INTEGRATIVE REVIEW

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ARAÚJO, Antônio Nelson Alencar de. OLIVEIRA, Marcos Alexandre Casimiro de. Evaluation of metabolic syndrome parameters after Roux-y gastric bypass. Revista Científica Multidisciplinar Núcleo do Conhecimento. Year 05, Ed. 10, Vol. 18, pp. 92-106. October 2020. ISSN: 2448-0959, Access Link: https://www.nucleodoconhecimento.com.br/health/metabolic-syndrome, DOI: 10.32749/nucleodoconhecimento.com.br/health/metabolic-syndrome

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SUMMARY

Introduction: Morbid obesity is characterized by a state of insulin-resistance and is often associated with metabolic syndrome, increasing overall and cardiovascular mortality. Due to
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the unsatisfactory results in conventional treatment in specific groups of patients, invasive intervention is an alternative. However, it may be indicated, especially in situations where the patient has severe obesity or morbid obesity. Objective: The present study aims to evaluate the changes in metabolic syndrome parameters after bariatric surgery. Methodology: This is an integrative review of the literature performed through searches in the Scielo, LILACS and PUBMED databases using the following Controlled Health Sciences Descriptors (DeCS): Bariatric Surgery, Gastric Bypass, Obesity and Metabolic Syndrome. The inclusion criteria were: articles in English or Portuguese, text in full, publications in the period from 2009 to 2019 in article format that addressed the theme described. Duplicate publications, articles that did not address the theme after reading the respective abstracts and articles that do not meet the objectives of this study were excluded. Results: According to the analysis of the results, a reduction of 86.1% in the prevalence of metabolic syndrome was observed; 65.3% in arterial hypertension and 84.2% in altered fasting glycemia. A normalization of abdominal circumference in 35.4% of patients, an increase in 35.8% in HDL levels and high triglyceride values may be observed. Among the results obtained, the increase in HDL did not obtain great relevance, as well as the decrease in abdominal circumference. Conclusion: The study showed a positive relationship between bariatric surgery and metabolic syndrome parameters. The results presented were favorable when surgery was associated with a healthy lifestyle and factors that contribute to the effective coping of this condition in most of the cases analyzed. However, multiprofessional follow-up, particularly for medical, nutritional and psychological care, is essential to have a positive impact on the quality of life of these patients.

Keywords: Bariatric surgery, gastric bypass, obesity, metabolic syndrome.

1. INTRODUCTION

Defined as a pathology caused by excess body fat, obesity has genetic and metabolic origin and is often related to comorbidities, being aggravated by exposure to environmental, cultural, economic and social factors (GODOY, 2010). It is considered a chronic pathology related to abnormal accumulation of fat in the body (WHO, 1998) and is closely related to the increased risk of comorbidities such as hypertension (SAH), cardiovascular diseases, type 2 diabetes mellitus (DM2), high cholesterol, cancer, orthopedic diseases and psychosocial...
problems that cause serious consequences interfering in the quality of life of patients who have the disease (COUTINHO , 1999).

Developing countries are experiencing a growth of obesity and chronic non-communicable diseases very rapidly. According to data from the Ministry of Health 50% of Brazilian adults (men = 55% and women = 47%) overweight (BRASIL, 2013). Obesity cases are increasing in Brazil every year, according to projections in 2030 about 55 million people will die from obesity-related causes (FINELLI et al., 2014). In addition to presenting a high prevalence in society, obesity is described among the main public health problems arising from the various harms resulting from an unhealthy life (FERREIRA, 2010).

The close relationship between obesity and the high risk of morbidity and mortality is evidenced in 45% of cases of DM2, and in 25% of cases of cardiovascular disease (Hruby et al., 2015). However, the problem of obesity is due to the fact that some obese individuals have several risk factors called Metabolic Syndrome (MS) and these factors mainly include changes in carbohydrate metabolism (type 2 diabetes, insulin resistance and glucose intolerance) and fats (increased triglycerides and reduction of high-density lipoprotein[HDL-c]), high blood pressure (hypertension), abdominal obesity and coagulation disorders (Alberti et al. , 2005)

As obesity has an etiology due to several factors, the treatment of obese patients encompasses different models of approach, which include the performance of physical activity and improvement of eating habits and behavioral factors related to diet. These conventional interventions are known as the pillars of treatment and are independent of the classification of overweight (ABESO, 2016).

However, some individuals do not present satisfactory clinical evolution when they use conventional treatment for weight reduction, and it is indispensable to intervene more efficiently, thus expanding the indications of bariatric surgery especially in patients with morbid obesity (BASTOS et al., 2013).

With this, bariatric surgery is recommended in situations of morbid obesity or obesity, both after documentation of failure of clinical treatment (ABESO, 2016). This procedure aims at weight loss, improvement of obesity-related pathologies, reducing the risk of mortality,
increasing longevity and improving quality of life. Among the various techniques that can be applied in this procedure, Roux-en-Y Gastric Bypass (RYGB) is currently the most performed technique in Brazil (SBCBM, 2017). RYGB is a disabsorptive surgical technique where changes in the intestinal anatomy occur to reduce the absorptive surface (QUADROS et al., 2006).

