Gangrenous Stomach in Mesentrioaxial Volvulus

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Abstract Volvulus refers to a greater than 180° twisting of a hollow organ about its mesentery and results in luminal obstruction impaired venous return and eventually ischemia though much less common than volvulus of caecum and sigmoid colon ischemia. Gastric volvulus are clinical problems, when not recognized promptly, can lead to necrosis of the involved organ with resultant high morbidity and mortality.

Keywords Gastric volvulus · Organoaxial and mesentrioaxial rotation · Borchardt's triad · Gangrenous stomach

Volvulus refers to a greater than 180° twisting of a hollow organ about its mesentery and results in luminal obstruction impaired venous return and eventually ischemia though much less common than volvulus of caecum and sigmoid colon ischemia. Gastric volvulus are clinical problems, when not recognized promptly, can lead to necrosis of the involved organ with resultant high morbidity and mortality.

A 16 years old unmarried girl presented with acute abdomen for a day, associated with 3 to 4 episodes of vomiting, containing altered blood and gastric contents. There was no history of dyspepsia, fever and taking analgesics. Past history was not significant. On general physical examination, patient looked toxic, pulse 156/min, BP 110/70 mm of Hg, respiratory rate 36/min, and abdomen was distended. On examination of abdomen

tenderness and guarding were present, there was no rigidity, bowel sounds were absent. An upright X-ray FPA showed large amount of gas under diaphragm. In laboratory investigation TLC was 12,800/cu mm. Patient was provisionally diagnosed as a case of peptic perforation peritonitis.

On exploration, the stomach was found to be gangrenous 2 cm from gastroesophageal junction to antrum and about 2 liters black coloured fluid with gastric contents was drained. A large perforation about 3×5 cm on body of stomach near greater curvature was present in the necrotic stomach (Fig. 1).

No diaphragmatic defect was found. Excision of gangrenous part of stomach with esophagogastric anastomosis (i.e. esophagus and antrum) was done along with dilatation of the pylorus. Jejunostomy feeding was started from 3rd post operative day. On 7th day patient was allowed to take oral liquids. On 8th post operative day bile tinged discharged was noticed from upper part of stitch line. Anastomotic leak was suspected and managed conservatively. It gradually decreased and stopped after one month. CT scan was done after 5 weeks (Fig. 2). There was no obvious leak and patient was allowed to take orally.

Organoaxial rotation is the most common (2/3rd of the cases) and occurs when the stomach rotates around a transverse line between the pylorus and the gastroesophageal junction. Mesentrioaxial, rotation is less common (1/3rd of the cases) and the stomach rotates around, a longitudinal line parallel to the gastrohepatic omentum. In 10 to 30 percent of cases the gastric volvulus is considered primary and results from laxity of the stomach's ligamentous attachments (gastrocolic, gastrolienal and gastrohepatic).

In 1904 Borchardt's described the triad of epigastric pain, retching with an inability to vomit and difficulty or

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Fig. 1 Anterior view of the stomach showing perforation and gangrene

inability to pass a nasogastric tube. This triad describes acute organoaxial volvulus.

The gastroesophageal junction is open in acute mesenteroaxial volvulus, and nasogastric tube placement should not be difficult. When gastric strangulation or perforation has occurred with either intra-abdominal or intrathoracic gastric volvulus, signs of gastrointestinal bleeding and septic shock may be evident [1].

A retrocardiac air fluid level on a lateral chest radiograph is highly suggestive of secondary gastric volvulus with an intrathoracic stomach [2]. An upper gastrointestinal contrast study will confirm the diagnosis by demonstrating a contrast filled stomach above a normally located gastroesophageal junction with narrowing at the site of the volvulus.

For acute gastric volvulus the treatment is emergency laprotomy with reduction of the volvulus. Strangulation leads to gastric necrosis with and without perforation and requires resection by local excision, subtotal gastrectomy or even total gastrectomy [3].

The goal of surgery is to prevent recurrence by fixing the stomach to the abdominal wall and correcting any predisposing condition. More recently endoscopic and laparoscopic approaches to both acute and chronic gastric volvulus have been popularized [3]. In contrast, laparoscopic approaches and combined laparoscopic and endoscopic approaches have the potential to combine minimally invasive techniques with repair of the diaphragmatic defect [4, 5]. Laparoscopic repair was technically difficult but as safe and associated with a shorter hospital stay.

Fig. 2 CT scan of the patient after 5 weeks showing small stomach without leakage

Our case was of mesenteroaxial volvulus, which was not associated with the classic Borchardt's triad and diaphragmatic defect. In contrast to the literature mentioning low rates of gangrene in a mesenteroaxial volvulus, the stomach was gangrenous in this case and surprisingly antrum was viable, so we have done anastomosis between antrum and GE junction. By this anastomosis we can prevent bile reflux (as occur in Roux -en-Y anastomosis) and postoperatively patient develops some storage capacity of the stomach so it is most physiological anastomosis.

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