

Delayed Mid-to-Distal Esophageal Perforation as a Rare Long-Term Complication of Laparoscopic Adjustable Gastric Banding: A Case Report

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Key words

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Abstract

Background: Laparoscopic adjustable gastric banding (LAGB) has been widely used for the treatment of morbid obesity. Despite early success, long-term complications have become increasingly recognized. Among these, esophageal perforation is exceptionally rare.

Case Presentation: We report the case of a 60-year-old male with LAGB placement ten years prior, who presented with acute respiratory distress, sepsis, and chest pain after vomiting. Imaging revealed a mid-to-distal esophageal perforation with an esophago-pulmonary fistula and right lower lobe abscess.

Management and Outcome: The patient underwent direct full-thickness esophageal repair with an intercostal muscle flap. The gastric band was intentionally preserved due to the absence of stenosis or mucosal damage. Postoperative recovery was uneventful, and follow-up was favorable.

Conclusion: To our knowledge, this is the first reported case of delayed esophageal perforation years after LAGB. It highlights the importance of long-term follow-up in bariatric patients and awareness of rare but serious complications. Multidisciplinary management is essential for optimal outcomes.

Introduction

Obesity is a chronic, multifactorial condition associated with a wide range of comorbidities, leading to substantial morbidity and mortality. These include type 2 diabetes mellitus, arterial hypertension, cardiovascular diseases, dyslipidemia, and peripheral artery disease.

In recent years, the global prevalence of obesity has risen dramatically, contributing to an increased utilization of bariatric surgery. Several surgical interventions have been developed to address this epidemic, with laparoscopic adjustable gastric banding (LAGB) being one of the earliest procedures introduced in the 1990s.

Due to its relative simplicity and reversibility, LAGB was widely adopted worldwide and played a significant role in the global expansion of bariatric surgery. However, over time, it has become clear that, despite its technical ease, LAGB is associated with a range of potential long-term complications.

Despite extensive experience across numerous surgical centers, there is still limited understanding regarding the long-term outcomes of gastric banding. Moreover, M. Suter et al. (1) have suggested that the incidence of long-term complications, particularly major complications, increases progressively over time.

Certain long-term complications are rare, such as proximal gastric outlet obstruction, but esophageal perforation

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has not previously been described in the literature. Here, we report a unique case of mid-to-lower third esophageal perforation in a patient who underwent laparoscopic adjustable gastric banding.

Case Report

The patient is a 60-year-old male with a history of rheumatoid arthritis, for which he doesn't take therapy, and laparoscopic adjustable gastric banding (LAGB) placement in 2015. He was regularly followed up by reference center for surgical obesity treatment, with a BMI of 26 (from 55 pre-operatively). The patient's medical history does not report any symptoms related to eating, such as vomiting, dysphagia or gastroesophageal reflux.

In January 2025 he presented to the Emergency Department in peripheral hospital with progressive dyspnea and marked hypotension, reporting severe lumbar pain following multiple episodes of profuse vomiting. It should be noted that in the two weeks prior to admission, the patient had not correctly followed the food quantities prescribed in the dietary program he was undergoing. A chest CT

scan with and without contrast was performed, revealing a large rolling trans-hiatal fundic gastric hernia containing substantial liquid and solid material, marked esophageal ectasia with food stasis and an intrapleural collection of gastroesophageal contents in the medial-basal segment of the right lower lobe. A right anterior apico-parieto-basal pneumothorax was also observed, along with adjacent lower lobe atelectasis. Multiple peribronchocentric consolidations were present in both lower lobes, suggestive of aspiration pneumonia. The mediastinum was midline with no signs of pneumomediastinum. The gastric band appeared correctly positioned, with no dislocation or disconnection of the tubing. Due to suspicion of esophageal perforation with associated pleuro-mediastinitis and right pneumothorax, the patient was intubated and transferred to the hub ICU.

