

Multidisciplinary approach to morbidly obese patients undergoing surgical treatment by adjustable gastric banding

Abordagem multidisciplinar de pacientes obesos mórbidos submetidos a tratamento cirúrgico pelo método da banda gástrica ajustável

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A B S T R A C T

Objective: To evaluate the outcome of the surgical treatment of morbidly obese patients by Adjustable Gastric Banding (AGB) followed in a multidisciplinary clinic. **Methods:** We studied 20 patients with BMI ranging from 36.6 to 72 kg/m² ($X = 47.51 + / - 6.1$) and aged between 36 to 60 years, undergoing placement of AGB. Preoperative comorbidities were hypertension (nine), type II diabetes (four), severe sleep apnea (one), hypertriglyceridemia (four) and severe orthopedic problems (three). In the post-operative period patients were followed at a multidisciplinary clinic (surgeon, endocrinologist, psychiatrist and nutritionist). In the first six months, the orientation was of monthly visits for band adjustments and nutritional counseling. After six months the visits occurred every two or three months, as needed. **Results:** The operative time ranged from 40 to 180 minutes; hospital stay varied from one to ten days ($X = 36$ hours). Two patients required surgical reintervention for late complications: a rotation of the portal and a band superior slippage. Follow-up ranged from 28 to 36 months. The average weight loss was 29.26 kg \pm 8.8, or 24.37% \pm 6.1 of the original weight and 49.16% \pm 11.3 overweight. The average BMI ranged from 47.51 to 34.88. There was global improvement of comorbidities, markedly in the patients with greater weight loss. **Conclusion:** The results were satisfactory for most patients on the variables weight loss and improvement of comorbidities.

Key words: Obesity, morbid. Therapeutics. Surgery.

INTRODUCTION

The laparoscopic placement of an adjustable gastric band - AGB has been used as a surgical method for the treatment of morbid obesity for almost two decades^{1,2}. Its application principle is to implement the reduction in food intake by the establishment, without cutting the stomach, of an hourglass-like division of it into two chambers: the first small, the receptacle and the second, the rest of the stomach, where digestion proceeds. There is thus less food ingested and delayed transit from the receptacle to the second chamber of the stomach, with feeling of early satiety.

Gastric bands appeared in the early '80s and were made of materials such as Marlex and Dacron. They were placed by laparotomy and were not adjustable. Back in the middle of that decade the first silicon bands arose as a

novelty that brought the possibility of adjustment, allowing the calibration of the diameter of the ring³.

Since 1991, the development of the band laparoscopic placement technique gave momentum to the method, which became the most popular in Europe and Australia, arriving in Brazil in the late 90's.

In a meta-analysis, Buchwald et al.⁴ observed that the average loss of excess weight (% EWL) at late follow-up of patients undergoing the method was 47.5%, lower than the average loss seen with gastric bypass operations (60,5%) or with biliopancreatic diversion - BPD (70%). In contrast, the method-related mortality was lower (0.1% for AGB, 0.5% for the bypass, 1.1% for biliopancreatic diversion). As for the control of the main comorbidities the results with the band, bypass and BPD were, respectively: 1) type 2 diabetes - 80% x 91% x 75%; 2) hypertension - 70% x 85% x 75%; 3) sleep apnea - 95% x 80% x 85%;

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and 4) hypertriglyceridemia - x-55mg/dL, x-95 mg/dL, x-75mg/dL. One must consider the small number of studies with BPD and a significant number of well-controlled studies with the band composing that meta-analysis.

More recently, the same author specifically evaluated the control of type 2 diabetes, noting a late follow-up improvement or resolution of the disease in 55% of the patients operated by this method, though lower than the bypass's and DBP's rates⁵.

The advantages of this surgical method, when compared to others used in the treatment of obesity, are the possibility of progressive adjustment, easy reversibility (except in cases of gastric wall erosion of the band, when there is local inflammation and adhesions), lower morbidity and lower risk of surgical nutritional complications⁶.

On the other hand, because it is a purely restrictive method, it is the most dependent on patient compliance in following diet postoperatively. Thus, patients who are candy eaters, compulsive or binge eaters, as well as those with a more depressed profile and lower rates of quality of life (SF-36) tend to have less satisfactory results^{7,8}. Therefore, postoperative follow-up in multidisciplinary regimen (surgeon, endocrinologist, psychiatrist or psychologist and nutritionist) is of great importance in the selection and management of patients undergoing this surgical method, positively affecting weight loss⁹.

Our objective was to evaluate the results of surgical treatment of morbidly obese patients by AGB followed in a multidisciplinary clinic.

METHODS

We studied 20 patients (three men and 17 women) aged 22-60 years undergoing placement of AGB between May 2005 and January 2006.

