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Weight regain after 5 years of sleeve gastrectomy due to morbid obesity.

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Summary:

Morbid obesity continues to be a global health problem, and bariatric surgery is its most successful long-term treatment. Sleeve gastrectomy is the most widely used bariatric technique today, although the weight reganance rate continues to be a problem today, presenting long-term results that differ between the various studies carried out. We present the results of 300 sleeve gastrectomies carried out at the Puerta del Mar University Hospital from 2012 to 2019. In the 5-year follow-up, we obtained a mean BMI of 37.5% and a weight reganance of 17.3%. Despite the fact that the results collected on reganance in sleeve gastrectomy are worse than in other techniques, our results are encouraging, although long-term studies will have to be carried out to confirm them.

Keywords:

- Weight gain
- Sleeve gastrectomy
- Morbid obesity
- Bariatric surgery

Introduction

The exponential increase in morbid obesity makes the use of surgery more and more frequent. Among bariatric techniques, sleeve gastrectomy is increasingly used for its good results [1-2]. However, long-term results are currently being published that make it evident that the weight reganance after sleeve gastrectomy represents a significant percentage of patients (heterogeneous results that represent between 40-86% of percentage of overweight lost at 5 years in different series) [2,3,4,5].

Weight reganance, defined as weight gain after bariatric surgery, is a complication evidenced by a gradual decrease in the percentage of weight lost observed in longitudinal studies. It is associated with recurrence of comorbidity associated with obesity, as well as additional healthcare costs [3]. Differences in the results found could be related to factors related to the technique, the patient, or factors still unknown [8-11]. Identifying prognostic factors in patients will serve to find those patients suitable for performing sleeve gastrectomy or assess whether they are susceptible to performing another technique [12-13].

In this article, we are going to present our results, collected in 5 years at the Puerta del Mar University Hospital (Cádiz), in terms of weight reganance after sleeve gastrectomy.

Material and methods

We performed a retrospective observational study of patients operated on for obesity at the Puerta del Mar University Hospital. From 2012 to 2019, 300 sleeve gastrectomies for morbid obesity have been performed at our center.

One month before surgery, patients must take a very low-calorie diet. These diets are formulations that provide between 450 and 800 kcal a day (from 30 to 62.4 g / day of protein, from 10 to 80 g / day of carbohydrates and the recommended daily dose of vitamins, minerals, trace elements and fatty acids), and makes sure to guarantee the supply of all the essential nutrients without influencing the weight. These diets will achieve in this way:

- A preoperative weight loss established in our protocol is between 5% and 10%.
- The decrease in liver steatosis and visceral fat.
- Identify compliant patients.
- Adapt patients to the postoperative diet [14].

In surgery, all patients underwent a laparoscopic sleeve gastrectomy according to our usual technique. After the creation of the Verres needle pneumoperitoneum at the left subcostal level and the introduction of the trocars, we proceeded to release the greater gastric curvature after separating the liver to improve field exposure.

We begin the release of the greater curvature at the transition between the antrum and the gastric body, first heading cranially by sectioning the short vessels and dissecting the Hiss angle. Second, we release the greater curvature distally, up to about 6 cm from the pylorus.

We check the gastric section with a 34 French Fouchet tube (11.3 mm) that is left insinuated in the gastric antrum. The gastric sections are made with a flexible 60mm stapler protected with Seamguard, the first with a green charge for the antrum and the following with a gold charge. In the last stapling, it is important not to get too close to the gastroesophageal junction to avoid stenosis, as well as not to get too far away and that we predispose to poor vascularization of the area and consequently to leakage.

Finally, we check the tightness with the introduction of methylene blue by the Fouchet tube at three levels: gastric antrum, half of gastric section and at the level of the hiatus. We then proceed to extract the piece and place a Blake drain in the gastric section line [1].

After the intervention, patients follow the bariatric surgery protocol established by the Bariatric Surgery Unit. In it, patients initiate tolerance 24 hours postoperatively, being discharged on the third day if no incidents occur.

At home they continue with progressive tolerance:

- the first 21 days after the patient takes a liquid diet supplemented with nutritional shakes,
- They continue 21 days with a crushed diet
- Finally, easy chewing diet; until gradually reintroducing the normal diet.

Reviews are carried out by one party:

- By the surgery service in outpatient Bariatric Surgery visits one month, 6 months and annually up to 5 years after surgery.
- By the hospital's endocrinology service at 3 months, 6 months, 9 months and one year, and then the follow-up is carried out by endocrines from the patients' health area.

