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Annals of Surgical Case Reports & Images

Volume 1 | Case Report

Simultaneous erosion of gastric band into stomach and transverse colon

***Corresponding Author:** Benjamin Harris Peterson Corman*

Email: Benjamin.Corman@StonyBrookMedicine.edu

Abstract

Laparoscopic adjustable banding was previously considered to be the safest and least invasive technique in bariatric surgery in the mid-1990s. It has since been performed less frequently as newer bariatric interventions and surgical techniques, and a fuller understanding of gastric banding complications have been elucidated. Nevertheless, there are a significant number of patients with in situ gastric bands, and cases of significant and unusual complications involving multiple visceral organs must be described and documented in order to enhance providers' awareness and facilitate early recognition.

Keywords: Laparoscopic adjustable gastric banding; Erosion; Bariatric surgery; Weight loss.

Benjamin Harris Peterson Corman[1]*; Edmund W Lee[2]; Konstantinos Spaniolas[2]

[1]Renaissance School of Medicine, Stony Brook University, 101 Nicolls Road, Stony Brook, NY 11794, USA.

[2]Department of Surgery, Stony Brook University Hospital, Stony Brook, New York, 101 Nicolls Road, Stony Brook, NY 11794, USA.

Received: Feb 19, 2024

Accepted: Mar 13, 2024

Published Online: Mar 20, 2024

Journal: Annals of Surgical Case Reports & Images

Online edition: https://annscri.org

Cite this article: Corman BHP, Lee EW, Spaniolas K. Simultaneous erosion of gastric band into stomach and transverse colon. Ann surg case rep images. 2024; 1(2): 1016.

Case presentation

A 67-year-old female, with a history of a laparoscopic adjustable gastric band placed 20 years ago, was sent by her primary doctor to the emergency department with worsening upper and right lower quadrant abdominal pain. Outpatient CT scan showed a dilated Common Bile Duct (CBD) with inflammation of the ascending colon (Figure 1). She was admitted to the general medicine floor service with leukocytosis of 14,000 and liver enzymes within the normal range. MRI of the abdomen showed an adhesive band extending from the left upper quadrant to the right lower quadrant, with an associated small bowel obstruction. Later that day, she had a 103F fever associated with an increasing leukocytosis of 22,000/uL. A repeat CT scan showed disconnected tubing tracking down to the right lower quadrant, interval development of inflammation surrounding the band and a small bowel obstruction with a transition point in the right lower quadrant associated with free fluid in the pelvis and right paracolic gutter (Figures 2 and 3). The surgery team was consulted given the concern for small bowel obstruction associated with the patient's prior bariatric surgery.

Intra-operatively, the small bowel was dilated and friable. In examining the bowel, a decompressed terminal ileum was noted with significant dilation of the bowel proximal to fibrinous, omental adhesions into the right lower quadrant. The center of the inflammatory process contained a perforated, inflamed, and injected appendix, which was removed. Adhesions of the liver to the stomach were sharply divided. The transverse colon was densely adherent to the area of the band and upon close inspection, it was evident that the intra-abdominal band had disconnected from the port tubing and eroded into the transverse colon. Furthermore, the band was eroded into the stomach. The band was carefully removed from both the transverse colon and stomach and the enterotomies were closed primarily. The gastrotomy was reinforced with an omental flap. The patient tolerated the procedure well, with no intraoperative complications. Pathology for the appendix resulted as acute transmural appendicitis with fibro purulent per appendicitis.

Given the intraoperative findings, the band seemed to be chronically eroded into the stomach. The disconnection from the tubing (it is unknown whether this was disconnected from

a prior surgery or if it was the product of device failure) created an exposed metal tip on the band side, which eroded into the transverse colon. The band tubing was freely floating within the abdomen when acutely, the patient developed an appendicitis. The subsequent perforation caused the omentum and the associated tubing to migrate toward the right lower quadrant to contain the perforation. With the band tubing draped toward the right lower quadrant, this caused a small bowel obstruction with a transition point in the right lower quadrant and compression of the CBD.

The patient's post-operative course and recovery were uneventful and an upper-GI series on post-operative day 7 was negative for leak. The patient was seen in clinic 3 months after the surgery. She was tolerating a regular diet without issue and reported regular bowel movements. She had no symptoms of gastritis or reflux.

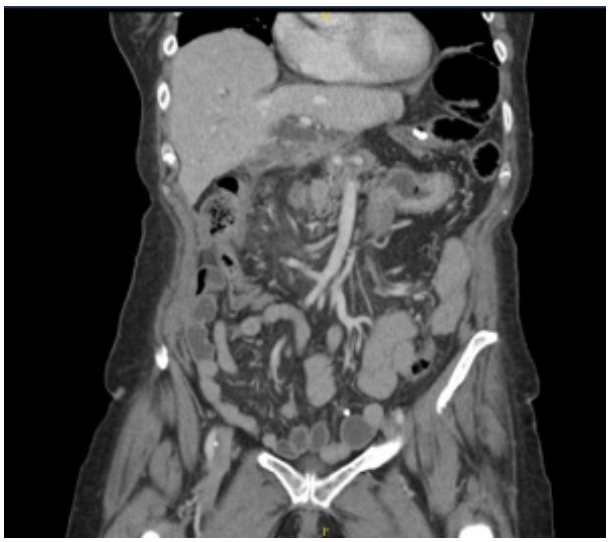

Figure 1: Sagittal CT demonstrating dilated common bile duct.

