

Gastric Volvulus: about 3 Cases Report and Literature Review

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Abstract: Stomach volvulus is a very rare pathology whose etiologies are dominated by hiatal or diaphragmatic hernia, the diagnosis is suspected at the clinical examination in front of Borchart's symptomatic triad which however is not very specific. abdominal Computed tomography make diagnosis in the majority of cases. The treatment of choice is always immediate surgical intervention combining devolvulation, reintegration of the stomach, and the treatment of the cause. [1] Medical and endoscopic treatments are reserved for patients with high operative risk and chronic evolution. The aim of this work was to discuss the aspects of epidemiological, diagnostic and therapeutic volvulus acute gastric [2].

Keywords: Volvulus, gastric, emergency, surgery,
Introduction

The gastric volvulus is an upper digestive obstruction due to an abnormal rotation of the stomach of all or part of the stomach around one of its axes, more than 180° [3], it's a diagnostic and therapeutic emergency. Its incidence is unknown due to the possibility of a chronic form [4] [5], the clinical presentation is not very specific [6]; it can manifest either as an acute abdominal emergency or as a chronic intermittent problem [7] [2], its diagnosis is essentially based on radiological exploration, and Surgery stays the main way of treatment. We report here three observations of an acute gastric volvulus on hiatal hernia which was treated by surgery. [5]

Materials and methods

We conducted a retrospective study between 2013 and 2022 including 3 cases presented in our training for the management of spontaneous gastric volvulus without notion of thoraco-abdominal trauma who were candidates for surgery. We study here the clinical presentation, the result of the biological and radiological assessments and the management adopted for each patient.

Results:

Case N 1:

a 65-year-old patient, with a history of cholecystectomy for a simple lithiasic gallbladder 2 years ago, admitted to the emergency with an acute high subocclusive syndrome made of early food vomiting with epigastralgia that goes back to 5 days, without stoppage of materials or gas. On clinical examination, the patient was conscious, has tachycardia at 102 bpm, correct blood pressure, with abdominal distension, wheelbase and tenderness of the epigastric region reaching the right hypochondrium, a biological assessment was carried out revealing an inflammatory syndrome; hyperleukocytosis at 13000 elements/ mm³, c-reactive protein at 475 mg/l, normal lipasemia, functional renal failure with hyperuremia at 2 g/l and creatinine at 22mg/l, natremia and potassium are corrected. Abdominal CT was performed in favor of a strangulated gastric hiatal hernia, with low abundance peritoneal effusion without signs of parietal ischemia. The patient was operated on urgently by a midline laparotomy, the exploration objectified the presence of approximately 50cc of a suffering liquid, collected then aspirated in addition to a strangulated hiatal hernia with rolling gastric and omental contents. The gesture consisted of a reduction of the hernia after release of the gastro diaphragmatic and omental diaphragmatic adhesions revealed necrosis of a part of the greater omentum which was resected, otherwise the stomach was healthy, then a calibration of the hiatal orifice measuring 5 cm by approximating the 2 diaphragmatic pillars and installation of an anti-reflux system (fundoplication) according to the TOUPET technical. The postoperative follow-up was simple both immediately and at subsequent.

Case N2:

a 42-year-old patient, operated four days before her admission for strangulated crural hernia, two days after the operation, the patient presented early postprandial food vomiting with abdominal distension, the clinical examination found a conscious patient, hemodynamically stable, a slightly distended abdomen, tympanic with slight tenderness and traces of stool on the digital rectal examination. a biological assessment had shown a normal level of leukocytes, a C reactive protein at 79 mg/l, and normal ionogram. an esophagogastroduodenal fibroscopy was carried out finding an aspect of hiatal hernia by rolling with a gastric mucosa of the hernial pocket erythematous and ulcerated. a nasogastric tube was placed with opacification of the esogastroduodenal tract by diluted gastrographin (figure 1) then a scannographic complement were indicated showing significant gastric distension with hydroaeric content upstream of a stenosis pyloric with ascent of the antropyloric region above the plan of the esophagogastric junction, compatible with mesenteric-axial gastric volvulus, without signs of digestive ischemia. Based on these data, the patient was sent to

the operating room; the surgical exploration by midline laparotomy shows a presence of an incomplete partial gastric volvulus consisting of the lesser curvature, the antro-pyloric region and the greater omentum. The procedure consisted of reduction of the hernia, careful dissection of the esophagus and then dissection and resection of the hernia sac with performing a funduplication according to Toupet technical, the operating suites were simple.

