Journal of Medical and Surgical Practice (JMSP)
ISSN: 2664-1704
Vol. 9, No. 4, October-December, 2023

Sleeve Gastrectomy vs. Gastric Bypass: Results in the Short and Medium Term

Dr. Haider Saleh Sultan[1*], Dr. Ammar Sabah Eliwi[2], Dr. Ali Anwer Saeed[3]

1. *M.B.Ch.B, CABS*
2. *M.B.Ch.B, FICMS*
3. *M.B.Ch.B, FICMS*

* *Corresponding Author* ***dr.haidersultan@yahoo.com.***

Original Article

Abstract

Background: *Worldwide, the incidence of morbid obesity continues to increase and surgery is recognized as the only effective treatment with sustained weight loss a long-term and significant resolution or improvement of their comorbidities. However, there are a variety of surgeries to achieve this goal.*

Objective: *To compare the clinical results between gastric bypass and vertical gastrectomy in terms of percentage of BMI lost and percentage of excess BMI lost.*

Patients and methods: *A single-center, ambispective study on a prospective data from the department of surgery in our hospital, of which patients undergoing bariatric surgery in a period comprising from January from 2018 to December 2020.*

Results: *The mean age of the patients was 44.56 years. In both groups, approximately one-third of the patients were men (32.6% in the group GBP and 27.5% in the VG group). greater reganance of weight in the group submitted to VG (8 patients, 10%) than in the group GBP (1 patient, 1.09%), this difference being statistically significant (p = 0.009). In the medium term, weight reganance is observed in 6 patients undergoing GBP (6.66% of the GBP) and in 19 of the VG (23.75%), reaching the significance statistics (p = 0.001).*

Conclusion: *In terms of weight loss and management of related comorbidities, the gastric bypass (GBP) procedure demonstrates superior outcomes compared to the vertical gastrectomy (VG) in both the short and medium term*

Keywords: *Obesity, Gastric bypass, Vertical gastrectomy, obstructive sleep apnea syndrome*

Received : November, 2023, **Published**: December, 2023

Citation: Sultan H.S, Eliwi A.S, Saeed A.A Sleeve Gastrectomy vs. Gastric Bypass: Results in the Short and Medium Term. JMSP 2023; 9(4): 169-77

1. INTRODUCTION

Obesity and overweight are growing problems all over the world in the last decades, affecting 36.9% of men and 38% of women in the Western world (1). Obesity it is a chronic disease, which is associated with a greater mortality and morbidity due to comorbidities such as type II diabetes mellitus (DM-II), hypertension arterial hypertension, dyslipidemia, increased cardiovascular risk, obstructive sleep apnea syndrome of (OSAS), cancer and others (2). The process of losing weight is connected to the amelioration or resolution of coexisting medical conditions and a decrease in mortality rates. Numerous treatments have been developed to cope with morbid obesity, as dietary and behavioral measures, drugs and endoscopic and surgical procedures (3). Several studies have shown that the treatment surgery provides greater weight loss and a higher rate of remission of comorbidities than the dietary and pharmacological treatment 3. Among the described surgical procedures, the gastric bypass (GBP) and vertical gastrectomy (VG) are the most employed. Globally, the VG is the most used procedure surpassing the GBP, the most used technique until 2015 (4). Published studies have shown good results with the employment of VG in terms of loss of weight and resolution of comorbidities, being a less technically demanding procedure and with a lower complication rate (5,6). On the other hand, weight reganance is one of the complications associated with bariatric surgery and multifactorial origin, with very high rates being reported heterogeneous in respect of (7).

2. PATIENTS and METHODS

A single-center, ambispective study on a prospective data from the department of surgery in our hospital, of which patients undergoing bariatric surgery in a period comprising from January from 2018 to December 2020. The research has received approval from the ethical committee at our institution.

Perioperative evaluation

Patients undergoing bariatric surgery during the study period, were evaluated by a multidisciplinary committee both pre- and post-operatively, trained by endocrinologists, psychiatrists, anesthesiologists, nurses and surgeons.

Two types of techniques have been performed, the VG and the GBP, indicating the first, for patients with BMI of 40-45, non-peckers and as a first phase in super-obese patients with BMI ≥ 55, while patients with a BMI of 40-45, without large comorbidities, they were subjected to GBP.

An average follow-up of 24-36 months is carried out (12-48 months). On the one hand, the results are evaluated of the weight curves in the form of PBMIP and PEBMIP of these patients. On the other hand, they are analyzed the success and failure rates with both techniques, the morbidity and mortality associated with both procedures (by the Clavien-Dindo classification) and the impact of surgery on comorbidities such as HTA, the DM-II and the OSAS.