We included patients with morbid obesity grade III (BMI e" 40 kg/m²) or II (BMI e" 35 kg/m²) associated with at least two comorbidities. Those identified in this series are listed in table 1.

In two patients the choice of surgical method occurred for particular needs: one patient had familial adenomatous polyposis, prior colectomy and duodenal polyposis requiring endoscopic control and one super-obese patient (BMI=62.2 kg/m²) with Cushing's Syndrome without a proper diagnosis who had in obesity a barrier to magnetic resonance imaging. The latter case was referred by the group of endocrinology who attended the patient and the procedure was recommended after thorough discussion of the case.

The remaining 18 patients were selected from the waiting list for bariatric surgery at the Hospital of the Faculty of Medicine, University of São Paulo, who opted for the method after the explaining meeting in which the

differences between the techniques were discussed and committed to the multidisciplinary follow-up.

Patients with previous gastric operations, patients with hiatal hernia larger than 2.0 cm and those with preferences for sweets by nutritional survey were excluded.

The patients signed a consent form approved by the Ethics in Research Committee (CAPPesq) under the number 1022-3.

All individuals underwent placement of AGB under general anesthesia by laparoscopy following the same surgical technique (via *pars flacida*), with five puncture sites in the abdominal wall. The adjusting portal was placed in the pre-sternal region in ten patients and in the left sub-costal area in the other ten. Concomitant cholecystectomy was performed in two individuals due to cholelithiasis.

Bands of two brands were used: Ethicon® in ten patients and Silimed® in the other ten.

All patients received prophylactic intravenous antibiotics (1.0g Cefoxitin 6/6 hours) for 24 hours and subcutaneous low molecular weight heparin (Clexane® 40 mg once a day) during hospitalization.

In the postoperative period they were followed at a multidisciplinary clinic. For the first six months, the orientation was monthly visits for band adjustments and nutritional counseling. After that visits occurred every two or three months, as needed.

The band adjustment is accomplished by infusion of saline through the adjustment portal. To that end, we used a 30x7 mm needle syringe, saline solution, non-sterile gloves, gauze and 70% alcohol for disinfection. The adjustment was performed without radiological control, in the office, following the protocol¹⁰ which uses a diagram to evaluate the degree of inflation of the band through the patients' food intake tolerance (Figure 1). Insufflation of the bands was done gradually, with small volumes each time, which varied depending on the band's brand and the patient's symptoms, in order not to cause dysphagia. After the adjustment the patient was asked to drink a glass of water to rule out dysphagia.

Special attention was paid to diet, with detailed food inquiry and nutritional guidance at each visit given by a nutritionist, who recommended an individualized hypocaloric diet for each patient, aiming daily caloric deficit from 600 to 1000 Kcal. The presence of symptoms such as dysphagia, vomiting, heartburn, coughing, intolerance to solid foods (especially meat) and/or preference for liquids,

Table 1 - Comorbidities identified in this series.

Comorbidity	Nº of patients
Arterial Hypertension	9/20
Type II Diabetes	4/20
Severe Sleep Apnea	1/20
Dislipidemia (hypertriglyceridemia)	4/20
Severe Orthopedic Problems	3/20

which imply too much restriction (too tight a band), was questioned at every visit.

Adequacy of medications for hypertension, diabetes and directed to other comorbidities was evaluated by endocrinologists in patients using them according to the variation of clinical and laboratory parameters.

Potential need for use of serotonergic medications such as fluoxetine and sertraline, as well as anti-obesity drugs orlistat and sibutramine, was considered by the endocrinologist and/or psychiatrist on the team.

RESULTS

The preoperative BMI ranged from 36.6 to 72 kg/m² (mean 47.51 +/- 6.1). Surgical time was 40 to 180 minutes. No patient had to stay in the ICU after the procedure. Hospitalization time ranged from one to ten days (mean 36 hours).

One patient had a postoperative complication in the first 30 days: deep venous thrombosis and acute renal failure in the postoperative period (the one hospitalized for 10 days). Two required surgical reintervention for late complications: a rotation of the portal (six months after placement) and a band superior slippage (one year). This same patient wanted the band to be removed one year after (two years after placement) due to food intolerance. She had lost 40% of the weight and the band was removed by laparoscopy without complications.

Follow-up ranged from 28 to 36 months. One patient was lost to follow-up after 12 months (never returned to the clinic), being excluded from the final analysis.

The average weight loss was 29.26 kg +/- 8.8, or 24.37% +/- 6.1 of the original weight and 49.16% +/- 11.3 of the excess weight (calculated from the Metropolitan table). The mean BMI changed from 47.51 to 34.88. Figure 2 shows the evolution of each patient's weight and figure 3, the evolution of BMI.

