

# Small Bowel Herniation Around an Anterior Gastropexy for a Gastric Volvulus: A Case Report

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## ABSTRACT

Gastric volvulus can be a medical emergency with life-threatening complications. Early surgical intervention is important to avoid potential ischemic complication that may lead to infarction of the stomach. The condition has been reported in children and in the elderly, but the majority of cases are reported in the fifth decade of life. We present a case of a complication arising from corrective laparoscopic surgery for gastric volvulus, whereby most of the small bowel herniated around the anterior laparoscopically performed gastropexy. The herniation was reduced during a laparotomy, and the space through which the herniation occurred was closed.

**Key Words:** Laparoscopy, Gastric volvulus, Gastropexy.

## CASE REPORT

A 79-year-old male presented to the North Shore University Hospital Emergency Department with a three-day history of anorexia, nausea and coffee ground emesis. The symptoms began three days earlier when he awakened at night nauseated and achieved only mild relief by vomiting. In the days leading up to admission, the patient continued vomiting dark, grainy coffee ground emesis at least five times per day with concurrent loss of appetite. His last bowel movement was one day prior to the onset of symptoms, and his overall condition worsened with time. The patient stated that he had increased his intake of NSAID for about one week prior to the initial symptoms due to progressing osteoarthritic pain. Further, he admitted to an increase in consumption of alcohol.

On examination, the patient was alert, oriented and in moderate distress. He was afebrile with a pulse of 127 bpm, blood pressure of 82/33 torr, and a respiratory rate of 19 breaths per minute. He appeared thin, weak, with poor skin turgor and dry oral mucosa. The lung exam revealed poor distant breath sounds at the area of the left lower lobe. The abdomen was mildly distended, but soft, non-tender, without guarding or palpable masses. Bowel sounds were distant. Stool was guaiac positive. The remainder of the exam was unremarkable. Relevant laboratory results were as follows: hematocrit 39.5%, sodium 136, bicarbonate 30, and BUN/creatinine were 77/2.2. The anion gap was 8. The remainder of the electrolytes, liver function tests, and the urinalysis were within normal limits. The chest x-ray showed left basal, possibly lingular atelectasis, while the abdominal x-ray revealed a nonspecific bowel gas pattern with stool in the colon.

The past medical history of the patient was significant for osteoarthritis, hypertension and one transient ischemic attack. Twenty months prior to the present illness, the patient presented to the emergency room with similar symptoms with mild hematemesis. Extensive work-up revealed a paraesophageal hernia and a gastric volvulus along with erosive esophagitis. The patient underwent laparoscopic repair of the crus of the diaphragm and an anterior gastropexy to prevent recurrence of volvulus.

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Based on the history and clinical picture, the initial working diagnosis was that of gastritis secondary to the NSAIDs and the increased alcohol intake. He was vigorously rehydrated. An upper endoscopic evaluation revealed severe erosive gastritis with a gaping lower esophageal sphincter permitting reflux and causing distal esophagitis. The patient, however, did not improve after several days of medical therapy with propulcid, erythromycin and prilosec, so an upper GI series with small bowel follow-through was performed (**Figure 1**). It revealed that most of the small bowel was displaced to the left upper quadrant with one loop of distal ileum coursing to the right lower quadrant to join a medially displaced cecum. These findings were consistent with an internal hernia around the site of the anterior gastropexy. The patient was taken to the operating room. A laparoscopic exploration was done that confirmed the diagnosis. The small bowel had herniated to the left upper quadrant through the space created between the anterior gastropexy and the falciform ligament.

Attempts at laparoscopic reduction of the small bowel (SB) were not successful, so a laparotomy was performed. The SB was reduced without any difficulty. It was viable with no evidence of ischemia. The defect through which the herniation occurred was closed by suturing the greater curvature of the stomach distal to the gastropexy to the anterior abdominal wall and medially to the falciform. Postoperatively, the patient recovered without complications and was discharged home a few days later. The patient was doing well on follow-up a month later.

## DISCUSSION

Gastric volvulus is an uncommon but potentially life-threatening problem. In its acute and complete form, the presentation is characteristic. Patients present with unproductive retching, abdominal distention and inability to pass a nasogastric tube (Borchardt's Triad). The rotation can be organoaxial (more common) or mesenteroaxial. The pathophysiology is laxity in the ligamentous attachments of the stomach (gastrophrenic, gastrohepatic, gastrosplenic and gastrocolic). This can be seen with age or secondary to gastric distention caused by disorders such as pyloric hypertrophy or stenosis.<sup>1</sup> The management consists of immediate reduction of the volvulus. This may be achieved endoscopically, laparoscopically or by an open surgical procedure. If the stomach is viable, an anterior gastropexy can be performed



**Figure 1.** An upper GI with small bowel follow through showing the small intestine in the left upper quadrant and the terminal ileum in the mid abdomen.

with any of the mentioned approaches. However, if there is evidence of gastric necrosis then an emergent gastrectomy is indicated.

Several authors have reported laparoscopic anterior gastropexy for gastric volvulus. The techniques differ, however. Some suture the fundus to the diaphragm and the greater curvature with one anchoring stitch to the anterior abdominal wall,<sup>2</sup> others have more than one anchoring point to the anterior abdominal wall.<sup>3</sup> A combined laparoscopic and endoscopic approach has been used by Newman et al<sup>4</sup> and Koger et al,<sup>5</sup> whereby one or more

endoscopic gastrostomies were part of the anterior gastropexy. Laparoscopic-assisted gastropexy using T-fasteners for anchoring the stomach to the anterior abdominal wall has also been described.<sup>6</sup>

The usual reported complication of anterior gastropexy is recurrence of the volvulus.<sup>7</sup> This case is an unusual complication of laparoscopic anterior gastropexy for gastric volvulus. The adhesions formed in an open procedure will probably prevent any such herniation from happening. With laparoscopic surgery, adhesions are minimal; thus, the potential for herniation is there. Our patient seems to have had gastritis precipitated by the NSAIDs and the increased alcohol intake. The doubling over and increased intra-abdominal pressure associated with the vomiting that pursued may have led to the rostral displacement of the small bowel with herniation into the left upper quadrant around the attachment of the stomach to the anterior abdominal wall. Review of the laparoscopic literature did not reveal a similar complication. To avoid similar complications, anchoring the stomach along the greater curvature at several sites, or performing a concurrent gastrostomy will help obliterate open spaces and the herniation that may ensue.

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