In the reviews, compliance with the postoperative diet, physical exercise and evolutionary control of the patient's weight are analyzed, as well as the resolution and improvement of comorbidities and the presence of complications. We will analyze the demographic characteristics of the sample, expressing the results in percentages (qualitative variables) and in averages (quantitative variables).

Results

Since 2012 and until 2019, 300 sleeve gastrectomies have been performed, due to morbid obesity in our center. We have followed up 150 cases, 70 women and 80 men (figure 1).

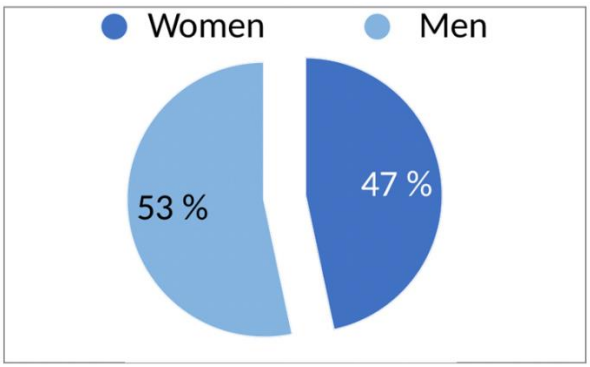

Figure nº 1: distribution of patients according to gender.

The mean age of the patients studied was 41.82 years (minimum 23, maximum 61), with an average weight of 137.87 kg (minimum 85.9 kg, maximum 176 kg), with an average BMI of 49, 81 kg / m2 (37-73 kg / m2), as shown in Table 1

Table 1 – demographic and anthropometric features in 150 patients after 5 years of the surgery	
Age	Average 41.82 years (min 23- Max 61)
Weight	Average 137,87 kg (min 85,9- Max 175)
IMC	Average 49.81kg/m2 (min 37- Max 73)

Table 1 Demographic and anthropometric characteristics after 5 years of follow-up

The following results were obtained from the 150 cases studied:

Average stay of 4.69 days (minimum 3 and maximum 9)

Regarding results at the weight level, one year after surgery the mean weight was 84.8 kg (min. 51- max. 139) with a mean BMI of 31,127 (min. 22, max. 50) with PSP at one year of 75% (Table 2)

Table 2	Weight results per year 150 patients
Weight	84.8 kg (Min. 51 – Max. 139).
IMC	31.127 kg/m2 (Min. 22 – Max. 50).
PSP	PSP per year 75%

Table nº2. Weight results achieved in the follow-up of the 150 patients operated each year.

As for the surgical complications in the 300 operated patients, 3 leaks (2%) have been presented, which were managed conservatively with a favorable evolution.

In addition, there was a death due to necrotizing aspiration pneumonia and a hemoperitoneum that required reoperation. These results are reflected in Table 3. Five years after surgery, 26 patients out of 150 have presented weight reganance (17.3%), of which 16 were women and 10 men (figure 2).

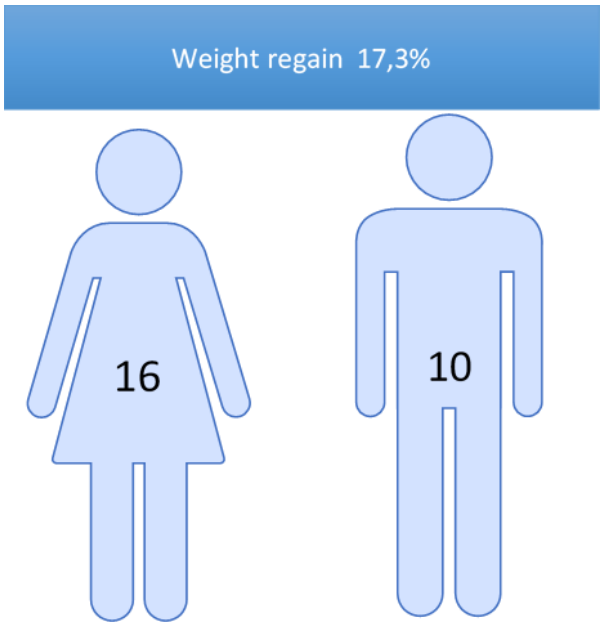

Figure nº 2: Weight gain at 5 years. Distribution by gender.

