

The Silent Band: Not Loud Enough? Asymptomatic Gastric Band Erosion: A Case Report

Keywords: Laparoscopic adjustable gastric banding; Surgery; Erosion; Weight loss; Bariatric and Metabolic Surgery; Revisional Surgery

Abstract

Background: Laparoscopic adjustable gastric band (LAGB) is a common and an effective bariatric procedure. It involves the placement of an adjustable band with an inflatable balloon at the gastric cardia near the gastroesophageal junction. However, several complications have been reported. These include port-site infections, slippage of the band, and band erosion.

Case summary: A 44 years-old female who was found to have an eroding gastric banding during esophagogastroduodenoscopy incidentally. The gastric band was placed laparoscopically five years prior to presentation. The band was removed successfully through an endoscopic laparoscopic-assisted technique under general anesthesia. Starting endoscopically, the eroded gastric band was visualized and then broken using a mechanical lithotripter. However, a small portion of the band remained embedded in the mucosa and prevented the retrieval. Simultaneously, laparoscopy revealed intra-abdominal adhesions which were released, freeing the gastric band into the stomach and allowing extraction of the gastric band using a snare was completed endoscopically while ensuring examination of intact gastric mucosa. The post-operative course and follow up were uneventful.

Conclusion: Eroded LAGB can be silent necessitating life-long follow-up. Endoscopic laparoscopic-assisted approach allows definitive management, examining gastric wall integrity and leaks simultaneously.

Introduction

Laparoscopic adjustable gastric band (LAGB) is a bariatric procedure that involves placement of an adjustable band with an inflatable balloon at the gastric cardia near the gastroesophageal junction. Placing this band will limit the amount of food consumption promoting early satiety and progressive weight loss with time. LAGB is a common bariatric surgery procedure ranking as the third most common in the United States. However, several complications have been implicated with the use of banding including pouch dilatation (11%), band infection (1%) band erosion (28%) [1]. As with any procedure, advantages and disadvantages must be highlighted. LAGB is the least invasive bariatric procedure with an advantage of it being adjustable and reversible. No anatomic rearrangements are done; therefore, it has the lowest morbidity and mortality rates amongst other bariatric procedures. However, slower rates of weight loss, up to 40% to 54% of excess weight loss, are implicated in comparison to other procedures like laparoscopic sleeve gastrectomy (LSG) and laparoscopic Roux-en-Y Gastric Bypass (LRYGB); 49%-56% and 55%-66% respectively [2]. Complications of LAGB may arise including band slippage, band infection, and band erosion. Band erosion is a late complication occurring at a mean of 22 months after surgery. It may result either due to gastric wall ischemia from an excessively tight band, mechanical trauma related to the band buckle or thermal trauma from electro surgical energy sources used during



AlHabit R¹, Kayali N¹, Al Rashed A^{1*} and Al-Jaser W²

¹Department of Surgery, Al Amiri Hospital, MOH, Kuwait

²Department of Gastroenterology, Al Amiri Hospital, Kuwait

*Address for Correspondence

Al Rashed A, Department of Surgery, Al Amiri Hospital, MOH, 25 Gulf Road 13041, Kuwait City, State of Kuwait, Phone: +965 22450005 (Ext: 5500); Email: asmaalrashed@dr.com

Submission: 02 July, 2022

Accepted: 01 August, 2022

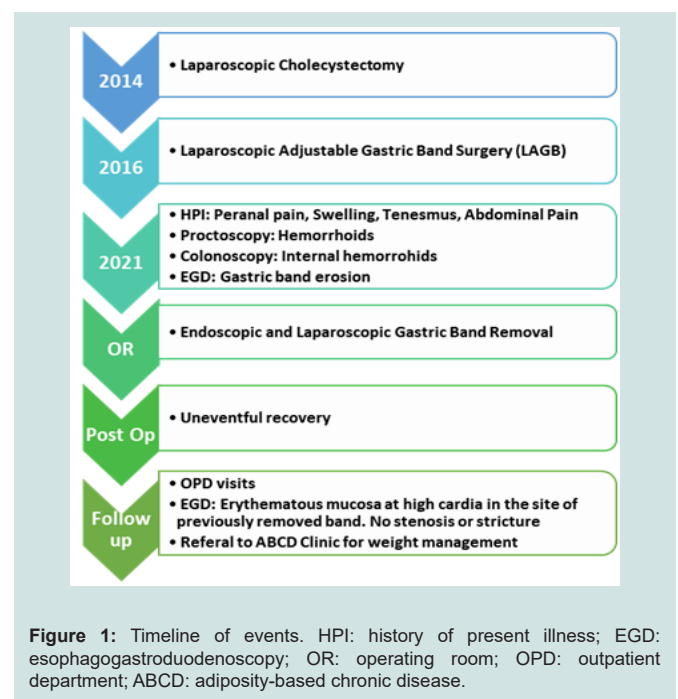
Published: 06 August, 2022

Copyright: © 2022 AlHabit R, et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

