

"De novo" gastroesophageal reflux disease after Sleeve Gastrectomy in our setting after 5 years of follow-up.

M^a de Los Angeles Mayo Ossorio, José Manuel Pacheco García, Ander Bengoechea Trujillo, Mercedes Fornell Ariza

General Surgery and Digestive System Service of the Puerta del Mar University Hospital. Cádiz.

Corresponding author: Maria de Los Angeles Mayo.

E-mail: marimayoo@gmail.com

Received (first version): 26-November-2019

Accepted: 28-November-2019

Published online: April 2020

Summary:

Sleeve gastrectomy is increasingly used for its good results, in the treatment of morbid obesity, and the appearance of de novo GERD (Gastroesophageal Reflux Disease) is controversial. From 2012 to 2019, 300 Sleeve Gastrectomy (GS) have been performed in our center. After 5 years of follow-up of the 150 patients reviewed, GERD clinic in Novo had presented in 5 patients who underwent EDA, Ph metry, manometry and radiological study. Two of them had stenosis and torsion in the gastrectomy, presenting the symptoms two years after surgery. Another two 5 years after surgery, with a reflux clinic and grade A esophagitis, and in one case a year after surgery without evidence of esophagitis, but with radiological data of a sliding hiatus hernia. We have intervened 3 of the patients undergoing conversion to Bypass The presence of de novo GERD after GS is a controversial issue, although some authors postulate that there is a silent GERD in obese patients that manifests itself after it, despite EDA normal preoperative. Among the causes is torsion and stenosis of the gastrectomy, although there are new cases related to sleeve hyper pressure and dietary violations. Appropriate treatment is gastric bypass revision surgery. Follow-up should be done to assess the incidence of Novo GERD.

Keywords:

- Morbid obesity
- Sleeve gastrectomy
- GERD

Introduction

Obesity is an epidemic problem worldwide, and this is demonstrated by the latest report from the World Health Organization (WHO) of February 2018, which indicates that the obesity rate has tripled since 1975 (1),

It reduces life expectancy and limits the social development of people who suffer it, causing a negative economic impact, assessed at a loss of 3.3% of Gross Domestic Product (GDP) in the countries of the Organization for Cooperation and Development. Economic Development (OECD), as we have recently seen announced in the media (2).

Bariatric surgery is the only treatment that offers the best long-term results. Among the bariatric surgery techniques, Sleeve Gastrectomy (SV) is currently the most widely used technique (3). Hess in 1998 (4) performed the open GS as the restrictive part of the duodenal switch). Subsequently, Gagner in 1998 (5) performed the first laparoscopic GS as the first time of biliopancreatic diversion in super obese patients.

Since then, GS has established itself as a primary bariatric technique with a wide diffusion and acceptance by patients and surgeons (6-7)), due to a series of characteristics: Low incidence of complications, shorter surgical time, do not use foreign materials, acceptance by patients, versatility for conversion into another procedure, good results in terms of resolution of comorbidities, use in fragile and super-obese patients (8,9,10). However, its complications are important and far-reaching for the patient. The most frequent are leak (2%) and staple line bleeding (1.1%) 6,

without forgetting stricture and gastroesophageal reflux (6). In this regard, some concerns have been raised about the possible increased risk of postoperative gastroesophageal reflux disease (GERD) due to complete removal of the gastric fundus, dissection of the muscle fibers of the his angle, decreased motor function of the antrum and gastric volume reduction (11). It is therefore a controversial and topical issue, which is why we plan to carry out a study to evaluate our results regarding the presence of de novo GERD in our patients operated on for morbid obesity by GS in the HUPM of Cádiz.

Material and methods

We have performed a retrospective observational study of 300 patients operated on from 2012 to 2019 for obesity through GS in our center to analyze the presence of GERD after 5 years of follow-up.

All patients who are operated on in the HUPM must undergo a series of tests and evaluations within the established protocol to be included in the surgical waiting list.

These tests are reflected in Table 1.



