



ORIGINAL ARTICLE

Frequency of complications that needs endoscopic treatment after bariatric surgery

Frecuencia de complicaciones que requieren tratamiento endoscópico después de cirugía bariátrica

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Abstract

Introduction: Obesity is a global health problem. Surgical treatment is currently considered the most effective treatment; however, the risk of postoperative complications reported that requiring endoscopic treatment is important. The aim of this study was to determine the incidence and type of complications following bariatric surgery performed at our center.

Methods: A retrospective study with patients whom underwent to bariatric surgery (gastro-jejunal anastomosis) was made. Descriptive statistics were used and differences between groups were analyzed using Student's *t* test for continuous variables and χ^2 for dichotomous variables.

Results: We included 92 patients with a mean age \pm SD of 38.5 ± 9.6 years, 71 (77.2%) were women. The body mass index \pm SD was 48.9 ± 9.3 . A total of 22 (23.9%) patients had complications but only 14 (15.2%) cases required endoscopic treatment. Of the complications candidates for endoscopic treatment, 12 (13%) were stenosis of gastro-jejunal anastomosis

Resumen

Introducción: El tratamiento quirúrgico para la obesidad se considera el tratamiento más efectivo. El riesgo de desarrollar complicaciones posoperatorias que requieran tratamiento endoscópico es importante. El objetivo del presente trabajo fue conocer la incidencia y tipo de complicaciones poscirugía bariátrica realizada en nuestro centro.

Métodos: Estudio retrospectivo de pacientes sometidos a derivación gástrico-yeyunal. Se utilizó estadística descriptiva y se analizaron las diferencias entre los grupos.

Resultados: Se incluyó a 92 pacientes con edad media de 38.5 ± 9.6 años; 71 (77.2%) mujeres. El índice de masa corporal promedio fue 48.9 ± 9.3 . Un total de 22 (23.9%) pacientes presentaron alguna complicación, de las cuales 14 (15.2%) requirieron tratamiento endoscópico. De las complicaciones posoperatorias candidatas a tratamiento endoscópico, 12 (13%) fueron estenosis de la gástrico-yeyuno anastomosis y dos (2.2%) úlceras en el sitio de la anastomosis. El tratamiento utilizado fue la dilatación neumática en el caso de las estenosis e inyección de adrenalina para las úlceras. La mediana de sesiones endoscópicas fue cuatro (1 a 11), un solo paciente

and 2 (2.2%) were ulcers at the anastomosis site. The treatment used was pneumatic dilation for strictures and injection of adrenaline at 1:10,000 dilutions for ulcers. The median number of endoscopic sessions required was 4 (1-11). Only one patient required 11 sessions and when we remove this data the median was 2 (1-4). We had two complications secondary to endoscopic treatment. There was no mortality related to endoscopic treatment.

Conclusion: The postoperative complications requiring endoscopic treatment after GJA are frequent. Endoscopic therapy is effective and safe. There were no differences between patients whom developed complications and those did not develop.

Keywords: Gastrojejunal anastomosis; Endoscopic treatment; Mexico.

Introduction

The number of bariatric surgeries performed worldwide every year continues to grow because of the increased number of morbidly obese individuals that fail medical treatment and the increased awareness of the safety and success rate of bariatric surgery.¹ However, as expected and as a result of the above mentioned the number of complications of bariatric surgery continues to grow as well.^{2,3} Stricture formation at the gastrojejunal anastomosis (GJA) is a relatively common complication after laparoscopic Roux-en-Y gastrojejunal bypass (LRYGB) that is reported in 3% to 27% of patients.² The aim was to report the frequency in our institution of complications after bariatric surgery that needed endoscopic treatment.

Methods

A retrospective analysis of data obtained prospectively was made. Patients seen in our department that was undergone to bariatric surgery from May 2004 to May 2007 were included. All patients have a GJA by LRYGB. In every case, before the first procedure, complete blood count, INR, and prothrombin time were obtained for all patients to minimize the risk of bleeding. An experienced endoscopist in EGD performed the procedure in all cases. All procedures for an individual patient performed in the same endoscopy center by the same team. Written informed consent was obtained for each patient and the

requirió 11 sesiones, al suprimir ese dato la mediana fue dos (1 a 4). Un paciente presentó perforación como complicación endoscópica y uno más sangrado del sitio de la dilatación que requirió inyección de adrenalina. No existió mortalidad relacionada con el tratamiento endoscópico.

Conclusiones: El número de complicaciones posteriores a la gastroyeyuno anastomosis que requieren tratamiento endoscópico es alto. El tratamiento endoscópico es efectivo y seguro. No existen diferencias en las características evaluadas entre los pacientes que desarrollan complicaciones y aquellos que no las desarrollan.

