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Slippage of Gastric Banding for Morbid Obesity: case report and review of literature

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ORIGINAL

Abstract

Background: laparoscopic adjustable gastric banding (LAGB) was one the commonest and less invasive bariatric operation and is associated with low morbidity and mortality rates. When a Gastric Band Slippage (GBS) happens, part of the gastric fundus herniates through the band. Removal of Gastric Banding (GB) is necessary to prevent necrosis of the herniated stomach.

Case report: We present a case of a 40-year-old female patient who was admitted for a huge gastric pouch dilatation after 3 years of undergoing LAGB.

Conclusion: The LAGB is one of the most common procedures used for the treatment of morbid obesity. The complications are generally not mortal but complications must be recognized by a general surgeon and physicians should be aware of the symptoms. Diagnosis of GBS can be made with signs or symptoms and patient's medical history, with the use of oral contrast X-ray studies or CT Scan. Surgical intervention is necessary.

Keywords : laparoscopic adjustable gastric banding (LAGB), slippage, gastric pouch dilatation

Introduction

The laparoscopic adjustable gastric banding (LAGB) is less invasive bariatric operation , though sleeve gastrectomy is used more and more. Adjustable gastric banding is positioned 2cm away from the gastro-oesophageal junction, creating a small proximal "gastric pouch" (15-30 ml capacity) and causing early satiety from delayed transit of food bolus. LAGB is reversible and has very few early complications. In addition, concerns about its long-term efficacy and safety are increasing, with complications and the need for reoperation reported in 33-40% and 9-22% of patients within 10 years (1; 2; 3).

Gastric band slippage is a late complication performed for obesity by laparoscopic gastric banding operation. This refers to distal stomach herniation by cephalad through the band, secondary to insufficient fixation and increased pressure on the proximal pouch. It occurs in 4-13 percent of cases, in 4.9-8.1% (up to 15-22% in some series) of patients. Patients can experience weight-loss cessation, extreme gastroesophageal reflux, and vomiting (4; 5; 6). Untreated GBS may result in obstruction, volvulus, gastric ischemia, hemorrhage, or stricture (5; 7; 8; 9). Consequently, early recognition and treatment of band slippage are essential for the management of patients with laparoscopic adjustable gastric banding (10).

Normally a gastric band appears at 40-50 degrees to the vertebral column as a single radio-opaque circle, lying diagonally. When the fundus herniates through the gastric band, this gives the stomach an annular appearance. It is important to highlight these complications within obesity surgery. Emergency deflation and removal of the band are required to avoid herniated stomach necrosis (11) . The band is normally obliquely oriented in the upper left quadrant and a few centimeters below the diaphragm. In the setting of the gastric band slippage, because the

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stomach hernies the band superiorly, the weight of the herniated stomach causes the band to tilt along its horizontal axis so that it no longer superimposes the anterior and posterior sides of the band. This creates the appearance of an O-shaped radiography configuration, the sign O. There may also be signs of obstruction as associated pouch dilation occurs. The classic 'O' sign is seen on views of the antero-posterior, which represents the end-on visible gastric band. This is highly suggestive of slippage of the posterior band.

CT Scan proves stomach herniation through the gastric band (4; 5; 6). Past findings indicated that a slipped stomach band is more likely to have:1) an irregular vertical or horizontal orientation relative to the midsagittal plane across the thoracic spine (i.e., the phi angle, with a standard range of 4–58 °),2) the central lumen of the band is more likely to be visualized than its superimposed sides (i.e., the "O sign"),3) inferior displacement of the superolateral gastric band margin from the diaphragm by more than 2.4 cm (corresponding to two times the bandwidth, which is approximately 1.2cm by our measurements of ex vivo bands and gastric bands on CT studies),4) the presence of an air-fluid level above the gastric band on an upright frontal radiograph obtained before barium ingestion (12; 13; 14; 15). We present a case report of a late complication after LABG, focusing on radiological findings.

Case report

A 40-year-old Caucasian woman came to the emergency department with a one-week history of sudden onset regurgitation and complete dysphagia for solids and liquids. She had had gastric banding three years ago for morbid obesity. Her medical history included arterial hypertension, diabetes mellitus, and obesity because of BMI 35Kg/m². She had a Glasgow Coma Scale (GCS) of 15. Her vital signs showed hypertension with an arterial blood pressure of 180/100 mmHg, not tachycardia, and no fever. Routine blood investigations showed no leukocytosis, normal hemoglobin, and protein Chain Reaction (PCR) in the range. Arterial Blood Gas was normal. Upon physical examination, she presented with no signs of peritoneal irritation. As the first maneuver, her band was deflated in the emergency department without symptoms resolution.

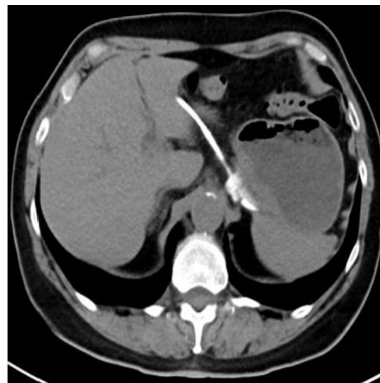
A plain chest and abdomen radiograph plus gastrographin showed an annular appearance of the band. Antero-posterior scout image at the time of acute presentation illustrates O-shaped configuration of the gastric band "O" sign and eccentric dilated pouch without passage of oral contrast material into the distal stomach, marked dilatation of gastric pouch with herniation of inferior stomach through the band([Figure 1](#)).