Protocol previous to the inclusion in bariatric surgery
Endocrinology and nutrition report from the University hospital Puerta del Mar
Abdominal MRI
High digestive endoscopy and eradication of the Helicobacter pylori (a bacteria)
Pneumology report
Preoperative respiratory physiotherapy
Psychiatry report
Anesthetic assessment

Table nº 1: Protocol of explorations and tests prior to the inclusion of patients candidates for Bariatric Surgery of the HUPM Cádiz (own elaboration).

Once they comply with the protocol, they are sent to the Bariatric Surgery consultation and depending on the results of the tests, our protocol (Figure 1 and Figure 2), concomitant pathology and opinion of the patient after correct information, the type of treatment is decided surgical.

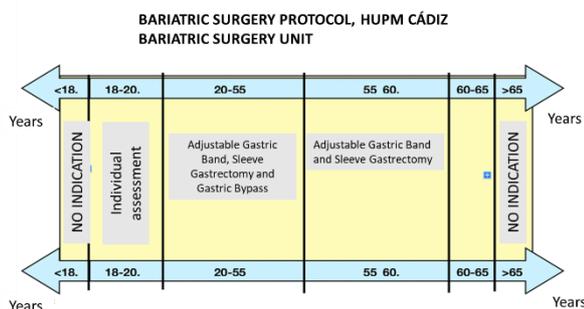


Figure nº 1: Choice of technique according to age and under the Bariatric Surgery Protocol

35-40	40-50	50-60	>60
Gastric Band It doesn't take any risk Cultural level Not great comorbidity or surgical risk	Gastric Band It doesn't take any risk Cultural level Not great comorbidity or surgical risk	Gastric Band It doesn't take any risk Cultural level Not great comorbidity or surgical risk	Gastric Band It doesn't take any risk Cultural level Not great comorbidity or surgical risk
Gastric Bypass Great comorbidity DM type II	Gastric Bypass <50 years old		
Sleeve Gastrectomy Mild Comorbidity Low Surgical risk Preview abdominal surgery	Sleeve Gastrectomy >50 Low Surgical risk Preview abdominal surgery	Sleeve Gastrectomy Great comorbidity	Sleeve Gastrectomy Great comorbidity

Figure nº 2: Choice of Technique based on BMI according to HUPM Bariatric Surgery protocol Cádiz

Once included in the waiting list, the bariatric nurse is referred for weight control and exercise, and all patients perform presurgical optimization using a very low-calorie

diet (12) about 20-30 days before surgery. From the inclusion in the waiting list to surgery, they take between 60-180 days.

The 150 patients studied with 5 years of follow-up underwent GS according to our usual technique. The patient is placed with the legs open and in a semi-sitting position on the conventional operating table (Figure 3). Only in the case of super obese is it necessary to resort to expanding the table by means of special support-extensions for bariatric surgery. Pneumoperitoneum is usually performed with the closed technique, with a Veres needle punctured at the left subcostal level, just below the rib margin. Although subject to individual variations depending on the characteristics of the patient, 5 trocars are usually used (Figure 3) (6).



Figure nº 3: Position of the patient and the proper fixings to perform the GS (drawings yielded by co-author Dr. José Manuel Pacheco García) (6)

We performed the surgery tutoring the stomach with a 34 French tube, starting the section 6 cm from the pylorus. We use a load-protected stapler (Figure 4). We don't drain regularly. We performed leak tests with blue methylene.

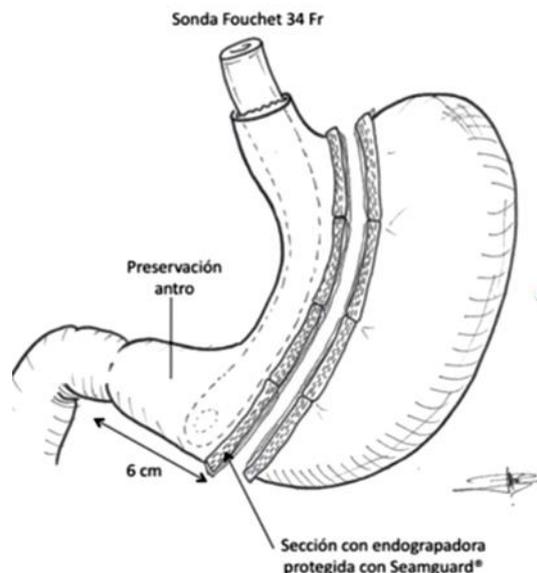


Figure nº 4: Authorized sleeve gastrectomy technique with 34 Fouché Probe. Staple line and protection detail. (drawings yielded by co-author Dr. José Manuel Pacheco García) (6).

