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Quality of Life, After Bariatric Surgery

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1. Abstract

Obesity is a disease characterized by the abnormal accumulation of body fat. It is estimated that there are 650 000 000 obese adults. Its incidence has increased in recent years, contributing to the decrease in the average life expectancy of up to 12 years and with a worsening in the quality of life of the obese, mainly due to the association with systemic diseases. This study was to verify the effect of Bariatric surgery on the quality of life of obese patients with a BMI greater than or equal to 35 kg/m2 through verification of the perception of these operated patients about changes in quality of life. An observational, longitudinal, retrospective, and quantitative study was carried out, initially with 85 adult patients, with severe or morbid obesity (greater than or equal to 35 kg/m2), submitted to RYGB in the period from January 2019 to November 2020, in a private hospital located in the city of São Paulo, Brazil. Of the 49 patients who underwent RYGB, 83.6% (n = 41) were female, 44.8% (n = 21) had Grade 3 obesity, 93.8% (n = 46) had comorbidities related to obesity, and 65.3% (n = 32) had completed higher education. Age ranged from 19 to 59, with a median of 34.5 (SD = 1.41). Patients who underwent RYGB (73.4%, n = 36) had a positive outcome, with loss of excess weight greater than 50%, which directly influences the calculation of BAROS, relating greater weight loss with better quality of life. The Fisher exact test was applied, which calculated P = 0.0011. Most patients up to 6 months after their operation were classified with the current "very good" quality of life (56%) in relation to the time before surgery. Between patients with more than 6 months postoperatively, most were classified as having current "excellent" quality of life (50%) in relation to the time before the surgery. Therefore, the group of patients more than 6 months after their operation showed superiority in the outcome when compared to patients with less than 6 months postoperatively, proven after application of the ANOVA formula, both with greater weight loss (P = 0.003) and lower BMI (P = 0.015). Under the conditions in which this study was carried out, it can be concluded that patients undergoing gastric bypass surgery with RYGB intestinal bypass presented overall improvement in quality of life.

2. Introduction

Obesity is a chronic disease characterized by the abnormal accumulation of body fat, which leads to an increase in BMI at values greater than or equal to 30 kg/m2.1 It is estimated that there are 650 000 000 obese adults, representing 13% of the world's population [1]. The etiology of obesity can involve genetic, behavioral, environmental, and metabolic factors [2]. Its incidence has increased in recent years, contributing to the decrease in the average life expectancy of up to 12 years [2] and with a worsening in the quality of life of the obese, mainly due to the association with systemic arterial hypertension, type 2 diabetes mellitus, dyslipidemias, and reduced productivity at work.[2] Biener et al3 point out that obesity-related conditions correspond to 7% of total health care spending costs in the United States and that direct and indirect costs related to obesity exceed $117 000 000 000 per year [3]. The treatment for obesity consists of pharmacological and dietary measures and stimulation of physical activity [4]. Bariatric surgery may be effective in the treatment of severe and morbid obesity as well as resolution and control of associated comorbidities, with

improvement in quality of life and reduced morbidity and mortality [4]. Gastric bypass with intestinal bypass Roux-en-Y (RYGB) surgery is the most used surgery in the world for the treatment of obesity, and the second most performed surgery in the United States.4 RYGB consists of creating a gastric pouch with 50 to 70 ml volume by stapling and sectioning the original gastric chamber, in addition to a RYGB intestinal bypass, with a 100 cm loop alimentary intestine and 100 cm of biliodigestive intestinal loop. RYGB can benefit a patient's health globally and reduce costs arising from medications and activities related to the control of comorbidities [5]. Quality of life is defined as an individual's perception of their position in life in the context of their culture and value systems, and it relates to goals, expectations, standards and concerns [6]. The present study aims to analyze the effect on the quality of life of patients undergoing RYGB surgery.

3. Objectives

The aim of this study was to verify the effect of RYGB surgery on the quality of life of obese patients with a BMI greater than or equal to 35 kg/m2 through verification of the perception of these operated patients about changes in quality of life.