band placement. Patients complicated with band erosion present with abdominal pain, weight regain, nausea and vomiting. It may also result in intragastric migration, partial or complete. Conversion to other bariatric procedures such as LSG and RYGB are an option once LAGB has failed whether due to inadequate weight loss or if any complications have occurred. Gastric bypass has better outcomes than gastric band procedures for long-term weight loss, type 2 diabetes controls and remission, hypertension, and hyperlipidemia [3] (Figure 1).

Case Report

A 44-year-old female presented to the out-patient department with a one-month history of perianal pain, swelling and tenesmus. The perianal pain was sharp in nature, exacerbated by defecation and lasted for multiple hours. She has a history of chronic constipation for the past seven years and passes stool with straining, she had used



local treatments such as ointments and suppositories. Additionally, the patient reports abdominal pain and vomiting of one month duration that occurred after heavy meal consumption with a sensation of food impacted in the stomach. Past surgical history revealed laparoscopic cholecystectomy seven years ago and LAGB five years ago performed in another institution with a total of 17kg weight loss. Her family history was positive for bowel cancer affecting both her mother in the 7th decade and paternal uncle in his 8th decade. The patient's general appearance and vital signs were normal. Her measurements were height 171 centimetres (cm), weight 87.2 kilograms (kg), and body mass index (BMI) 28.8 cm/kg. Abdominal examination revealed mild tenderness in the epigastric area, without distention, rigidity, or peritonitis. Proctoscopy showed grade II hemorrhoids at 11 o'clock and grade I hemorrhoids at 3 and 9 o'clock positions. The patient was advised for lifestyle changes and a decision was made to proceed with colonoscopy to rule out malignancy and esophagogastroduodenoscopy (EGD) for gastric band surveillance.

The colonoscopy showed internal hemorrhoids; however, EGD showed gastroesophageal (GEJ) at 37 cm, normal esophagus, the gastric band eroding the gastric wall (nearly 2/3 of band circumference was visualized) and migrated upwards, just below the GEJ by 2 cm (Figure 2). The rest of the examination was unremarkable. A Barium meal showed that the gastric band is noted in the proximal part of the stomach but appears relatively superiorly located with an increased phi angle, measuring 70 degrees, suggestive of displacement with mild superior migration of the gastric band and no leak. The findings were consistent with the diagnosis of gastric band erosion. The diagnosis and the management options with risks, benefits and complications were discussed with the patient. She consented for endoscopic, and/or laparoscopic and/or open laparotomy for eroded gastric band removal.

The patient was admitted to the hospital and followed pre-operative assessment as per protocol. Preparation and coordination with the intervention gastroenterologist team was arranged. The patient was brought to the operating room, placed in supine position, and underwent general anesthesia with endotracheal intubation. Starting with endoscopy, an eroded gastric band around 2 cm below the GEJ at 39 cm was identified. A mechanical lithotripter was then used to break the band successfully (Figure 3). However, one position of the band system, most likely the buckle, was embedded in the mucosa impeding the retrieval. After multiple attempts to pull it out, a decision to proceed with laparoscopy was taken to assess if external adhesive bands have prevented the endoscopic retrieval. The patient was re-positioned to split-leg supine position. Pneumoperitoneum achieved with 12-15 mmHg using Veress needle at Palmer's point, and then entry to the abdominal cavity in the left supraumbilical area using a bladeless vesi-port 10 mm and a 30-degree camera was done. Surveillance revealed a dilated stomach and small bowel with multiple upper quadrant adhesions to the abdominal wall and the stomach. The gastric band tube was followed to lead to the anterior portion of the stomach. Few adhesive-bands were released using hook cautery which facilitated in pushing the gastric band inwards to the gastric lumen until no further resistance was felt. The EGD was performed simultaneously to confirm that the entire gastric band is seen free in the stomach cavity, which was then retrieved using a snare out of the oral cavity (Figure 4). Integrity of the stomach was confirmed

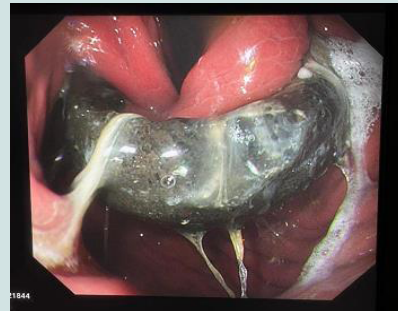


Figure 2: Eroded adjustable gastric band.

