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ACTUE VOLVULUS OF THE STOMACH SECONDARY TO ADHESIONS: CASE REPORT

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GASTRIC VOLVULUS is an unusual condition in which the stomach, entirely or partially, undergoes rotation in a transverse or longitudinal direction. This rare abdominal emergency carries a high mortality if not promptly treated. World literature reports about 240 cases, one third of which are acute.

Historically, according to Bockus,² credit is given for the first description of this condition to Berti in 1866, who observed the unusual pathology during an autopsy examination. Berg first operated upon gastric volvulus in 1897, Rosselet first made a radiologic description of this entity in 1920.

The fact that torsion or volvulus of the stomach is infrequent is not surprising when considered in the light of anatomical facts. The gastrohepatic and gastrocolic attachments tend to prevent transverse rotation around the longitudinal axis or the line from the esophagus to the duodenum. Likewise, fixation at the esophagogastric and gastroduodenal tends to prevent rotation in the opposite or longitudinal direction. A normal stomach cannot undergo 180° of rotation unless its ligamentous attachments are significantly lengthened or divided. It is generally agreed that 180° of rotation, or more, on a given axis is necessary to make the volvulus complete. Anything less than this may be considered an incomplete volvulus or torsion. Blood supply to the stomach is rarely compromised, yet Morrison⁵ reported such a case.

CLASSIFICATION

The generally accepted classification is that proposed by Von Haberer and subsequently modified. The outline below is taken from the article by Singleton⁸ and reproduced almost verbatim.

I. *Type:*

- a) Organo-axial. Rotation of the stomach is around the long axis of the stomach. The organ is rotated around the line that connects the cardia with the pylorus. This is the more common form.

*From the Department of General Surgery.

- b) Mesentero-axial. Rotation of the stomach from right to left, or left to right, about the long axis of the gastrohepatic omentum of the lesser curvature with the middle of the greater curvature. This is the more common type.

II. *Extent:*

- a) Total. Cases in which the whole stomach except the diaphragmatic attachment rotates.
- b) Partial. Cases in which the rotation is limited to a segment of stomach, usually the pyloric end.

III. *Direction:*

- a) Anterior. Cases in which the rotating part passes forward.
- b) Posterior. Cases in which the rotating part passes backward.

IV. *Etiology:*

- a) Idiopathic.
- b) Secondary to diseases in the stomach or adjoining organs, e.g. diaphragmatic hernias, gastric tumors and ulcers, particularly when hour-glass deformity results, and displacement of neighboring organs.

V. *Severity:*

- a) Acute. Presenting a picture of an acute abdomen.
- b) Chronic. Causing constant or recurring milder symptoms, or may be asymptomatic.

Exciting factors in the development of gastric volvulus include: — acute dilatation of the stomach, overfilling of the stomach, trauma, intractable vomiting and sudden increase in intra-abdominal pressure.

Weeder⁹ and Gabor⁴ reported an unusual case in which volvulus occurred in both the longitudinal and transverse directions simultaneously.

CLINICAL FEATURES

The onset of symptoms is usually abrupt, and the progress rapid. A past history of similar attacks with spontaneous improvement may be present. Severe upper abdominal pain is usually the first symptom. Vomiting follows shortly, and this changes to severe retching without vomitus. This is an important diagnostic sign. Upper abdominal distention then occurs. Rupture or necrosis of the stomach may follow, producing shock and eventually death. Gastric intubation may be impossible due to occlusion of the cardia.

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Borchardt in 1904, according to di Lorimier,³ described a triad of symptoms which he felt must be present to make the diagnosis of acute gastric volvulus:

1. Severe retching and inability to vomit.
2. Epigastric pain.
3. Inability to pass a stomach tube.

Plain films of the abdomen usually show 2 fluid levels when taken with the patient in the vertical position. In complete volvulus barium does not enter the stomach, since the torsion mechanically occludes the gastric inlet.

TREATMENT

An immediate attempt to pass a Levin tube into the stomach should be made. Forceful insertion must be avoided, if injury to the lower esophagus is to be avoided. Hazards in management are stressed by de Lorimier.³ If a tube can be passed, immediate relief of symptoms will follow, and the general condition of the patient will improve dramatically.

If a tube cannot be passed, surgical intervention becomes necessary. Reduction of the volvulus may not be possible until the enormously distended stomach is emptied. This may be done by needle aspiration. Correction of any associated lesion should be accomplished and a gastropexy carried out. The case reported by Schatzki and Simeone⁶ was treated by gastropexy. A variety of procedures to prevent recurrence are described in the text by Shackelford.⁷ The gastrocolic omentum may be sutured to the anterior abdominal wall (Duret). Rovsing devised another method to accomplish the same objective.

