

Hiatal Hernia With Volvulus Of Stomach: Classical Scenario

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IMPORTANCE Gastric volvulus is associated with abnormal rotation of the stomach. It can present as an emergency or as a chronic intermittent upper GI problem. It is rarely encountered, hence making its diagnosis difficult. We present a case of a 45-year-old lady who presented to the hospital with dysphagia and chronic heartburn. She was on proton pump inhibitors for heartburn but had minimal to no relief in symptoms. An abdomino-thoracic CT revealed mesenteroaxial rotation of the body of the stomach with the distal part of the stomach lying in thoracic cavity. After initial diagnostic evaluation accompanied with medical and anesthetic risk assessment patient was prepared for laparotomy. A midline laparotomy was performed with detorsion of the stomach and transhiatal hernia repair along with Hill Procedure. Patient remained stable post-operatively and was discharged on the 6th post-operative day. Patient had satisfactory postoperative outcomes.

KEY WORDS Volvulus of stomach, Hiatal hernia; Surgical Repair

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Case Report

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Gastric volvulus is defined as the rotation of more than 180° of the stomach along its mesentery as proposed by Singleton¹. To classify the volvulus of the stomach, learning about the rotation of the stomach along a certain axis is crucial. Two axis have been described in the literature with the organoaxial axis constituting 59% of the reported cases of gastric volvulus and 29% to be along mesenteroaxial, with the remainder being a combined type where both organoaxial and mesenteroaxial components are presents and it usually presents as a chronic gastric volvulus. Early on the gastric volvulus was attributed to the obstructive element but recently, volvulus is described as a torsion of the stomach with the obstructive element not always present.

Presentation of the condition could be acute or chronic. Acute presentations can be described by the classical triad associated with it, as described by Borchardt². Severe epigastric pain, retching without vomiting, inability to pass a nasogastric tube. Whereas as described by Carter³ following findings are also suggestive of gastric volvulus: minimal abdominal findings when the stomach is in the thorax, gas-filled viscus in the lower chest or upper abdomen on chest radiograph, obstruction at the site of the volvulus on an upper gastrointestinal radiological examination. Some unusual symptoms could be hiccups⁴ or haematemesis⁵, whereas in the chronic cases presenting complaints mostly comprise intermittent epigastric pain and early satiety after meals.

A hiatal hernia is defined as the protrusion of the stomach mostly its upper part through the weakness or a defect in

the diaphragm. The diaphragm is the muscle that separates the abdominal and mediastinal cavity. The defect is called hiatus hence the condition is termed as hiatal hernia. Four types of hiatal hernias are known. However, the sliding hiatal hernia (type 1) accounts for 95% of all hiatal hernias hence being the most common. Other three types are classified as true para-esophageal hernias (PEHs) and account for remaining 5% of hiatal hernias⁶.

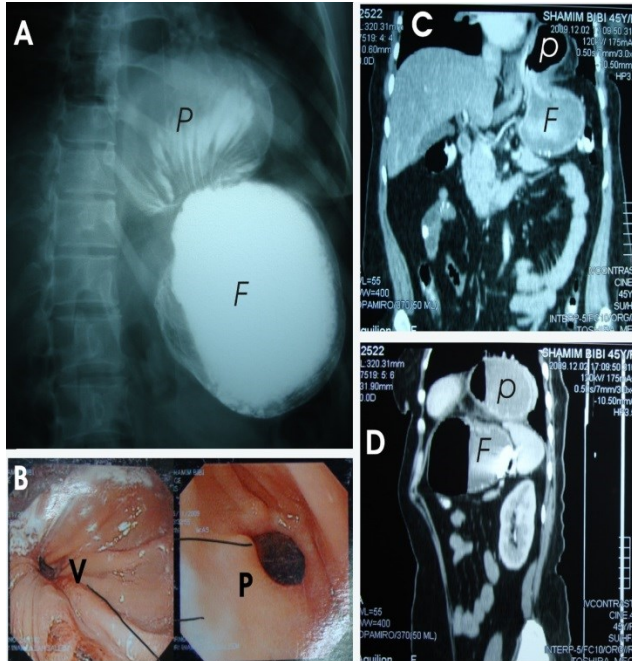
Here we present a classical case of gastric volvulus, secondary to para esophageal hiatal hernia resulting in bulging of the stomach into the mediastinal cavity complicated by volvulus.

CASE REPORT

A 45-year old frail lady presented with long-term heartburn and dysphagia starting with solids which gradually progressed to liquids. She was being treated at home with oral proton pump inhibitors for heartburn for almost 6 months but with minimal reduction in symptoms. She was admitted for further workup of progressive dysphagia and stubborn dyspepsia unresponsive to PPIs.