Surgical technique

All the interventions were made by the same surgical team (consisting of three surgeons)and by laparoscopic approach in the case of GBP, a reservoir is made isolated gastric with a Roux-en-Y biliary loop of 60 cm and a 150 an endograper 25 mm circular and the jejuno-jejunal anastomosis latero-lateral mechanical cm antecolic food handle. The gastro-jejunal anastomosis is performed with. In the VG, a gastric resection is performed vertical on a 36 French tutor probe from 4-5 cm from the pylorus to the angle of Hiss, by endograpadora. In both procedures a test of leakage by the administration of methylene blue through a nasogastric tube and is left an intra-abdominal aspirated drainage. Perioperative care All patients receive antithrombotic prophylaxis with low molecular weight heparin and medium of pneumatic compression during the procedure, in addition to antibiotic prophylaxis with amoxicillin, clavulanic 2 g (in case of allergy, clindamycin 900 mg + gentamicin 240 mg). In the GBP, mobilization begins on the first day postoperative (PO). A barited study is carried out control at 48 hours and in case of not objectifying contrast leakage, the drain is removed and the liquid diet on the third day PO, being discharged to address on the fifth day PO. In the VG, mobilization and tolerance begins to sips of water on the first day PO. The drain is removed aspirational on the second day PO, progressing the diet to more dairy liquids and being discharged among the third and fifth day PO. Subsequently, monitoring is carried out by of surgery, endocrinology and nursing every 3 months up to 24 months after the intervention. Subsequently follow-up is carried out by nursing and endocrinology. Success or failure of the surgical technique According to the current criteria of success of the surgery bariatric, it has been considered an excellent result a PEBMIP > 65%, good result between 50-65% and failure if PEBMIP < 50% (8).

In this study and being the most widely used definition at present, weight gain has been considered the increase greater than 10 kg from the lowest weight acquired after bariatric surgery. They have compared the reganance rates with both short-term and medium term. Resolution or

improvement of comorbidities The results of the surgery have been analyzed bariatric in terms of resolution or improvement of comorbidities according to standardized criteria published in 2015 by the American Society for Metabolic and Bariatric Surgery (ASMBS) (9).

Statistical analysis

The statistical package of social science SPSS has been used version 25.0. The variables have been described by the most appropriate statistic for the nature and measuring scale of each: mean and deviation standard (or median and interquartile range) for variables quantitative and absolute and relative frequencies in percentage for qualitative variables. Univariate analysis has been performed to evaluate the importance of the study variables in relation with the result/s of interest (outcome). For the parametric variables (Mann-Whitney, Kruskal Wallis) if they were necessary and for the variables chi-square tests have been performed or Fischer's exact test.

3. RESULTS

During the study period, a total of 172 patients underwent bariatric surgery (n = 172). 92 patients (53.4%) underwent GBP and 80 (46.5%) patients underwent VG, The average duration of follow-up was 30 months, ranging from 12 to 48 months. The demographic characteristics of both groups are mentioned in (**Table 1**). The mean age of the patients was 44.56 years. In both groups, approximately one-third of the patients were men (32.6% in the group GBP and 27.5% in the VG group). The initial BMI in the GBP group was 47.28 while in the group subjected to VG was 45.65 (p = 0.078). Comparing the two groups, no differences are observed statistically significant in terms of age, sex, initial BMI and ASA risk, nor as soon as to the distribution of comorbidities. Hypertension was the most frequent comorbidity in both groups (35.87% in GBP and 33.75% in VG), followed by the ODS (29.34% and 28.75% respectively) and type I and II DM (21.73% in GBP group and 20% in the VG group). There was no mortality related to the process surgical. In terms of morbidity and according to the Clavien-Dindo classification, a total of 22 patients (12.79%) suffered minor complications (Clavien Dindo I and II) and 8 patients (4.65%) complications higher (Claven Dindo III and IV) (**Table 2**). By comparing the two techniques, there is a greater complication rate in the GBP group 24 (26.09%) than in the VG group, 6 (7.5%). When performing analysis by subgroups, from among the patients who they have complications, there are no differences as for the type (minor/major) of complication (Fisher's exact test p = 0.208). A patient undergoing GBP, presented leakage anastomotic that was treated by endoscopic placement from a stent. 5 patients had to be reintermitted, 4 of the group subjected to GBP and one