The first procedure was to deflate the LAGB. A contrast-enhanced chest-abdomen CT scan performed with oral contrast did not demonstrate any active contrast extravasation (image 1). The day after, the clinical, laboratoristic and anamnestic suspicion of esophageal perforation remaining. A contrast swallow study was performed, re-

Image 1. Pre-operative chest-abdominal CT scan with oral contrast. The marked ectasia of the esophagus filled with ingested material, the presence of a rolling hiatal hernia and the gastric banding are highlighted.



vealing contrast leakage into a fistulous tract originating from the distal third of the esophagus and projecting into the right lower lung field, consistent with the previously noted pulmonary abscess. No further extravasation was identified.

A right posterolateral thoracotomy was performed: upon entering the pleural cavity, a large amount of torbid fluid and a parenchymal abscess of the right lower lobe were encountered, as previously noted on imaging. Lobectomy was deemed unnecessary due to satisfactory lung re-expansion under insufflation and minimal air leakage. An intraoperative endoscopy was performed to better assess the extent of the esophageal lesion, the condition of the esophageal and gastric mucosa, and the esophagogastric junction. At 35 cm from the dental arch, a small mucosal discontinuity was identified between edematous folds. Under endoscopic guidance, a full-thickness primary repair was performed using interrupted Vicryl sutures, as the mucosa appeared viable and non-retracted. The repair was reinforced with the previously prepared intercostal muscle flap. An air leak test performed via endoscopic insufflation was negative. Given the absence of esophageal stenosis, mucosal compromise, or impediments to endoscopic passage through the gastric band, laparotomy for LAGB removal was deemed unnecessary. Moreover, intraoperative confirmation of the presence of a hiatal hernia supported the choice to electively remove the LAGB to allow simultaneous surgical repair of the hernia. Two chest drains were placed.

The postoperative course was uneventful, with regular radiographic follow-up. A contrast-enhanced abdominal CT scan with Gastrografin performed one week later showed no signs of contrast leakage. After an 18-day hospital stay, the patient was discharged in good general condition. At surgical follow-up 10 days later, he demonstrated good clinical and functional recovery, tolerated the prescribed diet, and had already undergone nutritional and surgical reevaluation at his reference center for obesity treatment, where a diagnostic-therapeutic admission was scheduled for potential LAGB removal.

Discussion

To the authors' knowledge, no cases involving delayed mid-to-distal esophageal perforation as a long-term complication of gastric banding have been described in the literature.

In a systematic review by Shen et al. (2) the median rates of long-term complications and reoperations following LAGB were reported as 42.7% (range 5.9%–52.9%) and 36.5% (range 7.2%–66.1%), respectively. The most common

long-term complications of LAGB include irreversible gastric pouch dilation or band slippage (6%–12.5%), intragastric migration of the band with gastric wall erosion (10%), proximal gastric outlet obstruction (3%–8%), and progressive food intolerance, often accompanied by gastroesophageal reflux (7%) (1, 3). In literature esophageal dilatation, megaesophagus and esophageal dysmotility are described (7). Few cases of full-thickness esophageal perforation are documented, such as caused by band erosion evolving in fistulas with pleural cavity, or cases of band distal migration resulting in extensive gastrointestinal injuries (7). Additional minor complications include port infection, displacement of the port, leakage of the catheter-port system, and issues with the catheter-band connection, which can lead to an inability to adjust the neo-pylorus (1, 3). Our case, therefore, represents an exceptionally rare but life-threatening complication. Reported cases of esophageal perforation mostly involve intraoperative or immediate postoperative iatrogenic injuries (4, 5). A few instances of esophageal perforation due to mucosal necrosis and the development of “black esophagus” secondary to slipped LAGB have been documented (6).

Typical presenting symptoms of esophageal perforation include pain, dyspnea, subcutaneous crepitus, chills, and signs of systemic inflammation such as fever, tachycardia, and hypotension. In advanced cases with delayed diagnosis, sepsis, mediastinitis and respiratory failure may develop, particularly with thoracic perforations, which often present with epigastric pain radiating to the back or chest, vomiting, and rapid onset of septic state. Abdominal perforations typically result in peritonitis-associated pain or back discomfort (8, 9).