Of the surgical techniques used, Roux-y Gastric Bypass is the most used technique, and laparoscopic RYGB is considered the gold standard for treating severe obesity, presenting low morbidity and mortality (KAUL et al., 2011). This technique has a high degree of excellence due to being related to weight loss and improvement of long-term comorbidities, besides promoting the reduction of the secretion of hormones such as ghrelin, insulin and leptin, which are associated with appetite, weight gain, energy balance and metabolism and storage, with this play an important central role in reducing obesity and comorbidities (FINELLI et al., 2014).

2. JUSTIFICATION

In some patients there is a worsening of the clinical picture leading to a number of complications due to the low efficacy of treatment done through conventional therapies. Among them we can highlight the change in eating and behavioral habits in the face of food and the practice of physical activities that present unsatisfactory results.

The present study becomes timely, since the increase in cases of obesity is directly related to the appearance of associated risk factors such as diabetes, hypertension and hypercholesterolemia. Thus, it is necessary to implement new therapeutic approaches for patients at risk in order to reduce the serious consequences caused by this pathology, and thus increase therapeutic success.

Therefore, the bibliographic research aims to evaluate the results through scientific evidence and verify the relationship between the improvement of metabolic syndrome parameters and the reduction of abdominal circumference, fasting glycemia, blood pressure and triglyceride levels after the surgical procedure. It is also expected that the critical analysis resulting from the present review concludes whether there are benefits to attest to the indication or not of bariatric surgery in the control of metabolic syndrome parameters.
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3. GOALS

3.1 GENERAL

To evaluate the behavior of metabolic syndrome parameters in patients undergoing bariatric surgery.

3.2 SPECIFIC

To analyze in scientific evidence the relationship of the benefit of bariatric surgery by roux’s Y-Y Gastric Bypass technique on conditions such as diabetes mellitus, hypertension, triglycerides and abdominal circumference.

To verify the efficacy of surgical treatment in patients with obesity or morbid obesity.

4. METHODOLOGY

4.1 STUDY DESIGN

The integrative review has an amplified methodological approach related to reviews that allows the inclusion of studies for a complete understanding of the analyzed phenomenon. It also unites data from theoretical literature and incorporates several purposes such as: definition of concepts, analysis of a particular topic and review of theories and evidence (WHITTEMORE, 2005).

It is included in a study conducted through the integrative bibliographic review, where there is a need to identify, analyze and synthesize results of independent studies on a specific theme, including experimental and non-experimental studies, making it possible to express several aspects of the same phenomenon. The information synthesized and compared allows general conclusions in relation to the problem addressed. Its applicability is due to the elaboration of protocols, procedures and policies, as well as the critical thinking that daily
4.2 LITERATURE ACQUISITION PROCESS

In the second stage, the bibliographic survey was carried out through articles from the Internet in the second half of 2019. The corpus of the research is based on the search in online databases: SCIELO (Scientific Electronic Library Online), PUBMED (National Library of Medicine National) and LILACS (Latin American and Caribbean Literature in Social and Health Sciences) conducted in July and August 2019. The following Health Sciences Descriptors (DECS) were used: BARIATRIC SURGERY, GASTRIC BYPASS, METABOLIC SYNDROME and OBESITY. The associations used will be: BARIATRIC SURGERY AND METABOLIC SYNDROME, GASTRIC BYPASS AND OBESITY.

The abstracts and titles of all studies verified in the indicated databases were initially evaluated, aiming at the identification of those imminently eligible. Then, the complete works of the selected for a more careful research were read.

The following data were collected from the articles chosen: title/author/country/year and SM classification criteria and repercussions related to Metabolic Syndrome.

4.2.1 INCLUSION CRITERIA

In the study, patients of both sexes in adulthood (18-60 years) who had undergone bariatric surgery by gastric bypass technique for about one year were evaluated. The sample was selected according to the following inclusion criteria: available and complete articles that have been published on the subject, national and international articles with publications in English and Portuguese published between 2009 and 2019.

4.2.2 EXCLUSION CRITERIA

The sample will be listed according to the following exclusion criteria: articles that do not address the theme after reading the respective abstracts, articles that do not have their...
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abstracts available, duplicate publications and articles that do not meet the objectives of this study.

5. RESULTS

From the selection of 21 articles initially in the databases, ten studies met the inclusion criteria used for this integrative review work.

Of the ten selected studies, all aimed to verify the influence of bariatric surgery on metabolic syndrome parameters, two of them analyzed the regularity of insulin resistance by the Homeostasis Model Assessment (HOMA), and the inflammatory process was evaluated comparing with the serum level of C-Reactive Protein, as well as liver enzymes (JIMÉNEZ, 2013; IANELLI, 2013). In addition, two studies included analysis and quality of life (AFTAB et al., 2014), and the resolution of non-metabolic comorbidities associated with obesity (SCHMID et al., 2015).

