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J Case Rep Images Surg 2022 Jul-Dec;8(2):47–50.
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CASE REPORT PEER REVIEWED | OPEN ACCESS

Cecal volvulus, a rare and late complication of a laparoscopic adjustable gastric band

Amar Lakhani, Casey Fung, Paul Strauss

ABSTRACT

Introduction: Laparoscopic adjustable gastric band (LAGB) surgery is one of the three most popular bariatric procedures worldwide due to its favorable risk benefit profile, reversibility, and low rates of morbidity and mortality. Recent studies have demonstrated a myriad of long-term complications including band slip, band erosion, intra-abdominal infection, port-site infection, port breakage, and pouch enlargement. All of which contribute to alarming rates of revision, adjustment, and removal of LAGB.

Case Report: We describe a novel case of a 68-year-old female presenting to the Emergency Department with a one-day history of abdominal pain, obstipation, loss of appetite, nausea and vomiting. A computed tomography (CT) scan demonstrated a cecal volvulus. Subsequently an emergency right hemicolectomy was performed which identified a LAGB encircling the hepatic flexure.

Conclusion: Clinicians should hold a high index of suspicion and a low threshold for operating when treating patients with a bowel obstruction with a known history of a LAGB.

Keywords: Bariatric surgery, Bowel obstruction, Cecal volvulus, Hemicolectomy, Laparoscopic adjustable gastric band

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Received: 06 September 2022
Accepted: 08 December 2022
Published: 22 December 2022

How to cite this article

Lakhani A, Fung C, Strauss P. Cecal volvulus, a rare and late complication of a laparoscopic adjustable gastric band. J Case Rep Images Surg 2022;8(2):47–50.

Article ID: 100113Z12AL2022

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doi: 10.5348/100113Z12AL2022CR

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INTRODUCTION

Obesity is defined as an abnormal or excessive level of fat accumulation, often classified as a body mass index greater than or equal to 30 [1]. These individuals are at greater risk of developing preventable diseases including heart disease, type two diabetes mellitus, dyslipidemia, and at least 13 different forms of cancer [2]. Over the past decade the prevalence of obesity is increasing at an alarming rate. It is estimated that 1.9 billion adults were overweight and 650 million were considered obese in 2020 [1]. Initial management often involves a combination of diet, exercise, and behavioral modification. For patients unable to achieve weight loss through conservative measures, pharmacological and surgical interventions may be considered.

Laparoscopic adjustable gastric bands were considered to be the most popular bariatric procedure for weight loss at the beginning of the millennium due to its favorable risk benefit profile, reversibility, and low rates of morbidity and mortality. However, increasing evidence of long-term complications, alarming rates of revision and removal of LAGBs, and poor long-term weight loss outcomes have resulted in a shift of surgeon preference away from the procedure in favor of a gastric sleeve and Roux-En-Y gastric bypass [3]. We describe a novel case of a 68-year-old female who developed a cecal volvulus secondary to a LAGB.

CASE REPORT

A 68-year-old female presented to the emergency department with a one-day history of centralized abdominal pain, radiating to the right iliac fossa. The pain was described as progressively increasing in intensity colicky with paroxysms every 30–45 minutes. Her pain was associated with a 24-hour history of obstipation, loss of appetite, nausea, and vomiting (bile and food contents). No hematemesis or melena was reported at the time of presentation.

Her surgical history was significant; a vaginal hysterectomy (1992), a pelvic floor repair (1996), laparoscopic cholecystectomy (2010), and a laparoscopic adjustable gastric band (2016) which had been deflated for the past five years. Medically she has been diagnosed with asthma and bronchiectasis. She was an active smoker, drinks socially and was independent of her activities of daily living.

At time of presentation her heart rate, blood pressure, oxygen saturation, temperature, and body mass index (BMI) were 72 beats/min, 149/69 mmHg, SpO_2 98% on room air, afebrile at 37.2 °C, and 31.5 respectively. Her BMI was recorded at 31.5 kg/m² on admission (88.6 kg). Physical examination demonstrated a distended and tympanic abdomen, pain localized centrally and to the right iliac fossa with no evidence of peritonitis. The patient was deemed euvolemic at time of examination.

Laboratory tests were unremarkable. A CT scan of the abdomen and pelvis was ordered. A cecal volvulus with luminal distension of 12 mm was identified. A transition point was localized to the right, anterior to the kidney with swirling of the mesentery and evident collapse of large bowel distally (Figures 1 and 2). It was unclear from the CT scan whether the laparoscopic band may be contributory.