4. Methods

An observational, longitudinal, retrospective, and quantitative study was carried out, initially with 85 adult patients, diverse in terms of gender and ethnicity, with severe or morbid obesity (greater than or equal to 35 kg/m2), submitted to RYGB in the period from January 2019 to November 2020, in a private hospital located in the city of São Paulo, Brazil, after the first postoperative month. The study was conducted in accordance with ethical standards determined by the declaration of Helsinki of the World Medical Association, adopted in 1964 and reformulated in 1996. This study was approved by the Research Ethics Committee of Hospital São Luís-Rede D'Or. The research was carried out by reviewing the patients' medical records and contacting them by telephone and then analyzing their anthropometric profiles (weight, height, BMI, and overweight), presence of comorbidities, life habits, and quality of life using the Bariatric Response Analysis System (BAROS) protocol. In addition, the evolution of their obesity-related comorbidities was investigated. All patients were operated on by the authors. Thirty-six patients who did not want to participate in the research, who underwent an operation other than video laparoscopy, or who could not be located were excluded. Patients who met the inclusion criteria were invited to participate in the study by telephone and their medical records reviewed. They were informed of the commitment to the confidentiality of personal data or their identification, described in the confidentiality and confidentiality agreement (TCS) (ANNEX B). These patients were invited to answer the validated questionnaire via telephone (ANNEX A), and finally the information (anthropometric data and presence and/or resolution of comorbidities) was verified and validated in the medical record.

The questionnaires were separated into 2 groups, with Group 1 formed by patients up to 6 months after their operation and Group 2 formed by patients more than 6 months after their operation. Among the groups, the data were also separated according to age, gender, and comorbidities. Each questionnaire was identified with a alphanumeric code chosen at random, and their data were entered into a spreadsheet that did not allow the identification of the interviewees. After creating the data sheet, the sum of the scores was performed according to the BAROS protocol, which allows the assessment of the quality of life of obese patients after surgical treatment of obesity [7]. This protocol is composed of 5 domains: self-esteem, physical activities, social relationships, sexual activity, and performance at work. There is a questionnaire for each domain, each with 5 alternative responses, categorizing an increasing level of satisfaction. Each response could vary between a minimum of −1 and a maximum of 1, linked to a rating ranging from much worse to much better [7]. The total score was classified into patients with and without comorbidities, allowing global assessment of patients in the postoperative period of RYGB [7].

4.1 Assessment of Weight Loss

To calculate the excess weight loss score, the following criteria were used: when weight gain occurred after the operation, a score of −1 was given. If the percentage loss of excess weight varied between 0 and 24%, no points were added. In cases where weight loss ranged from 25 to 49% of excess weight, 1 point was added; from 50 and 74%, 2 points were added; and from 75 to 100%, 3 points were added. Excess weight was calculated using the Weight and Height table (ANNEX A).

4.2 Quality of Life Assessment

The assessment of quality of life was performed through the interpretation of the results obtained by the questionnaire developed by Moorehead-Ardelt of the BAROS[7] protocol. This questionnaire includes 5 conditions: self-esteem, physical activities, social relationships, sexual activity, and work performance. For each item, there is a question with 5 response options, expressing an increasing level of satisfaction, with each response ranging from a minimum of −1 to a maximum of 1, associated with a rating ranging from much worse to much better. Health conditions prior to surgery were analyzed, as if there were resolution of comorbidities and possible postoperative complications.

To calculate the total score for the BAROS protocol, it is mandatory to add the points corresponding to quality of life, excess weight loss, and comorbidities, and then subtract the points related to the following conditions: need for reoperation (1 point for each reoperation), major complications (1 stitch, even if there is more than 1 stitch), and smaller complications (2 points, regardless of quantity).[7] In the analysis of the final score, whether there was the presence of comorbidities was considered, and the assessments

can be classified as insufficient, moderate, good, very good, and excellent [8].

4.3 Statistical Analysis

To analyze the profile of the patients evaluated in the present study and the comorbidities presented by them after the surgery, calculations of the percentage frequencies and the respective frequency distributions of the factors evaluated were constructed. In the descriptive analysis of the qualitative variables of the sample, the frequencies were absolute and relative. In the description of the quantitative variables, position or central tendency and dispersion (minimum, maximum, mean, and SD) were measured. A truth strength of 95% (P = 0.05) was used. Comparisons were made of the variables that are applied by the BAROS protocol, using ANOVA to compare the variables with time of operation before 6 months and after 6 months. The variables that were not considered normal were not applied according to the BAROS protocol, and the value of P was obtained through the Kruskall-Wallis test. For the variables that presented different values for the groups before 6 months and after 6 months, a boxplot plot was performed. To perform the hypothesis test before and after surgery for the counting variables and the time, the Wilcox test for paired data was used, using the median of the variables before and after surgery.