Regarding comorbidities, from the four diabetic patients, one stopped taking any medication and normalized HbA1c; two had significant reduction in HbA1c and the amount of medication required; one with a poor weight loss (13% of initial weight) had no improvement of diabetes.

Of the nine patients with Systemic Arterial Hypertension (SAH), two stopped taking medications and seven continued, but at lower doses than preoperatively.

Of the four patients with hypertriglyceridemia, two are within normal triglyceride levels (<150 mg/dL), one is borderline (183 mg/dL) and another has still high levels despite a reduction of 40% (212 mg/dL).

A patient with traumatic amputation of the lower limbs was referred for stent placement after losing 40 kg and two patients with severe osteoarthritis of the knee await operation for placement of knee prostheses, having lost 32 and 25 kg respectively.

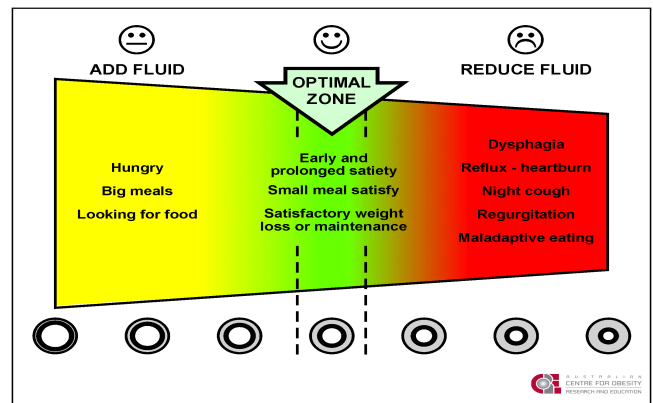


Figure 1 - Diagram to guide the degree of inflation.

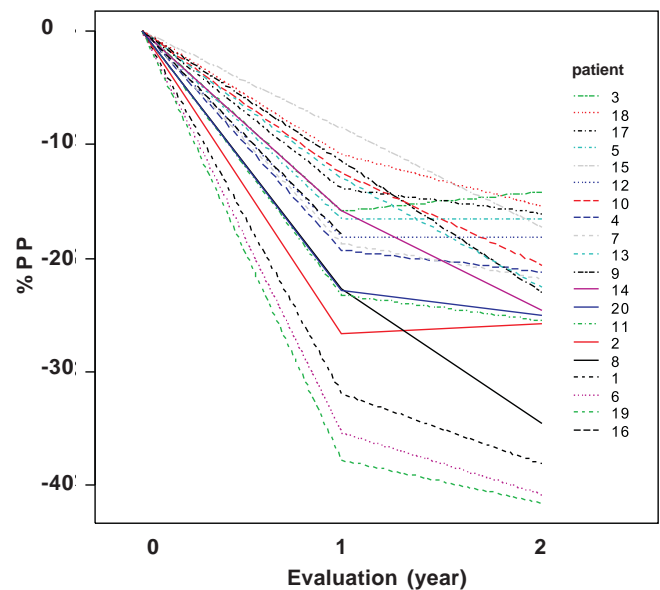


Figure 2 - Percentage of weight variation.

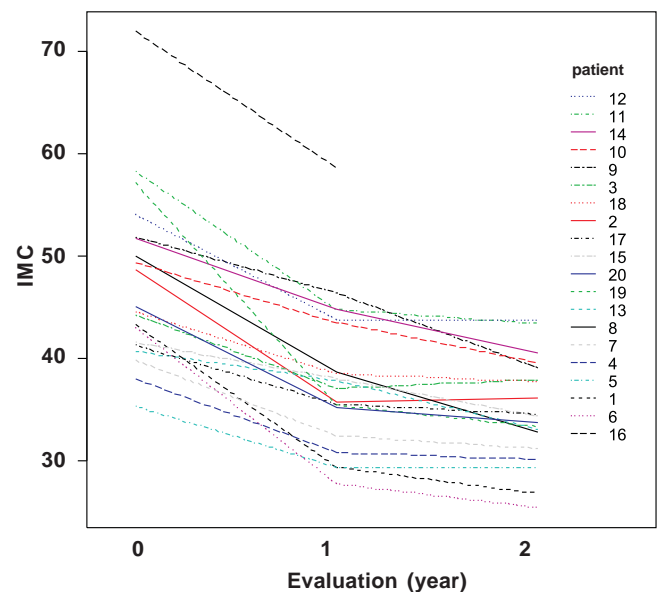


Figure 3 - BMI variation.

Six patients (30%) received combined therapy to control binge eating (sibutramine or fluoxetine).

DISCUSSION

There is still no consensus method to select patients in order to undergo an operation or other treatment for morbid obesity (restrictive, derivative or mixed). On the contrary, in most series of patients operated, the method of choice was solely based on the preference of the team¹¹.