After surgery, tolerance begins 24 hours and 48-72 hours after surgery, if there are no incidents, the patient is discharged.

Patients are followed alternately one month, 3,6,9,12 and 24 months by endocrinology and surgery. After discharge by endocrinology, patients undergo annual review in the Bariatric Surgery consultation up to 10 years after the intervention. Patients are not systematically examined endoscopically, only in cases in which they report a clinical condition. These patients underwent upper digestive endoscopy, a barium radiological study, Phmetry and esophageal manometry.

Results

After 5 years of follow-up of the 150 patients, they have only presented de novo GERD 5 symptoms (3.3%), documented after a complete study, which has only been carried out on those patients who reported symptoms and not the rest of the series. To confirm the diagnosis, EDA, Phmetry and Manometry have been performed, as well as radiological esophagogastric study (EGD). Of the 5 patients, all (100%) completed the GERD study method. None of the patients had a hiatus hernia in the preoperative period. The postoperative period of the initial surgery was uneventful in all cases with adequate oral tolerance and they were discharged on the 3rd postoperative day. The clinic presented by the patients was heartburn and regurgitation in all of them, one of them presented vomiting. Conservative treatment was initially performed in the 5 patients who presented clinical follow-up, but without clinical improvement. In two cases worsening occurred, one of the patients confessed dietary transgressions, two of them have presented weight regain.

The demographic and anthropometric characteristics of the patients are reflected in Figure 5. Four of the patients are women and a man with a mean age of 44 years (min 37-49), average postoperative BMI of 29.5 (25-29, 9). Two of them had stenosis and torsion in the gastrectomy, presenting the symptoms two years after surgery. Another two 5 years after surgery, with a reflux clinic and grade A esophagitis, and in one case a year after surgery without evidence of esophagitis, but with radiological data of a sliding hiatus hernia (Figure 6).



Figure 5: Demographic data of the 5 patients with de novo GERD symptoms after 5 years of follow-up.

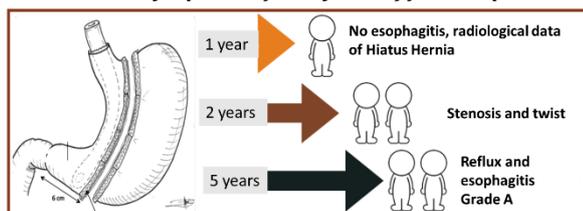


Figure 6: Pathological findings in patients who presented with esophagitis after 5 years of GS surgery.

We have operated on 3 of the patients undergoing conversion to a standard gastric bypass with a 120 cm food loop and a 50 cm biliopancreatic loop, using a laparoscopic approach. In one of them, the sleeve was twisted and the staple line was attached to the lower face of the left liver lobe. Another case presented torsion and stenosis of the sleeve, and in one case there was no evidence of anatomic abnormality of the sleeve (Figure 7).

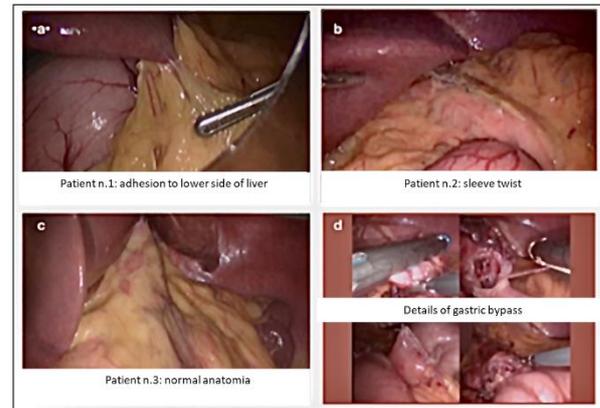


Figure 7: details of the surgery

The postoperative course was uneventful, being discharged on the 5th day with adequate oral tolerance. At one month and 6 months of follow-up, patients remain asymptomatic and with adequate weight loss. Two of the patients are pending intervention.