5. Results

Of the 49 patients who underwent RYGB, 83.6% (n = 41) were female, 44.8% (n = 21) had Grade 3 obesity, 93.8% (n = 46) had comorbidities related to obesity, and 65.3% (n = 32) had completed higher education. Age ranged from 19 to 59, with a median of 34.5 (SD = 1.41). The age variable was 21 to 57 years old, without statistical significance when compared across the different postoperative moments regarding the effect on quality of life. Patients who underwent RYGB (73.4%, n = 36) had a positive outcome, with loss of excess weight greater than 50%, which directly influences the calculation of BAROS, relating greater weight loss with better quality of life. The Fisher exact test was applied, which calculated P = 0.0011, proving positivity between the longest postoperative period and the outcome of quality of life. Most patients up to 6 months after their operation were classified with the current "very good" quality of life (56%) in relation to the time before surgery. Between patients with more than 6 months postoperatively, most were classified as having current "excellent" quality of life (50%) in relation to the time before the surgery. Therefore, the group of patients more than 6 months after their operation showed superiority in the outcome when compared to patients with less than 6 months postoperatively, proven after application of the ANOVA formula, both with greater weight loss (P = 0.003) and lower BMI (P = 0.015). The sexual activity item presented statistical relevance comparing the different postoperative periods, with 29% (n = 24) of patients perceiving their sexual activity as "much better" more than 6 months after their operation when compared with patients less than 6 months after surgery (4%, n = 1). Life habits were analyzed before and after surgery, including drinking alcohol, smoking, and physical activity. Of the 49 patients interviewed, only 1 (2%) patient performed physical activity irregularly before surgery. After the operation, 87.7% (n = 43) of patients practiced physical activity regularly, with an average of 1.63 modalities, 61.38 minutes, and 4.72 days a week.

6. Discussion

The present study sought to assess the effect of RYGB surgery on the quality of life of obese patients who received a bariatric operation in a private referral hospital in the city of São Paulo, aiming to establish differences in relation to the postoperative period. The study was based on the analysis of weight loss, changes in medical conditions, and quality of life. BAROS proved to be useful for evaluating the results after the surgical treatment because it has simple language and easy execution [7]. Despite the limited number of patients evaluated in this study, this aspect can be critical when it is known that what is desirable for studies on the effect on quality of life and weight loss in the postoperative period of bariatric surgery. With larger sample, it is expected that the observed relationships may increase the interest in our environment concerning the study of the effect of RYGB on quality of life, encouraging further studies. In the current study, 83.6% (n = 41) of patients were female. The prevalence of most female patients is in line with Peterli et al[9] and Duvoisin et al [10], who found prevalence of 72% (n=156) and 78.2% (n=515), respectively, for women also undergoing bariatric surgery. Cella et al [11] believe that the prevalence of the females may be related to the fact that women are exposed to a greater load of stress and tend to consume inadequate food intake as well as have increased possibility of depression [11]. In the present study, there was a predominance of morbidly obese patients (44.8%, n = 22). In the group with up to 6 months postoperatively, there was a predominance of patients with grade 2 obesity, corresponding to 56% (n = 14), and in patients with more than 6 months postoperatively, predominance of morbid obesity corresponded to 62.5% (n = 15). Similar data were presented by Zilberstein et al [12]. Whose sample population presented BMI before bariatric surgery with an average of 46.9kg/m2, and by Rêgo et al [13], who showed a higher prevalence of severe obesity in a female population (59.4%, n = 73).

Analyzing the relationship between bariatric surgery and its effect on weight loss, it is clear in the present research (and in Castanha et al [14], that this procedure has been shown to be quite effective. The mean BMI before and after surgery was 41 kg/m2 and 29.6 kg/m2, respectively, which implies a significant reduction in cardiovascular mortality and all-cause mortality associated with weight excessive [15]. Patients, on average, had a significant improvement in severe obesity, going from grade 3 to overweight. The average percentage loss of excess weight was 73.4%, with evidence that there was success in relation to the bariatric operation, where the minimum required value is a percentage loss of