On clinical examination, no positive findings were present. Hematological workup was also unremarkable. She ingested barium meal which revealed obstruction at the level of the body of stomach due to a hiatal hernia. (Fig. A) An upper GI endoscopy was conducted which also confirmed rotation of the stomach precisely mesenteroaxial type (Fig B: note the rotated stomach with reduction of the

'outlet' diameter (left side); also compare the diameter with pyloric sphincter seen in the right panel). A CT abdomen was also ordered (Fig. C & D) suggesting type 3 transhiatal hernia. Coronal and sagittal sections through the upper abdomen and lower chest revealed mesenteroaxial rotation of the body of the stomach, with the distal part of stomach occupying thoracic hernial sac (Fig C & D, denoted as 'p') while fundus lying in the abdomen (Fig C & D, denoted as 'f'). The patient was successfully treated with transhiatal hernial repair and Hill's procedure.



DISCUSSION

Whenever encountering a patient with an abdominal complaint, a stomach volvulus is seldom thought of. Berti was the first person to have described the term gastric volvulus while performing an autopsy on a female patient in 1866. And it wasn't until 1896 when Berg performed surgery for this condition successfully.⁷ Many patients end up being misdiagnosed as gastroesophageal reflux disease or peptic ulcer disease and further managed by proton pump inhibitors and/or antacids. Although it is a rare entity, its underdiagnosis may be consequential to grave complications like strangulation, necrosis, and eventually perforation. Hence a thorough knowledge of the condition is essential in early diagnosis and prompt management of the patient. There is no predilection towards any gender or race, although the incidence rises after the fifth decade.⁸

According to the etiology of gastric volvulus, it can be classified as Idiopathic, usually due to the laxity of the gastrosplenic, gastroduodenal ligaments which predisposes the individual towards hiatal hernia and inturn gastric volvulus. Another etiology is Acquired/Congenital

conditions which cause excessive mobility of the stomach leading to this condition⁹.

Hiatal hernias are the number one cause of gastric volvulus¹⁰ mainly because of the negative intrathoracic pressure of the mediastinal cavity leading to the bulging of the stomach into the chest cavity, which further is complicated by volvulus of the stomach. Four types of hiatal hernias are known, type I "sliding hiatal hernias" being the most common where the gastroesophageal (GE) junction slides into the thoracic cavity due to a lax diaphragmatic opening. Type II to IV are termed as "paraesophageal hernias" (PEHs) and are further classified upon the location of the GE junction and the organ or the part of the organ which has herniated into the chest cavity. Type II hiatal hernia refers to a condition when the GE junction lies in its normal anatomical position but a portion of the stomach herniates into the chest cavity. Type III is similar to Type II but involves the displacement of GE junction from its anatomical position. Type IV has similar features as I and III but the herniated organ is usually other than the stomach.

Among all diagnosed gastric volvulus 75% are associated with a paraesophageal hiatal hernias, abdominal conditions, or diaphragmatic problems.⁹ General physical examination and abdominal examination of the patients with gastric volvulus is usually non-specific although epigastric tenderness and abdominal distention may suggest a gastric volvulus. If complications develop signs of peritonitis like abdominal tenderness, rebound tenderness, guarding or rigidity, decrease in bowel sounds, maybe present. Laboratory tests are non-diagnostic, but the elevation in serum alkaline phosphatase and high amylase levels have been reported¹¹. Many cases have been reported with a positive association between hyperamylasemia and gastric volvulus¹². Such presentations might lead to a misdiagnosis of acute pancreatitis.

Imaging studies, such as radiography, a plain film chest x-ray revealed gas-filled viscus in the chest cavity, confirming the diagnosis. In erect abdominal x-ray, a distended viscus may be seen in the upper abdominal cavity usually horizontally oriented with one or more air-fluid levels. Whereas in contrast radiography like barium studies, the stomach may be visualized in a twisted state, making the study diagnostic for the condition.^{13 14} Some authors consider CT abdomen to be the diagnostic modality for gastric volvulus.^{15 16} Contrast studies have been reported to have a diagnostic yield in 81-84% of patients.^{14 17 18 19}

For acute gastric volvulus, the management involves resuscitation, passing a nasogastric tube with intention of gastric decompression, and placing the patient in a prone position followed by medical optimization involving anti-emetics and analgesics for surgery, since emergency

surgery is still considered to be the gold-standard treatment for acute gastric volvulus²⁰. For chronic gastric volvulus, emergency surgical treatment is not preferred unless the patient becomes symptomatic or any complication occurs.

The surgical procedure involves the reduction of the volvulus, assessment of the gastric tissue of viability, and if the gangrenous portion is present it is followed by resection of the gastric tissue by segmental, total, or subtotal gastrectomy. After devolvulation and reintegration of the stomach back into the abdominal cavity with the gastroesophageal junction at the anatomical position, it is necessary to treat the secondary causes which could

predispose the patient to recurrent volvulus. Further prevention of reflux disease if present pre-operatively can be done through performing fundoplication, which also helps in the reduction of re-herniation²¹. Both laparoscopic and open techniques are used to operate on the gastric volvulus but open surgery is usually preferred since it broadens access to the abdominal cavity. Whereas for chronic gastric volvulus, the laparoscopic technique has shown its usefulness. Overall the choice of surgery depends on various factors as clinician's personal preference, patient characteristics, etc. Postoperatively gastric decompression is maintained until the return of bowel sounds.

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