

Revision surgery after laparoscopic sleeve gastrectomy: 11-year experience in our center

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Abstract

Laparoscopic sleeve gastrectomy (LSG) is a bariatric technique that has achieved satisfactory results in weight loss and resolution of comorbidities associated with obesity. The main indications for revision surgery after LSG are an inadequate weight result and the appearance of complications; highlighting gastroesophageal reflux disease (GERD), stenosis and chronic fistula. We present 3 cases operated on of LSG during the period 2011 to 2022 that required conversion surgery (CC) to laparoscopic gastrojejunum bypass (LGB). A retrospective descriptive analysis of 221 patients operated on of LSG between 2011 and 2022 is performed. The reason for CC was in 33% of the cases due to weight loss, vomiting and weight loss

(33%) and GERD 33%. Obtaining unfavorable results has been associated with various causes, an inadequate surgical technique is one of them. Prior to any revision surgery, an adequate multidisciplinary reassessment is essential to determine the cause as well as an individualized study with the different appropriate complementary tests.

Keywords:

- Laparoscopic sleeve gastrectomy
- Gastrojejunum bypass
- Revision
- Conversion

Introduction

Laparoscopic sleeve gastrectomy (LSG) is currently the most widespread bariatric procedure worldwide due to its advantages; including the low complication rate, the duration of the intervention, the absence of prosthetic material, the absence of associated gastrointestinal anastomosis or malabsorption, and the feasibility of its conversion to other bariatric techniques ^(1,2). Despite all its favorable characteristics, there is a growing number of arguments in the literature that show less favorable long-term results related to complications and inadequate weight results ⁽²⁾.

Therefore, the main indications for revision surgery after LSG are an inadequate weight result and the appearance of complications; highlighting gastroesophageal reflux disease (GERD), stenosis and chronic fistula ^(1,2). We present 3 cases operated on for LSG during the period 2011 to 2022 that required conversion surgery to laparoscopic gastrojejunum bypass.

Methods

A retrospective descriptive analysis of 221 patients who underwent LSG between 2011 and 2022 was performed. Five patients were excluded due to loss of follow-up. Finally, three cases required conversion surgery to LGB, met the criteria and were analyzed. Unsatisfactory results were defined as insufficient weight loss and the appearance of complications after GVL (stricture/fistula/GERD). The following variables were analyzed: sex (man/woman), age <30 / 30 - 50 / > 50 (years), comorbidities (DM/ HTA/ OSA/ PCOS) pre and post-surgical BMI <35/ 35 - 45/ >45 (kg/m²), mean stay (days) and symptoms after LGB.

Results

The total number of patients analyzed after LSG were 216 and only 1.39% (n=3) required conversion surgery. From those, 67% (n=2) of the patients were women, with an age at

the first surgery of 24, 44, 54 years and in the second 67% > 50 years. A mean stay of 12 days was recorded, and 4 days in the second intervention. These patients had a mean pre-surgical BMI for LSG and LGB of 41.9 kg/m² and 35.1 kg/m², respectively. After conversion with a follow-up period of 5 months - 2 years, the mean BMI was 30.1 kg/m². Hypertension (33%), DM (33%), OSAS (33%), PCOS (33%) were identified as associated comorbidities after GVL. The reason for the conversion surgery was in 67% of the cases due to weight loss, vomiting and weight loss (33%) and GERD in 33%.

Regarding the three cases that underwent conversion surgery, the first was a female patient, diabetic operated the first time at age 44 with a BMI of 41 kg/m² and an average stay of 30 days due to a leak in the immediate postoperative period. Three years later she presented a BMI 33 kg/m² without DM, however, after 8 years her BMI increased to 35.5 kg/m² with DM again (Figure 1). She underwent surgery for LGB and after 5 months she has a BMI of 33 kg/m².

Secondly, a male patient with a BMI of 41 kg/m² was operated on and after 11 years of follow-up he presented a BMI 27 kg/m², GERD with esophagitis level D of the Los Angeles classification and hiatal hernia (Figure 2). He underwent a LGB and closure of the primary pillars and currently, one year after the conversion surgery, he has a BMI of 25 kg/m² and is asymptomatic.

