

Long-term quality of life after vertical sleeve gastropasty

Avaliação da qualidade de vida tardia após gastropastia vertical

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A B S T R A C T

Objective: To evaluate the quality of life in patients undergoing vertical sleeve gastropasty. **Methods:** We conducted a historical cohort study including patients with morbid obesity in the Unified Health System (SUS), registered in the database of the General University Hospital, University of Cuiabá. All patients underwent vertical sleeve gastropasty and were followed for at least one year after the operation. The study variables were: quality of life, weight loss, improvement of hypertension and diabetes, and mortality. **Results:** The sample comprised 41 patients, 13 (31.7%) men and 28 (61.3%) women, mean age was 37 years, the average weight was 136.4 kg and mean BMI 50.3 kg/m²; mean follow-up was 19.1 months (12-32). There was a significant reduction in weight (96.7 kg, $p < 0.001$) and BMI (35.835 kg/m², $p < 0.001$). The rate of blood pressure decreased from 56% to 31.7%, and diabetes from 14.6% to 4.8% ($p < 0.001$). Quality of life improved in 92.5% of patients. **Conclusion:** There was an improvement in the quality of life in the majority of patients, achieved by means of weight loss and clinical improvement of diabetes and hypertension.

Key words: Outcome assessment (health care). Obesity. Weight loss. Gastropasty. Quality of life.

INTRODUCTION

Obesity is a universal disease of increasing prevalence that has been gaining alarmingly epidemic proportions, affecting more than one billion adults, one of the major public health problems of modern society^{1,2}. This epidemic is not restricted to industrialized societies and it is increasing in faster rates in developing countries².

The Brazilian Ministry of Health directs that obesity treatment should always be initiated with clinical measures through diet, psychotherapy, medication and exercise, being accompanied by a multidisciplinary team (endocrinologist, psychologist, psychiatrist, nutritionist and others) for at least two years. When there is therapeutic failure there is the option of surgical treatment for patients with associated chronic diseases (BMI between 35 and 40kg/m²) and/or morbidly obese (BMI above 40kg/m²)³.

Clinical management of obesity is difficult, for not only weight loss, but mainly conservation of achieved weight, is not possible for most morbidly obese⁴.

From the middle of the twentieth century on began the surgical treatment of obesity^{5,6}, which can be done with restrictive, disabsortive and mixed techniques^{7,8}.

The vertical sleeve gastropasty, a restrictive operation, was popularized by Gagner as the first stage to apply the duodenal switch operation in super-obese patients or patients with high surgical risk with promising results, noting improvement in comorbidities, fewer nutritional complications and good weight loss curve, and is currently recognized as an additional surgical option for the treatment of obesity^{9,10}.

The aim of this study was to assess the quality of life in patients undergoing vertical sleeve gastropasty.

METHODS

This was a clinical, observational, historical cohort of evaluation of therapeutic efficacy. The study was approved by the Ethics in Research Committee of the Federal University of Mato Grosso (UFMT), under number 179,015 - 12/20/2012.

The study population consisted of morbidly obese attended at the Unified Health System (SUS), registered on the electronic database of the General University Hospital (HGU) from the University of Cuiabá (UNIC) and assisted in the clinic of Bariatric Surgery in the period from May 2009 to February 2012.

Work conducted at the General University Hospital of the University of Cuiabá – HGU-UNIC, Cuiabá, Mato Grosso State – MT, Brazil.

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The operations were performed by the same surgical team and made via laparotomy, initiating gastric resection at a maximum of 6cm from the pylorus towards the angle of Hiss, with mechanical stapler and covering suture. The gastric chamber was calibrated with a 32 Fr. Fouchet catheter.

The main outcome variable of the study was quality of life (Moorehead-Ardelt quality of life questionnaire)^{11,12}, and secondly, the amount of weight loss after at least one year of operation, improved diabetes and hypertension, and postoperative mortality.

Oria and Moorehead sent a survey to surgeons and psychologists members of the American Society of Bariatric Surgery. After this initial work, and with the collaboration of Dr. Elizabeth Ardelt, from Salzburg, Austria, a questionnaire, called "Moorehead-Ardelt Quality of Life Questionnaire" was developed to be part of the BAROS Protocol (Bariatric Analysis and Reporting Outcome System), developed to analyze bariatric surgery treatment outcomes¹².

We defined as clinical improvement of diabetes and hypertension the suspension of medications.

The questionnaire consists of five questions about self-esteem, willingness to physical activity, social interaction, willingness to work, and sexual activity (Figure 1).

Each of the five questions of the quality of life questionnaire has five possible answers that generate a final value for each question. The sum of the amounts allocated to each of the five questions expressed the value of each individual case, ranging from -3 (lowest possible quality of life) to +3 (best possible quality of life). After that, we categorized the final values of the questionnaire into five classes of quality of life: severely decreased, decreased, minimal or no changes, improved and greatly improved (Table 1).

