

A Wolf In Sheep's Clothing: Acute Idiopathic Subdiaphragmatic Mesenteroaxial Gastric Volvulus



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Gastric volvulus is a rare but life-threatening condition that may present to primary care physicians or gastroenterologists. The term *volvulus* is derived from the Latin word *Volvere* meaning to turn (1). Ambrosie Pare first described gastric volvulus in 1579 (2,3) with Berti describing the first case of acute stomach volvulus on postpartum examination in 1866 (2,4–6).

Gastric volvulus is defined as an abnormal rotation of the stomach of more than one hundred eighty degrees creating an obstruction that can result in incarceration and strangulation (2,4,6). Gastric volvulus can be classified according to the axis around which the stomach rotates into organoaxial, mesenteroaxial or combined (1–5). We present an unusual case of acute idiopathic mesenteroaxial gastric volvulus.

CASE PRESENTATION

A 73-year-old African-American woman was admitted to the hospital with a two-day history of epigastric pain. The pain was described as progressively sharp in character without radiation,

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aggravating or alleviating factors. She complained of nausea and vomiting but denied any constipation, diarrhea or weight loss.

On physical examination the patient was found to have normal vital signs. Abdominal examination revealed epigastric tenderness with normal bowel sounds. There was no evidence of abdominal distention, guarding or succussion splash. Rectal examination was normal.

Admitting labs along with chest x-ray and EKG were normal. CT scan of the chest and abdomen revealed a dilated stomach but no masses were seen (Figure 1).



Figure 1. CT scan showing long dilated stomach.

EGD showed retained food; however, the outflow tract and the duodenum were not seen (Figure 2); upper GI series revealed no evidence of gastric outlet obstruction (Figures 3,4). The patient continued to have abdominal pain and a repeat CT scan of the abdomen revealed worsening gastric distention without obstruction (Figure 5).

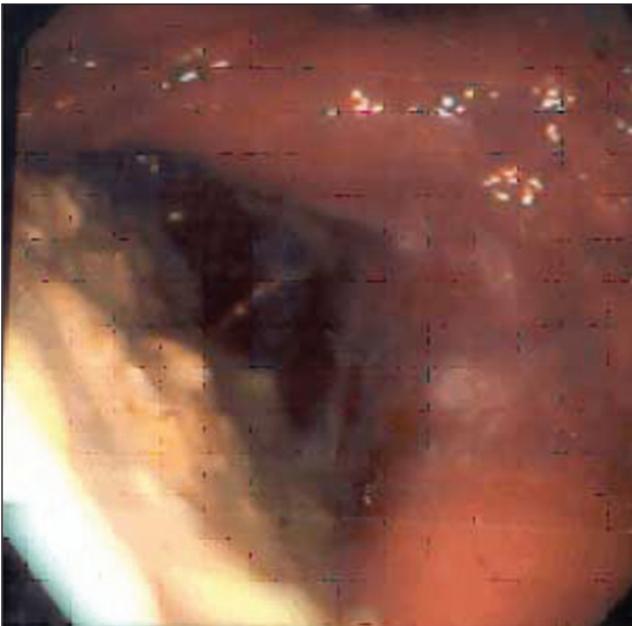
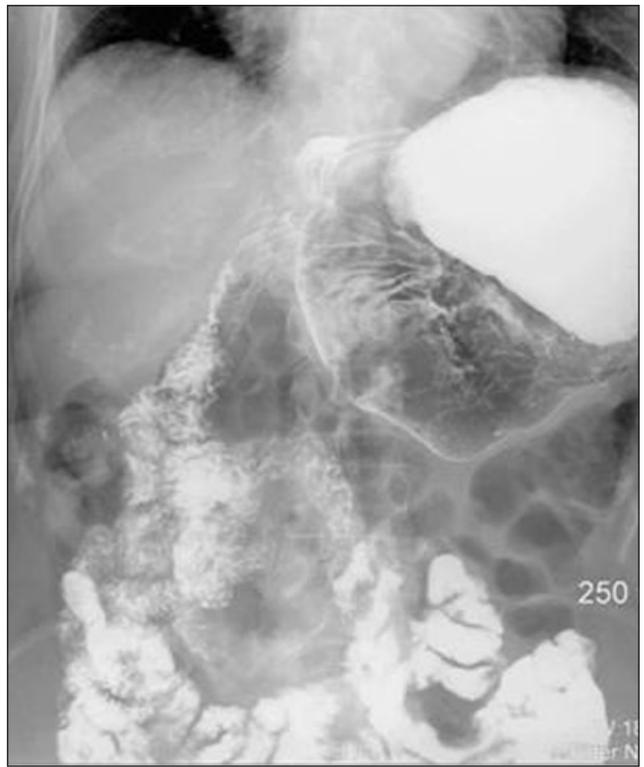


Figure 2. First EGD showed retained food but was unable to visualize the duodenum.