Regarding the study design, a retrospective analysis and prospective collection (JIMÉNEZ, 2013), two case-control studies (IANELLI et al., 2013; SCHMID et al., 2015) and seven cohort studies (AFTAB et al., 2014; FARIA et al., 2014; JUNGES et al., 2017; MONTEIRO et al., 2009; ORTIZ et al., 2015; RAMOS et al., 2016; SILVA et al., 2013).

Regarding the number of patients submitted to bariatric surgery by gastric bypass technique, a total of 1,358 patients who presented metabolic syndrome were obtained, most of them female (81.2%) with an average age of 40.7 years.

According to the analysis of the selected articles, an average remission of MS was observed in 86.1% of patients submitted to gastric bypass, with a variation between 65.1% and 92.8%.

The results of altered fasting glucose were positive in most patients with an average reduction of 84.2% in the parameters evaluated, with a variation between 70% and 96.2%. The evaluation of abdominal circumference measurement did not obtain very satisfactory results with an average normalization of 35.4% of patients, with a rate of variation between 3% and 80%.
Data on dyslipidemia showed an increase in HDL levels, which reached reasonable values on average of 35.8% of cases ranging from 11.1% to 80%. Hypertriglyceridemia showed a reduction in 77.8% of cases, ranging from 46% to 97.6%. Regarding the parameters of systolic and diastolic arterial hypertension, an average reduction of 65.3% was observed in patients ranging from 56.8% to 100% of the studies.

6. DISCUSSION

Obesity is a chronic disease of multifactorial etiology and its treatment may involve beyond the pharmacological approach, the practice of physical activity and nutritional reeducation. However, these treatments and behavioral changes presented a limited success rate with 98% of recurrence in individuals with severe obesity (SANTOS et al., 2016).

The relationship between severe obesity and Metabolic Syndrome (MS) has already been established, and confirmed that both are related to the higher risk of developing cardiovascular diseases, thus increasing morbidity and mortality (SUNDSTROM et al., 2006). When it comes to obesity grades 2 and 3, diet, exercise and weight control medications generally do not have good efficacy in maintaining long-term weight loss (SJOSTROM et al., 2007). Therefore, other therapeutic measures, such as bariatric surgery, are receiving increasing attention for evaluation in clinical trials (BATSIS et al., 2008).

According to the results found in the study, it was seen that bariatric surgery performed by roux-in-Y gastric bypass in obese patients had positive repercussions for obese patients with Metabolic Syndrome (MS). In addition, the influence of this procedure on the parameters that integrate MS was observed, which begins to present good results after one year postoperatively.

The analysis of the evaluated results showed that fasting glucose indexes had a high resolution rate and the change in hypertriglyceridemia presented a better performance in reducing their levels and, consequently, in their prevalence. However, despite the increase in serum HDL levels in all studies analyzed, this parameter was the one that obtained the lowest prominence among the results, followed by the decrease in abdominal circumference.

It is notorious that there may be variations in the evaluation of the normalization of
parameters and remission rates of metabolic syndrome depending on the criterion used to diagnose patients with morbid obesity. Therefore, it is important to highlight that the criteria of the National Cholesterol Education Program’s Adult Treatment Panel III (NCEP ATP-III) and the International Diabetes Federation (IDF) presented discrepant results in patients with morbid obesity, referring to the evaluation of the metabolic results of bariatric surgery (ORTIZ et al., 2015). The authors’ justification for these differences is due to the fact that the IDF criteria better specify cases of arterial hypertension, dyslipidemia and hyperglycemia, and also consider them much more rigorous and detailed to evaluate the remission of MS in bariatric patients.

According to the analysis of the post-surgical data, it can be noted that the recently operated patients presented better results in the markers of metabolic syndrome parameters. In depending on the control of hypertension, a positive relationship was observed in all studies after the surgical procedure.

In addition, the surgical procedure also favors the change in levels of gastrointestinal hormones, decreasing the secretion of ghrelin (orexigenous hormone) and increasing the secretion of GLP-1 (peptide similar to glucagon 1) and PYY (YY peptide) which are anorexic hormones that act on considerable weight loss (CENEVIVA, 2011), explaining the positive impacts seen in the studies.

Thus, patients with a high degree of obesity with MS and associated comorbidities should be immediately referred for evaluation of treatment with bariatric surgery. In this case, as MS can be reversed, cardiovascular outcomes are also expected to decrease (KAUL et al., 2011).

7. CONCLUSION

An improvement in metabolic syndrome parameters was observed in patients who underwent Roux-y-gastric bypass surgery among them, the reduction of fasting glucose showed better results and to a lesser extent the reduction of abdominal circumference and increased HDL levels. Thus, we can consider that the surgical treatment by Roux-en-Y gastric bypass positively reflects on the health condition in patients with severe obesity, with improvement in comorbidities and consequent increase in quality and life expectancy.
Thus, Roux-y-y gastric bypass has been recommended for the treatment of obesity and morbid obesity associated with hypertension, DM2 and dyslipidemias, and is known as one of the most effective methods (FINELLI et al., 2014).

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Sent: July, 2020.

Approved: October, 2020.