After collection, the data were compiled and the means were compared using analysis of variance for repeated measures (ANOVA). The chi-square test was used to compare categorical variables. The minimum accepted significance level was 5% ($p < 0.05$).

RESULTS

Fifty-eight patients were operated from May 2009 to February 2012. During outpatient follow-up there was a

loss of 17 patients. Therefore, for the study, the sample consisted of 41 patients, 13 men and 28 women. The age of patients ranged from 22 to 59 years, with an average of 37.1 ± 10.7 . The mean initial weight, BMI and follow-up are displayed in table 2. Obesity quantified by BMI before surgery was higher in men than in women ($p < 0.001$).

There was a significant drop in weight ($p < 0.001$). In line with the drop in weight, BMI decreased significantly ($p < 0.001$). However, the decrease in BMI was greater in women ($p < 0.001$) than in men (Table 3). At the start of treatment the male patients were significantly heavier and had a greater BMI than that of the female ones ($p < 0.001$).

Initially there were six patients on medication for diabetes and, after treatment, we observed a significant improvement in the operated patients ($p < 0.001$), a reduction of approximately one third of the initial cases (Table 3).

Preoperatively, 56% of patients were taking medication for hypertension, this percentage decreasing significantly ($p < 0.001$) in patients operated on (Table 3).

There was improvement in the quality of life in 92.5% of surgical patients (Table 4).

We highlight a case of complications (2.4%) of gastrointestinal fistula, located in the gastric antrum, which was successfully treated medically.

One patient (2.4%) died during follow-up due to pulmonary thromboembolism.

DISCUSSION

The analysis of our data showed that surgical treatment with vertical sleeve gastroplasty determined significant results in quality of life as well as in weight loss and improvement of comorbidities such as hypertension and diabetes.

The vertical sleeve gastroplasty is a new option for the treatment of obesity and is currently the fastest growing¹³ worldwide, as a technique that keeps the gastrointestinal continuity, with less surgical time, good weight loss curve, lack of dumping syndrome (found often in gastric bypass), access to the biliary tree, no excluded stomach segment in the cavity (hindering future diagnosis of tumors), absence of malabsorption (with low levels of nutritional complications), and allowing continued operation

Table 1 - Quality of life according to the score obtained in the *Moorehead-Ardelt*¹² questionnaire.

Classification of quality of life	Score Range
Severely Decreased	-3.00 a -2.25
Decreased	-2.00 a -0.75
Minimal or no changes	-0.50 a +0.50
Improved	0.75 a 2.00
Greatly Improved	2.25 a 3.00

with gastric bypass or with duodenal switch if weight loss failure occurs^{9,14-19}.

According to Freeza *et al.*²⁰ there was an average weight loss of 54-58% of the overweight five years after vertical gastropasty. Dapri *et al.*²¹ reported a reduction in mean BMI to 34.4 kg/m², similar to the results found in our study. Lakdawala *et al.* showed better results after one year of surgical treatment regarding weight loss, resolution of diabetes and hypertension, than those found after gastric bypass²².

Baltazar *et al.* described the vertical sleeve gastropasty as ideal for teenagers who need surgical treatment for obesity due to the low number of complications compared with gastric bypass or duodenal switch²³.

Won Woo Kim, Seoul, Korea, stated the vertical gastropasty has been performed in the Philippines, Taiwan, Singapore and Japan in patients with BMI below 35kg/m²¹⁷.

Zhang compared vertical sleeve gastropasty with gastric bypass and concluded that both promoted a similar reduction in sleep apnea, hyperlipidemia, hypertension,

diabetes and musculoskeletal diseases. However, gastric bypass showed better results in resolution of gastroesophageal reflux disease¹⁹.

The decrease in appetite occurs because the resection of the fundus results in the reduction of the levels of ghrelin and hence the secretion of growth hormone (GH)^{15,24}.

Weight loss of even 10kg offer clinical improvement of diabetes, hypertension, angina and lipid profile^{25,26}.

The results described in papers presented and those found in our study are similar with respect to weight loss, reduction of hypertension and diabetes and contribute to improving the quality of life of the patients.

Some disadvantages of Sleeve Gastropasty are: short follow-up of patients undergoing this new surgical procedure; fistula, of difficult treatment; and irreversibility^{14,15}.

The surgical complications most commonly encountered are: fistula, which usually occurs at the angle

Table 2 - Clinical variables (n = 41).

Variables	Mean ± Standard Deviation
Initial Weight (Kg)	136.4 ± 25.3
BMI (kg / m ²)	50.3 ± 8.1
Male BMI (kg / m ²)	54.4 ± 6.8
Female BMI (kg / m ²)	48.6 ± 8.1
Follow-up Time (months)	19.1 ± 6.5 (12 até 32meses)

BMI: Body mass index.

