

Proximal Gastric Plication to Treat Gastroesophageal Reflux in Patients with Previous Bariatric Surgery

Alejandro Weber Sánchez*, Pablo Weber and Denzil Garteiz Martinez

Department of Surgery, Hospital Angeles Lomas, Huixquilucan, México

*Corresponding Author: Alejandro Weber Sánchez, Department of Surgery, Hospital Angeles Lomas, Huixquilucan, México.

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Abstract

Treatment of gastroesophageal reflux after bariatric surgery has been a concern among surgeons because of its harmful effects. Many techniques have been developed to treat this unfavorable consequence of bariatric surgery. We present two cases in which an easy and innovative surgical technique, a proximal gastric plication, has been useful for solving GERD in addition to the necessary correction of the hiatal hernia if present and conversion of the bariatric procedure if required.

Keywords: Proximal Gastric Plication; Gastroesophageal Reflux Disease (GERD); Bariatric Surgery; Sleeve Gastrectomy (SG)

Introduction

A large percentage of patients with bariatric procedures have gastroesophageal reflux disease (GERD) after their surgery, especially those operated with sleeve gastrectomy (SG) and one anastomosis gastric by-pass (OAGB). To correct this problem, different alternatives have been tried. When it is severe, it usually requires a conversion to another bariatric procedure. In addition, various alternative methods have been implemented to achieve better results. We report two patients with GERD after bariatric procedures in which proximal gastric plication was applied, with favorable clinical results and adequate radiologic control of GERD.

Case Report

Case 1

A 45-year-old female with history of appendectomy, cholecystectomy and lithotripsy, operated five years earlier of OAGB with a weight loss of 30 Kg, experienced gastroesophageal reflux since the immediate postoperative period. Symptoms were progressive with some episodes of bronchial aspiration. She presented erosive loss of tooth substance, hypersensitivity, and functional impairment that needed change of several dental pieces, identifying GERD as the source. An endoscopy reported severe esophageal and gastric erosion secondary to biliary reflux (Figure 1). The upper gastrointestinal series reported type II hiatal hernia (HH), gastroesophageal reflux and morphology of OAGB surgery (Figure 2).

Laparoscopic correctional surgery was performed, a large HH was found with an OAGB with 2.5m of biliopancreatic loop and 5m of alimentary loop. Dissection of the mediastinum and hernial sac with descension of the esophagus into the abdomen was achieved. Closure

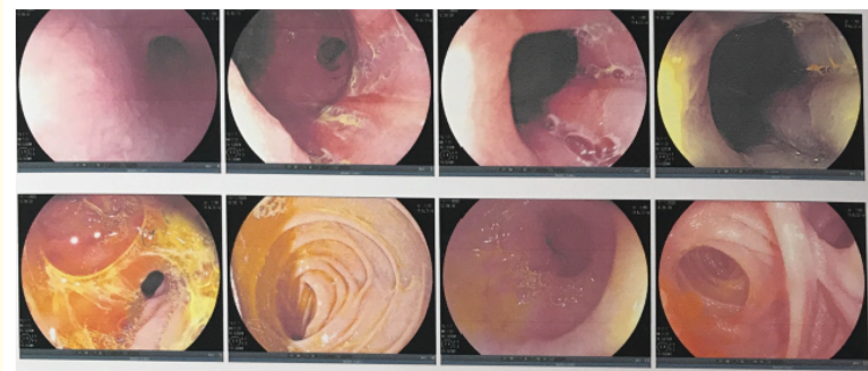


Figure 1: Endoscopy with severe esophageal and gastric erosion secondary to biliary reflux.



Figure 2: Upper gastrointestinal series showing type II hiatal hernia.

of the hiatus was performed with suture and placement of a composite mesh (Proceed J&J®) cut in the form of keyhole. Proximal gastric plication was created in order to simulate an internal antireflux valve by inverting 3 cm of the upper lateral side of the gastric pouch with 3 stitches (Ethibond 00, J&J®) attaching with suture the gastric pouch to the native stomach (Figure 3) and converted the OAGB to conventional by-pass, sectioning the biliopancreatic loop with stapler (EndoGIA Medtronic®) and made a yeyuno-yeyuno anastomosis 1m distal of the gastrointestinal anastomosis. The postoperative period was uneventful. An upper GI series verified an adequate reduction of the HH and an antireflux valve effect, (cardial narrow zone) due to the inverted gastric plication (Figure 4). The patient referred total relief of her GERD symptoms since then. Follow-up for three months.

