

Letter to Editor:

Conversion of Nissen Fundoplication to RY Gastric Bypass in a Morbidly Obese Patient Without Wrap Taken Down



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Please cite this article as Jangjoo A, Sadeed AR, Rezapanah AR, Zandbaf T. Conversion of Nissen Fundoplication to RY Gastric Bypass in a Morbidly Obese Patient Without Wrap Taken Down. 2021; 10(1):1-4. <http://dx.doi.org/10.32598/ABS.10.1.9>

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Dear Editor

The association between Gastroesophageal Reflux Disease (GERD) and obesity has been proven with a prevalence of 50%-100%, while 8%-26% of non-obese patients experienced GERD. Laparoscopic Roux-en-Y Gastric Bypass (LRYGB) is considered the gold standard for obese patients with GERD. Roux-en-Y Gastric Bypass (RYGB) can accelerate gastric emptying and thus improve reflux symptoms.

Obesity and GERD are common medical problems that are often associated with each other. Because of the prevalence of obesity, its impact on the etiology and treatment of GERD has become a significant problem [1, 2]. The classical causes of the relationship between obesity and GERD are increased intra-abdominal and intra-gastric pressure, inversion of the gastroesophageal gradient, and increased hiatal hernia in obese patients [3]. Obese persons are more likely to develop severe GERD complications like erosive esophagitis, Barrett's esophagus, and esophageal cancer. Obesity raises the risk of Barrett's esophagus by 35% for every 5-unit increase in Body Mass Index (BMI) [4].

A 56-year-old man with 101 kg weight and 167 cm height (BMI 36.2 kg/m²) presented to the hospital with major complaints of obesity and mild gastroesopha-

geal reflux disease. He also suffered from comorbidities like DM (diabetes mellitus), HTN (hypertension), and IHD (ischemic heart disease). Lab exam results were as follows: FBS=172 mg/dl, HbA1C=8%, Insulin=23.1 mIU/L, c-peptide=1.8ng/dl. He took valsartan (80 mg twice a day), metformin (500 mg twice a day), atorvastatin (20 mg daily), ASA (100 mg daily), insulin Lantus (52 unit/day), and NovoRapid (66 units divided into three doses). Upper Gastrointestinal (GI) endoscopy reported erosive esophagitis with medium size of sliding hiatal hernia, and the abdominal ultrasonography reported fatty liver grade 2. He underwent Nissen fundoplication due to severe GERD 15 years ago. After the operation, he gradually gained weight, and then mild reflux symptoms have begun. Because of obesity, mild reflux, and comorbidities such as DM and HTN, the patient was a candidate for LRYGB surgery. The challenging issue was past fundoplication, severe adhesions, and fibrosis at the last operation site.

After general anesthesia, the pneumoperitoneum was established, and the ports were put in their conventional locations: 10-mm camera port at a distance of 12 cm below xiphoid, 15-mm port on left mid-clavicular line, 5-mm port on the right mid-clavicular line, 5-mm port on the subxiphoid area for liver retractor, and 5-mm port on left anterior axillary line for the assistant. Because of the past antireflux surgery, adhesions were seen between the liver and gastroesophageal junction. No evidence

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of wrap disruption and wrap herniation was found. So we decided to preserve a functioning fundoplication that kept the antireflux mechanism intact and prevented complications such as fundus ischemia, bleeding, and leakage. After adhesiolysis, the RYGB procedure was initiated by accessing the retro-gastric cavity through the lesser curvature. Below the fundoplication, the first stapler was used. Because of the abnormally thick stomach, we chose the black cartridge to make the pouch. Finally, without wrap unfolding, the pouch was prepared. Because of wrap preserving, we expected the pouch to be larger than the normal size. This approach avoids manipulation of the gastroesophageal junction, which lessens the risk of esophageal injury and bleeding and the morbidity of the surgery. Biliopancreatic and alimentary limb lengths were 100 cm based on the patient's BMI and comorbidities. The operative time was 2 hours.

On the first day after surgery, an upper gastrointestinal series (UGI) with Gastrografin showed no leakage (Figure 1). The patient was discharged from the hospital three days after surgery without any problems. No major or minor complications occurred in the first month after surgery. Three months after the surgery, his weight, BMI, and FBS were 77 kg, 27.6 kg/m², and 90-95 mg/dl, respectively. The blood pressure was in the normal range, while he did not take any medication.

