

Acute Organo-Axial Gastric Volvulus – A Complication of Anti-Reflux Surgery

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Abstract

Introduction: Acute gastric volvulus is a medico-surgical emergency who necessitate an early diagnostic and treatment

Case Presentation: We present a case of a patient with organo-axial gastric volvulus with medical history of Nissen operation by laparotomy for hiatal hernia.

Discussions: Organo-axial volvulus occurs when there is a rotation around the cardiopyloric axis. This is the most common type in the world literature, and it has the highest rate of predisposition to visceral strangulation.

Conclusion: In case of gastric volvulus, early surgery is mandatory. Non-specific and misleading symptoms and signs may delay the diagnosis and increase the risk of necrosis and perforation.

1. INTRODUCTION

Acute gastric volvulus is a medico-surgical emergency who necessitate an early diagnostic and treatment [1]. It is a rare pathology given the different means of stomach fixity represented by the gastro-phrenic, gastro-hepatic, gastro-splenic ligaments, the different large and small omentum and the different vessels and their anatomical relationships [2].

Volvulus can occur after diaphragmatic hernia surgery, traumatic defect in diaphragm, bands that sling up stomach or abnormal ligament laxity. Obstruction may be acute, recurrent, intermittent, or chronic. In acute gastric volvulus, there is acute epigastric pain and vomiting, followed by retching with inability to vomit and failure to pass nasogastric tube into the stomach. [3,4]

We present a case report of a patient with history of Nissen fundoplication for hiatal hernia by laparotomy 15 years ago, who present an organo-axial gastric volvulus.

2. CASE PRESENTATION

A 71-year-old patient presented in the Emergency Department for uncontrollable vomiting and epigastric pain, violent, types as a torsion, radiating to the chest, with no fever, from 24 hours.

The medical history revealed Nissen operation for hiatal hernia by laparotomy 15 years ago.

On physical examination it was noted a general altered state, saturation: 98%, T°: 35,5°C; blood pressure: 112/76 mmHg, rapid cardiac frequency: 140/min. We noted the presence of a bi-sub-costal scar an enlarged, tense and tympanic abdomen above the umbilicus.

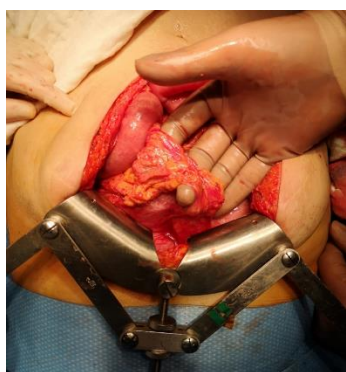
The laboratory exam revealed an important inflammatory syndrome: leukocytosis 20,000/mm³ (normal 3.70- 9.50×10³/mm³) and C-reactive protein 250 (normal <5.00) The abdominal CT-scan showed very significant gastric dilation associated with hiatal hernia with an impression of volvulus with a significant pneumoperitoneum.



Abdominal CT Scan Coronal View



Abdominal CT Scan Sagittal View



Intra-Operative Image that Reveals the Epiploic Flange

3. OPERATIVE TECHNIQUE

The procedure was performed by a laparotomy with a median xypho-umbilical incision. The exploration revealed significant gastric dilation and an epiploic flange between the large curvature of the stomach and the diaphragm with the presence of an organo-axial gastric volvulus. No signs of gastric perforation were observed. The epiploic flange was resected and the stomach was liberated. One drainage tube was placed in the subdiaphragmatic left space. A naso-gastric tube was left in place.

4. POST-OPERATIVE COURSE

The post-operative course was marked by the presence of a prolonged functional ileus. The patient resumed bowel movement and oral feeding. The discharge was authorized on the 13th post-operative day.

5. DISCUSSIONS

Gastric volvulus is defined as an abnormal rotation of all or part of the stomach with respect to one of its axes, thus creating the conditions for a high occlusion with dilation gastric and risk of strangulation. Taking into account the axis of rotation we can have two types of volvulus: the organo-axial volvulus and mesenterico-axial volvulus [5,6].