Contrast-enhanced CT scan with oral contrast as Gastrografin is the diagnostic modality of choice for suspected esophageal perforation. It allows assessment of the size and location of the perforation, presence of fluid collections or abscesses, pneumomediastinum, or pneumoperitoneum (9). In our case, intraoperative endoscopy played a pivotal role in localizing the esophageal tear and guiding the surgical repair. Endoscopy also allows assessment for esophageal stenosis or underlying pathologies (10). However, its use remains controversial. In contained perforations, some experts caution that insufflation during endoscopy may convert the lesion into a full-thickness perforation or induce tension pneumothorax if the mediastinal pleura is breached (9).

Surgical intervention is not always indicated in esophageal perforation. Whenever possible, minimally invasive endoscopic approaches such as placement of metal clips or

stents are preferred. Clips are typically indicated for early-detected and small perforations (<1–2 cm). Stents (self-expandable metal or plastic) are appropriate for larger defects or when clip closure is inadequate, even in the presence of mediastinal contamination (9, 11). In our case, surgical management was warranted due to the delayed diagnosis and associated right lung abscess, pleural and mediastinal contamination, requiring thorough debridement and chest drainage. The surgical approach depends on the location of the perforation, patient comorbidities, and clinical status. Primary repair is the treatment of choice in free thoracic esophageal perforations. Repair involves direct closure of the defect, often under endoscopic guidance, reinforced with viable tissue (11). In our case, an intercostal muscle flap was used. The mucosal defect often exceeds the muscular tear, and a longitudinal myotomy at both ends may be performed to expose the mucosal margins for a layered repair. Traditionally, a two-layer closure (mucosa and muscle separately) is recommended. Reinforcement with intercostal muscle, pleura, or pericardial patch is advised to reduce the risk of leakage. Esophagectomy with primary or staged reconstruction is a more invasive surgical option, generally reserved for cases involving significant esophageal damage (>10 cm) or underlying esophageal disease (8).

Another important consideration was whether to proceed with removal of the gastric band. The management of gastric banding in emergency situations requires careful evaluation of the patient. Immediate removal of the band can prevent further complications but carries significant risks, such as a high probability of reoperation and a higher morbidity rate. Delayed approaches to gastric band removal can allow for optimal planning of the procedure, minimizing the risks of immediate complications and allowing for more careful management of the patient's general condition. The choice between immediate and delayed removal must therefore be evaluated on a case-by-case basis (12). In our case the deflation of the LAGB was the first therapeutic step. Given the correct positioning of the band, the absence of stenotic segments at the esophagogastric junction, the lack of mucosal damage, and the unobstructed passage of the endoscope into the stomach, laparotomy for band removal was not deemed necessary during the emergency surgical procedure. Furthermore, the intraoperative confirmation of the CT abdomen finding of a hiatal hernia supported the hypothesis of postponing the removal of the LAGB to an elective setting, in order to perform a combined treatment. Given the emergency conditions, it was deemed appropriate to defer non-essential surgical procedures. The patient was subsequently referred to his refer-

ence center for surgical obesity treatment, where elective removal of the gastric band was indicated.

Conclusion

This case highlights an exceptionally rare and severe complication of LAGB, with a delayed mid-to-distal esophageal perforation presenting years after the initial bariatric procedure. To our knowledge, no similar cases have been previously reported in the scientific literature. The absence of established guidelines or published data regarding the management of such late-onset esophageal complications in patients with gastric banding underscores the need for increased clinical awareness and further investigation. Our experience suggests that a multidisciplinary approach, combining radiological, endoscopic, and surgical expertise, is essential to achieve favorable outcomes in these complex scenarios. This report contributes to the limited existing evidence and may support future decision-making in similar cases.

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