

# The Impact of Anti-Reflux Suture on the Rate of Reflux Following Laparoscopic Gastric Surgery

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## 1. Abstract

### 1.1. Introduction:

This study aims to assess the impact of laparoscopic gastric plication (LGP) combined with anti-reflux sutures on the occurrence of complications following surgery and the degree to which GERD symptoms in obese individuals worsen or improve.

### 1.2. Methods:

The effectiveness of LGP combined with anti-reflux sutures in preventing or alleviating GERD symptoms in obese people was evaluated in this prospective trial. After surgery, all patients had follow-ups at the one- and six-month marks to assess the severity and progression of their GERD symptoms.

### 1.3. Results:

105 patients from group A (case group or with anti-reflux suture) and 105 patients from group B (control group or without anti-reflux suture) were included out of the 210 patients total. In the first postoperative month, there was no significant difference in the incidence of GERD between the two groups ( $P=0.067$ ). However, by the sixth follow-up month, the intervention group's incidence of GERD was significantly lower than that of the other group ( $P=0.001$ ).

### 1.4. Conclusion:

It seems that LGP associated with the anti-reflux suture is generally effective and safe in reducing the risk of incidence or worsening of GERD and weight loss.

## 2. Keywords:

Gastroesophageal reflux disease (GERD); Laparoscopic Gastric Plication (LGP); Anti-reflux suture; Bariatric surgery; Morbid obese

## 3. Introduction

The World Health Organization (WHO) declared that obesity is a serious health issue that can lead to a number of consequences [1,2]. For example, it may lead to severe illnesses such as diabetes mellitus, hypertension, metabolic syndrome, cardiovascular disease, and GERD, all of which have a significant negative impact on patients' quality of life (QOL) [2]. Surgeons devised a variety of bariatric surgery treatments in order to address this previous issue. Numerous surgical techniques for obesity exist, each with varying effects on obesity and potential significant or minor consequences. GERD is one of the most common side effects after restrictive bariatric surgery [3]. LGP and laparoscopic sleeve gastroplasties (LSG) are frequent limiting surgeries. Because of increased intragastric pressure, malfunction of the Lower Esophageal Sphincter (LES), and anatomical abnormalities including hiatal herniation, these operations increase the prevalence of GERD.

Every approach has benefits and drawbacks that vary based on the patient's circumstances and the experience of the surgeon [8]. For instance, in the long run, LSG is thought to be linked to a higher risk of cancer and Barrett's esophagus. It is a straightforward, invasive, and costly procedure. Similar to LGP, a novel restrictive bariatric technique that Talebpour et al. proposed in 2006 [9], [5, 7]. LGP is affordable, but it takes expertise and experience [10,11]. Furthermore, since no stomach tissue is removed during LGP, the procedure has no effect on the body's physiology [1]. However, LGP by itself promotes weight reduction without appearing to help GERD [1,12]. A minor modification to LGP can lower the incidence of GERD. Thus, the purpose of this study was to assess the therapy outcome.

## 4. Methods

### 4.1. Study design & Population

From April 2013 to December 2018, we conducted a prospective study at Tehran University Hospital's Department of Surgery in Tehran, Iran. Groups A (case group or with anti-reflux sutures) and B (control group or without anti-reflux sutures) were assigned to the participants. The Tehran University of Medical Sciences Medical Ethics Committee approved

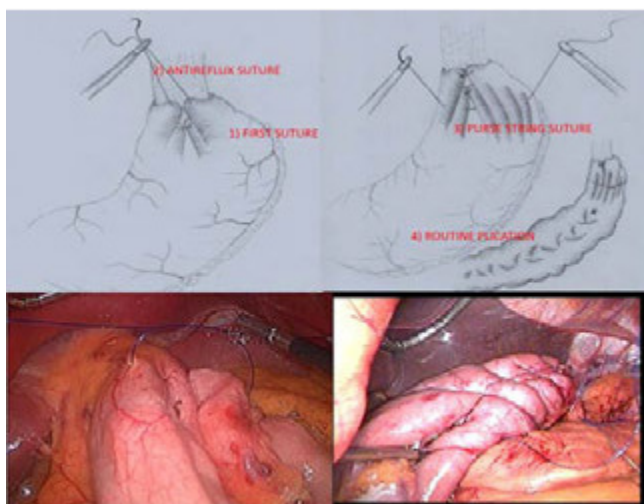
this study. It is IR.TUMS. MEDICINE.REC.1398.083, the ethical code. The following were among the requirements for eligibility: 1) Patients undergoing laparoscopic gastric bypass surgery who have a BMI of more than 40 or 35, comorbidities, and no prior history of reflux disease, either first- or second-degree reflux illness. The following were the exclusion criteria: 1) Patients who have experienced higher second-degree reflux in the past; 2) Patients who have undergone anti-reflux surgery in the past; 3) Patients with a history of repaired hiatal hernia; 5) Patients dissatisfaction. Procedures Every patient had LGP surgery after taking an anti-reflux medication. group A's sutures. A skilled surgeon and his team used laparoscopy to carry out the surgical surgery.

