjacent organs (secondary gastric volvulus) [6]. Plain radiographic findings include retrocardiac air, in keeping with the intrathoracic portion of the stomach. Air fluid levels in the mediastinum may also be noted [7]. In organoaxial type, the stomach lies rather horizontally on plain film with single fluid level [8]. Treatment can be either surgical or medical in nature. The gold standard is open laparotomy with detorsion and prevention with anterior gastropexy [9]. We hereby report a rare case of organoaxial gastric volvulus presented at our institution as a surgical emergency highlighting the approach for management and other aspects relevant to the case.

CASE REPORT

An 18 year old female patient presented to emergency of our hospital with chief complaints of pain abdomen associated with nausea and vomiting and was unable to pass flatus since 3 days. On clinical examination abdomen was grossly distended with guarding and rigidity and absence of bowel sounds. Nasogastric tube could not be passed. Patient underwent relevant radiological investigations including X-ray chest showing air under both domes of diaphragm, X ray abdomen(erect view) showing air stomach shadow with single fluid level, ultrasound abdomen showed gaseous abdomen with possibility of gut perforation. After taking informed consent for surgery patient underwent exploratory laparotomy under general anaesthesia. Midline incision was given after painting and draping parts from abdomen up till mid thigh. Massively dilated stomach twisted around longitudinal axis was delivered from the main wound. A perforation 5cm from gastroesophageal junction was identified with gastric contents coming out of it. This area was opened and gastric contents were drained and lavage with normal saline was done until clear fluid returned. Peritoneal lavage was also done. Splenectomy was done to aid rotating stomach and relieving twist of stomach around its own axis. Areas of necrosis and non viable

gastric tissue were present for which the patient underwent partial gastrectomy. After this, stomach was repaired to construct a gastric sleeve in two layers with absorbable sutures. Nasogastric tube was placed. Feeding jejunostomy was also done and abdominal drain was placed and fixed and wound was closed in layers after achieving hemostasis. Gradual improvement in general condition of patient was noticed on second postoperative day. Patient was discharged on 10^{th} postoperative day with feeding jejunostomy in situ. Patient's general condition improved and patient resumed regular oral diet after removal of feeding jejunostomy. No complication was seen in follow up period and patient was accepting normal diet orally in form of small frequent meals as advised.

RADIOLOGICAL FINDINGS

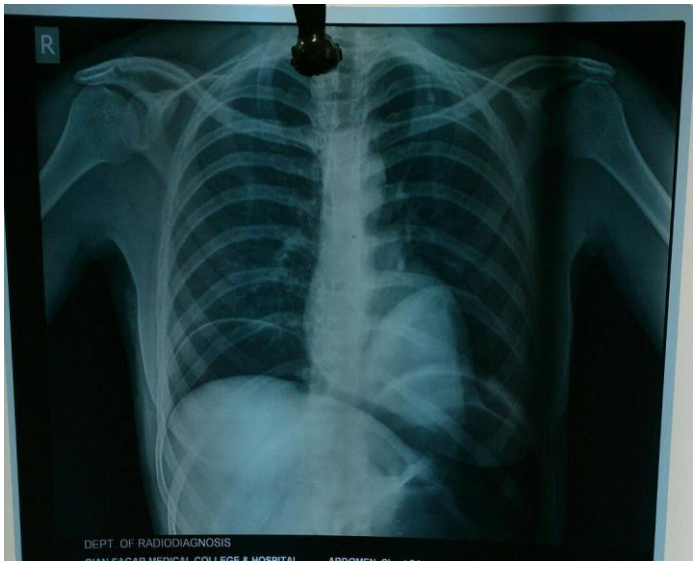

Fig-1: X-ray Chest showing air under both domes of diaphragm and gastric shadow

Fig-2: X-ray abdomen erect view showing air stomach shadow with single fluid level

OPERATIVE FINDINGS

Fig-3: Midline laparotomy incision and stomach delivered from main wound. Stomach twisted around its own axis

Fig-4: Stomach twisted around axis and perforation five centimetres from gastroesophageal junction