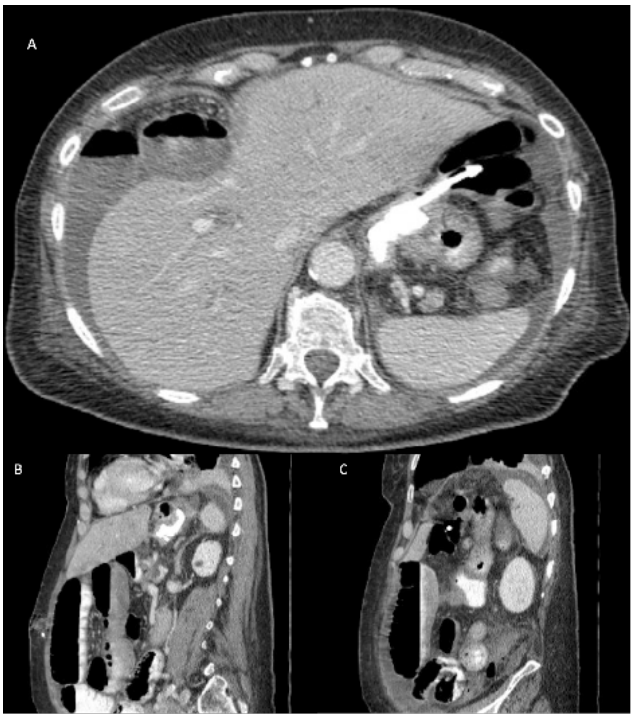

Figure 2: CT abdomen and pelvis of the patient with IV contrast. **A:** Axial view showing disconnected eroding gastric band surrounded by inflammatory changes. **B:** Sagittal view at the level of the gastric band. **C:** Sagittal view showing connecting tubing eroding into transverse colon.

Figure 3: Sagittal CT scan demonstrating band extending the free-floating tubing draping toward the ascending colitis.

Discussion

Gastric band erosion into the stomach is a well-described complication occurring in 1.6%-3% of cases [1]. Erosion into the colon is less commonly observed, and the simultaneous erosion of the gastric band apparatus into both the stomach and the transverse colon is extremely uncommon. To our knowledge, there are no original research studies that investigate the prevalence of gastric band erosion into both the stomach and the colon simultaneously, and the pathology has been described in only a few case reports [2-7].

There are two primary proposed etiologies for erosion at the site of the gastric band: (1) elevated pressure caused by overfilling of the band or excessive food boluses and (2) rejection reaction against the silicon of the gastric band with circumferential fibrosis [8]. It has further been previously proposed that repeated episodes of intra-abdominal infection may cause subacute infection of gastric band and tubing, which, in the setting of friable colonic tissue, may predispose to erosion [2]. Furthermore, it has been suggested that the most likely mechanism leading to gastric band connecting tubing erosion is through bacterial colonization of the tubing due to port infection [9]. Other proposed contributory factors for gastric band apparatus erosions include hollow organ ischemia, NSAID use, vomiting, alcohol consumption, and smoking history [10].

Our patient had an appropriately depressurized cuff at the time of presentation and reported no findings or behaviors concerning for excessive food boluses, making a rejection reaction the likely etiology. However, with regards to known modifying factors that may predispose a patient to erosion, this patient had no findings to suggest an ischemic process, nor did she have a history of intraabdominal infection, signs of port-site seeding, NSAID use, vomiting history, or alcohol use. The patient's smoking history may have contributed to a basal inflammatory state that put this patient at increased risk of erosion into both the stomach and the transverse colon.

This patient's acute presentation was likely secondary to her appendicitis with progression to perforation, leading to omental displacement into the right lower quadrant, tracking the free end of the band tubing with it, causing the observed small bowel obstruction.

Conclusion

Erosion of adjustable gastric bands and the adjacent connecting tubes into the stomach or colon are rare, but relatively well-documented complications of gastric banding. However, it is exceedingly rare for a patient to present with simultaneous erosion of the gastric band apparatus into two separate organs as was the case in this patient's erosion into the stomach and transverse colon. It has previously been proposed that a history of intra-abdominal infection (namely port site infection or recurrent diverticulitis), NSAID use, vomiting, alcohol use, and smoking may predispose a patient to erosion. In this case, the patient's only known risk factor was her smoking history, which may have contributed to a rejection reaction against the gastric band. We suggest counseling all patients with a history of gastric band placement on smoking cessation and monitoring all patients with risk factors for gastric band erosion carefully for signs of erosion and perforation such as abdominal pain, inability to tolerate oral intake, signs of obstruction, and sepsis as gastric band erosion is a pathology necessitating surgical or endoscopic removal of the eroded foreign body and repair of the eroded tissue.

Furthermore, clinicians should be aware of the possibility of secondary complications in patients with a history of gastric placement. As in this case, acute abdominal processes such as perforated appendicitis can cause omental displacement and the tracking of implanted hardware with it. Such hardware mobilization should be considered as a potential etiology in patients with subsequent small bowel obstruction.

Financial disclosures: No disclosures to report.

Conflicts of interest: No conflicts to report.

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