Nutrición Hospitalaria

Nutr Hosp. 2013;28(3):618-622
ISSN 0212-1611 • CODEN NUHOEQ
S.V.R. 318

Original

Effect of binge eating disorder on the outcomes of laparoscopic gastric bypass in the treatment of morbid obesity

Eduardo García Díaz[1], María Elena Jerez Arzola[2], Tomás Martín Folgueras[2], Luis Morcillo Herrera[2] and Alejandro Jiménez Sosa[3]

[1]Servicio de Endocrinología y Nutrición. Hospital Dr. José Molina Orosa. Lanzarote. [2]Servicio de Endocrinología y Nutrición. Hospital Universitario de Canarias. Tenerife. [3]Unidad Mixta de Investigación Hospital Universitario de Canarias. Universidad de La Laguna. Tenerife. España.

Abstract

Introduction: **Previous studies about the effect of binge eating disorder (BED) on the outcomes of laparoscopic gastric bypass (LGBP) are controversial. These studies have not compared patients with and without BED according to the Bariatric Analysis and Reporting Outcome System (BAROS), which takes into account weight loss, correction of comorbidities, improvement in quality of life and complications.**

Objectives: **To assess whether BED predicts worse outcomes after LGBP, according to BAROS parameters.**

Methods: **We carried out a cohort study which included 45 morbidly obese patients operated with LGBP. Patients with preoperative BED were identified by Questionnaire on Eating and Weight Patterns-Revised and results were evaluated by BAROS system.**

Results: **Prevalence of BED was 21.4%. Median postoperative follow-up was 12 months. BED patients experienced after LGBP lower rates of resolution of hypertension (42.9% *vs.* 92.9%; p = 0.025) and were complicated by stenosis of the gastrojejunal anastomosis more frequently (70% *vs.* 17.1%; p = 0.003) than patients without binge eating. No differences in BAROS score, percentage of excess weight loss and quality of life were found.**

Conclusions: **BED patients experienced after LGBP lower rates of resolution of hypertension and higher rates of anastomotic stenosis. BAROS score, weight loss and quality of life are comparable to that of patients without BED.**

(*Nutr Hosp.* 2013;28:618-622)

DOI:10.3305/nh.2013.28.3.6251

Key words: *Binge eating disorder. Gastric bypass. Morbid obesity. Hypertension.*

Correspondence: Eduardo García Díaz.
Servicio de Endocrinología y Nutrición.
Hospital Dr. José Molina Orosa.
C/ Las Cruces, 6.
38320 La Laguna, Tenerife, Spain.
E-mail: eduardogd@terra.es

Recibido: 20-X-2012.
1.ª Revisión: 23-X-2012.
Aceptado: 8-I-2013.

EFECTO DEL TRASTORNO POR ATRACÓN EN LOS RESULTADOS DEL BYPASS GÁSTRICO LAPARÓSCOPICO EN EL TRATAMIENTO DE LA OBESIDAD MÓRBIDA

Resumen

Introducción: **Los estudios previos sobre el efecto del trastorno por atracón en los resultados del tratamiento de la obesidad mediante bypass gástrico por vía laparoscópica (LGBP) son controvertidos. Faltan trabajos que comparen a pacientes con y sin trastorno por atracón según el sistema BAROS, que incluye: el porcentaje de sobrepeso perdido, la evolución de las comorbilidades, la calidad de vida y las complicaciones.**

Objetivo: **Estudiar si el trastorno por atracón predispone a peores resultados tras el LGBP en los términos que definen el sistema BAROS.**

Métodos: **En un estudio de cohortes con 45 obesos mórbidos intervenidos mediante LGBP, se identificó a los pacientes con trastorno por atracón prequirúrgico mediante el Questionnaire on Eating and Weight Patterns-Revised y se valoró sus resultados según los parámetros incluidos en el sistema BAROS.**