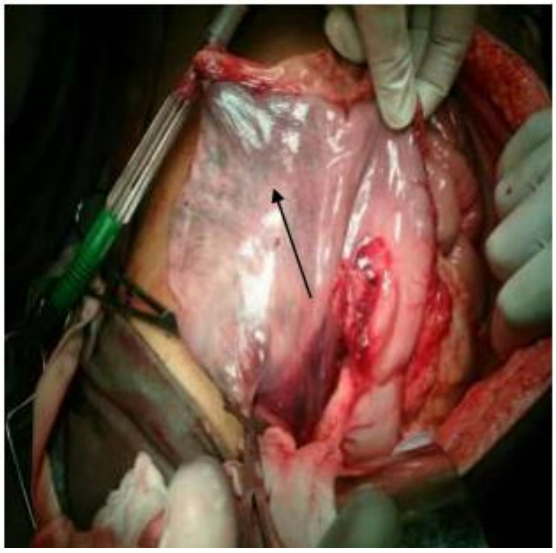

Fig-5: Necrotic gastric tissue

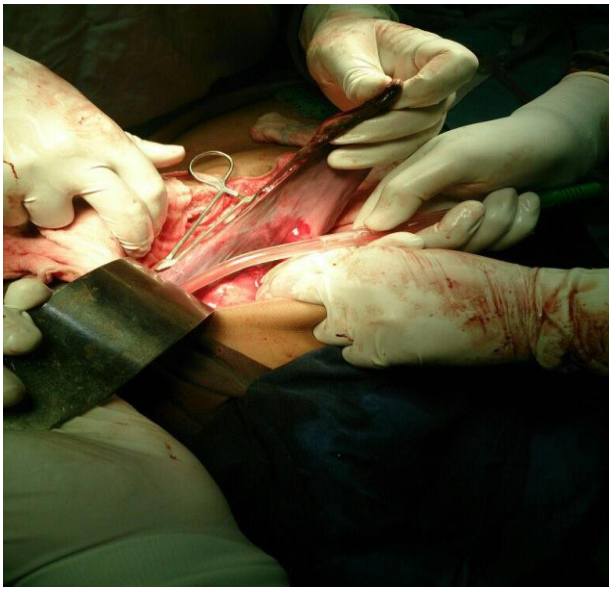

Fig-6: Gastric sleeve after partial gastrectomy

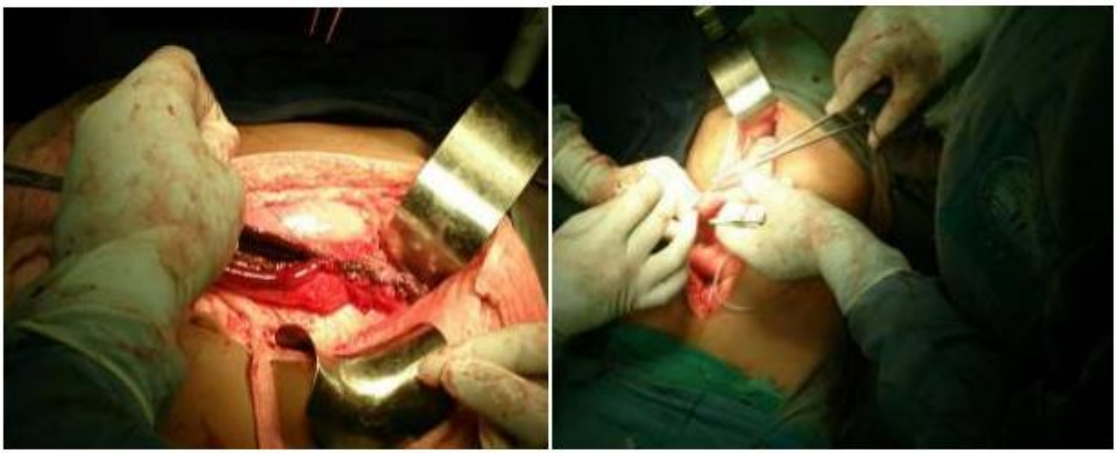

Fig-7: Construction of gastric tube with absorbable sutures(Double layer) and feeding jejunostomy

DISCUSSION

The term "volvulus" is derived from the Latin verb *volvere*, which means to turn or roll. A brief History revolves around 3 B's—it was first described by Berti in 1866, First successful operation was done by Berg in 1896 and First delineation of classic triad of Borchardt in 1904. Oltman described the first pediatric patient in 1899 [10]. Gastric volvulus can be defined as a torsion of more than 180° of the stomach around its short or long axis [11]. This can lead to ulceration, perforation, hemorrhage, ischemia or necrosis [12]. The non-operative mortality rate is as high as 80% [13]. Gastric volvulus is usually divided into two main subtypes: organoaxial and mesentero-axial. Organo-axial volvulus is far more common than mesenteroaxial volvulus and accounts for approximately two-thirds of cases of gastric volvulus. In a revision of 200 cases, Wastell and Ellis found organo-axial gastric volvulus in 59 % of patients. This was followed in frequency by the mesenteric axial volvulus type (29%), both types (2%), and no classification (10%) [14]. The radiological findings are specific in acute and secondary gastric volvulus. Plain film in chronic volvulus shows only gaseous dilatation of the stomach and intestines. In the case of mesenteroaxial volvulus, gastric shadow may show double air fluid levels in erect position, one in the fundus and the other in the antrum. In organo-axial type, the stomach lies rather horizontally on plain film with single fluid level. The contrast roentgenogram shows a rotated stomach but no obstruction in the case of chronic gastric volvulus. Hence the radiological examination should be done in supine as well as in upright position. Absence of classical roentgen signs of gastric volvulus may be observed in intermittent obstruction [8]. Both are surgical emergencies and warrant prompt diagnosis and treatment [15]. As for the treatment, gastric volvulus presenting with acute symptoms requires immediate surgical intervention. The surgical management of gastric volvulus is usually straightforward, requiring de-rotation, reduction of the hernial contents into the abdominal cavity and repair of the hernial defect if present. In children, percutaneous gastropexy by a combined laparoscopic and

gastroscopic approach has been described. Other techniques include gastrojejunostomy, fundo-antral gastrostomy (Opelzer's procedure), partial gastrectomy, division of any congenital bands, simple gastropexy, gastropexy with division of the gastrocolic omentum (Tanner's procedure), all with or without repair of diaphragmatic hernia, have also been described. The introduction of laparoscopic approaches has led to safer less invasive surgery. Endosopic de-rotation together with percutaneous endoscopic gastrostomy has been described in patients with isolated gastric volvulus and significant co-morbidity. Laparoscopic gastropexy is already well described for treating acute and chronic gastric volvulus [16].

CONCLUSION

Gastric volvulus is a rare surgical emergency least commonly encountered in emergency setups and has a very high mortality if diagnosis is missed. Prompt diagnosis and treatment is of utmost importance to prevent complications and catastrophic events that might take place in the form of ischemia, perforation and necrosis. As relevant to our case where we encountered organoaxial gastric volvulus with perforation and necrotic areas, immediate detorsion and repair in an appropriate manner was undertaken and patient discharged satisfactorily with improved status on follow up and resumption of regular oral diet. We conclude that immediate surgical repair is required to prevent any adverse events .In the era of endoscopic and minimally invasive surgery traditional method of repair is still a preferred option by many surgeons.

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