Short Communication
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Literature review on gastric sleeve vs. Roux-en-y gastric bypass for bariatric surgery: comparative aspects

Abstract

The article presents a comparison between two widely used bariatric surgeries, Roux-en-Y Gastric Bypass (RYGB) and Vertical Gastrectomy (GV), highlighting their efficacies, complications, and considerations for obese patients. Initially, the prevalence of obesity and the importance of bariatric surgery in improving metabolic problems associated with obesity are discussed. The study's methodology consisted of a comprehensive literature review, searching for articles on various platforms such as PubMed, SciELO, and UpToDate, regarding the surgical procedures Roux-en-Y Gastric Bypass (RYGB) and Vertical Gastrectomy (GV) in bariatric surgeries. GV has emerged as the most common bariatric surgery in recent years due to its simplicity and efficacy, while RYGB, although effective in long-term weight loss, presents greater complexity and associated risks. It is concluded that discussion with healthcare professionals is essential for an informed decision on the most suitable type of bariatric surgery, emphasizing that the choice between them should consider the individual needs of each patient, health, and weight loss goals.

Keywords: bariatric surgery, obesity, efficacy

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Introduction

Obesity is a global health problem affecting people of all ages, including children, adolescents, and adults. In the United States and Canada, about one-third of adults are considered obese, according to 2010 data. Surgery to treat obesity, known as bariatric surgery, is recognized for improving metabolic problems such as type 2 diabetes and cardiovascular diseases associated with obesity. This surgery not only helps with weight loss but also reduces the risks of cardiovascular problems. Surgery results are often measured in terms of the percentage of weight lost, with the current trend being to report the percentage of total weight lost rather than excess weight. Bariatric surgery has a significant impact on blood sugar regulation, possibly through neuroendocrine mechanisms, resulting in rapid improvement in glycemic control, independent of weight loss. Over the years, several studies have compared the effectiveness of bariatric surgery with medical therapy in treating diabetes. These studies have shown that surgical procedures such as RYGB, AGB, SG, and BPD with duodenal switch were more effective in reducing diabetes than medical therapy, which includes lifestyle changes and medication, as per the American Diabetes Association guidelines. Roux-en-Y Gastric Bypass (RYGB) was one of the most popular bariatric procedures, but its performance has declined due to the increasing use of vertical gastrectomy (GV).[1,2] In 2020, 41,280 RYGBs were performed in the United States, representing 20.8% of all bariatric procedures. RYGB involves creating a small proximal gastric pouch connected to a part of the small intestine called the Roux limb, limiting the amount of food ingested. Most of the digestion and nutrient absorption occur in a common part of the small intestine, where stomach, liver, and pancreatic secretions mix with food. On the other hand, the Sleeve Gastrectomy or vertical gastrectomy (GV) is a surgical procedure that removes most of the larger part of the stomach, creating a tube-shaped stomach. Originally intended for patients with extreme obesity (BMI > 60 kg/m^2), GV has become the most common bariatric procedure since 2016, accounting for 58% of all bariatric surgeries performed in the United States in 2020. Compared to Roux-en-Y Gastric Bypass (RYGB), GV is considered simpler and safer, as it does not require multiple connections and reduces the risks of complications such as internal hernias and nutrient absorption problems. During GV, the antrum is divided near the pylorus, and a tube-shaped stomach is created around a 32 to 40 French guide. While it restricts stomach capacity, GV can also affect stomach movement, influencing weight loss outcomes. However, GV may increase the risk of leaks and gastroesophageal reflux disease due to the high pressure in the stomach resulting from surgery. It is important for patients to be aware of the risks of each of these surgeries before making decisions. Based on these considerations, the following review gathers aspects of various comparative studies to discuss the best surgical options for obese patients.[3–7]

Methodology

This is an expanded summary based on research articles from various platforms such as PubMed, SciELO, and UpToDate, regarding the use of Roux-en-Y gastric bypass and sleeve gastrectomy in bariatric surgeries, analyzing the benefits and drawbacks of the respective procedures. For this, inclusion criteria aligned with the research objective were used, such as studies in Portuguese and English, systematic reviews, clinical trials, and bariatric management approaches in individuals undergoing one of these procedures, comparatively, for a comprehensive understanding of the subject.