The patient was admitted for treatment and a nasogastric tube was inserted into the stomach. Based on the history and this radiographic finding, a Thoracic-Abdomen CT Scan was performed showing an "hourglass stomach", a massive gastric pouch above the gastric band with a degree of air-fluid, O-shaped configuration of a gastric band with air-fluid level just above the band. ([Figure 2a](#) [Figure 2b](#)).For this reason, the patient was referred to urgent laparoscopy. During the exploration, we saw that the gastric band was prolapsed down in the middle of the stomach.

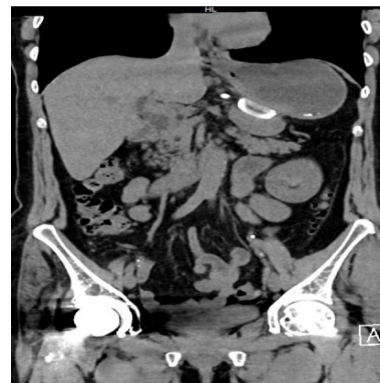
With the help of laparoscopic graspers, the gastric band was pulled up, the stomach was pulled down through the band, the band was removed. A transit after surgery showed a normal digestive tract ([Figure 3](#)).The patient's recovery was uneventful and she was discharged home on the 3rd postoperative day. At the 20-month follow-up, she had no problems except that difficulty in had weight loss for which awaits other bariatric surgery techniques.



Figure 1. An annular appearance of the band and transit stopping in middle stomach.



(a)



(b)

Figure 2. CT Scan showed “hourglass stomach”

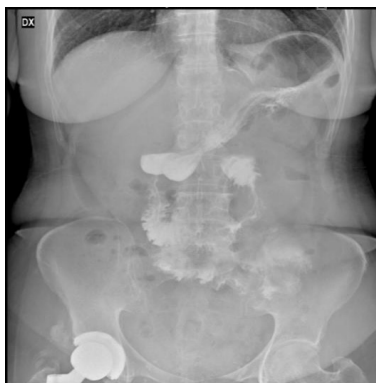


Figure 3. Postoperative digestive transit

Discussion

Bariatric surgery is an acceptable and preferred method of sustained weight loss in seriously obese patients worldwide. The available procedural choices for bariatric surgery include restrictive, malabsorption or a combination of both functions. The decision on the technique is affected by various factors such as BMI, general performance status, age, concurrent diseases, and also the skills and experience of the surgeon (16). Laparoscopic adjustable gastric banding (LAGB) has many advantages for the surgeons including tool easiness, relatively low surgical morbidity, rapid recovery, adjustability, reversibility, and overall positive outcomes. Given the many benefits it provides, it has many early and late complications commonly known as band obstruction, stomach perforation, wound infection, leakage, band slippage, pouch or esophagus dilation, band erosion,

and band migration (17).

There are two different methods for Laparoscopic adjustable gastric banding: the perigastric technique and the pars flaccida technique. Given the high complication rate attributed to the perigastric technique, most surgeons preferred the technique of pars flaccida (18). The first LAGB operation was carried out by Belachew in 1993 with a perigastric technique. In the perigastric technique, a small window at the lower stomach curvature 3 cm below the gastroesophageal junction is formed as the source of a tunnel below the stomach wall and extended to the angle of His. Before locking the band, using a calibration bougie which is inserted orally into the stomach and inflated with 25 cc saline helps to adjust a 15–30 ml gastric pouch above the band. To reduce the risk of slippage, three to five anterior sutures between the greater curvature and gastric pouch are placed to create gastric plication. In the pars flaccida technique, dissection begins near His angle, and the thin area of the gastrohepatic ligament, which is the flaccid pars, is divided over the caudate lobe. Once the dissection continues, the right crus is isolated and the peritoneum at the crus' border is cut. Then, a grasper is passed behind the gastro-esophageal junction to the angle of His. Thus the band is placed in the same way as in the perigastric technique (18). With time, it has been proven that the perigastric technique is associated with more frequent band slippage than the pars flaccida technique. Complications following gastric banding are becoming increasingly obvious.

LAGB complications may be classified as minor complications such as pouch dilation (12%), persistent gastroesophageal reflux disease (7%), port prominence (2.5% to 6%), port malfunction (< 1%), and major complications such as band slippage (< 5%), late port infection (< 1%), band erosion (< 1%), and stomach obstruction. Diagnosis of GBS can be made with signs or symptoms and patient's medical history, with the use of oral contrast X-ray studies or CT Scan and surgical intervention is necessary (19; 20; 21). Eid et al. (22) classified band slips into 5 types: Anterior slip (type 1 prolapse), Posterior slip (type 2 prolapse), Pouch enlargement (type 3 prolapse), immediate postoperative prolapse (Type 4 prolapse), posterior or anterior slip with gastric perforation (Type 5 prolapse) which is the most dangerous. Kang et al. (23), in their 6-year experience with 1347 patients who underwent a LAGB procedure, reported that band prolapse is a significant and common late complication following LAGB with an incidence of approximately 5% (23). Lee et al. (24) recorded that band slippage was 11.1% remarked that it is the most common long-term complication after LAGB. The complications are generally not mortal but complications must be recognized by a general surgeon and physicians should be aware of the symptoms.

Conclusion

The slippage complication is generally not mortal and can be recognized by a general surgeon. Band deflation and early intervention is necessary to prevent gastric necrosis. Diagnosis of GBS can be made with signs or symptoms and patient's medical history, with the use of oral contrast X-ray studies or CT Scan and surgical intervention is necessary (17; 25).

Conflict of interest statement

Authors declare no conflict of interest.

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