Resultados: **El 21,4% de los pacientes presentaban trastorno por atracón. La mediana de seguimiento postoperatorio fue 12 meses. Los pacientes con trastorno por atracón presentaron menor tasa de resolución de la hipertensión arterial (42,9% frente a 92,9%; p = 0,025) y mayor frecuencia de estenosis de la anastomosis gastroyeyunal (70% frente al 17,1%; p = 0,003) que los pacientes sin trastorno por atracón. No se encontraron diferencias entre los grupos con y sin trastorno por atracón respecto al porcentaje de sobrepeso perdido, calidad de vida y puntuación global BAROS.**

Conclusiones: **Los obesos con trastorno por atracón presentan tras el LGBP menores tasas de resolución de la hipertensión arterial y se complican más frecuentemente con una estenosis de la anastomosis gastroyeyunal. La valoración BAROS, la pérdida de peso y la calidad de vida son equiparables a la de los pacientes sin trastorno por atracón.**

(*Nutr Hosp.* 2013;28:618-622)

DOI:10.3305/nh.2013.28.3.6251

Palabras clave: *Trastorno por atracón. Bypass gástrico. Obesidad mórbida. Hipertensión.*

Abbreviations

BAROS: Bariatric Analysis and Reporting Outcome System.

LGBP: Laparoscopic gastric bypass.

BMI: Body mass index.

NBE: No binge eating disorder or fewer than 1 episode of binge per week.

EWL: Percentage of excess weight loss.

QEWP-R: Questionnaire on eating and weight patterns-revised.

BED: Binge eating disorder.

Introduction

Laparoscopic gastric bypass (LGBP) is considered the procedure of choice for obese patients who meet the criteria for bariatric surgery, especially those with a body mass index (BMI) ≤ 50 kg/m^2.[1] In recent years interest in finding predictors of outcomes of LGBP, to guide the selection of appropriate candidates, is increasing. It has been proposed that one of these predictors could be the presence of certain disorders of eating behavior, such as binge eating disorder (BED). In a previous study using the Spanish version of the Questionnaire on Eating and Weight Patterns-Revised (QEWP-R) as a method of diagnostic assessment, BED was identified in the 25.9% of morbidly obese patients operated with LGBP.[2]

Studies about the effect of BED on the outcomes of LGBP are controversial. Latner et al. followed their patients for a period of 16 months and concluded that BED predicts weight loss.[3] Sallet et al. reported that BED is associated with poorer weight loss at 2-years follow-up.[4] Alger-Mayer et al. observed that BED was not predictive of poor weight loss outcomes in patients up to 6 years after LGBP.[5] Differences in percentage of excess weight loss (EWL) at 6 months after surgery reported by Green et al. (46.8% for BED and 41.2% for those without BED) were statistically significant, but the authors describe these differences as clinically insignificant.[6]

This controversy is added to the lack of studies comparing patients with and without BED according to the Bariatric Analysis and Reporting Outcome System (BAROS),[7] reference method which measures weight loss, correction of comorbidities, improvement in quality of life and complications. These limitations determine that the current practice with BED patients is very variable: 20% are operated, in 27.3% surgery is delayed until improvement of the disorder and in 45.3% attitude depends on severity of the disorder.[8]

The objective of this study was to assess whether patients with at least one binge episode per week have worse outcomes after LGBP than those without BED, in terms of EWL, resolution of comorbidities, surgical complications, quality of life and BAROS overall score.

Methods

We conducted a prospective cohort study of 45 morbidly obese patients undergoing LGBP by the same surgical team, between January 2010 and February 2012, in the Canary Universitary Hospital, whose geographic area of reference is the north of the island of Tenerife and La Palma in the Canary Islands. All patients provided written informed consent and were given an information sheet. Before surgery, patients visited the Nutrition Consultation of the same hospital, in order to assess the weight and height, review the comorbidities and ensure that they met the criteria for bariatric surgery proposed by the Spanish Society of Obesity Surgery in the year 2003: 1) BMI ≥ 40 kg/m^2, or BMI ≥ 35 kg/m^2 if associated comorbidities: type 2 diabetes mellitus, hypertension, dyslipidemia, cardiovascular disease, obstructive sleep apnea syndrome and severe osteoarthropathy. The clinical suspicion of obstructive sleep apnea syndrome was confirmed by polysomnography. 2) Failure of monitored conservative treatment. 3) Adequate psychological profile, once assessed by the Psychiatry Service.