#### 4.2. Surgical technique

The surgeon was initially positioned on the patient's left side while the patient was put in a supine reverse Trendelenburg position. One 10 mm trocar and three 5 mm trocars were placed correctly. Liga Sure TM was used to begin the dissection of the larger curvature 3 cm prior to the pylorus and continued all the way to the esophagus.

#### 4.3. Anti-reflux suture:

The fundus's attachments to the diaphragm and esophagus—including the Hiss angle—are all released. Following the removal of the esophageal and stomach attachments, the anterior zone of attachment is approximately 1 centimeter lower than the posterior zone. The esophageal-gastric junction is the site of the first suture, which is placed anterior to the stomach. Suturing proceeds above the initial suture, closing the stomach on its lateral borders and encircling the 1 cm distal portion of the esophagus in an anterior wrap. Suture for anti-reflux The risk of vomiting was significantly reduced by the use of a purse string suture below the esophagus, which allows the inverted stomach to have a fix somewhere without moving. (Figure 1).



**Figure 1:** Three steps of anti-reflux suture and LGP, A) Anti-reflux suture; B) Second suture; C) Continuous suture.

#### 4.4. Postoperative follow-up

Participants' incidence or worsening of reflux disease was monitored at one and six months after surgery.

Using the usual GERD-HRQL questionnaire, follow-up was conducted [13]. There are nine questions on this survey, and the answers range from 0 to 5. Individuals who receive a score more than 15 are diagnosed with reflux illness.

#### 5. Results

Two equal groups were created out of the 210 obese individuals who had surgery between April 2013 and December 2018. Every patient was monitored for a duration of one month and six months. There was a 100% .

##### 5.1. Demographic data of patients

There were 210 patients total; 60 (28.6%) were men and 150 (71.4%) were women, split equally between the two categories. According to Table 1, their mean (SD) age was 36.43 (11.10) years, and their mean (SD) perioperative BMI was 40.26 (4.72) kg.

Comparison of EWL between two groups according to the following time At follow-up, the intervention group's EWL rate had significantly lower values ( $P < 0.001$ ). In the first and sixth months following surgery, the mean EWL in the intervention group was  $19.01 \pm 67.12$  and  $60.07 \pm 13.05$ , respectively, whereas in the other group the figures were  $12.22 \pm 5.03$  and  $61.04 \pm 13.14$ .

#### 6. Discussion

This study showed that in morbidly obese patients, LGP combined with the anti-reflux suture is beneficial in preventing or alleviating GERD symptoms. The following were the general findings of our retrospective investigation: The anti-reflux group experienced a considerably decreased incidence of GERD in the sixth month following surgery. One month following surgery, there was no discernible difference in the two groups' perioperative BMI, sex, or reflux incidence. Additionally, the anti-reflux group had less reflux associated to BMI at one and six months following surgery. Bariatric surgery is a successful treatment for obese people, according to studies; nevertheless, restrictive operations like LGP and LSG increase the risk of Barrett's esophagus and GERD, and they can exacerbate symptoms of GERD, hiatal hernia, and erosive reflux disease [14–16]. However, in the absence of a hiatal hernia, these techniques (LSG and LGP) do not worsen GERD symptoms, according to a research by Chi-Ming Tie et al. [6]. Consequently, bariatric surgeons have implemented various strategies to address this problem by modifying LSG and LGP. For example, research by Stephano et al. [17] and Mariano et al. [18] demonstrated that weight loss and improved GERD symptoms are linked to LSG combined with anti-reflux fundoplication. Additionally, Juan Pablo et al. [19] evaluated the effectiveness of LSG in conjunction with an anti-reflux fundoplication for obese patients exhibiting symptoms of GERD. They found that while short-term outcomes were favorable, 53.3% of patients required revision surgery. Similar outcomes were seen in another investigation demonstrating that LGP with fundoplication.

## 7. Conclusion

In conclusion, it appears that LGP is connected to the anti-reflux. Sutures are generally safe and effective in lowering the chance of developing GERD or making it worse as well as facilitating weight loss.

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