Palabras clave: Gastroyeyuno anastomosis; endoscopia, México.

procedures were performed under deep sedation with midazolam, propofol and phentanyl by an anesthetist. A regular diagnostic endoscope was initially used GIF-100, GIF-130, GIF-140 or GIF-160 (Olympus, American Corp., Melville, NY, USA). Injection was made with epinephrine alone on a 1:10 000 dilutions. Supplemental oxygen was provided by means of nasal catheter. All patients were hospitalized after the procedure for at least 2 hours for surveillance of possible complications.

Statistical analyses: Descriptive statistics were used for demographic variables. Results are expressed as mean \pm standard deviation or medians and ranges, according to distribution. Comparison of quantitative data was performed using the Student's *t*-test. The differences between proportions of categorical data were obtained by the Fisher exact test when the number of expected subjects was less than five and by the *Chi-square* test otherwise. A *p* value < 0.05 was considered statistically significant. All statistical analyses were conducted using the statistics program SPSS/PC version 12.0 (Chicago, IL, USA)

Results

A total of 92 patients were included with a mean \pm SD of 38.5 ± 9.6 years. Seventy-one (77.2%) were female. The body mass index (BMI) was 48.9 ± 9.3 . The global complications were present in 22 (23.9%) patients with 22 cases, but only 14 (15.2%) patients needed of endoscopic treatment. In **Table 1** are

○ **Table 1.** Characteristics of the included patients according to complications development after endoscopic treatment.

Characteristic	Patients with complications candidates to ET N = 14 X ± SD	Patients without complications candidates to ET N = 78 X ± SD	p value
Age, years	37 ± 7.5	38.8 ± 10	0.55
BMI, kg/m ²	50.7 ± 14	48.6 ± 8.3	0.43
Weight, kg	140.4 ± 48.6	131.4 ± 28.7	0.35
Hemoglobin, g/dL	13.7 ± 2.7	14.3 ± 1.5	0.21
Albumin, g/dL	3.4 ± 0.5	3.6 ± 0.4	0.28
ALT, UI	31.7 ± 20	31.9 ± 17.3	0.96
AST, UI	29.7 ± 16.9	28.5 ± 11.9	0.74
Women, n (%)	10 (71)	61 (78)	0.57

ET: Endoscopic treatment; BMI = Body mass index; ALT = alaninaminotranferase; AST = aspartatoamin transferase.

shown the characteristics of included patients according to presence of complications.

Of the total of post-surgical complications candidates for endoscopic treatment 12 (13%) cases were stenosis of gastrojejunal anastomosis and 2 (2.2%) cases with ulcers at the anastomotic site. The endoscopic treatment used was pneumatic dilation with balloon for strictures and injection of adrenaline at 1:10,000 dilution for ulcers. The median number of required endoscopic sessions was 4 (1-11). Only one patient required 11 endoscopic sessions, when we removed this data the median of endoscopic sessions were 2 (1-4). All patients were asymptomatic after the last endoscopic session. One patient had perforation as a complication of endoscopic treatment and one patient with bleeding of the anastomosis site that required treatment with injection of adrenaline. There was no mortality related to endoscopic treatment.

Discussion

In this study we found that the frequency of post-bariatric surgery complications requiring endoscopic treatment is high. Our data are consistent with data from previous studies.

In previous studies the most common complications are stenosis of the anastomosis and the presence of ulcers in this level. Our results are consistent with these statements. In relation to the frequency of development of stenosis, the data vary from 3% to

27% according to different studies.⁴⁻⁷ Our results are within the ranges reported. The treatment used in our patients (pneumatic dilation), is consistent with that used by other authors and has a proper success rate with low complications.² Although in different studies have reported a high frequency of ulcers at the anastomosis in patients with stenosis of the same, in our series had no case in which there are two complications.⁵ Marginal ulcers occur at the gastrojejunal anastomosis, usually on the intestinal side, and are thought to arise from a number of factors, including local ischemia, staple-line disruption, effects of acid on exposed intestinal mucosa, and the presence of staples or suture material. Factors that increase the risk of marginal ulcers include smoking and nonsteroidal anti-inflammatory drug use, whereas proton pump inhibitor use appears to decrease the risk. The true incidence of a marginal ulcer after an RYGB is uncertain, with reports that range from 1% to 36%.² In our series, the marginal ulcers was the second most common complication and all our patients were treated with only one endoscopic method without recurrence. Others complications after bariatric surgery as GERD, fistulas, cholelithiasis, dumping syndrome, diarrhea, nutritional deficiencies, and chronic anemia have been reported but they did not presented in our series.

Some limitations of our study are: 1). although the patients were enrolled as a prospective cohort, the conclusions of this study are limited by the fact that



they are based on retrospective analysis; and, 2). the medium sample size. It is important to mention that despite retrospective design and sample size, this is an important world-wide topic and information from other Latin American centers will be useful to improve quality attention in this kind of patients.

In conclusion post-GJA complications requiring endoscopic treatment are frequent. Endoscopic therapy is effective and safe in this group. There were no differences between patients assessed who developed complications and those who did not.

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