Figures 3, 4. Upper GI series showing delayed gastric emptying but barium was seen beyond the stomach.



Figure 5. CT scan of the abdomen showing worsening distention of the stomach.

After two days the patient was noted to be cold and clammy. Abdominal exam revealed a distended abdomen, involuntary guarding, markedly decreased bowel sounds with succussion splash. A nasogastric tube was difficult to place but drained three liters of non-bilious fluid. She was transferred to the intensive care unit where a repeat EGD showed evidence of focal ischemia seen in the proximal body of the stomach (Figure 6). The patient underwent exploratory laparotomy, which revealed mesenteroaxial gastric

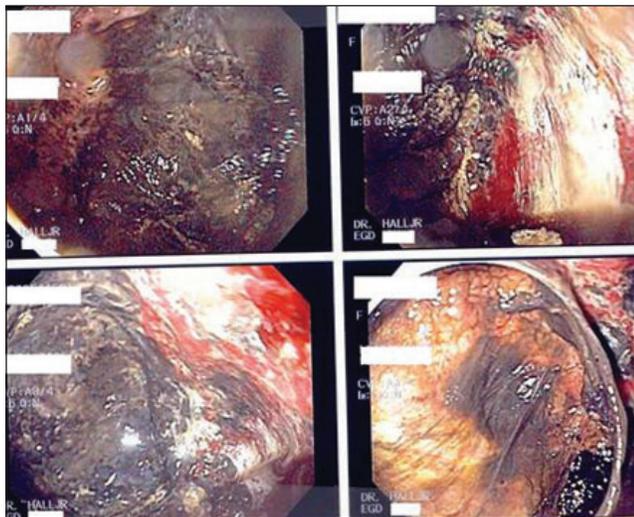


Figure 6. Repeat EGD showed focal ischemia contained to the mucosa.

volvulus with perforation of the greater curvature in the absence of associated hernia. The patient recovered over the next few days and was discharged.

DISCUSSION

The incidence and prevalence of gastric volvulus is unknown because many cases of chronic gastric volvulus are not diagnosed (4). Gastric volvulus is uncommon in adults younger than 50 years of age (1,4,6,7), with males and females being equally affected (1,4). No racial predilection has been reported (1).

The stomach is held in place by gastrocolic, gastrophrenic and gastrosplenic ligaments. The stomach normally rotates less than one hundred eighty degrees to mix food. For gastric volvulus to occur the stomach must rotate more than one hundred eighty degrees, which happens when the gastrosplenic or the gastrocolic ligaments are divided. Another predisposing factor for gastric volvulus is the presence of a diaphragmatic defect, which allows gastric displacement into atypical spaces (1).

According to etiology, gastric volvulus can be classified into type 1 (primary) which is idiopathic and is presumably due to abnormal laxity of the ligaments supporting the stomach or type 2 (secondary) which is associated with congenital or acquired abnormalities that result in abnormal mobility of the stomach. Congenital abnormalities would include diaphragmatic defects, abnormalities in the gastric ligaments, asplenia, rectal atresia and pyloric stenosis.