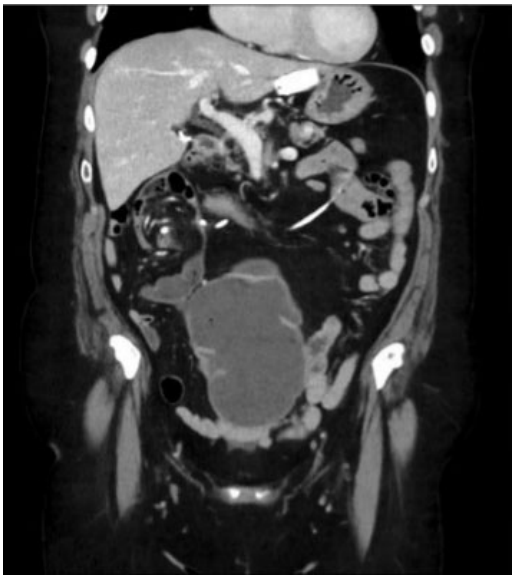

Figure 1: Computed tomography—Coronal image: Cecal volvulus with evident transition point and swirling of the mesentery anterior to the right kidney.

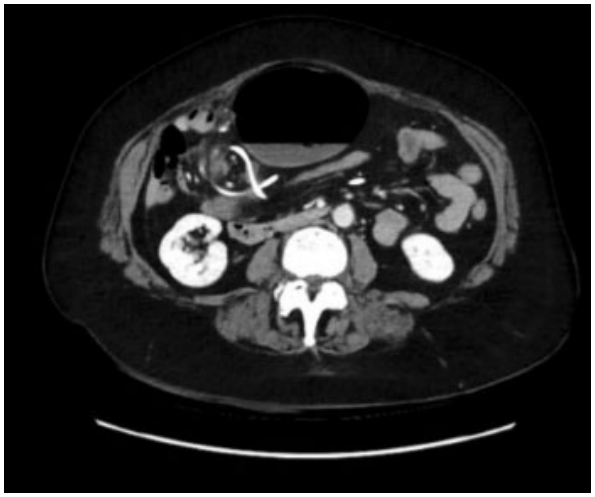

Figure 2: Gastric tubing encircling the right transverse colon.

The patient underwent an emergency laparotomy which identified an extremely mobile right colon and a laparoscopic adjustable gastric band encapsulating the hepatic flexure (Figures 3 and 4). A right hemicolectomy was subsequently performed with a side-to-side single layer continuous suture anastomosis. The gastric band and catheter were repositioned and remained in situ. Histopathology demonstrated congestion and hemorrhage of the colonic wall, evidence of venous strangulation without established infarction. Her post-operative recovery was complicated by an ileus and hospital acquired pneumonia treated with intravenous antibiotics. The patient subsequently made a full recovery and was discharged ten days post-admission.

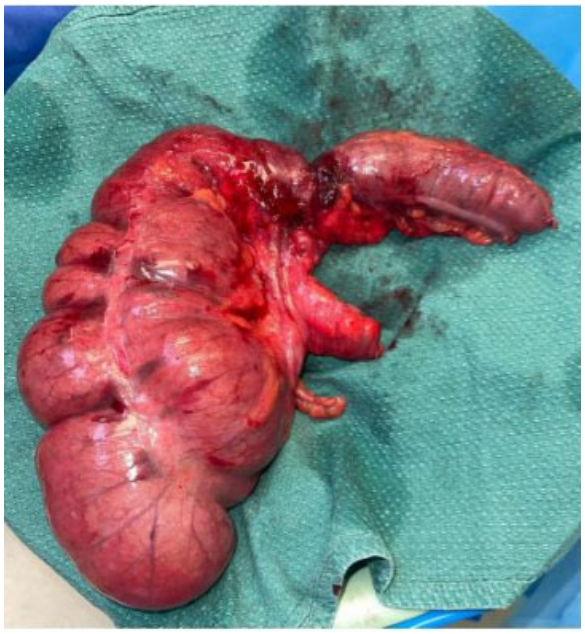

Figure 3: Dilated cecum and erosion of gastric tubing into the colonic wall of transverse colon.

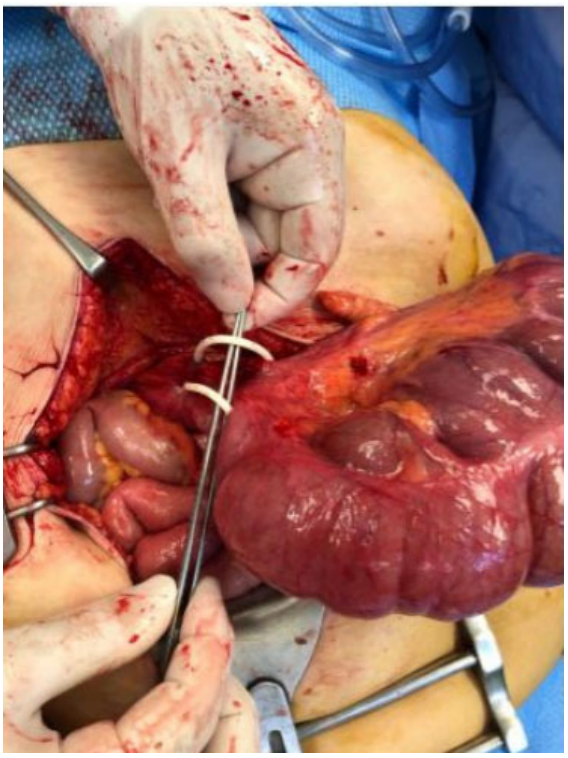

Figure 4: Gastric tubing encircling the transverse colon.