Table 3 - Evolution of weight, BMI, diabetes and hypertension.

Variables	Preoperative	Postoperative	p
Weight (kg) *	136.4	96.7 ± 18.9	p<0.001
BMI (kg/m ²) *	50.3	35.8 ± 6.7	p<0.001
Male BMI (kg/m ²)	54.4	38.8 ± 6.9	p<0.001
Female BMI (kg/m ²)	48.63	34.5 ± 6.3	p<0.001
Diabetes	6 (14.6%)	2 (4.8%)	p<0.001
Hypertension	23 (56%)	13 (31.7%)	p<0.001

*(mean / standard deviation)

BMI: Body mass index.

Table 4 - Distribution of patients according to the quality of life after treatment.

Classification of quality of life	Number of cases / (%)
Severely Decreased	0
Decreased	1 (2,5%)
Minimal or no changes	2 (5%)
Improved	7 (17,5%)
Greatly Improved	30 (75%)
Total	41 (100%)

of Hiss, is difficult to treat, with an incidence ranging from 0.7 to 5.3%^{14,17}; stenosis, especially in the angular notch, due to failure when preparing the gastric tube²⁷; portals infection; hernia; cholelithiasis 3.8%¹⁵; gastroesophageal reflux disease^{28,29}; and dilatation of the gastric pouch after two years of operation and weight regain^{15,28,30,31}.

The reduction of the stomach promotes reduced food intake and reduced parietal cells, resulting in decreased production of hydrochloric acid, which is important in the absorption of iron. There are vitamin B12, folic acid and iron deficiencies in 4.9% of patients, and anemia in 4.9%^{32,33}.

The weight regain after gastropasty is a concern among bariatric surgeons, mainly because it is still a procedure with short study time. Among the causes of regained weight we can highlight two main technical mistakes while performing the operation: use of catheters with diameter greater than 32 Fr. to calibrate the stomach and no resecting the antral region, initiating the gastropasty at the great gastric curvature more than six cm from the pylorus^{20,25,30,31}.

We understand that the approach to obesity should not just be restricted to surgical treatment. For the successful treatment of this disease to be reached it is necessary that the monitoring is done, since the preoperative

time, by a multidisciplinary team consisting of physician, nutritionist, psychologist, physiotherapist and physical trainer, conducting nutritional education, emotional support and initiating physical activities.

Mortality after sleeve gastropasty is small, usually less than 0.5%^{13,20,29}. In our study there was a case of death due to postoperative thromboembolism, despite the use of preventive measures and anticoagulant employee.

Obesity is a major risk factor for developing diabetes, with relative risk of 5% in men and 8-20% in women^{34,35}.

The resolution of type II diabetes consequent to the sleeve gastropasty is described by Cottan *et al.* and Silecchia *et al.*, respectively, as 81%³⁶ and 79.6%³⁷. We found similar results in our study.

Hypertension is described by Menenakos *et al.* in a study with 261 patients with resolution in 88.8%³⁸. We found a statistically significant improvement, both for diabetes and hypertension. Discontinuation of medication for hypertension occurred in over 50% of patients.

We observed an improvement in quality of life in the majority of operated patients (92.5%), representing satisfaction achieved by clinical improvement resulting from weight loss and control of diabetes and hypertension.

R E S U M O

Objetivo: avaliar a qualidade de vida em pacientes submetidos à gastropastia vertical (Sleeve). **Métodos:** estudo de coorte histórica incluindo pacientes obesos mórbidos do Sistema Único de Saúde, cadastrados na base de dados do Hospital Geral Universitário da Universidade de Cuiabá. Todos os pacientes foram submetidos à gastropastia vertical e foram acompanhados por pelo menos um ano após a operação. As variáveis do estudo foram: qualidade de vida, perda de peso, melhora da hipertensão e do diabetes, e mortalidade. **Resultados:** a amostra foi composta por 41 pacientes, sendo 13 (31,7%) homens e 28 (61,3%) mulheres, a média etária foi 37 anos, o peso médio inicial foi 136,4Kg e o IMC médio 50,3Kg/m², tempo médio de seguimento de 19,1 meses (12-32). Houve uma significativa redução do peso (96,7Kg; $p < 0,001$) e IMC (35,835Kg/m²; $p < 0,001$). O índice de hipertensão diminuiu de 56% para 31,7% e de diabetes de 14,6% para 4,8% ($p < 0,001$). A qualidade de vida melhorou em 92,5% dos pacientes. **Conclusão:** observamos que houve melhora da qualidade de vida na maioria, 92,5%, dos pacientes operados, representando a satisfação alcançada em virtude da melhora clínica decorrente da perda de peso, do diabetes e da hipertensão arterial.

Descritores: Avaliação de resultados (cuidados de saúde). Obesidade. Perda de peso. Gastropastia. Qualidade de vida.

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