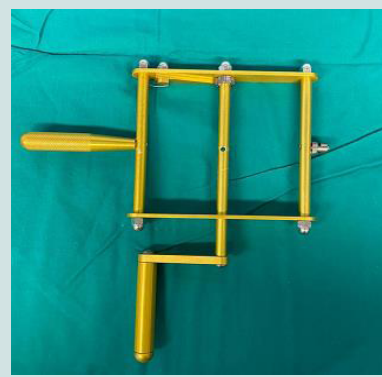


Figure 3: Mechanical lithotripter.



Figure 4: Mechanical lithotripter.

through insufflations of the stomach and filling the abdominal cavity with sterile water. No bubbles were noted intra-abdominally while the stomach was fully distended. The gastric-band reservoir was in the epigastric subxiphoid area, and an incision was made to extract it. All pieces of the gastric band tube system have been extracted successfully. The port sites were inspected which were satisfactory for hemostasis, pneumoperitoneum was then deflated, and the wounds closed. On post operative day 1, the patient was vitally normal and had only mild pain over the incision sites. A barium meal fluoroscopy was performed, and no radiological signs of leak were seen. The patient had an uneventful postoperative course, tolerated a fluid diet with normal bowel function. On post operative day 2, the patient was discharged home on proton-pump inhibitors (PPI) medication and followed up in the outpatient clinic in the following week. Upon

further follow up at OPD, she reports mild symptoms of food being impacted in the stomach and vomited a few times; otherwise, she was doing well and tolerating oral diet. An EGD was performed as an out-patient to assess for stricture that showed an erythematous mucosa at high cardia in the site of previously removed band with no stenosis or stricture. She was advised to maintain a healthy diet and lifestyle; continue the PPI medication and she was referred to the Adiposity Based Chronic Disease Clinic (ABCD) for further follow-up regarding weight maintenance after the LAGB removal. In her 6 months follow up the patient was asymptomatic.

Discussion

Laparoscopic adjustable gastric band is a common and effective procedure for morbid obesity. However, complications of LAGB are not uncommon. This can include port-site infections, slippage of the band, and band erosion. Gastric erosions after LAGB were first reported in 1998 [4].

Gastric band erosion can present as an early or late complication. Early erosions are usually related to the surgeon's experience and port site infection. Late erosions are related to port system dysfunction and chronic ischemia. The incidence rate of gastric band erosion ranges from 0.5% to 11% [5]. The variation in incidence rate could be attributed to the type of the band and the surgical techniques. Possible etiological factors of erosions are overfilling of the band leading to gastric wall ischemia, suturing over the buckle of the band, damage from the surgical instruments, and the dissection method. Other causes are related to the patient's factors including smoking, use of NSAIDs, and consumption of alcohol.

The clinical presentation can range from asymptomatic with incidental finding of erosion with routine endoscopy to failure to achieve weight reduction, dysphagia, epigastric pain, and dehydration. The erosion can be diagnosed by a CT scan. However, to confirm the diagnosis of gastric band erosion, an upper gastrointestinal endoscopy is needed.

Different techniques of gastric band removal have been reported in the literature. This includes laparoscopic, endoscopic, and combined endoscopic and laparoscopic techniques. The endoscopic technique has proved to be successful in many cases. However, this technique can only be done when more than 50% of the band has eroded through the stomach and when direct visualization of the buckle is possible. Adhesions can also limit the endoscopic retrieval of the band. In a systematic review by Egberts et al, endoscopic removal was not recommended because of the failure rates, the lengthy procedural time, and the need for anesthesia and hospital admission [6].

In a case series by Chisholm et al, however, 46 cases out of 50 endoscopic retrievals were successful yielding a success rate of 92% [7]. Similarly, Neto et al reported 82 cases of gastric band erosion with a 95% success rate of endoscopic removal of the band [8].

Rodarte-Shade et al have described a hybrid technique for the removal of eroded gastric bands. Adhesiolysis was done through a laparoscopic technique. This was followed by an upper gastrointestinal scope to visualize and remove the band trans-orally [9].

In our case, an endoscopic removal under general anesthesia was attempted as more than 2/3 of the gastric band was visible; however,

high resistance while pulling the band into the gastric lumen indicated possible external adhesions. We proceeded to the laparoscopic approach and found a few centimetres of the band visible and the tube with multiple adhesions to it. After releasing the adhesions, the band was smoothly pushed into the stomach and retrieved endoscopically.

