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A Lethal Twist - Case of Gastric Perforation Secondary to Gastric Volvulus

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ABSTRACT

Gastric volvulus may be defined as an abnormal anterior or posterior rotation of part or almost all of the stomach about either the coronal or the sagittal axis of the body. The stomach, being fixed by the gastrophrenic ligaments above and by the peritoneum covering the second portion of the duodenum below, is limited in mobility between these fixed points only by the length of the lesser curvature and the length of the gastrohepatic omentum, and may be displaced within these limits by extrinsic pressure from whatever cause. This interesting condition is not of recent discovery, being first described by Berti in 1886, who found the condition at autopsy. Acute presentation of gastric volvulus is a rare condition with a high mortality for acute ischaemia. A 45-year-old female , homemaker with no notable past medical history presented to the emergency with history of generalized acute abdominal pain more over the right hypochondrium. . CECT abdomen revealed moderate volume of free fluid and air (perihepatic and beneath anterior abdominal wall) with dependent air-fluid is seen within peritoneal cavity suggestive of gastric perforation. Twisting of stomach over it's axial plane/ short axis is seen with gastro-esophageal junction seen below pyloro-duodenal junction, suggestive of gastric volvulus. Hence she was taken up for exploratory laparotomy with near total gastrectomy and gastrojejunostomy . Intraoperatively gastric perforation secondary to gastric volvulus with necrotic patch seen at the fundus of stomach anteriorly and body of stomach posteriorly . Postoperatively patient was kept NPO for 4 days . Gastrograffin study was done , revealed no anastomotic leak . Hence she was started on liquid diet gradually progressed to soft solids . Gastric volvulus is a rare surgical emergency which may become life-threatening if not treated timely. It is characterized by abnormal rotation of the stomach, causing vessel strangulation, ischemia or in some cases even perforation. Acute gastric volvulus is a surgical emergency with high morbidity and mortality. The most important factor in diagnosing acute volvulus of the stomach is a high index of suspicion. A constellation of clinical symptoms along with radiological studies helps in making the diagnosis. Emergency laparotomy is needed to prevent serious complications like gangrene and perforation.

1. INTRODUCTION

Gastric volvulus is recognised to be a life-threatening condition, thus prompt diagnosis and treatment is imperative [1]. The stomach, being fixed by the gastrophrenic ligaments above and by the peritoneum covering the second portion of the duodenum below, is limited in mobility between these fixed points only by the length of the lesser curvature and the length of the gastrohepatic omentum, and may be displaced within these limits by extrinsic pressure from whatever cause. This interesting condition is not of recent discovery, being first described by Berti in 1886, who found the condition at autopsy. In 30% of cases the volvulus occurs as a primary event, but it is more commonly secondary to another cause [2] . Acute presentation of gastric volvulus is a rare condition with a high mortality for acute ischaemia. Herewith we present a case of gastric perforation secondary to gastric volvulus , emphasizing diagnostic challenges and therapeutic approaches, followed by an in-depth literature review.

2. CASE PRESENTATION

A 45-year-old female , homemaker with no notable past medical history presented to the emergency with history of generalized acute abdominal pain more over the right hypochondrium. The pain, moderate in intensity, worsened with physical activity , with no relieving factors , accompanied by bilious vomiting and cessation of intestinal transit . The patient denied associated symptoms such as fever , constipation , obstipation , burning micturition , loss of weight , loss of appetite. This symptomatology had evolved for 48hours. The patient had no known surgical history. On physical examination revealed distended abdomen with diffuse tenderness with absent bowel sounds.

CECT abdomen revealed moderate volume of free fluid and air (perihepatic and beneath anterior abdominal wall) with dependent air-fluid is seen within peritoneal cavity suggestive of gastric perforation. Diffuse peritoneal fat stranding / food particles is seen , more prominent in perisplenic region. Twisting of stomach over it's axial plane/ short axis is seen with gastro-esophageal junction seen below pyloro-duodenal junction, suggestive of gastric volvulus. Antrum and pylorus are seen above fundus and proximal body. Site of perforation could not be clearly delineated. Wandering spleen.

Hence she was taken up for exploratory laparotomy with near total gastrectomy and gastrojejunostomy . Intraoperatively gastric perforation secondary to gastric volvulus with necrotic patch seen at the fundus of stomach anteriorly and body of stomach posteriorly . Postoperatively patient was kept NPO for 4 days . Gastrograffin study was done , revealed no anastomotic leak . Hence she was started on liquid diet gradually progressed to soft solids . Final histopathology report showed features of gastric mucosa with areas of necrosis and transmural dense inflammatory exudate , granulation tissue formation with loss of gastric glands. The inflammatory exudate is seen up to the serosa. Adjacent gastric tissue shows ulceration and marked congestion. Patient was discharged with complete recovery.