Table 3	Post-operative complications in 300 patients after 5 years
Leak	3 (2%)
Hemorrhage	1 hemoperitoneum (0.03%)
Death	1 (pneumonia due to aspiration (0.03%)

Table nº3: Number and percentage of complications in the 5 of the patients operated on at Puerta del Mar University Hospital.

The mean weight reganance of the 26 patients was 17.5 kg (minimum 10 kg, maximum 35 kg) and the mean BMI at 5 years of 37.5 (minimum 30, maximum 45). In the rest of the series, the PSP remained at 65% at 5 years. Until now, none of the patients wanted to be operated again and they are being followed up by endocrinology pending evolution. These results are contemplated in Table 4.

Table 4: Weight results of patients with weight regained after 5 years.	
Regained weight	17.5kg. (19-35)
IMC.	37 kg/m2 (30-45)

Table 4. Results of weight regained in the follow-up of the operated patients.

Discussion

Obesity is defined as a chronic disease where there is excess weight in relation to the height of the patient due to an imbalance between intake and caloric expenditure and is currently considered the epidemic of the 21st century. The increase in the prevalence and incidence of obesity worldwide is also reflected in our environment, especially in our community, presenting during the last decade one of the most unfavorable records. This problem leads the patient to suffer from comorbidities that reduce their quality of life and health, and which are accompanied by an increase in direct and indirect costs at the healthcare level [15-18].

Due to the data previously exposed, bariatric surgery is an increasingly common therapeutic tool for patients with BMI ≥ 40 kg / m2, or with BMI 35-40 kg / m2 and associated comorbidities [15].

Sleeve gastrectomy is an effective bariatric technique in the treatment of obesity as well as its comorbidities, presenting multiple indications regarding the low number of complications. Although specifically sleeve gastrectomy appears to be superior to other procedures in terms of weight reganance, there is insufficient data in the literature to support these results [1].

On the other hand, it is common to confuse terms like weight reganance and insufficient weight loss. We define weight reganance as a medium-long term complication that occurs after the greatest weight loss achieved, and insufficient weight loss as not achieving more than 50% loss of excess weight [19, 20].

Weight reganance after sleeve gastrectomy presents highly variable results, of which few results can be obtained given the few studies with a low number of patients. Five different etiologies have been described that lead to weight reganance: diet non-compliance, hormonal-metabolic imbalance, mental health, lack of physical exercise and anatomical / surgical fatigue [21]. In addition, several predisposing factors have been defined for the weight reganance, such as:

- Initial gastric sleeve size: related to an insufficient section of the fundus, this anatomical region producing greater ghrelin secretion [22].
- Increase in the size of the postoperative gastric remnant at follow-up: it is a suggested predisposing factor, although the correlation has not been clearly demonstrated [23, 24].
- Ghrelin levels: low postoperative levels reduce appetite and contribute to the restrictive effect that promotes weight loss [25].
- Follow-up support: discharge from bariatric surgery consultations has been related to a weight reganance [4].
- Postoperative lifestyle: adherence to the diet is interfered with by an early gastric emptying and a feeling of hunger, which can lead to re-gaining in the years of follow-up [26-28].

A recent Spanish-Portuguese multicenter study that includes 1565 patients treated with sleeve gastrectomy in 29 hospitals, shows an elevated percentage of patients with satisfactory weight loss (90% in the first year), and a global mean PSP at 5 years of 68.46 ± 23.1, with 79.2% achieving a loss of more than 50%. Of the patients who do not achieve the goal, 20% gain weight again. In these patients, a new surgery could be considered in a second stage; The factors contributing to the worst results were identified as metabolic syndrome and BMI ≥ 50 kg / m2, age greater than 50 years, variations in technique, distance of the first staple greater than 5 cm from the pylorus and size of the spark plug greater than 40 F) [3].

The results in terms of weight reganance of our series are encouraging, standing at 17.3% compared to 35%

reflected in recent publications. The 5-year PSP of our series of 300 patients is good (65%) with a rate of complications and mortality within the standards. However, more studies will have to be carried out to confirm these results since they refer to the 150 patients studied.

Conclusions

Morbid obesity is considered the epidemic of the 21st century, and although bariatric surgery is one of the basic pillars of treatment, weight reganance continues to be a problem today. The literature collects heterogeneous data on the percentage of patients who gain weight again: between 20-86%.

In our center, performing sleeve gastrectomy has been established as a safe and efficient technique, with few complications, and better long-term results on weight reganance than in published studies. However, further studies have to be carried out to corroborate these results.

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