Some of the advantage of laparoscopic-assisted endoscopic retrieval of the band approach is to examine gastric wall integrity, to test for leaks and to allow definitive management in that case with one exposure to general anesthesia.

Kohn et al advocate for laparoscopic technique as this allows for early intervention regardless of the percentage of erosion of the band into the stomach [10].

In a retrospective review by Robinson et al that involved twenty-two patients with gastric band erosions, one patient has undergone a combined endoscopic and laparoscopic approach. This decision was made based on the history of Roux-en-Y gastric bypass followed by banding of the gastric pouch, which has undergone a combined endoscopic and laparoscopic approach. Adhesiolysis was done and the band was retrieved endoscopically [11].

In one case report by Spitali et al, the authors have introduced the use of a trans-gastric single incision laparoscopic surgery for the removal of an eroded gastric band with an uneventful postoperative course [12]. In a video case report, the authors preferred laparoscopic trans-gastric removal in which the band was removed through the trocar under direct visualization using both endoscopy and laparoscopy. The reason for this is dense scarring in the anterior wall of the stomach [13].

A trans-gastric endoscopic rendezvous technique was described by Karmali et al to remove an eroded Molina gastric band. This technique was preferred because the area of dense adhesions around the stomach can be avoided [14].

Conclusion

Laparoscopic-assisted endoscopic retrieval of the band is a safe and an effective approach that allows to examine gastric wall integrity and to test for leaks. It also allows a definitive management with one exposure to general anesthesia.

Acknowledgement

Author Contributions: Kayali N and AlHabib R, reviewed the literature and contributed to manuscript drafting; Al-Jaser W, revision of the manuscript, the gastroenterologist who performed the endoscopy portion of the procedure; Al Rashed A, conception and revision of the manuscript, the surgeon who operated the laparoscopic portion of the procedure. All authors issued final approval for the version to be submitted.

References

1. Ellsmere JC (2021) Late complications of bariatric surgical operations.
2. Makley A & The University of Cincinnati Residents (2017) The Mont Reid Surgical Handbook. In *Bariatric surgery*: 442-449.
3. Puzifferri N, Roshek TB 3rd, Mayo HG, Gallagher R, Belle SH, et al. (2014) Long-term follow-up after bariatric surgery: a systematic review. *JAMA* 312: 934-942.
4. Weiner R, Emmerlich V, Wagner D, Bockhorn H (1998) Management and

- therapy of postoperative complications after "gastric banding" for morbid obesity. *Chirurg* 69: 1082-1088.
5. Cherian PT, Goussous G, Ashori F, Sigurdsson A (2010) Band erosion after laparoscopic gastric banding: a retrospective analysis of 865 patients over 5 years. *Surg Endosc* 24: 2031-2038.
 6. Egberts K, Brown WA, O'Brien PE (2011) Systematic review of erosion after laparoscopic adjustable gastric banding. *Obes Surg* 21: 1272-1279.
 7. Chisholm J, Kitan N, Toouli J, Kow L (2011) Gastric band erosion in 63 cases: endoscopic removal and rebanding evaluated. *Obes Surg* 21: 1676-1681.
 8. Galavo Neto MP, Ramos AC, Campos JM, Murakami AH, Falcão M, et al. (2010) Endoscopic removal of eroded adjustable gastric band (AGB): lessons learned after 5 years and 78 cases. *Surg Obes Rel Dis* 6: 423-428.
 9. Rodarte-Shade M, Barrera GT, Arredondo JHF, Diaz RR (2013) Hybrid technique for removal of eroded adjustable gastric band. *JSLS* 17: 338-341.
 10. Kohn GP, Hansen CA, Gilhome RW, McHenry RC, Spiliadis DC, et al. (2012) Laparoscopic management of gastric band erosions: a 10-year series of 49 cases. *Surg Endosc* 26: 541-545.
 11. Robinson TJ, Soriano C, Larsen M, Mallipeddi MK, Hunter JA, et al. (2020) Endoscopic removal of eroded laparoscopic adjustable gastric bands: a preferred approach. *Surg Obes Relat Dis* 16: 1030-1034.
 12. Spitali C, De Vogelaere K, Delvaux G (2013) Removal of Eroded Gastric Bands Using a Transgastric SILS Device. *Case Rep Surg* 2013: 852747.
 13. Liu D, Gonzalvo JP, Murr M (2014) Laparoscopic transgastric removal of an eroded adjustable gastric band. *Surg Obes Relat Dis* 10: 184-185.
 14. Karmali S, Sweeney JF, Yee K, Brunicaudi FC, Sherman V (2008) Transgastric endoscopic rendezvous technique for removal of eroded Molina gastric band. *Surg Obes Relat Dis* 4: 559-562.