The surgical procedure should be directed at the underlying pathology. Diaphragmatic hernias should be repaired; if peptic ulcer is present or if malignancy is found, gastric resection should be performed (Bazzano).¹ Lysis of adhesions and a gastropexy, as in our case, may resolve the problem.

CASE REPORT

The case herein reported is that of a 45-year-old colored male who appeared at the emergency room on October 1, 1962, with a 12-hour history of severe epigastric "cramps" which began shortly after a generous supper. The pain was followed shortly by repeated violent vomiting throughout the night. There was no blood or bile in the vomitus. There were no other gastro-intestinal symptoms of significance, other than occasional mild epigastric distress.

On arrival in the emergency room the patient was in acute distress. Immediate relief was obtained by inserting a Levin tube into the stomach and withdrawing about 1000 cc. of gastric secretion. No difficulty was encountered in passing the Levin tube.

His past history revealed that he had an acute myocardial infarction in June, 1960. In May, 1962, under local anesthesia, he had repair of an incarcerated umbilical hernia with resection of a small segment of infarcted omentum. He also had a bilateral inguinal hernioplasty a few days later. Following these operations his recovery was rapid and uneventful.

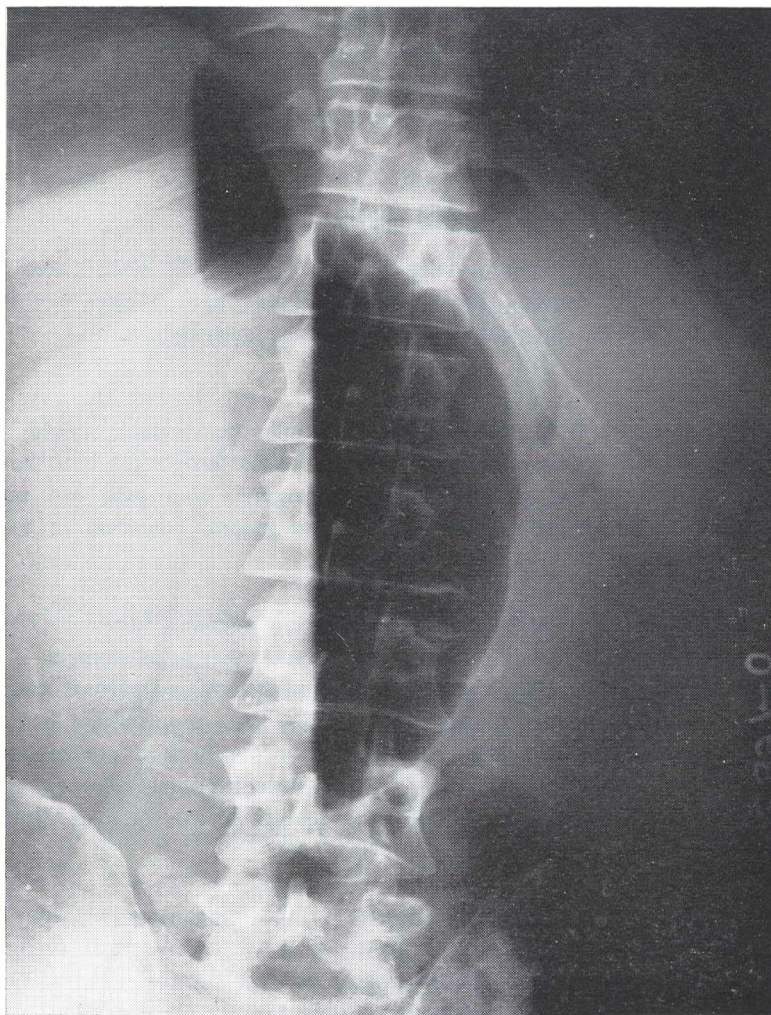


Figure 1

Plain film of the abdomen in the lateral decubitus position showing two air-fluid levels in a dilated stomach.

On physical examination his temperature was 98.6, pulse 84/mim., blood pressure 176/90. After insertion of the Levin tube and application of suction his abdominal distension was relieved. The abdomen became soft, but residual mild epigastric distress remained. No masses could be palpated.

His hematocrit was 40 per cent, the leucocyte was 6,000 and the blood amylase 198 Units. Chest and abdominal roentgenograms after nasogastric suction were negative. The initial diagnostic impression was duodenal ulcer with obstruction.

