

Endoscopically guided sutured gastropexy: a novel treatment of gastric volvulus



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Gastric volvulus is the abnormal twisting of the stomach (Figs. 1 and 2). Gastric volvuli are rare and the incidence is unknown. Adverse events of gastric volvulus include ischemia, necrosis, perforation, shock, and even death, particularly with acute gastric volvulus. The morbidity and mortality of gastric volvulus is high, at 30% to 50%.¹ Management typically entails laparoscopic surgery and gastropexy or PEG tube placement for stable patients. An exploratory laparotomy would be indicated if a patient demonstrates instability or signs of perforation, such as peritonitis and abnormal vitals and laboratory values. Contraindications to performing this novel endoscopically guided gastropexy would be the presence of a hiatal hernia, diaphragmatic defect, or supra-diaphragmatic volvulus (as these would indicate need for laparoscopic fundoplication or diaphragmatic repair at the same time as the pexy), signs of bowel ischemia or perforation, or a significant abdominal surgical history.

We demonstrate a novel endoscopically guided gastropexy technique for treating gastric volvulus. This video (Video 1, available online at www.videogie.org) includes an overview of the case, background information on gastric volvulus, 3-dimensional models of the different types of gastric volvuli, and novel endoscopic and surgical techniques. Institution review board approval was waived because this is a case report. The Geisinger Privacy Office confirmed that the patient information was properly de-identified and appropriate for publication.

We describe here a case of a 69-year-old man who presented to the emergency department with intermittent “grabbing” epigastric pain accompanied with mild nausea,

early satiety, dysphagia, and odynophagia for the past 2 weeks, unrelieved by proton pump inhibitors. An upper GI series demonstrated an infradiaphragmatic organoaxial gastric volvulus without a hiatal hernia or diaphragmatic defect. Traditional surgical options for stable patients with gastric volvulus would be laparoscopic surgery and gastropexy or PEG tube placement. However, given that the patient did not have any other indications for laparoscopy (supradiaphragmatic volvulus, hiatal hernia, diaphragmatic defect), we elected for an even more minimally invasive option than laparoscopy: endoscopy. Additionally, the patient had no indication for a PEG, other than for pexy purposes, so it was decided to pexy the stomach to the abdominal wall with nonabsorbable sutures as opposed to with a PEG.

The procedure was performed by an advanced interventional endoscopist and a minimally invasive surgeon. The patient was placed in the supine position. After insertion of the gastroscope, the gastric volvulus was reduced by retroflexing the scope and pushing down on the antrum. Retroflexion increases the surface area of the scope and distributes its force as it manually reduces the stomach, which theoretically decreases the risk of perforation. After gastric reduction, the fundus was inspected on retroflexion to confirm its return to anatomic position. Fluoroscopy was not used during the endoscopic reduction because direct visualization through endoscopy was believed to be sufficient.

Although cross-sectional imaging could help visualize the patient's anatomy for presurgical planning, it was not necessary. Overall, this is very similar to a PEG tube placement; however, there are multiple points of pexy. Hence, like a PEG tube placement, transillumination and 1:1 finger pressure are sufficient confirmation of anatomy, and endoscopy is sufficient confirmation of detorsion. Also, like a PEG tube placement, the abdomen was prepped with chlorhexidine, and sterile gloves, masks, and surgical caps/bouffants were worn. Two grams of cefazolin was administered as standard preoperative antibiotics, and no further antibiotic administration was indicated. Local anesthesia was injected, a 3-mm incision with an 11 blade was made, and a specialized suture-grasper device was used under endoscopic guidance to suture the anterior wall of the stomach to the abdominal wall. Under endoscopic guidance, the suture

