LAPAROSCOPIC MANAGEMENT OF AN ATYPICAL ORGANOAXIAL GASTRIC VOLVULUS

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ABSTRACT
A 13-year old girl presented with intermittent epigastric distension, pain and retching. Upper GI contrast study revealed a rare, partial, anterior organoaxial gastric volvulus involving exclusively the fundus. Abnormal rotation of the fundus consequent to underlying laxity of the gastrophrenic and gastrosplenic ligaments was confirmed at laparoscopy and treated by gastropexy without fundoplication. The paper reviews current management options for gastric volvulus in children. Key words: organoaxial gastric volvulus, gastropexy

Gastric volvulus is a rare condition especially among the paediatric population where a delay in diagnosis in the acute type may be associated with significant morbidity. In cases of chronic, intermittent volvulus, clinical presentation can be atypical with vague upper abdominal symptoms predominating. For both types, upper gastrointestinal contrast study is the investigation of choice. Surgical correction of chronic gastric volvulus is recommended to prevent recurrence with its complications. Different surgical techniques, including laparoscopic approaches, have been described. The technical aspects of laparoscopic management of this rare condition are discussed.

Case Report
A 13-year old girl presented with a six months history of recurrent severe post prandial epigastric discomfort, nausea, upper abdominal distension and retching. These episodes typically lasted for several hours without any response to analgesia. Clinical examination was unremarkable with height and weight being normal. However barium meal demonstrated a gastric volvulus with fundus folded over the body and lesser curve producing intermittent obstruction. (Figs 1,2, 3)

The patient was approached laparoscopically, in the Lloyd Davis position, using 3 ports, each 5 mm, sited in the umbilicus, epigastrium and in the mid clavicular line to the left of the umbilicus. Pneumoperitoneum was induced by Hassan technique with intra-abdominal pressure maintained at 10 mm Hg. Initial laparoscopic inspection revealed a redundant, congested, mobile fundus with lax gastrophrenic and gastrosplenic ligaments. No diaphragmatic defects were discovered and the fundus was fixed in a non rotated position to the left hemidiaphragm and the antero-lateral abdominal wall, using 5 interrupted, non resorbable, 2/0 Ethibond (Ethicon, Johnson & Johnson Int’l, St. Steven-Woluwe, Belgium) intracorporeal stitches.

Figure 1. Early phase of upper gastrointestinal contrast study showing abnormal gastric filling pattern.

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The patient was fed on recovery and discharged the following day. A year later she remains totally asymptomatic.

**Discussion**

Gastric volvulus is anatomically classified in terms of axis, degree (partial or complete) and direction (anterior or posterior) of rotation (1). There are three types of rotation: mesenteroaxial (59%) occurring along the short axis transecting the lesser and greater curvatures, organoaxial (29%) occurring along the longitudinal axis extending from the hiatus of the diaphragm to the pylorus and combined type (12%). The aetiology of this condition may be primary or secondary with the former due to the laxity or absence of gastric attachments (gastrophrenic, gastrohepatic, gastrocolic and gastroplenic) and the latter to abnormalities of adjacent organs, congenital bands or adhesions.

Acute gastric volvulus is classically described as presenting with Borchardt’s triad of intractable retching, epigastric distension and the inability to pass a nasogastric tube.[2] In practice the clinical presentation varies according to the degree of rotation and subsequent gastric obstruction and vascular compromise. These ‘typical’ clinical features can be difficult to assess in children (3, 4, 5).

The features of chronic volvulus are those of vomiting, nausea, abdominal distension, and recurrent episodes of epigastric pain, gastro-oesophageal reflux, colic, crying, delayed growth, dysphagia, and chest pain and repeated respiratory infections. However, clinical findings in the chronic recurrent type, as seen with this patient, maybe non-specific and subtle. Appropriate investigations in this context include plain abdominal and chest X-rays, endoscopy and an upper gastrointestinal contrast study which is essential to clarify the anatomical derangements.

There is little dispute over the management of acute gastric volvulus which requires urgent decompression and derotation before surgical repair of underlying defects and gastric fixation. However, the treatment of chronic volvulus has changed in recent years from a more conservative approach to that involving surgery (8, 9) as the former may be associated with a higher recurrence and mortality rate (3). Surgery involves gastric derotation, correction of any underlying predisposing conditions and gastrostomy. Nowadays the minimal invasive approach and percutaneous endoscopic gastrostomy (PEG) placement are replacing open procedures as a means of achieving gastrostomy. This is due to an improving skill base and refinement in equipment allowing the safe performance of these procedures in all ages irrespective of the severity of the condition (10). Still under discussion is the requirement for an antireflux procedure although a recent study has shown that primary gastrostomy without fundoplication is an effective treatment option (4).

Simple PEG placement in this patient was not an option because of the difficulty in adequately securing the apex of fundus by this technique. Additionally, the procedure potentially leaves patients at risk from gastrostomy related problems and disfiguring anterior abdominal wall wounds. The option of a fundoplication to achieve gastrostomy was not considered because it is a major undertaking and not without complications. Having considered the above options it was elected to undertake simply a fundopkey to left hemidiaphragm and anterolateral abdominal wall. Comprehensive fixation of the fundus was achieved and we found this limited gastrostomy to be highly suited to the laparoscopic approach as the technique could be tailored to match this variant of gastric volvulus. The aesthetic and functional results of this minimal intervention were impressive.

**REFERENCES**

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