X-ray studies of the gastro-intestinal tract were completed later. Cholecystograms were negative. Barium enema examination showed definite tenting of the mid-transverse colon, which appeared to be attached to the under surface of the diaphragm, the liver, or the upper abdominal wall. X-ray studies of the stomach showed the fundus to be lying beneath the level of the body and antrum. The stomach was greatly distended with air and fluid (Figure 2). Two levels were seen in the decubitus film (Figure 1). There was no evidence

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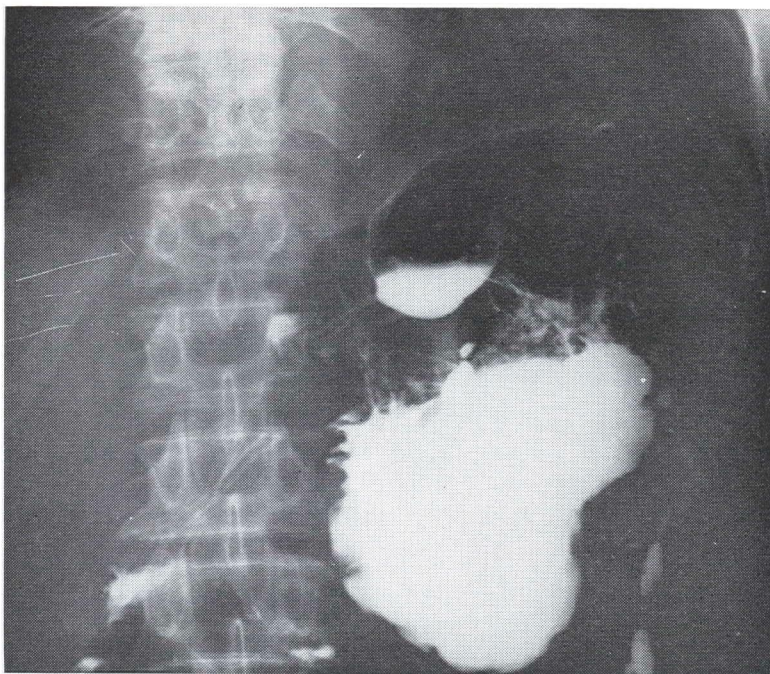


Figure 2

Barium x-ray study showing the marked traction on the greater curvature of the stomach. Note the elevated position of the gastroduodenal junction.

of gastric or duodenal ulcer, or other intrinsic abnormality. The barium traversed the upper gastrointestinal tract in normal time without evidence of any gastric outlet obstruction. The roentgen diagnosis was volvulus of the stomach. The patient was asymptomatic throughout his stay at the hospital, and was discharged one week later on a bland diet and anti-spasmodics.

Three weeks after the above admission he was re-admitted with an almost identical episode. He had repeated vomiting, but without relief of his pain. On examination he was seen to be in acute distress. Dehydration was apparent; the skin was warm and dry, the tongue quite dry. His temperature was 99°, pulse was 80/min., blood pressure 180/120. Epigastric distension and tenderness were present, but there was no rebound tenderness. Bowel sounds were absent upon auscultation. A Levin tube was passed into the stomach without difficulty and a significant amount of about 2 liters of gastric secretion, free of bile and blood, were aspirated. Relief of his symptoms was immediate and dramatic.

The hemoglobin was 13 Gm. and the leucocyte count 13,000.

X-ray studies of the stomach four days later showed marked dilation of the proximal stomach with displacement of the duodenum superiorly and posteriorly (Figure 2). The antrum was lying against the diaphragm adjacent to the cardia (Figure 2). Again there was no gastric outlet obstruction.

On 11-5-62 the patient was operated upon under spinal anesthesia. A midline upper abdominal incision was made and the abdomen explored. The transverse colon was tented upward toward the diaphragm. The stomach was rotated about the longitudinal axis and the anterior wall of the antrum was fixed with adhesions to the inferior, posterior aspect of the left diaphragm, so that the greater curvature was at a level superior to the lesser curvature. An organized hematoma, measuring about 3" x 2", was found at the site of adherence between the greater omentum and the posterior aspect of the diaphragm. The omentum had attached itself to the organizing hematoma and literally pulled the greater omentum, stomach and transverse colon high into this subdiaphragmatic position, resulting