Case N 3

a 58-year-old patient, followed for asthma well-controlled, thyroidectomy under treatment, operated for breast neoplasia benefiting from PATEY surgery with radiotherapy and adjuvant chemotherapy, cholecystectomized for lithiasic gallbladder, three years ago. Initially hospitalized in another hospital structure for chronic food vomiting dating back several months punctuated by meals becoming uncontrollable, associated with regurgitation, and a feeling of bloating without transit disorder, all evolving in a context of unquantified weight loss, the patient underwent biological and radiological evaluation and was then referred to us for further treatment. Our clinical examination on admission finds a patient in good hemodynamic and respiratory condition, dehydrated, distended tympanic abdomen, we note on the initial biological assessment a normal level of leukocytes at 8750 elements/mm, hypokalaemia at 1.9 mmol/l, sodium at 133 mmol/l, correct kidney function; urea at 0.37 mg/l and creatinine at 5.4 mg/l. an esogastroduodenal fibroscopy revealed a bulky hernial sac by rolling, with impossibility of progression of the fibroscope despite several attempts, cross-sectional imaging showed the appearance of a large hiatal hernia by intrathoracic rolling (figure 2). The patient was taken to the operating room. Under general anesthesia, a laparoscopy was performed; the exploration found a partial gastric volvulus on the mesenteric-axial axis and consists detorsion and reintegration of the stomach, the hiatal opening was closed by separate stitches, and then a Dor fundoplication was done (Figure 3). The patient recovered gradually and was discharged on the forth postoperative day.