3. DISCUSSION

Gastric volvulus is a rare surgical emergency which may become life-threatening if not treated timely. It is characterized by abnormal rotation of the stomach, causing vessel strangulation, ischemia or in some cases even perforation. Gastric volvulus can be primary or secondary in nature, and it can also be classified based on the point of gastric rotation. The classification by singleton is most popular in clinical practice. Singleton's classification divides gastric volvulus into four types: Type I is the most common, organo-axial volvulus. It consist of rotation of the stomach along its longitudinally oriented axis connecting cardia and pylorus. It accounts for approximately 59% of cases. Type I is more frequently observed in older adult population and is associated with anatomical abnormalities like paraesophageal hernia or diaphragmatic eventration. Type II is Mesenteroaxial Volvulus. It is less seen in older patients and accounts for younger populations. Gastric volvulus, organo-axial or mesenterico-axial, may present either as surgical emergency or as chronic abdominal symptoms [3]. This type also tend to be more common, accounting for 29% of cases, and suggests a greater amount of rotation around the transverse axis bisecting greater and lesser curvatures of the stomach. Type III is a mixed form combining features of both organo-axial and mesentero axial. Unclassified or indeterminate forms make up about 10% of cases in type IV. Gastric volvulus may have a primary cause resulting from laxity or absence of the gastric ligaments like gastrosplenic, gastrohepatic, gastrocolic, and gastrophrenic, or a secondary cause due to structural anomalies like diaphragmatic hernia, phrenic nerve palsy, traumatic injury, or previous abdominal surgery. The variable clinical presentation of gastric volvulus contributes to a delay in its diagnosis. Acute presentations may include Borchardt's triad, though universally this is not always present: unproductive retching and epigastric pain in addition to inability to pass a nasogastric tube. Chronic forms tend to be more difficult to diagnose due to nonspecific and intermittent symptoms such as abdominal discomfort, nausea, bloating, early satiety, or even vague discomfort. Radiological assessment is integral to the diagnosis; abdominal x-rays can demonstrate a greatly distended stomach with an air-fluid level, while an upper GI contrast remains the benchmark for diagnosis, showing the malposition and rotation of the stomach. Because of its ability to depict diaphragmatic defects along with signs of ischemia or perforation CT is increasingly becoming the preferred imaging technique. Initial management involves passing a nasogastric decompression to reduce intragastric pressure and provide symptomatic relief. This is followed by fluid resuscitation and correction of electrolyte imbalances. Definitive treatment is surgical, with the approach determined by patient stability, the presence of ischemia, and the underlying cause. Emergency laparotomy remains the standard for unstable patients or in the presence of gastric necrosis. However, A conservative management may be considered safely in stable patients [4]. Surgical procedures may involve derotation of the stomach, repair of anatomical defects such as a diaphragmatic hernia, and gastropexy to prevent recurrence. Complete twists usually lead to disturbance of the blood supply with obstruction of the lumen and present as an acute surgical emergency . In cases of gastric necrosis, partial gastrectomy may be necessary. Long-term outcomes are favorable with timely diagnosis and appropriate surgical intervention

4. CONCLUSION

Acute gastric volvulus is a surgical emergency with high morbidity and mortality. The most important factor in diagnosing acute volvulus of the stomach is a high index of suspicion. A constellation of clinical symptoms along with radiological studies helps in making the diagnosis. Emergency laparotomy is needed to prevent serious complications like gangrene and perforation.

CONSENT

Patient consent is obtained

ETHICAL APPROVAL

Ethical approval is not required for case report

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AUTHOR CONTRIBUTION

Conceptualization, Dr.Surya Priya and Dr.Kumaresh.; Methodology Dr.Surya Priya.; Formal analysis, Dr.Surya Priya and Dr.Kumaresh ; Investigation, Dr.Surya Prya and Dr.Kumaresh Writing—original draft preparation, Dr.Surya Priya.; Writing, review & editing -Dr.Surya, Dr,Surendran , Dr Gautham

DECLARATION OF COMPETING INTEREST

I declare no conflict of interest.

FIGURE A : Resected Specimen

FIGURE B : Necrotic patch seen at posterior aspect of stomach

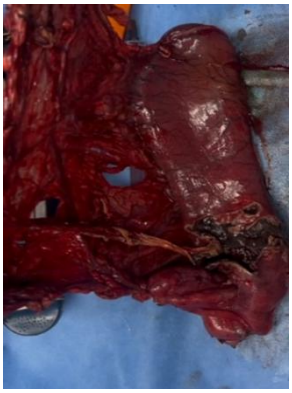

FIGURE C : Necrotic patch seen at posterior aspect of stomach

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