Acquired abnormalities are those that follow Nissen fundoplication and total esophagectomy (4,5). Gastric volvulus can also be classified according to its location in reference to the diaphragm into sub- or supra-diaphragmatic. Subdiaphragmatic volvulus accounts for one third of cases and is not associated with diaphragmatic defects while supradiaphragmatic volvulus accounts for two thirds of cases and is associated with diaphragmatic defects (1,3). In addition gastric volvulus can be classified according to the axis around which the stomach rotates into organoaxial, mesenteroaxial or combined (1–5,8,9). Organoaxial is the most common type (59% of cases) in which the stomach rotates around an axis that connects the gastroesophageal junction and

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Table 1
Borchardt triad

1. Epigastric pain
2. Vomiting followed by retching without the ability to vomit
3. Difficulty to pass a nasogastric tube

the pylorus while the antrum rotates in opposite direction to the fundus of the stomach. Strangulation and necrosis commonly occur with this type. In the mesenteroaxial type (29% of cases) the stomach rotates around an axis that bisects both the lesser and greater curvatures. The antrum rotates anteriorly and superiorly so that the posterior surface of the stomach lies anteriorly. Patients with this type usually present without diaphragmatic defect and commonly have chronic symptoms. In combined cases (2% of cases) the stomach twists both mesentericoaxially and organoaxially. Ten percent of cases are unclassified.

Clinically acute gastric volvulus presents as sudden onset of severe upper abdominal pain with progressive abdominal distention and nonproductive retching that follow the pain. The Borchardt triad (Table 1) is diagnostic of acute gastric volvulus and reportedly occurs in 70% of cases (1,2,4–6). On the other hand, patients with chronic gastric volvulus may present with intermittent epigastric pain, abdominal fullness following meals, early satiety (3) or dyspnea. Dysphagia may occur if the gastroesophageal junction is distorted (2,7). As the symptoms of chronic gastric volvulus are non-specific, patients are often investigated for other common illnesses (1,5).

The most definitive study aiding in the diagnosis of gastric volvulus is upper gastrointestinal barium study. Noteworthy however the diagnosis may be missed in intermittent torsion. A recent study on the use of ultrasound has demonstrated the peanut sign in a case of chronic gastric volvulus. This sign consists of a constricted segment of the stomach with two dilated segments located above and below the constricted part of the stomach. Some experts argue that the images provided by helical CT scanning may be better than those provided by barium study particularly in the acutely ill patients unable to tolerate a fluoroscopic examination (1,2).

Treatment of acute gastric volvulus is directed towards reduction of the volvulus and fixation of the stomach to the anterior abdominal wall. Although surgery is generally necessary the above may be accomplished endoscopically (1,4,6). Surgery is necessary when evidence of ischemic strangulation is noted or there are anatomic predisposing factor such as paraesophageal hernia. (1,2,4,6).

In conclusion acute gastric volvulus is an unusual condition that is often associated with high mortality. Although the classic pattern of epigastric pain, vomiting and the difficulty in passing a nasogastric tube are highly suggestive of this condition; less elusive symptoms may delay the diagnosis. Continuous monitoring and repeated evaluations are often necessary to establish the diagnosis. ■

References

1. Jeremy Green and Marjorie Stein. Gastric Volvulus. [emedicine Web site]. June 10, 2004. Available at: <http://www.emedicine.com/radio/topic296.htm>. Accessed June 10, 2006.
2. HladikI Pavel, Cap R, Holecek T. Acute stomach volvulus-case report. *Acta Medica (Hradec Kralove)*, 2004;47(4): 281-283.
3. Sood A, Midha V, Sood N. A rare cause of dysphagia-gastric volvulus. *Am J Gastroenterol*, 2000; 95(12): 3668-3669.
4. Akoad M, Golub RW. Gastric Volvulus. [emedicine Web site]. April 12, 2006. Available at: <http://www.emedicine.com/med/topic2714.htm>. Accessed June 10, 2006.
5. Naim HJ, Smith R, Gorecki PJ. Emergent laparoscopic reduction of acute gastric volvulus with anterior gastropexy. *Surg Laparosc Endosc Percutan Tech*, 2003; 13(6): 389-391.
6. Ala A, Arnold N, Khin CC, Van Someren N. Nausea and vomiting, a cause for concern? *Postgrad Med J*, 2000; 76(896):375, 379-380.
7. Godshall D, Mossallam U, Rosenbaum R. Gastric volvulus: case report and review of the literature. *J Emerg Med*, 1999; 17(5):837-840.
8. Cairns DA, Hulme-Moir M. Acase report of acute gastric volvulus with avulsion of the splenic vessels. *Scott Med J*, 2003; 48(4):12312-4.
9. Milne LW, Hunter JJ, Anshus JS, Rosen P. Gastric volvulus: two cases and a review of the literature. *J Emerg Med*, 1994; 12(3):299-306.

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