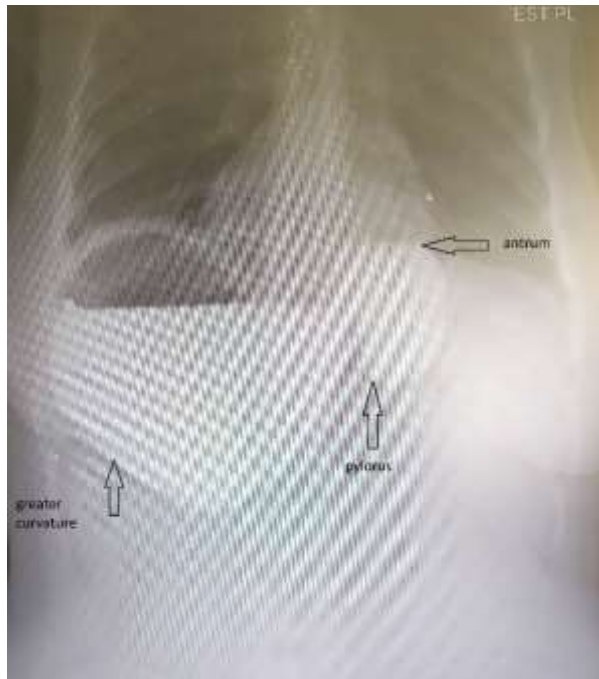


Figure 1: esogastroduodenal transit: mesentero-axial gastric volvulus

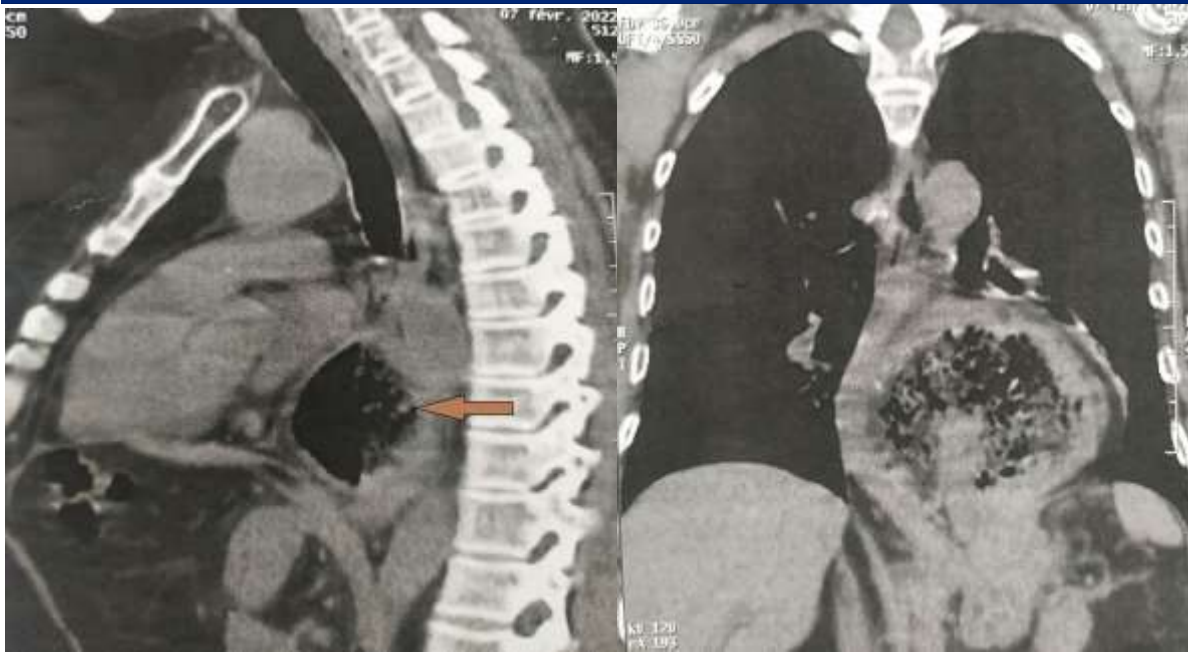


Figure 2: CT scan image of a large hiatal hernia by intrathoracic rolling

Discussion

Gastric volvulus is a rare disease, which creates a closed-loop upper obstruction that can result in incarceration and strangulation with ischemia and gastric necrosis [8] this rarity is explained by the stomach's strong fixations by four ligaments : gastrocolic, gastrophrenic, gastrosplenic and gastrohepatic [9]. its frequency is probably underestimated because spontaneously resolving forms are possible [3] [10]. Gastric volvulus is most often found in the elderly with a peak frequency around the age of 50, [11] but can also affect children less than 1 year of age (representing 45% of published cases) carriers of congenital diaphragmatic anomalies or rarely asplenia [11] [12] [13]. There does not seem to a predilection for gastric volvulus for either gender or race [2]

There are several anatomical varieties according to the axis of rotation, the degree of rotation, the seat of the volvulated stomach and the extent of gastric involvement [11] [14]. Von Haberer and Singleton have described 3 types of anathomopathological classification according to the rotation axis modified by Carter in 1978 [15]: Organoaxial volvulus the most common form, is a rotation of the stomach around a longitudinal axis passing through the cardia and the pylorus which produces a true volvulus [16], In mesenteroaxial volvulus, rotation occurs along a transverse, medigastric axis, connecting the middle of the greater and lesser curvatures (this axis is perpendicular to the axis of the mesenteric vessels), this second type actually causes more of folding rather than true torsion in the majority of cases, the rotation is anterior [17] [1], and finally a combined type represents only 2% of cases [16], and an unclassified type have also been reported, represents 10% of cases of gastric volvulus with anarchic rotation that does not follow any well-defined axis [18] [19]. Depending on the extent of gastric involvement, the volvulus is either partial (involving the antrum) or total. As for the degree of rotation, it is possible to define an incomplete type when the angle of rotation is < 180 , the most common and least severe form [16], and the complete type when the angle of rotation is between 180 and 360 compromising gastric vascularization [12] [5]. Gastric volvulus is total when it concerns the whole organ, whereas it is partial when the torsion involves only a part of the stomach, which is often the antrum [19].