Lastly, a 24-year-old female patient had her LSG surgery done with a BMI of 42.7 kg/m² who, after five years of follow-up, maintained a BMI of 42.3 kg/m² and associated symptoms of recurrent vomiting with an upper gastrointestinal endoscopy without alterations. A LGB was performed and two years after the conversion surgery she is asymptomatic and with a BMI of 32.3 kg/m².

Discussion

There are different descriptions of the aphorism “failure by weight “ after bariatric surgery: an increase of 10 kg with respect to the initial weight, an increase of more than 25% of the PEPP (percentage of excess weight lost); 5 point increase in BMI from the baseline, any weight gain after remission of type 2 diabetes mellitus, exceeding a BMI of 35 kg/m²; all of them can be ambiguous or arbitrary ⁽¹⁾.

Obtaining unfavorable results after LSG has been associated with various causes, and inadequate surgical technique is one of them; incomplete resection of the gastric fundus in one of our cases would explain the weight loss and vomiting^(1,3). In addition, there are other causes to which LSG failures are attributed: changes in dietary habits, loss of restriction due to gastric dilatation, BMI >50 kg/m², age >50 years, the

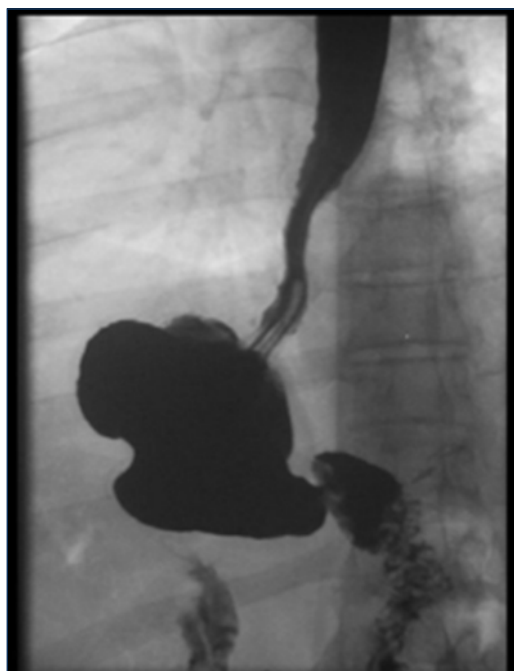


Figure 1 and 2. Barium test: gastric dilatation and abdominal CT: hiatal hernia type 1

presence of the main comorbidities such as DM or HTA and the active taking of antiaggregants ^(1,3). The technical aspects of LSG that are associated with a worse weight result are the beginning of the section >4 cm of the pylorus and the use of tutor probes of >40 F, although they are also the factors that reduce the incidence of fistulas in the postoperative period^(1,3).

Another cause of unfavorable results is the presence of a subclinical hiatal hernia prior to performing LSG, after this technique the patient may develop GERD ⁽²⁾. One of our patients developed reflux disease associated with a hiatal hernia after LSG, which was not diagnosed either before or during LSG.

A meta-analysis from 2019 comparing the efficacy of SADI/CD (single anastomosis duodeno-ileal bypass with sleeve gastrectomy / duodenal switch) with LGB as revision procedures after LSG, describes a similar safety profile of the procedure, but a high percentage of total weight lost (TWL percentage) in favor of the SADI/CD group ^(1,4,5). The greatest predictor of the need for revision surgery after SG is presenting an initial BMI >50 kg/m², and it is in this weight range that the CD/SADI-S revision procedure obtains better results^(1,4,5).

Based on a recent meta-analysis with a follow-up of between 3 and 5 years, the incidence of revision surgery is around 7.4%, with an increase of up to 22.6% with follow-up beyond 10 years, these facts suggest whether the indication for LSG should be restricted in the future, such as what happened with the gastric band.

This study has been limited in terms of follow-up of the cases since many of the patients who underwent vertical gastrectomy have not yet exceeded five years of follow-up. In addition, patients undergoing conversion surgery are followed up from five months to two years, eventually we will be able to conclude more precise results with a greater range.

Conclusions

Prior to any revision surgery, an adequate multidisciplinary reassessment is essential to determine the cause as well as an individualized study with the different appropriate complementary tests. The choice of technique will be determined by what are the main symptoms or causes that have led to the need for revision.

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