Each patient completed the Spanish version of QEWP-R on the third day after surgery. This questionnaire includes 28 items which evaluate the presence and frequency of binge episodes, some additional criteria for the diagnosis of BED as defined in DSM-IV and possible purging (vomiting, laxatives, diuretics or slimming medication, fasting for 24 hours, compulsive exercise). It is completed in 10 minutes and has already been validated in obese patients operated with LGBP.[2] Patients were classified into 2 groups according to the results of the questionnaire: no binge eating disorder or fewer than 1 episode of binge per week (NBE) and BED, when they occurred at least once a week.

At 6, 12, 18 and 24 months after the LGBP, we proceeded to assess weight, review cardiovascular risk factors, ask about possible complications related to surgery, carry out basic analytical study with lipid profile and monitor potential deficits of iron, calcium, vitamin D, folic acid and vitamin B_{12}, to replace them in specific cases. Nutrition education begun in the preoperative period was continued by Nursing staff. Data were collected in a notebook previously designed for this purpose and BAROS[7] was filled, as indicated in table I. This facilitates making comparisons between different working groups and examines the 4 important aspects of the outcomes after bariatric surgery: weight loss, changes in comorbidities, complications and quality of life. To fill in the quality of life questionnaire we contacted patients by telephone.

Depending on the presence or absence of BED, we explored the BAROS score and EWL at 6, 12, 18 and 24 months, the percentage of resolution or improvement of diabetes, hypertension and dyslipidemia in the last visit to the Nutrition Consultation, the points awarded based on improvement of comorbid condition, the presence or absence of complications and the

Table I
Evaluation of outcomes of laparoscopic gastric bypass according to the BAROS

	Score awarded	*Condition*	
Percentage of excess weight loss (EWL)*	-1	Increase of weight	
	0	EWL = 0-24%	
	+1	EWL = 25-49%	
	+2	EWL = 50-74%	
	+3	EWL = 75-100%	
Comorbidities†	-1	Worsening	
	0	No changes	
	+1	Improvement, without resolution	
	+2	Resolution of 1 mayor comorbidity, improvement of minor comorbidities	
	+3	Resolution of all mayor comorbidities, improvement of minor comorbidities	
Complications‡	-0.2	Each minor complication	
	-1	Each major complication	
	-1	Each surgical revision	
Quality of life (questionnaire of Moorehead-Ardeldt)§	-3 a -2.1	Much worse	
	-2 a -1.1	Worse	
	-1 a +1	No changes	
	+1.1 a +2	Better	
	+2.1 a +3	Much better	
		With comorbidities	*Without comorbidities*
Final evaluation (Sum of 4 previous sections)	Failure	-3 a 1	0 or less
	Fair	> 1-3	> 0-1.5
	Good	> 3-5	> 1.5-3
	Very good	> 5-7	> 3-4.5
	Excellent	> 7-9	> 4.5-6

*EWL = (baseline weight-current weight)/(baseline weight-ideal weight) × 100 Considering ideal a BMI of 21 kg/m^2 in the case of women and 22 kg/m^2 in the case of men, ideal weight is calculated as the square of height in meters multiplied by 21 or 22, according to the sex.

†A major comorbidity is resolved when its control has been achieved without medication. Minor comorbidities studied were fatty liver, gallstones, gastroesophageal reflux, menstrual disorders and varicose veins.

‡Complications were classified as early if they occurred in the first 30 days after the bypass, as late if they occurred after these initial 30 days and as major in the case of life threatening or need to surgical revision.

§This questionnaire studies the self-esteem, physical activity, social activity, work activity, sexual activity and attitude toward food. Patients assessed all these items on a scale ranging from -0.5 to +0.5. At the end the points for each item were added up.

points achieved with regard to the quality of life questionnaire. Results of quantitative variables were expressed as the median and range (minimum-maximum), categorical variables as frequencies and percentages. We used the Mann-Whitney test for quantitative variables and the chi-square or Fisher's exact as appropriate for categorical variables. Statistical analysis of data was performed using SPSS version 17.0 (Chicago, Ill). A significance level of $p < 0.05$ bilateral was fixed for all tests.