Pure intra-abdominal gastric volvulus is rare which can be either idiopathic linked to a laxity of the means fixation of the stomach [3] [10] [21], or secondary to a splenic, [20] [21] or hepatic [22] anomaly, in contrast intrathoracic gastric volvulus are more frequent and secondary to a diaphragmatic anomaly because the intrathoracic negative pressure and the thrust of the other abdominal organs lead to the occurrence of volvulus [19]. Rolling hiatal hernias represent 50% of the causes of gastric volvulus in adults, unlike sliding forms which are exceptionally at the origin of this pathology [23]. However, it should be noted that only 4% of hiatal hernias are complicated by gastric volvulus, signifying the rarity of this pathology [24] [1].

Traumatic diaphragmatic injuries have also been reported [11] [25] [16]. It could be a congenital form, especially than the forms of the child described, are most often secondary to congenital anomalies [14].

The clinical picture remains aspecific, the chronic form affects 30% of gastric volvulus. Symptoms are dominated by abdominal pain, type of gastric heaviness or oppression, often after meals, relieved by vomiting and accompanied by early satiety [26]. The intermittent or subacute gastric volvulus evolves by crises yielding spontaneously and suddenly, it is the prerogative of partial volvulus of mesenteroaxial type, and the acute gastric volvulus is often the prerogative of complete volvulus and occurs especially

in the elderly [17]. The functional signs are often related to gastric emptying difficulties, The famous Borchardt triad which includes severe epigastric pain with distention, vomiting followed by violent, nonproductive retching, and finally difficulty or inability to pass a nasogastric tube into the stomach, is highly suggestive of the diagnosis [13]. cardiopulmonary signs may be present too.

To establish a positive diagnosis of gastric volvulus, Abdominal X-ray is usually not very contributive [3], it may show gas distension of the upper part of the abdomen, retrocardiac hydro-aeric levels, in case of associated hiatal hernia, and sometimes emphysema of the gastric wall [27] [10]. The upper gastrointestinal barium study is considered the gold standard because of its high sensitivity and specificity for the diagnosis of gastric volvulus [4] [28], It can study the reducibility of the gastric volvulus, its position, its rotation, and the antropyloric evacuation of the contrast product [11] [29] [30]. Abdominal ultrasound has no diagnostic interest but helps to detect other associated pathologies suggesting that CT scan should currently be the standard if gastric volvulus is suspected, it makes the diagnosis, find the etiology and anatomic variety and to look for signs of gravity [5].

upper gastrointestinal endoscopy is not of great diagnostic interest but above all makes it possible to search for an etiology such as a hiatal hernia and to study the gastric mucosa state. It is contraindicated if gastric necrosis or perforation signs are present. Unfortunately, this exploration is often incomplete due to the gastric torsion which prevents the progression of the fiberscope [31] [1].

The initial management for acute gastric volvulus includes resuscitation, placement of a nasogastric tube, gastric decompression, and resting in the prone position [32]. Most authors agree on the principle that emergency or deferred emergency surgical treatment is essential even in chronic forms that are long asymptomatic because of the permanent and unpredictable risk of strangulation [33]. The aim of the surgical procedure is to restore the normal anatomical position of the stomach and to prevent further episodes by correcting the predisposing factors with or without gastropexy [34] [1]. Laparotomy is the most used way, it allows wide access to the abdominal cavity especially in case of acute gastric volvulus [11].

Teague, reported a superiority of laparoscopy over laparotomy in terms of morbidity and length of hospitalization, However, in the absence of prospective randomized studies, this superiority could not be demonstrated [35]. Finally, endoscopic treatment is indicated in inoperable patients with high comorbidities risks, It consists of a devolvulation endoscopic and percutaneous gastrostomy in the absence of local complications [36].

Conclusion:

Acute gastric volvulus is a rare and often unknown. Its etiologies are multiple and dominated by hiatal hernia and diaphragmatic dissection. The Management is surgical in emergency combining devolvulation, reintegration of the stomach, and the treatment of the cause, conservative treatment is reserved for patients with high risk comorbidities.

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