excess weight greater than 50% [7]. Similar data were reported by other authors, such as Costa et al [16]. Who observed a satisfactory percentage of excess weight loss in 94.7% of the patients investigated. Compared with patients included in international studies, Brazilians have similar anthropometric and comorbidity data, except for the higher prevalence of hypertension, according to Tonatto-Filho et al [17]. On the other hand, the present study showed a higher incidence of diseases of the osteolomotor system (63.2%, n = 31), sleep disorders (48.9%, n = 24), dyslipidemia (36.2%, n = 18), hepatic steatosis (34.6%, n = 17), type 2 diabetes mellitus (26.5%, n = 13), and systemic arterial hypertension (24.4%, n = 12). In this study, there were high rates of resolution of comorbidities, with type 2 diabetes mellitus (100%), systemic arterial hypertension (80%), dyslipidemia (94.4%), and sleep disorders (95.2%). Nguyen et al[1]¥ presented similar comorbidity resolution rates, namely, dyslipidemias (73.9%) and type 2 diabetes mellitus (86.4%). This was due to changes in neuroendocrine mechanisms mediated by glucagon-like peptide-1 (GLP-1) and alterations in intestinal physiology, exerting a regulatory effect under the control of glycemic index regardless of weight loss [18]. Only 2 patients with systemic arterial hypertension did not present comorbidity resolution, without interference of postoperative time, being 1 patient (4%) with up to 6 months postoperation and 1 patient (4.1%) with more than 6 months of postoperation. Therefore, among the 2 periods evaluated and among individuals who had weight loss greater and less than 50%, no significant differences were found, although all reported improvement in the domains evaluated, a result similar to that presented by Marchetti et al [18]. Regarding lifestyle habits, none of the patients in the present study began consuming alcoholic beverages in the postoperative period of RYGB, and 56% (n = 14) of the patients stopped alcohol consumption postoperatively. This fact is in contrast to Gregorio et al [19]. Who stated RYGB had a greater association with the increase in alcohol consumption during the postoperative period, and in 2013, there was an increase of 40% of alcohol consumption by these patients [19]. Regarding the ability to perform physical activity, there was a positive effect in relation to the practice of physical activity. Most patients (87.7%, n = 43) started the practice of regular physical activity. Herring et al [20], Stated the difficulty that obese people have in exercise is because of their weight, which can cause joint pain and intense fatigue, added to the embarrassment and discrimination suffered in gyms. In the current study, 42% of patients 6 months after their operation performed regular physical activity more than 3 times a week, and 88% of patients performed regular physical activity more than 3 times a week less than 6 months after their operation. In view of this result, the conclusion is similar to that of Herring et al [20], who showed that according to the postoperative period and the closer to the desired ideal weight loss, the greater the lack of interest of this population in the practice of physical activity. Regarding the analysis of self-esteem, 95.8% (n = 23) patients considered themselves "much better" more than 6 months after their operation. Brito et al [21] presented a similar result, where 74.8% (n = 77) of patients felt "much better." As for social relationships, most patients in the postoperative period responded they were "much better" (55%, n = 27), reinforcing the patients' good mood and natural sociability after improving satisfaction with their physical state.23 Neto et al. [22]. Presented similar results where 49.1% patients reported feeling much better in terms of social involvement. Brito et al. [21]. Reported 57.3% (n = 59) of patients feeling "much better" in terms of work and daily activity, revealing that with the reduction of excess weight, the patients feel more confident and willing in the work environment and in daily activity when talking to other people, without being ashamed of their appearance. In the current study, 59% (n = 29) of patients presented "much better" job performance in response, with no statistical difference in relation to postoperative period. As for the quality of sexual relationships, 29% (n = 7) of patients reported the relationships were "much better" more than 6 months after their operation, with a statistical difference in relation to postoperative period. Rowland et al[23] showed similar results, with "much improvement" in 50% of patients, stating that obesity limits sexual identity because the accumulation of fat in regions such as the abdomen causes obese people to lose their physical shape and prevents them from having a mature experience, in addition to being tired quickly and uncomfortable with the activity.

In relation to activities of daily living, the observed results showed the reduction in body weight promoted improved autonomy and functionality of patients through aspects of everyday life necessary for the maintenance of health. According to Neto et al. [22], all conditions associated with the assessment of quality of life, according to the BAROS questionnaire, showed improvement after surgery with a prevalence of 66% for "much better." The current study showed most patients had "very good" (48.9%, n = 24), "excellent" (30.6%, n = 15), and "good" (20.4%, n = 10) activities of daily living. There was a higher prevalence of an "excellent" result in patients more than 6 months after their operation due to a higher percentage of weight loss, reduction of comorbidities, and continuous use of medications.

7. Conclusion

Under the conditions in which this study was carried out, it can be concluded that patients undergoing gastric bypass surgery with RYGB intestinal bypass presented overall improvement in quality of life.

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