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## Acute gastric volvulus and wandering spleen: A rare association



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## ABSTRACT

Gastric volvulus is a rare cause of acute abdomen in pediatric practice. It is defined as the twisting of the stomach around its longitudinal or transverse axis. The symptoms are variable and not specific. It is often associated with a diaphragmatic defect or unfixed stomach. Herein we report a rare observation in a case of an 18 month old infant who presented with abdominal distension and vomiting. The insertion of a nasogastric tube was laborious and blurred the symptoms. Conventional radiography was very not contributive. The exploratory laparotomy allowed making the diagnosis of a gastric volvulus in its organo-axial form associated with wandering spleen. Untwisting associated with gastropexy seemed to be the procedure of choice for these patients.

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Acute gastric volvulus is a rare surgical emergency especially in children. It is defined as the abnormal rotation of the stomach over 180° around its longitudinal or transverse axis [1]. Relating to the torsion's axis, three types of gastric volvulus have been described: organo-axial, mesenterico-axial and a third form that combines the two previous [2,3]. Its diagnosis is often confirmed by the esophageal contrast swallow and upper GI contrast study. The treatment of the urgent condition involves detorsion of the stomach, either by placement of a gastric tube, or esophagoscopy to decompress the stomach, which may lead to spontaneous detorsion, or by manual detorsion by laparotomy or laparoscopy. The gastropexy prevents recurrence. We report a case of acute gastric volvulus in its organo-axial form, emphasized by the presence of a "wandering" spleen in an infant of 18 months.

## 1. Case report

A 18 month old boy presented with persistent crying for 5 days associated with food vomiting, abdominal distension and constipation. On admission examination, the child was whining, complaining, afebrile with a distended and tympanitic abdomen. The hernial orifices were free. On rectal examination, the rectum

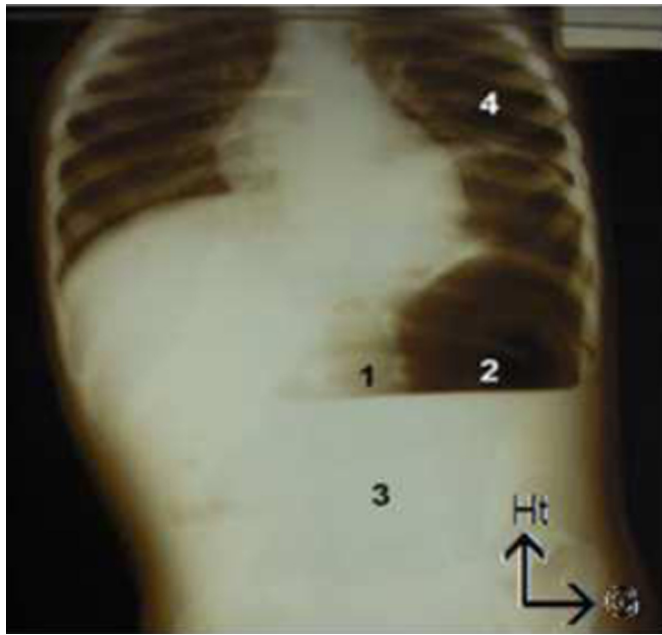
was empty. Thoracoabdominal radiograph showed a gastric double bubble image and a lack of aeration of the digestive tract downstream (Fig. 1). Laboratory tests revealed anemia of 7.2 g/dl and leukocytosis (19,300/mm<sup>3</sup>). A laborious insertion of a nasogastric tube drained 1300 DC of digestive fluid, sag the abdomen and improved the condition of the child. Laparotomy was performed after a brief resuscitation. On exploration, an organo-axial gastric volvulus associated with a viable spleen below the right lobe of the liver were found (Figs. 2 and 3). The rest of the exploration finds out a left diaphragmatic eventration and gastrocolic ligament laxity. After the stomach had been untwisted and the spleen delivered from the left hypochondrium, a phrenoesophageal fundopexy and anterior gastropexy were performed. The postoperative period was uneventful. After a period of 2 years, the child was asymptomatic.

## 2. Discussion

Gastric volvulus primarily occurs in adults. The first description in children was made by Oltmann in 1899; 33 years after the first case described by Berti in adults [1,2,4]. In 1940, Singleton proposed a classification into three types, based on the rotational axis of the stomach: organo-axial, mesenterico-axial and the mixed type combining the two [4]. In the organo-axial form, the greater curvature switches from left to right and from bottom to top. This is the most common form. In the mesenteroaxial rotation, the movement is made according to an axis passing through the two curvatures so that the antrum moves from right to left and from bottom to top and the posterior surface of the stomach becomes anterior. The third type combines both organo-axial and mesenteroaxial forms

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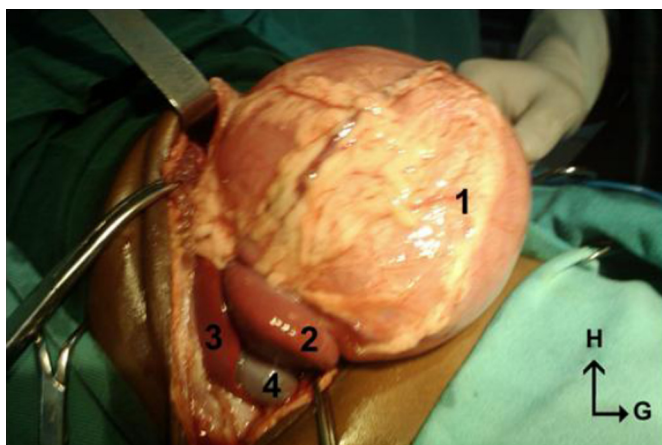


**Fig. 1.** Plain abdominal radiograph showing two air-fluid levels (1, 2) with decreased abdominal aeration (3) and an elevated left dome (4).