in the group of VG (2 by hemoperitoneum, 2 by intestinal perforation and 1 by intra-abdominal abscess). Success of bariatric surgery Regarding the success of short-term bariatric surgery term, 82 patients (47.7%) present a result excellent, 49 patients (28.5%) good and in 41 patients (23.8%) failure of bariatric surgery. A in the medium term, 65 patients present excellent results (49.24%), 31 good (23.48%) and 36 failure (27,27%). The results are shown in (**Table 3**) according to the surgical technique used. Statistical analysis, comparing the two surgical techniques, shows no difference in the results obtained in the short term, however, a in the medium term, there is a statistical difference significant in favor of the GBP, presenting better results. Weight loss in a year, 2 years, 3 years and 4 years after surgery. It statistically significant differences observed both in the PBMIP and PEBMIP between groups and at the throughout the 4 years, except for the PEBMIP per year (p = 0.1476). Short and medium weight reganance rate deadline A reganance rate of weight is observed at short term of 5.4%, while in the medium term it reaches 14.5% of patients. If we compare according to surgical technique, it notice a greater reganance of weight in the group submitted to VG (8 patients, 10%) than in the group GBP (1 patient, 1.09%), this difference being statistically significant (p = 0.009). In the medium term, weight reganance is observed in 6 patients undergoing GBP (6.66% of the GBP) and in 19 of the VG (23.75%), reaching the significance statistics (p = 0.001). Improvement or resolution of comorbidities In the overall of the series and in the medium term, it is observed an improvement or resolution of hypertension in the 74,19% of the patients, from 45.76% in the case of DM type II and 51.02% in the OSAS.

Table 1. Demographic data and associated comorbidities

Variable		GBP (n=92)(%)		VG (n=80)		P. value
		No.	%	No.	%	
Mean age (year)		43.08±11.5		46.30±10.7		0.06
Sex	Male	30	32.61	22	27.5	0.4
	Female	62	67.39	58	72.5	
BMI		47.28 ± 4.88		45.65±7.11		0.07
ASA Risk	I	0		1		0.4
	II	35		37		
	III	53		38		
	IV	4		4		
Comorbidity	HT	33	35.8	27	33.75	0.5
	DM	20	21.7	16	20	0.7
	OSAS	27	29.5	23	28.25	0.9

Table 2. Precocious Major and minor complications in the postoperative period

Clavien-Dindo	GBP		VG	
	N	Type of complication	N	Type of complication
I	10	assistance wound infection	1	Paralytic ileus
	2	Paralytic ileus		
	1	Intraluminal hemorrhage		
II	2	Intraluminal hemorrhage	1	Atrial fibrillation
	2	Subclinical anastomotic leak	2	Hemoperitoneum
	1	Pneumonia		
IIIa	1	Anastomotic leak	1	Intestinal perforation
IIIb	2	Hemoperitoneum		
	1	Intestinal perforation		
	1	Intra-abdominal abscess		
Iva			1	Respiratory distress
IVb	1	Anastomotic leak		
V	0	Undetermined	0	Undetermined

Table 3. Short- and medium-term success of bariatric surgery according to the technique used

Results	Short-term (1 year)					Medium-term (3 years)				
	GBP (n=92)		VG (n=80)		P. value	GBP (n=67)		VG (n=65)		P. value
	No.	%	No.	%		No.	%	No.	%	
Excellent PEBMIP >65%	49	53.3	33	41.3	0.28	43	64.2	22	33.8	≤0.001
Well PEBMIP 50-65%	24	26	25	31.3		15	22.4	16	24.6	
Failure PEBMIP <50%	19	20.7	22	27.5		9	13.4	27	41.5	

4. DISCUSSION

As can be seen in this study, the surgery bariatric surgery has good results in terms of weight loss and improvement or resolution of comorbidities associated with obesity. Regarding the success or failure of bariatric surgery, excellent or good results are observed at short-term in about 75% of cases (79.34% of GBP and 72.5% of VG), while that in the medium term there is a slight decrease in the success of both procedures, reaching the 72.5% of these, in addition to observing a distribution different with respect to short-term results (the GBP presents better

results, with a higher of success in 86.6% of procedures versus 58.46% of the VG). These results could be explained by the greater reganance of weight that patients undergoing VG experience. Various mechanisms about the reganance of weight in patients undergoing VG have been described, among them the realization of a gastric reservoir > 225 ml (10), the dilation of the same and a diet of bad quality and excessively caloric. In this series, in all patients undergoing VG has been performed a gastric reservoir of the same characteristics (about 36 French tutor probe) and they have all received the same follow-up and dietary guidelines. Despite having a higher rate of complications the group subjected to GBP, probably related to the increased complexity of the technique, this does not reach statistical significance. There is a low morbidity associated with bariatric surgery, with a minor complication rate of 12.79% and greater than 4.65% (8 patients) of whom 5 they required re-intervention. As for the results about the loss of weight, better results are observed both in the PBMIP and PEBMIP in patients undergoing GBP (11). This difference is more noticeable with the passage of time after the surgical procedure, probably due to the reganance of weight that they experience patients undergoing VG. In this study, satisfactory results are observed in the short and medium term in terms of improvement of comorbidities in 74.19% of patients suffering from HYPERTENSION, in 45.76% of patients with DM-II and in 51.02% of patients with OSAS, these results being superior in the group subjected to GBP. There is little literature that compare the results obtained with the GBP and the VG in the medium and long term, if there are data to short-term that show similar results with both techniques are. In this series, the results obtained as to weight loss, reganance and improvement of comorbidities, are higher with the GBP. These results and even observing a higher rate of complications in the group undergoing GBP, we have led to a lower number of VG being performed in favor of the GBP. In 2011, 47.7% of surgeries bariatric performed were GBP while a 52.2% were VG. In 2015, the percentage of GBP it reached 81%. (12,13).