Discussion

The presence of de novo GERD after Sleeve Gastrectomy is a controversial issue, although some authors postulate that there is a silent GERD in obese patients that is evident after Sleeve Gastrectomy, despite normal preoperative EDA (13).

Severe reflux not only affects the patient's quality of life and forces him to permanently depend on proton pump inhibitors, but it can actually cause esophagitis (13), which can progress to Barreto's esophagus, which is a premalignant lesion. from which an esophageal carcinoma can develop (14).

Short-term studies often do not detect de novo GERD or even show an improvement in it [15-17] probably caused by the large initial weight loss that produces a decrease in intra-abdominal pressure [6]. Studies with longer follow-up have shown an increase in symptomatic reflux after GS [18, 19], possibly due to weight gain or the development of de novo hiatal hernias caused by pressure within the gastric sleeve for years [19]. Other causes are purely mechanical, such as torsion and stenosis of the gastrectomy, but there are also problems derived from the technique that produce anatomical changes that may be responsible for the appearance of Reflux, such as: Changes in the manometric parameters of the LES due to decreased pressure; Decreased compliance of the gastric reservoir, Dismantling of the ant reflux mechanism in the dissection of the Hiss angle, and the funnel shape of the gastrectomy.

The appropriate treatment for this Novo GERD is revision surgery. Bariatric surgery (CBR) is a complex field in bariatric surgery even in expert hands and the evaluation

of the second procedure that the patient will benefit from is often difficult to determine. (twenty). Vilallonga et al. Indicate that the indication for revision surgery after sleeve gastrectomy in their GS series is GERD in 30.76% of patients, with bypass being the most widely performed technique as GS revision surgery (20).

New techniques are emerging such as heart complications and bipartition of the transit, which according to its providers is capable of treating both obesity and GERD, in a simple way, avoiding mechanical restriction and significant malabsorption related to the exclusion segments (21). Another technique used is Hill's gastropexy combined with sleeve gastrectomy in patients with gastroesophageal reflux, although there is insufficient experience in its use as revision surgery in the case of GERD after GS. Of all the revision techniques, laparoscopic gastric bypass is the one that offers the best results in terms of improvement of symptoms and maintenance or improvement of weight loss, which is why, in the event of failure of a restrictive technique such as GS, it is the most widely used.

Analyzing the results of our study, we would show that until now the incidence of de novo GERD after sleeve gastrectomy after 5 years of revision is 3.3% offering results below those found in the literature, although in our case we have only Exploration and diagnostic tests were performed on patients with symptoms and symptoms of GERD. Possibly it would be necessary to study all the patients who have undergone a GS to really demonstrate the incidence of this pathology that can sometimes be asymptomatic and carry out more long-term studies to assess the real incidence.

Conclusions

Despite the fact that GS is the most widely used technique for the treatment of morbid obesity, it is not without complications and GERD de novo is one of them. The actual incidence of reflux disease is currently unknown, as there are few studies that systematically perform an endoscopic or radiological examination of asymptomatic patients who underwent obesity surgery five years ago with GS.

Gastric bypass is currently the most appropriate and widely accepted revision surgery technique to treat patients with severe GERD after sleeve gastrectomy.

Bibliografía

1. *Obesity and Overweight Fat Sheet. 2018. February 2018.* <http://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight>
2. Mayo Ossorio MA. *Situación actual de la obesidad mórbida y la cirugía bariátrica en Andalucía y España.* *Cir. And* 2019. n°30 Vol 4: 433. 2019.
3. Pacheco García JM, Mayo Ossorio Ma, Bengoechea Trujillo A, Fornell Ariza M, Vilchez López F, Aguilar Diosdado M. *Gastrectomía vertical: la técnica quirúrgica bariátrica más utilizada en la actualidad.* *Cirg. And.* 2019. N°30. Vol 4: 455-64
4. Hess DS, Hes DW. *Biliopancreatic diversion with a duodenal switch.* *Obes Surg* 1988;8:267-282.
5. Regan JP, Inabnet WB, Gagner M, et al. *Early experience with two-stage laparoscopic Roux-en-Y gastric bypass as*

an alternative in the super-super obese patient. *Aves Surg.* 2003;13(6):861-4.