Recently, evidence pointing to the benefits of duodenal diversion or stimulation of ileal to control diabetes, as occurs in gastric bypass or BPD, has led to preferential indication of these techniques in the treatment of obese patients with diabetes^{12,13}.

The adjustable gastric band started being used on a large scale in Europe in the early nineties¹. In Brazil, its use began at the end of that decade and it became the method of introduction of many surgeons to bariatric surgery¹⁴. However, in most series the results were below those reported by the services in Europe and Australia, where the method has come to represent 90% of surgical procedures to treat obesity.

Some factors may have contributed to this situation, such as higher surgical complication rates, ill-indicated procedures, inadequate postoperative follow-up with high loss to follow-up and "competition" with gastric bypass, with unrealistic expectations of similar results in the same range time.

Over time the method became less and less used in our area, representing less than 3% of bariatric procedures performed.

Conversely, even after the introduction of laparoscopic gastric bypass from the year 2000 on, the band remains the most commonly performed method in countries such as France¹⁵, Italy¹⁶, Germany¹⁷ and Australia¹⁸. The main appeals for the use of this method are low morbidity, reversibility, low complication rate and satisfactory resolution of nutritional comorbidities, despite lower weight loss.

In the U.S., the method only commenced being used in clinical protocols monitored by the FDA since 2001, after numerous animal studies and analysis of international clinical trials that proved the safety of the method. Since 2003 its use has been allowed and now bands represent 35% of operations for treating obesity in that country¹⁹.

Adjustable gastric banding is a clinical-surgical treatment. That is, it begins with the placement of the band, but it is the postoperative clinical conduction that will determine success. How and when to adjust, dietary guidance, recognition and treatment of eating disorders and of concomitant comorbidities are measures applied in the doctor's office based on clinical parameters. The early identification and treatment of complications (band slippage, leakage of fluid through the system or band erosion into the stomach) are important parts of the monitoring of these patients by clinicians and surgeons and are vital to achieve the best results.

In this study, we tried to organize a model of care that would meet this need. In selecting patients, we included those who were on the waiting list for obesity surgical treatment and who voluntarily presented themselves for this type of surgery after the explanatory meeting. Subjects were excluded if they showed a weak commitment to the proposed follow-up (through the psychological evaluation), if they had problems to come to the hospital as often as necessary for adjustments and if they were sweet eaters. Still, there were two cases of follow-up loss (10%). We did not exclude patients with diabetes and/or very high BMI so that the sample was representative of the profile of patients treated and operated normally in our institution. These patients were those who had worse results (less weight loss, less control of comorbidities).

During follow-up, two patients needed surgical reintervention: one under local anesthetic to reposition the dislocated adjustment portal, and one for repositioning of a slipped band. There were no serious surgical complications.

The results were satisfactory for most patients in the categories of weight loss and improvement of comorbidities and similar to those reported in the literature by major referral centers.

R E S U M O

Objetivo: Avaliar o resultado do tratamento cirúrgico de pacientes obesos mórbidos pelo método da BGA, acompanhados em ambulatório multidisciplinar. **Métodos:** Foram estudados 20 pacientes com IMC que variou de 36,6 a 72 kg/m² (X=47,51 +/- 6,1) e idade entre 36 a 60 anos, submetidos à colocação de BGA. As comorbidades encontradas no pré-operatório foram hipertensão arterial (nove), diabetes tipo II (quatro), apneia do sono grave (um), hipertrigliceridemia (quatro) e problemas ortopédicos graves (três). No seguimento pós-operatório os pacientes foram atendidos em ambulatório multidisciplinar (cirurgião, endocrinologista, psiquiatra e nutricionista). Nos primeiros seis meses, a orientação foi de visitas mensais para ajustes da banda e orientação nutricional. Após, as visitas ocorreram a cada dois ou três meses, conforme a necessidade. **Resultados:** O tempo cirúrgico variou de 40 a 180 minutos; o de internação de 1 a 10 dias (X = 36 horas). Duas pacientes necessitaram reintervenção cirúrgica por complicações tardias: uma rotação do portal e um deslizamento superior da banda. O tempo de seguimento variou de 28 a 36 meses. A perda de peso média foi de 29,26 kg +/- 8,8, ou 24,37% +/- 6,1 do peso inicial e 49,16% +/- 11,3 do excesso de peso. O IMC médio variou de 47,51 para 34,88. Houve melhora global das comorbidades, mais acentuada nos pacientes com maior perda de peso. **Conclusão:** Os resultados obtidos foram satisfatórios para a maioria dos pacientes nos quesitos perda de peso e melhora das comorbidades.

Descritores: Obesidade mórbida. Terapêutica. Cirurgia.

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