Obesity predisposes to GERD by causing various disorders such as esophageal motility disorders, greater prevalence of hiatal hernia, decreased Lower Esophageal Sphincter (LES) pressure, and increased intragastric pressure [4]. The breakdown of the antireflux barrier, which consists of the LES and the crural section of the hiatus, is crucial to the development of GERD. The intrinsic LES pressure, total LES length, intra-abdominal LES length, and the frequency and duration of transient LES relaxation are all directly related to LES function. The pressure gradient between the intragastric and intraesophageal environments indirectly affects LES function [5].

Fundoplication can fail for various causes, including wrap migration into the thorax due to recurring or new hiatal hernias, unraveling of the wrap, recurrent GERD symptoms, or dysphagia caused by functional partial obstruction. Reoperation failing rates have been 5%–8% but estimated to be as high as 18% in some facilities [2].

Because the pathophysiological factors that cause GERD are different in obese and non-obese people, the treatment must change [3]. While fundoplication is the therapy of choice for non-obese people with GERD who are resistant to conventional treatment, the LRYGB is

the most effective way to cure both GERD and obesity in those who are morbidly obese [4].

Obese patients with GERD may benefit from an LRYGB rather than an antireflux surgery. Following an antireflux surgery, obese people have experienced GERD recurrence, a slow remission of the disease, and even the progression of erosive esophagitis to Barrett's esophagus and malignancy. Therefore, LRYGB appears to be a wonderful alternative for obese GERD patients, and many authors regard it as the gold standard technique [3]. Roux-en-Y's bile diversion effect is significant in preventing mixed acid and biliary reflux, a known mechanism of esophageal mucosa transformation [6].

Even though LRYGBP after antireflux surgery is a technically more challenging operation with a greater morbidity rate, treatment of recurrent GERD and obesity worsening (with additional weight loss benefit) and improving comorbidities are expected [2, 7, 8]. In morbidly obese patients with previous antireflux surgery and obese individuals requiring surgical therapy for GERD, LRYGB results in effective weight loss, controls reflux symptoms, and maybe the operation of choice [4, 9, 10].

The major challenge in bariatric surgery in patients with a history of antireflux surgery is complete wrap unfolding or fundoplication-preserving bariatric procedures. To avoid oversizing the pouch and eliminating acid-producing parietal cells, some authors believe that it is critical to remove the wrap entirely before constructing the gastric pouch. Gastric bypass in patients who have already undergone antireflux surgery is associated with a high morbidity rate,



Figure 1. Upper gastrointestinal series with gastrografin

not only because of the total wrap removal but also because of various bypass-related complications. Because patients with a fundoplication are more likely to have no short gastric arteries available for the fundus, ischemia insult to the proximal stomach is a significant concern [1]. Some authors suggest preserving a functioning fundoplication during a bariatric procedure in which the antireflux mechanism may have been intact. They believe that this condition would reduce post-surgery complications [11, 12]. The first Nissen-preserving bariatric procedures were reported by Watson and associates [13].

Although RYGB following Nissen fundoplication results in more morbidity than revisional bariatric surgery, it is safe and successful. Technical difficulties during the operation are responsible for the higher risk of morbidity. This situation can lead to increased blood loss, bile leakage, or stomach deserosalization, which increases the chance of a leak or perforation. Devascularization of the proximal pouch due to closure of the short gastric arteries with earlier antireflux surgery and loss of the left gastric artery as a blood supply to the stapled proximal pouch is a considerable concern if we try to wrap take down entirely. Ischemia in the gastric remnant should be treated with resection, although ischemia in the proximal pouch can lead to postoperative leakage and strictures of the gastrojejunal anastomosis.

The strong point of our method is the lack of dissection at the previous surgery region, which reduces the time of surgery and postoperative complications. But its disadvantage is that the pouch is larger than usual, and the fundus is remained, which can negatively affect the weight loss process and predispose the patient to marginal ulcers. However, this problem can be controlled mainly by thoroughly explaining to the patient and his commitment to a proper diet after surgery. However, in our patient, proper weight loss occurred within three months after surgery and the comorbidities were completely cured.

Ethical Considerations

Compliance with ethical guidelines

There were no ethical considerations to be considered in this research.

Funding

This research did not receive any grant from funding agencies in the public, commercial, or non-profit sectors.

Authors' contributions

All authors equally contributed in preparing this article.

Conflict of interest

The authors declared no conflict of interest.

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