Results

The outcomes in 42 patients out of the 45 included in the initial sample were analyzed. The median postoperative follow-up was 12 months (6-24). Among the 3 excluded, 2 stopped attending and 1 never went to the Nutrition Consultation after LGBP. Baseline characteristics were: mean age 40 ± 11 years, percentage of women 71.4%, mean BMI 44.4 ± 4.6 kg/m^2, 21.4% diabetic, 52.4% hypertensive, 26.2% dyslipidemic, 7.1% with cardiovascular disease, 21.4% with obstructive sleep apnea syndrome, 14.3% with severe osteoarthropathy. 28.5% had a history of depression. We identified 9 patients with BED (21.4%): binge eating occurred once a week in 5 patients and twice a week in the other 4. No differences in baseline characteristics between BED and NBE patients.

The outcomes of LGBP according to the BAROS at 6, 12, 18 and 24 months in the whole sample and in the BED and NBE groups are shown in table II. No differences were found between groups.

The evolution of EWL in BED and NBE patients was as follows: at 6 months (51.3% [38.9-70.4] *vs.* 54.7% [38-85]; p = 0.29), at 12 months (62% [41.2-88.5] *vs.* 71.7% [33.2-93.9]; p = 0.22), at 18 months (59.7% [38.4-97.3] *vs.* 68.2% [25.9-97.3]; p = 0.74) and at 24 months (27.8% [27.8-27.8] *vs.* 63% [29.2-82.5]; p = 0.11).

The following rates of resolution of major comorbidities after LGBP were obtained in BED and NBE patients, respectively: diabetes 100% *vs.* 66.7% (p = 0.5), hypertension 42.9% *vs.* 92.9% (p = 0.025), dyslipidemia 33.3% *vs.* 50% (p = 0.71). BED patients experienced after LGBP lower rates of resolution of all comorbidities than NBE patients (33.3% *vs.* 42.4%; p = 0.034).

Regarding early complications, there were 3 leakage at anastomosis (6.6%), 3 haemorrahages (6.6%) and 5 surgical wound infections (11.1%). Concerning late complications, there were 13 stenosis of anastomosis (28.8%), 1 intestinal obstruction (2.2%) and 7 cholelithiasis (15.5%). A total of 3 early surgical revisions, 2 late surgical revisions and endoscopic dilatation of all anastomotic stenosis were performed. Vitamin B_{12} deficiency required parenteral supplementation in 3 patients (6.6%), the rest of nutritional deficits were replaced by oral supplementation: 11 cases required iron (24.4%), 5 folic acid (11.1%), 11 calcium (24.4%) and 5 vitamin D (11.1%). BED patients were complicated by stenosis of the gastrojejunal anastomosis more frequently than NBE patients (70% *vs.* 17.1%; p = 0.003).

The median BAROS score for quality of life was 2.15 (-0.3-3). These medians and ranges were achieved for each quality of life axis: 0.4 (-0.1-0.5) for physical activity, 0.4 (-0.3-0.5) for self-esteem, 0.3 (-0.1-0.5) for attitude towards food, 0.3 (-0.5-0.5) for work acti-

Table II
Outcomes of laparoscopic gastric bypass according to the BAROS at 6, 12, 18 and 24 months in patients with and without preoperative binge eating

	Total	*NBE**	*BED†*	*p*
6 months — n (%)	n = 42	n = 33	n = 9	
Fair	3 (7.5)	2 (6)	1 (11.1)	
Good	14 (32.5)	11 (33.3)	3 (33.3)	0.96
Very good	14 (32.5)	11 (33.3)	3 (33.3)	
Excellent	11 (27.5)	9 (27.2)	2 (22.2)	
12 months — n (%)	n = 33	n = 26	n = 7	
Fair	2 (6)	2 (7.7)	0 (0)	
Good	8 (24.4)	5 (19.2)	3 (42.9)	0.49
Very good	8 (24.2)	6 (23.1)	2 (28.6)	
Excellent	15 (45.4)	13 (50)	2 (28.6)	
18 months — n (%)	n = 20	n = 14	n = 6	
Fair	2 (10)	2 (14.3)	0 (0)	
Good	4 (20)	2 (14.3)	2 (33.3)	0.63
Very good	6 (30)	4 (28.6)	2 (33.3)	
Excellent	8 (40)	6 (42.9)	2 (33.3	
24 months — n (%)	n = 11	n = 10	n = 1	
Fair	1 (9)	1 (10)	0 (0)	
Good	4 (36.3)	3 (30)	1 (100)	0.59
Very good	2 (18.1)	2 (20)	0 (0)	
Excellent	4 (36.3)	4 (40)	0 (0)	