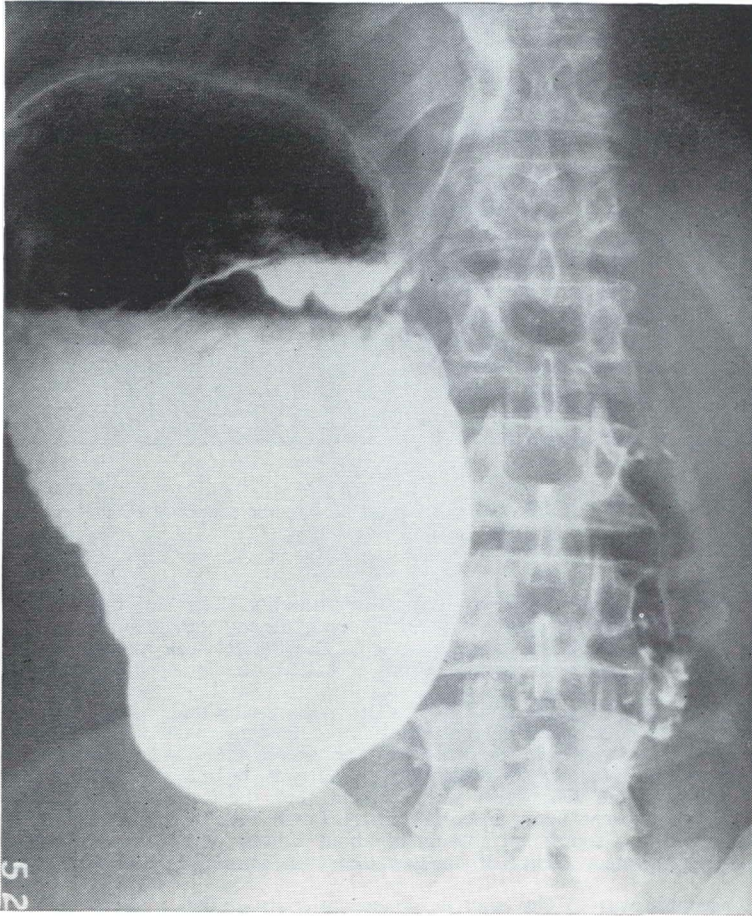


Figure 3

This barium study shows the enormous size of the stomach with air and barium mixture present.

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in a gastric volvulus (Figure 4). The stomach was freed and replaced in its normal position. A gastrotomy measuring 5 cm. was then made in the anterior wall of the fundus of the stomach, but no intrinsic lesion were found. The gastrotomy was then closed and the stomach fixed in position by a few sutures placed at the anterior wall just above the greater curvature and the anterior abdominal wall. The abdomen was then closed.

The postoperative course was uneventful and the patient was discharged from the hospital 11 days later.

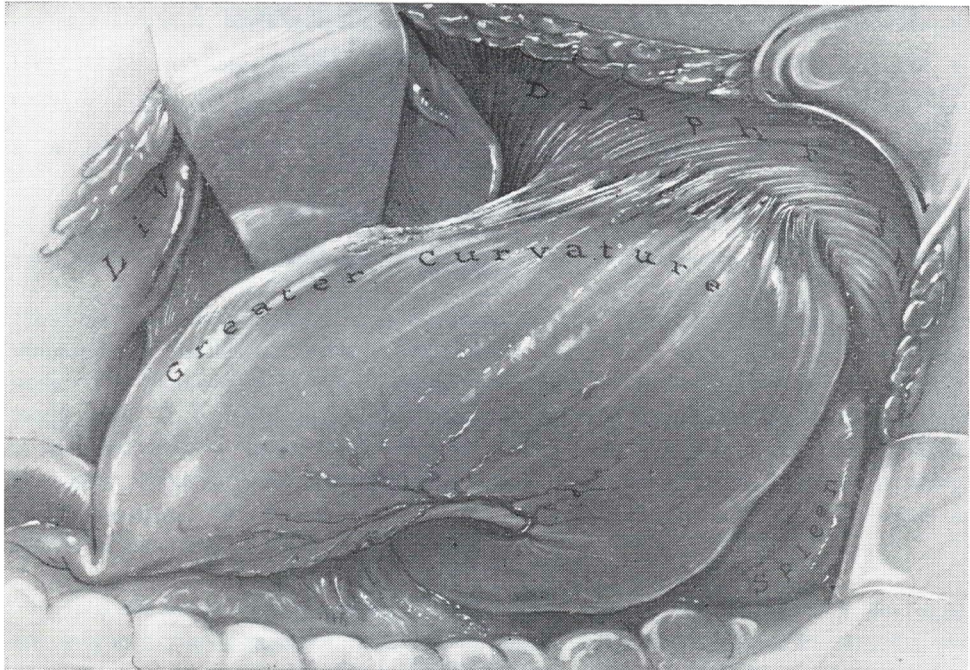


Figure 4

Artist's drawing at the operating table to show the marked traction on the greater curvature which had been elevated to a position above the torsion at the gastric outlet.

SUMMARY

A case history of a patient with the unusual findings of gastric volvulus is presented.

Pertinent facts in the historical development of knowledge of this entity are reviewed.

An available classification of the types and degrees of volvulus is presented.

Possible modes of treatment are discussed.

The patient herein presented was operated upon, a gastropexy performed and the patient survived.

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