6. Pacheco García JM, Mayo Ossorio MA. *Claves técnicas en la realización de la Gastrectomía Vertical para evitar complicaciones.* *Cir. Andal. Febrero 2017, vol 38, núm 1 (34-38)*
7. Zeki Ozsoy, Emre Demi. *Which Bariatric Procedure Is the Most Popular in the World? A Bibliometric Comparison.* *Obesity Surgery (2018) 28:2339-2352*
8. Gagner, M et al. *Laparoscopic sleeve gastrectomy for de super-super-obese (Body mass index >60 Kg/m²).* *Surgery Today.* May 2008, Vol 38, Issue 5. 399-403.
9. Gil-Randón A, Muñoz-Rodríguez JR et al. *Laparoscópica Sleeve Gastrectomy for High-Risk Patients in a monocentric series: Long Terms outcomes and predictor of Success.* *Obesity Surgery (2019) 29:3629-3637.*
10. Kowalewski, P.K., Olszewski, R., Walędziak, M.S. et al. *Long-Term Outcomes of Laparoscopic Sleeve Gastrectomy a Single-Center, Retrospective Study OBES SURG (2018) 28: 130.*
11. del Genio G, Tolone S, Limongelli P et al. *Sleeve Gastrectomy and Development of "De Novo" Gastroesophageal Reflux.* *OBES SURG (2014) 24:71-77*
12. Mayo Ossorio MÁ, et al. *Experiencia del empleo sistemático de la dieta de muy bajo valor calórico para la optimización en el preoperatorio de cirugía bariátrica.* *Rev Chil Cir.* 2017;69(6):472-478
13. Moritz Felsenreich et al. *Reflux, Sleeve Dilation, and Barrett's Esophagus after Laparoscopic Sleeve Gastrectomy: Long-Term Follow-Up.* *OBES SURG (2017) 27:3092-3101*
14. Drahos J, Li L, Jick SS, et al. *Metabolic syndrome in relation to Barrett's esophagus and esophageal adenocarcinoma: results from a large population-based case-control study in the clinical practice research Datalink.* *Cancer Epidemiol.* 2016;42:9-14.
15. Van Rutte PW, Smulders JF, de Zoete JP, et al. *Outcome of sleeve gastrectomy as a primary bariatric procedure.* *Br J Surg.* 2014;101: 661-8. .
16. Spivak H, Rubin M, Sadot E, et al. *Laparoscopic sleeve gastrectomy using 42-French versus 32-French bougie: the first-year outcome.* *Obes Surg.* 2014;24:1090-3.
17. Rebecchi F, Allaix ME, Giaccone C, et al. *Gastroesophageal reflux disease and laparoscopic sleeve gastrectomy: a physiopathologic evaluation.* *Ann Surg.* 2014;260:909-14. discussion 914-905
18. Himpens J, Dobbelaire J, Peeters G. *Long-term results of laparoscopic sleeve gastrectomy for obesity.* *Ann Surg.* 2010;252:319-24.
19. Deitel M, Crosby RD, Gagner M. *The first international consensus summit for sleeve Gastrectomy (SG), New York City, October 25- 27, 2007.* *Obes Surg.* 2008;18:487-96.
20. R. Vilallonga-Puy, A. García-Ruiz de Gordejuela, M.R. Rodríguez-Luna, Ó. González, E. Caubet, A. Ciudin, M. Pérez, M. Armengol, J.M. Fort. *Cirg. And.* 2019. N°30. Vol 4: 486-493.
21. Sergio SantoroFilippe Camarotto MotaCaio Gustavo Aquino. *Treating Severe GERD and Obesity with a Sleeve Gastrectomy with Cardioplication and a Transit Bipartition.* *Obesity Surgery . Vol 29. N°4:1439-1441.*



© 2020 seco- seedo. Published by bmi-journal. All rights reserved.



www.bmi-journal.com (ISSN: 2250-737X)

(*) Under a Creative Commons Attribution-NonCommercial-No-Derivative 4.0 Spain license