In a revision of 200 cases, Wastell et al. found organo-axial gastric volvulus in 59% of patients with gastric volvulus. This was followed in

frequency by the mesenterico-axial volvulus type (29%), both types (2%), and no classification (10%) [7]. Jacob et al. reviewed 38 cases of gastric volvulus from 1968 to 2001; he reported that occurrences of gastric volvulus are mainly secondary (75.8%); 52.6% of volvuli observed was organo-axial type and 18.4% was of mesenterico-axial type. Surgery was chosen as the treatment option for the majority of patients (33 out of 38), with conservative treatment reserved only for patients who were unfit to undergo surgery. Organo-axial volvulus occurs when there is a rotation around the cardiopyloric axis. [8]

This is the most common type in the world literature, and it has the highest rate of predisposition to visceral strangulation. [9]

In terms of sex it appears to be a feminine predominance while a male predominance was reported by some authors. [10, 5]

This condition is mainly confined to elderly subjects with a peak in frequency around the fifties [5,11] [6, 10,12,13] but cases of children with congenital diaphragmatic anomalies or rarely asplenia have been reported [5,12,13].

Primary gastric volvulus represents 30% of the cases related in the literature where secondary volvulus was predominant in the operated cases (75.8%). In cases of primary volvulus, the factors can be laxity of ligament agenesis. Secondary gastric volvulus may occur after rotation around a base point formed by an associated disease. Gastric ulcers and neoplasia retract the small curvature, thereby predisposing the stomach to rotation. Hiatal hernia is the most common disorder related to gastric volvulus (20%); in these cases, rotation occurs around the hernia ring. [14] The volvulus usually corresponds to the final stage of the gradual and asymptomatic increase in these hernias. [15].

The diagnosis of gastric volvulus is challenging due to the non-specificity of the symptoms and rarity of the condition; it is usually achieved radiologically in combination with the clinical presentation.

The clinical examination can reveal the symptomatic Borchart triad (major epigastric pain with irradiated back and/or hypochondre or left hemithorax, ineffective vomiting efforts, absolute food intolerance with difficulty or inability to pose a gastric probe). For the most often, however, the clinical picture remains aspecific. [15]

In term of diagnostic exams, the pulmonary and abdominal radiography can show thoracic and abdominals hydro-aeric images. Plain radiographs may show two air-fluid levels in the antrum and fundus, or a single air bubble with no additional luminal gas in the supine position, and a ‘beak’ in the cardio-esophageal region. [16]

The oeso-gastroduodenal transit allows to study the reducibility of gastric volvulus, its position and its anatomical shape. False negatives are rare and can be explained by the intermittent nature of gastric volvulus.

Abdominal ultrasound has no diagnostic value but helps to detect other associated pathologies.

The abdominal CT scan allows both to recognize the torsion of the stomach to eliminate another abdominal pathology and guide according to the severity of the clinical state, a possible surgical procedure. Typical signs of stomach hernia on CT scans include marked gastric hydro-aeric distension and a tissue thickening zone, with vascular congestion. [15,17,18] Oesogastric endoscopy in search of ischemic lesions is dangerous due to the risk of acute perforation. [15]. It is contraindicated in the presence of signs of necrosis or gastric perforation. This exploration is often incomplete due to gastric torsion, which hinders the progression of the endoscope [5]. Progressive ischemic ulceration, or mucosal fissuring suggests late stage disease with strangulation [6]

Some authors have reported a therapeutic interest in gastroscopy that allows endoscopic detorsion or even endoscopic guidance of percutaneous gastropexy. [19]

Surgery is the treatment of choice for gastric volvulus. It is indicated, particularly in cases of painful patient with CT signs of parietal gastric ischemia or perforation, or for a patient in septic shock. The surgical procedure includes the reduction of the volvulus, gastric decompression and the realization of gastropexy and/or the cure of an associated lesion if the patient's general state of health allows [15] Non-viable or gangrenous areas may demand subtotal or total gastrectomy. [20,21,22]

We opted for a laparotomy due to the surgical medical history and the abdominal distention. We performed a liberation of the epiploic flange and a gastric repositioning. The naso-gastric tube was put in place under a visual.

6. CONCLUSION

Gastric volvulus is a rare condition, the evolution of which can be very serious. It appears frequently after diaphragm's surgery. Early surgery is mandatory. Non-specific and misleading symptoms and signs may delay the diagnosis. Delayed diagnosis may result in strangulation, ischemia and necrosis It is important for clinicians to take patients age, comorbidity, physical performance, life expectancy and willingness into consideration. Surgical treatment should be performed according to etiology and to patient's characteristics.

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