DISCUSSION

Laparoscopic adjustable gastric bands were first described in 1993 [4]. By placing an adjustable silicone band around the gastric cardia, 2 cm distal to the gastroesophageal junction the LABG promotes early satiety and reduces caloric consumption. Additionally, an infusion port located in the subcutaneous tissue attached to the band via tubing allows the surgeon to increase or decrease the degree of constriction around the stomach. Well documented complications of a LAGB include: band slip, band erosion, intra-abdominal infection, port-site infection, port breakage, and pouch enlargement [5].

This case identified a novel and potentially life-threatening complication associated with a LAGB, a cecal volvulus. If left untreated, a cecal volvulus has the potential to result in bowel ischemia, necrosis, and eventually perforation. To our knowledge there are only four published case reports of a gastric band contributing to a cecal volvulus [6–9]. We hypothesize that a combination of a highly mobile right colon and migration of gastric tubing which constricted and eroded into the colonic wall of the hepatic flexure resulted in the development of a type 1 cecal volvulus; akin to a "lasso" which progressively tightened over time. This hypothesis is consistent with previous literature demonstrating a displacement of connecting tubing resulting in the development of a large bowel obstruction [6–9]. Shipmen et al. also postulated that rapid weight loss may contribute to lengthening of the mesocolon predisposing the patient to a cecal volvulus [8].

Interestingly, small bowel obstruction associated with LAGB and its connecting tube is an emerging concern with 13 cases published in the literature. Of which, 10 case reports describe the band tubing forming an internal hernia by looping around bowel mesentery causing obstruction, two cases illustrating small bowel obstruction as a result of gastric band tubing adhesions, and one case attributing its cause to gastric band slippage [6–18].

Given the increasing numbers of case studies identifying LAGB to be a contributing factor to the development of bowel obstruction one must approach the patient population with caution. As imaging may be inconclusive and there is a high likelihood of patients failing conservative management, a high index of suspicion of a LAGB or its tubing as the primary culprit of bowel obstruction may prevent the progression of an obstruction to ischemic gut or perforation by initiating early intervention.

CONCLUSION

It is evident that there are an increasing number of long-term complications associated with the use of a LAGB. Our case demonstrates a rare but potentially fatal complication of a cecal volvulus attributed to the tubing of a LAGB. Clinicians should consider that a LAGB or its tubing may contribute to the development of a bowel obstruction or volvulus, prompting early intervention.

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Author Contributions

Amar Lakhani – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Casey Fung – Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Paul Strauss – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Guarantor of Submission

The corresponding author is the guarantor of submission.

Source of Support

None.

Consent Statement

Written informed consent was obtained from the patient for publication of this article.

Conflict of Interest

Authors declare no conflict of interest.

Data Availability

All relevant data are within the paper and its Supporting Information files.

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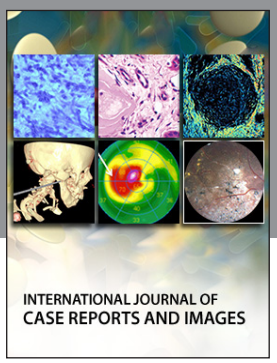

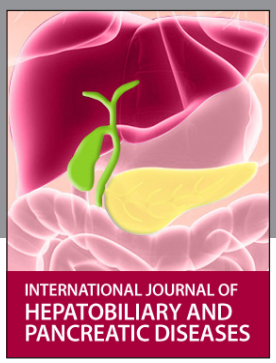

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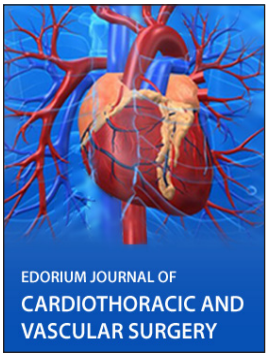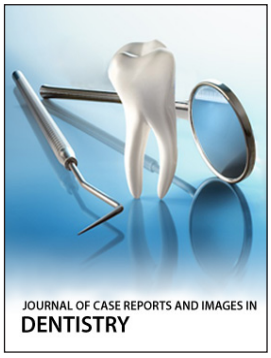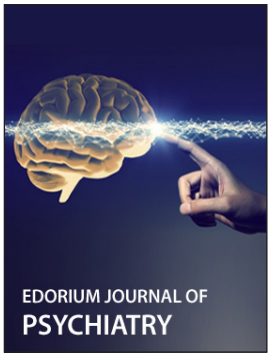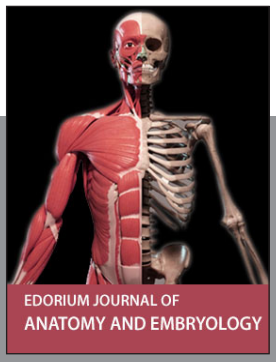
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