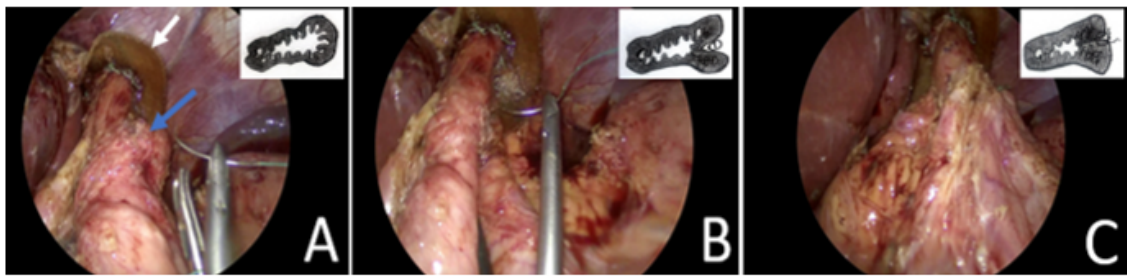


Figure 3: Proximal gastric plication: A) Gastric pouch in the upper lateral side of the stomach (blue arrow), prosthetic mesh (white arrow), B) Grasper inverting the gastric pouch C) Antireflux valve constructed.



Figure 4: Postoperative barium swallow. Total reduction of hiatal hernia and narrow cardiac zone due to the inverted gastric plication.

Case 2

A 72-year-old female who had undergone sleeve gastrectomy (SG) 14 years earlier with an adequate weight loss of more than 30 kg., and no regain. Her primary complaint consisted on heartburn and frequent belching, which had appeared in the last two years. Upper endoscopy showed a large type I HH with prolapsed gastric mucosa (Figure 5), and barium swallow depicted a dilated distal esophagus with part of the proximal sleeve migrated into the mediastinum (Figure 6). Due to age, fear of complications and no need for further bariatric treatment, the patient refused to undergo conversion to Roux-en-Y gastric bypass (RYGB).

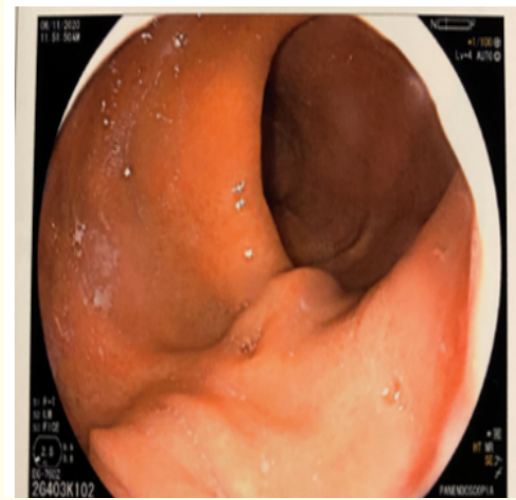


Figure 5: Upper endoscopy: Large hiatal hernia.



Figure 6: Preoperative esophagogram: esophageal dilatation and intrathoracic EG junction.

At laparoscopy, a large hiatal defect was observed (Figure 7). Complete sac dissection and esophagogastric junction reduction were performed. Hiatal crura were closed with suture and circumferential mesh used to reinforce the hiatal plasty (Figure 8). Proximal gastric plication was then performed with three sutures (Ethibond 00, J&J®) and two fixation stitches from the stomach to the diaphragmatic

crura. Postoperative esophagogram showed correction of esophageal dilatation, an intraabdominal EG junction, and adequate valve-like narrowing of contrast passage (Figure 9). The patient’s symptoms were corrected, and she has had no dysphagia or further complications for four months after surgery.

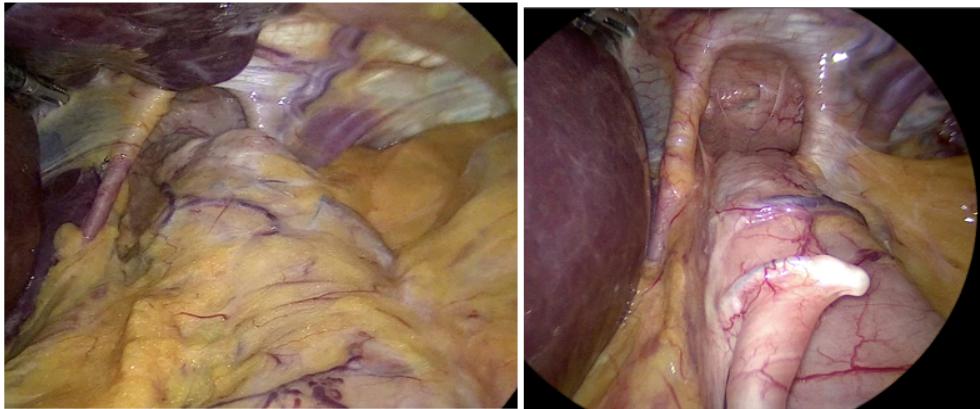


Figure 7: Large hiatal hernia.