Limitations of this study are the character hindsight and the bias of patient selection according to the above-mentioned surgical indication criteria. Another limitation is the follow-up to short and medium term, without being able to obtain results a long-term.

5. CONCLUSIONS

In terms of weight loss and management of related comorbidities, the gastric bypass (GBP) procedure demonstrates superior outcomes compared to the vertical gastrectomy (VG) in both the short and medium term.

Ethical Clearance:

Ethical issues were taken from the research ethics committee. Informed consent was obtained from each participant. Data collection was in accordance with the World Medical Association (WMA) declaration of Helsinki for the Ethical Principles for Medical Research Involving Human Subjects, 2013 and all information and privacy of participants were kept confidentially.

Conflict of interest: Authors declared none

Funding: None, self-funded by the authors

6. *REFERENCES*

1. *West SL, Caterini J, Banks L, Wells GD. The epidemic of obesity and poor physical activity participation: will we ever see a change?. Journal of Functional Morphology and Kinesiology. 2018 Jun 10;3(2):34.*
2. *Abdelaal M, le Roux CW, Docherty NG. Morbidity and mortality associated with obesity. Annals of translational medicine. 2017 Apr;5(7).*
3. *De Luca M, Angrisani L, Himpens J, Busetto L, Scopinaro N, Weiner R, Sartori A, Stier C, Lakdawala M, Bhasker AG, Buchwald H. Indications for surgery for obesity and weight-related diseases: position statements from the International Federation for the Surgery of Obesity and Metabolic Disorders (IFSO). 2016: 1659-1696.*
4. *Angrisani L, Santonicola A, Iovino P, Formisano G, Buchwald H, Scopinaro N. Bariatric surgery worldwide 2013. Obesity surgery. 2015 Oct;25:1822-32.*
5. *Aderinto N, Olatunji G, Kokori E, Olaniyi P, Isarinade T, Yusuf IA. Recent advances in bariatric surgery: a narrative review of weight loss procedures. Annals of Medicine and Surgery. 2023:10-97.*
6. *Wang BC, Wong ES, Alfonso-Cristancho R, He H, Flum DR, Arterburn DE, Garrison LP, Sullivan SD.*

Cost-effectiveness of bariatric surgical procedures for the treatment of severe obesity. The European Journal of Health Economics. 2014 Apr;15:253-63.

7. *El Ansari W, Elhag W. Weight regain and insufficient weight loss after bariatric surgery: definitions, prevalence, mechanisms, predictors, prevention and management strategies, and knowledge gaps—a scoping review. Obesity surgery. 2021 Apr;31:1755-66.*
8. *Lauti M, Kularatna M, Hill AG, MacCormick AD. Weight regain following sleeve gastrectomy—a systematic review. Obesity surgery. 2016 Jun;26:1326-34.*
9. *Deguines JB, Verhaeghe P, Yzet T, Robert B, Cosse C, Regimbeau JM. Is the residual gastric volume after laparoscopic sleeve gastrectomy an objective criterion for adapting the treatment strategy after failure?. Surgery for Obesity and Related Diseases. 2013 Sep 1;9(5):660-6.*
10. *Braghetto I, Cortes C, Herquiñigo D, Csendes P, Rojas A, Mushle M, et al. Evaluation of the radiological gastric capacity and evolution of the BMI 2–3 years after sleeve gastrectomy. Obesity surgery. 2009 Sep;19:1262-9.*
11. *Helmiö M, Victorzon M, Ovaska J, Leivonen M, Juuti A, Jaser N, et al. SLEEVEPASS: A randomized prospective multicenter study comparing laparoscopic sleeve gastrectomy and gastric bypass in the treatment of morbid obesity: preliminary results. Surg Endosc. 2012;26:2521-6.*
12. *Chouillard EK, Karaa A, Elkhoury M, Greco VJ. Laparoscopic Roux-en-Y gastric bypass versus laparoscopic sleeve gastrectomy for morbid obesity: case control study. Surgery for Obesity and Related Diseases 2011;7:500-5.*
13. *Lakdawala MA, Bhasker A, Mulchandani D, Goel S, Jain S. Comparison between the results of Laparoscopic Sleeve Gastrectomy and Laparoscopic Roux-en-Y Gastric Bypass in the Indian Population: A Retrospective 1 Year Study. Obes Surg. 2010;20:1-6.*