*No binge eating disorder or fewer than 1 episode of binge per week.
†Binge eating disorder, subclinical (1 binge eating per week) or clinical (2 or more binge eating per week).

vity, 0.4 (-0.1 - 0.5) for social activity and 0.35 (-0.5-0.5) for sexual activity. No differences in test scores for quality of life between BED and NBE patients.

Discussion

In this paper we have tried to show that BED patients experienced after LGBP lower rates of resolution of hypertension and were complicated by stenosis of the gastrojejunal anastomosis more frequently. No differences in BAROS score, EWL and quality of life were found. These results correspond to a median postoperative follow-up of 12 months.

The finding that preoperative BED does not predict worse weight loss after LGBP is comparable to that reported by Bocchieri-Ricciardi et al., which followed their patients for 18 months and, like us, used the QEWP-R as diagnostic method.[9] Alger-Mayer et al. reached the same conclusion, after a 6-year postoperative follow-up and using another method, the Binge Eating Scale.[5] However Sallet et al. found that BED is associated with poorer weight loss at 2-year follow-up[4]; this group assessed lifetime prevalence of BED, while the QEWP-R is limited to last 6 months and the Binge Eating Scale refers to the present moment. Not considering postoperative presence of BED, which has been described in 51% of patients[10] and is correlated with greater weight regain,[11] could be a limitation of our study. The assessment of the outcomes according to the BAROS could be an advantage. To our knowledge, this is the first study about the outcomes of LGBP in BED patients that, by using this standardized system, has evaluated the evolution of comorbidities and the complications in this group of patients.

A previous study reported that obese patients with a history of depression experienced after LGBP lower rates of resolution of comorbidities.[12] We believe that the finding that BED patients have lower rates of resolution of hypertension may have multiple implications. 40% of patients who undergo LGBP expect the resolution of their hypertension and this expectation is one of the main motivating factors for choosing this procedure.[13] Improvement of cardiovascular risk estimated by the Framingham algorithm, from 4.5% before LGBP to 1% at 2 years after surgery,[14] may be less significant in patients with lower resolution rates of hypertension. These lower resolution rates also have been observed in patients with longer preoperative duration of hypertension[15] or with vitamin D depletion.[16]

Stenosis of the gastrojejunal anastomosis occurs in 3-27% of patients after LGBP and its etiology is multifactorial: stomal ulcer, reflux, ischemia of the suture, retraction of the scar, or an inadequate technique, may contribute to its appearance.[17] Busetto et al. observed that 5-year frequency of gastric pouch and esophageal dilatation after laparoscopic adjustable gastric banding was significantly higher in binge eaters than in non-binge eaters.[18] The finding that BED also is associated to a higher frequency of anastomotic stenosis in patients undergoing LGBP could justify a closer postoperative monitoring of these patients.

A research effort is necessary to clarify what is the most effective treatment of BED, before and after LGBP. Ashton et al. reported that positive responders to brief cognitive behavioral group treatment for BED lost more weight at 6 and 12 months postoperatively.[19] Future studies could further explore whether this psychological treatment also results in a better evolution of comorbidities and less complications.

Conclusion

BED patients experienced after LGBP lower rates of resolution of hypertension and higher rates of anastomotic stenosis. BAROS score, weight loss and quality of life are comparable to that of patients without BED.