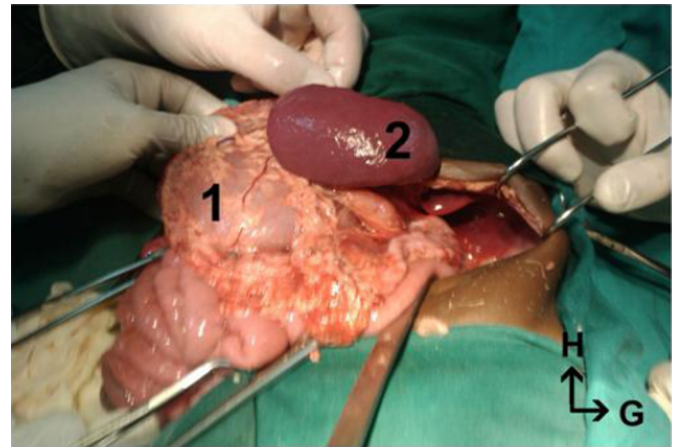
[1–3]. In our patient we found an organo-axial form. Relating to the etiologies, the gastric volvulus can be classified into two types: type I or idiopathic that should be linked to a laxity of the gastric ligaments and occurs mainly in adults and type II usually associated with a congenital anomaly or acquired form which is providing excessive mobility of the stomach [3,5].

The symptoms are variable. It may be an acute or chronic mode. In 1904, Brochardt described a triad quite suggestive of gastric volvulus involving unproductive retching, abdominal distension predominantly in epigastric region, difficulty or inability to insert a nasogastric tube. But once this nasogastric tube is introduced, it allows a clear regression of the symptoms [6–8] as well as in our case. In other cases, the most found respiratory symptoms can be chronic cough, wheezing or apnea and may mislead the diagnosis [4].

Plain abdominal X-rays can sometimes lead to the diagnosis of the gastric volvulus showing a gastric distension or a gastric double bubble sign [9]. However it is the esophageal contrast swallow and upper GI contrast study which is currently the gold standard in the



**Fig. 2.** Intraoperative appearance: gastric distension (1), spleen (2), liver (3) and gallbladder (4).



**Fig. 3.** Intraoperative appearance after untwisting of the volvulus and delivery of the spleen in the left hypochondrium: stomach (1) and spleen (2).

diagnosis' confirmation. In addition to delayed gastric emptying, it allows to specify the form: organo-axial or mesenteroaxial gastric volvulus [10]. The importance of the CT-scanner is also to be emphasized in the diagnosis. It shows gastric air-fluid levels and marked zone of thick tissue with vascular congestion, separating an air gastric contingent and a water contingent [3]. The MRI (magnetic resonance imaging) allows making the diagnosis of gastric volvulus and associated anomalies [10]. In our patient, plain abdominal X-rays showed gastric distension and a gastric double bubble image. These two signs are very indicative of the gastric volvulus. However the rarity of the disease did not suggest the diagnosis preoperatively. The context of emergency explains the unavailability of other radiological examinations which were not made before surgery. While some authors suggest a medical treatment of the disease, the majority opt for surgical treatment to prevent recurrences. In our case we believe that the associated wandering spleen prevented detorsion of the stomach when the nasogastric tube was placed, and consequently urgent laparotomy was required. The surgical approach consists of three stages: a reduction of the volvulus, the treatment of a predisposing factor and finally gastric fixation [4]. An anterior gastropexy and phrenoesophageal fundopexy are most often made. Some teams will combine oesocardiopexy in order to avoid a potential gastroesophageal reflux occurrence due to the opening of the angle of His by the first two steps of the process [4]. The laparoscopic gastric fixation was performed with success [6–8] and represents an alternative in the pediatric population. In our patient surgical exploration revealed an organo-axial gastric volvulus, associated with a viable wandering spleen. After untwisting the stomach, we performed an anterior gastropexy and phrenoesophageal fundopexy. We repositioned the spleen at the left upper quadrant without splenopexy. We have noticed no recurrence of symptoms after a period of 2 years.

### 3. Conclusion

Gastric volvulus is a rare disease in children. It should be suspected after a laborious nasogastric tube insertion and the double bubble image on the abdominal radiography. In underdeveloped countries the suspicion of the diagnosis must lead to an exploratory laparotomy. In fact, other imaging tests are often unavailable urgently and delayed management might expose to gastric necrosis.

### Conflict of interest

No conflict of interest.

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