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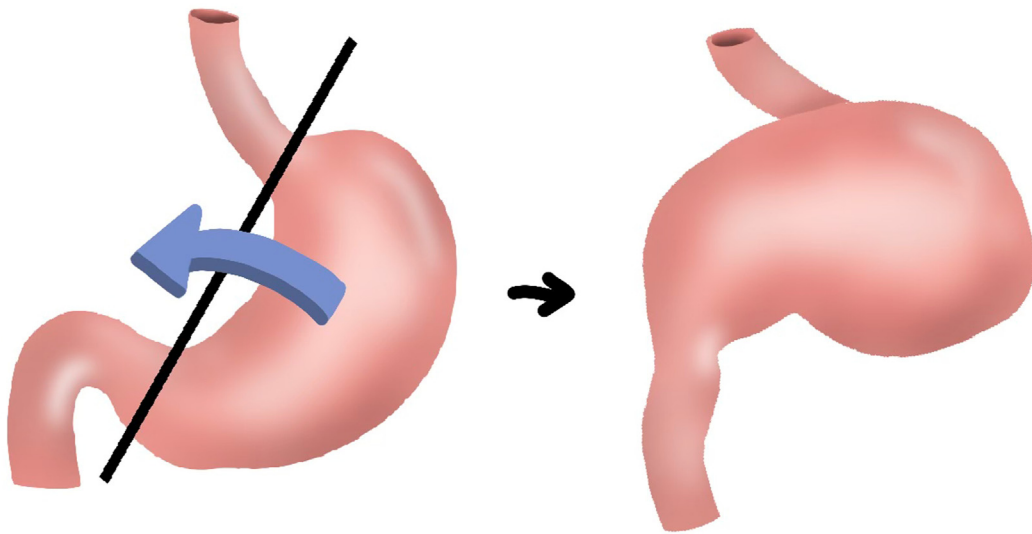


Figure 1. Organoaxial gastric volvulus.

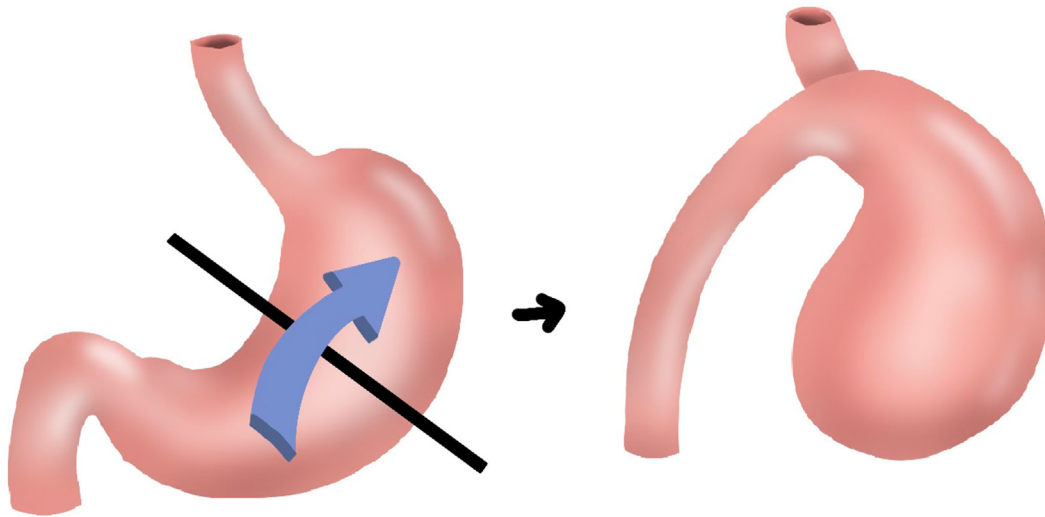


Figure 2. Mesoaxial gastric volvulus.

grasper delivers a 0-silk suture transfascially into the gastric lumen. The suture grasper is removed and then reinserted about a centimeter from the original entry site. The suture is then grasped, pulled superficially, and pexied to the anterior abdominal wall. Two rows of transfascial sutures are placed along the greater curvature of the stomach. The suture is then tied, trimmed, and buried in the incision, and the incisions are closed with Steri-Strips (3M, Inc, St. Paul, MN, USA). Silk suture was used because it is nonabsorbable, and by the time it loses its integrity, the stomach should be sufficiently adhered to the abdominal wall.

Postoperation, the patient was admitted to the minimally invasive surgery service. He started on a clear liquid diet on postoperative day 0. He experienced incisional pain, which was managed with Tylenol, tramadol, and oxycodone. On postoperative day 2, his diet was advanced to a full liquid diet. On postoperative day 3, the patient's pain was well controlled; he remained stable and was discharged on a mechanical soft diet to a skilled nursing facility. He was evaluated in the clinic a week postoperation and had excellent progress. He was then advanced to a regular diet.

In conclusion, this technique was minimally invasive, efficient, and safe and prevented the need for more invasive surgery or the need for tube gastropexy. It has the potential for replacing other methods of treating isolated gastric volvulus. To our knowledge, this is the first description of an endoscopically guided sutured gastropexy for management of gastric volvulus. As previously mentioned, traditional management involves laparoscopic repair or, if it is endoscopically driven, entails a gastric tube placement. We demonstrate a safe and fast alternative for patients with isolated gastric volvulus.

DISCLOSURE

The authors did not disclose any financial relationships.

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