References

1. Menéndez P, Gambi D, Villarejo P, Cubo T, Padilla D, Menéndez JM et al. Quality indicators in bariatric surgery. Weight loss valoration. *Nutr Hosp* 2009; 24 (1): 25-31.
2. Díaz EG, Folgueras TM, Morcillo L, Jiménez A. Diagnostic and psychopathologic evaluation of binge eating disorder in gastric bypass patients. *Nutr Hosp* 2012; 27 (2): 553-7.
3. Latner JD, Wetzler S, Goodman ER, Glinski J. Gastric bypass in a low-income, inner-city population: eating disturbances and weight loss. *Obes Res* 2004; 12 (6): 956-61.
4. Sallet PC, Sallet JA, Dixon JB, Collis E, Pisani CE, Levy A et al. Eating behaviour as a prognostic factor for weight loss after gastric bypass. *Obes Surg* 2007; 17 (4): 445-51.
5. Alger-Mayer S, Rosati C, Polimeni JM, Malone M. Preoperative binge eating status and gastric bypass surgery: a long-term outcome study. *Obes Surg* 2009; 19 (2): 139-45.
6. Green AE, Dymek-Valentine M, Pytluk S, le Grange D, Alverdy J. Psychosocial outcome of gastric bypass surgery for patients with and without binge eating. *Obesity Surgery* 2004; 14 (7): 975-85.
7. Oria HE, Moorehead MK. Updated bariatric analysis and reporting outcome system (BAROS). *Surg Obes Relat Dis* 2009; 5 (1): 60-6.
8. Devlin MJ, Goldfein JA, Flancbaum L, Bessler M, Eisenstadt R. Surgical management of obese patients with eating disorders: a survey of current practice. *Obes Surg* 2004; 14 (9): 1252-7.
9. Bocchieri-Ricciardi LE, Chen EY, Munoz D, Fischer S, Dymek-Valentine M, Alverdy JC et al. Pre-surgery binge eating status: effect on eating behavior and weight outcome after gastric bypass. *Obes Surg* 2006; 16 (9): 1198-204.
10. Kruseman M, Leimgruber A, Zumbach F, Golay A. Dietary, weight, and psychological changes among patients with obesity, 8 years after gastric bypass. *J Am Diet Assoc* 2010; 110 (4): 527-34.
11. Kofman MD, Lent MR, Swencionis C. Maladaptive eating patterns, quality of life, and weight outcomes following gastric bypass: results of an Internet survey. *Obesity* 2010; 18 (10): 1938-43.
12. Díaz EG, Folgueras TM. Preoperative determinants of outcomes of laparoscopic gastric bypass in the treatment of morbid obesity. *Nutr Hosp* 2011; 26 (4): 851-5.
13. Karmali S, Kadikoy H, Brandt ML, Sherman V. What is my goal? Expected weight loss and comorbidity outcomes among bariatric surgery patients. *Obes Surg* 2011; 21 (5): 595-603.
14. Ocón Bretón J, García B, Benito P, Gimeno S, García R, López P. Effect of gastric bypass on the metabolic syndrome and on cardiovascular risk. *Nutr Hosp* 2010; 25 (1): 67-71.
15. Hinojosa MW, Varela JE, Smith BR, Che F, Nguyen NT. Resolution of systemic hypertension after laparoscopic gastric bypass. *J Gastrointest Surg* 2009; 13 (4): 793-7.
16. Carlin AM, Yager KM, Rao DS. Vitamin D depletion impairs hypertension resolution after Roux-en-Y gastric bypass. *Am J Surg* 2008; 195 (3): 349-52.
17. Espinel J, Pinedo E. Stenosis in gastric bypass: Endoscopic management. *World J Gastrointest Endosc* 2012; 4 (7): 290-5.
18. Busetto L, Segato G, de Luca M, de Marchi F, Foletto M, Vlanello M et al. Weight loss and postoperative complications in morbidly obese patients with binge eating disorder treated by laparoscopic adjustable gastric banding. *Obesity Surgery* 2005; 15 (2): 195-201.
19. Ashton K, Heinberg L, Windover A, Merrell J. Positive response to binge eating intervention enhances postoperative weight loss. *Surg Obes Relat Dis* 2011; 7 (3): 315-20.