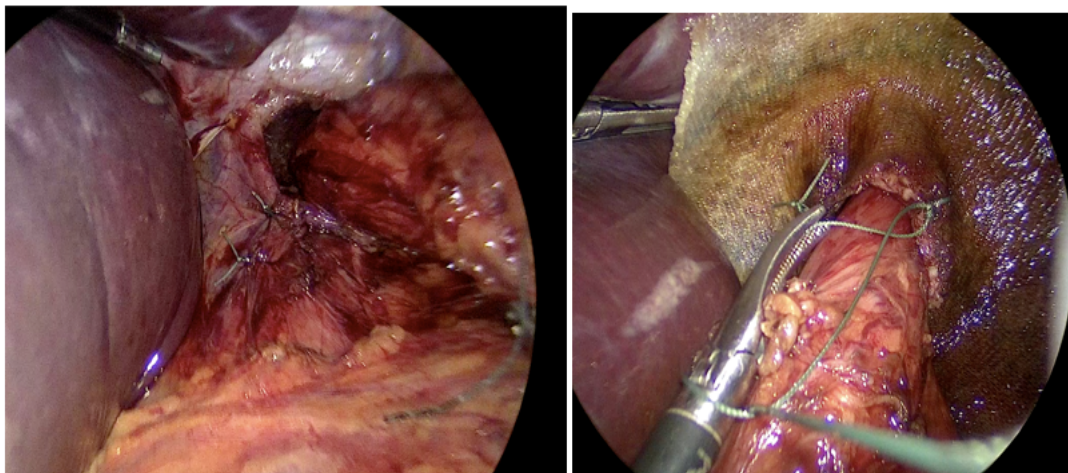


Figure 8: Hiatal closure and mesh placement.

Discussion

Bariatric surgery (BS) has proven benefits for morbid obesity and its associated comorbidities. Various surgical procedures have been attempted since 1952 and have evolved dynamically since then. All the surgical methods have benefits as well as disadvantages. The goals

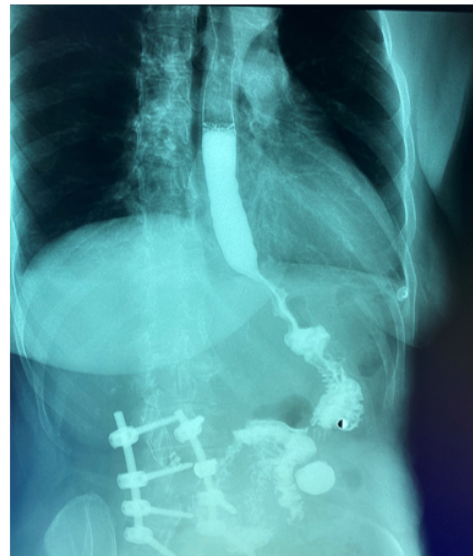


Figure 9: Postoperative barium swallow. Total reduction of hiatal hernia and narrow cardiac zone due to the inverted gastric plication.

to achieve for all procedures are safety, effectiveness and minimal side effects. Currently, there is still no consensus on the bariatric procedure that fully meets these characteristics. Recently, awareness has been focused on GERD as a complication of BS, due to its frequency, and potential harmful consequences, mostly because of the increasing use of sleeve gastrectomy and OAGB [1-3].

Various hypotheses have been elucidated to explain the pathophysiology of GERD after bariatric surgery. Some suggest impairment of the lower esophageal sphincter function after dissection and resection of the gastric fundus, and high pressure inside the gastric pouch in SG [4]. Others favor the migration of the stomach to the thorax as a mechanism. Hiatal hernia is often present in obese patients especially in those with morbid obesity and favor this condition [5]. Because of this, many surgeons came to the conclusion that bariatric procedures without HH repair can lead to its aggravation, or even appearance of GERD symptoms de novo, but controversy still exists about this topic [6,7]. As others, we consider that patients with bariatric surgery in whom HH is found, should undergo full dissection of the hernia sac, reduction of the migrated esophagogastric junction, closure of the diaphragmatic hiatus and mesh reinforcement if necessary, because ignoring this problem will lead to its worsening [8]. Technical variations of the bariatric procedures, RYGB, SG or OAGB are another factor to be considered as a possible source of GERD.

Many attempts to control postoperative GERD have been attempted. Medical treatment is usually effective in mild cases. But some patients with the severe form of reflux need surgical correction. The most common procedure is the conversion to RYGB, mainly in patients with previous SG and OAGB, but there is no warranty that this measure will resolve the reflux completely in all cases [9]. Other techniques have been reported to correct this complication such as the Dor-sleeve, Nissen-sleeve, Rossetti-sleeve, Hill's gastropexy, use of Teres ligament, intraluminal endoscopic plication, or the magnetic sphincter augmentation device with reported good results, but they need further investigation in larger groups [10-17].

The possibility to invert with sutures the proximal gastric remnant is an easy maneuver to create an anti-reflux valve, in addition to the necessary correction of the HH repair if present, and conversion of the bariatric procedure if required. The radiologic images in these

two cases, showed adequate narrowing at this point in both patients, and relieved completely their clinical GERD symptoms without dysphagia. We are aware that these are only two cases with short follow up, and more cases with longer follow-up and specific studies to demonstrate GERD correction are necessary. But it seems that proximal gastric plication to construct an anti-reflux type valve, could be an effective adjunctive method to correct GERD in these cases.

Conclusion

We present proximal gastric plication as an innovative and easy maneuver, beneficial in addition to HH repair and bariatric conversion surgery when necessary, to correct GERD in patients with previous bariatric surgery.

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