Discussion

When considering Roux-en-Y Gastric Bypass (RYGB) and Vertical Gastrectomy (GV) as options for bariatric surgery, several differences arise in terms of efficacy, surgical complexity, risks, hormonal changes, and dietary restriction: RYGB is recognized for its effectiveness in long-term weight loss, achieving up to 70% of excess weight in two years. However, it is a complex surgery involving multiple anastomoses, which increases the duration of surgery and associated risks. Additionally, it may result in more metabolic complications due to its malabsorptive nature. On the other hand, GV

also provides considerable weight loss, around 60% of excess weight in two years, and is less complex from a technical standpoint. GV is considered safer, with lower risks of metabolic complications and less need for multiple anastomoses.[8,9] Regarding hormonal changes, both procedures affect appetite-related hormones such as ghrelin, GLP-1, and CCK. However, specific hormonal changes may vary between the two procedures. Regarding dietary restriction, both RYGB and GV offer dietary restriction, but RYGB can cause unpleasant dumping symptoms after consuming sugar-rich foods. GV may have less impact on post-surgery eating habits. These studies have shown that surgical procedures such as RYGB, AGB, SG, and BPD with duodenal switch were more effective in reducing diabetes than medical therapy, which includes lifestyle changes and medication according to the American Diabetes Association guidelines. Schauer et al.[10] found greater improvements in total cholesterol, high-density lipoprotein cholesterol, and insulin resistance in Roux-en-Y gastric bypass compared to vertical gastrectomy. Roux-en-Y Gastric Bypass (RYGB), although effective as a bariatric procedure, may present a series of complications requiring specialized medical attention. These include gastrointestinal leakage, stenosis or obstruction, marginal ulcer, internal hernia, gastroesophageal reflux, Roux stasis syndrome, nutritional deficiencies, and insufficient weight loss or weight regain. It is vital for patients to be aware of these complications and maintain regular medical follow-up after RYGB. Following nutritional guidelines and adopting a healthy lifestyle are essential to optimize long-term outcomes after bariatric surgery. On the other hand, significant advantages of SG include low complication rates (between 3 to 24 percent) and mortality (0.39 percent), ease of performing the procedure, preservation of the pylorus, maintenance of physiological food passage, and prevention of foreign bodies in the stomach. Compared to Roux-en-Y Gastric Bypass (RYGB), patients undergoing SG have fewer reinterventions and complications in the first two years; however, in the long term, revisions are slightly more common due to the higher incidence of gastroesophageal reflux disease (GERD) after SG. Early complications of SG, including bleeding, narrowing or stenosis of the stoma, and leaks, are discussed in another section. Late complications include GERD and Barrett's esophagus. GERD is common among obese patients and may improve after bariatric surgery due to weight loss. However, patients undergoing SG are more likely to develop GERD again compared to RYGB. Studies have revealed that a significant percentage of patients develop esophagitis and Barrett's esophagus long term after SG. Initial treatment for GERD is anti-reflux medical therapy, but severe cases may require conversion to RYGB. In summary, although SG is effective in weight loss and has low complication rates, patients should be aware of the increased risk of Gastroesophageal Reflux Disease and Barrett's esophagus in the long term and the possible need for additional treatment, such as conversion to RYGB. Conclusion: Analyzing both situations, Vertical Gastrectomy (GV), also known as sleeve gastrectomy, involving the removal of part of the stomach, reducing its capacity and consequently the amount of food the patient can consume. Meanwhile, Roux-en-Y Bypass is considered by many as the "gold standard" procedure among weight loss surgeries. The average weight loss with this type of procedure is generally higher than purely restrictive procedures. GV is considered less complicated compared to other procedures such as Roux-en-Y Gastric Bypass (RYGB), which alters the anatomy of the gastrointestinal tract by diverting part of the stomach and small intestine. While RYGB provides more significant long-term weight loss, it is associated with a higher risk of metabolic complications and may require subsequent surgical revisions. Thus, the choice between RYGB and GV depends on the specific needs of each patient, including their health profile, personal preferences, and weight loss goals. Discussing with a physician or bariatric surgeon is essential to understand the available options and the potential risks and benefits associated with each procedure.

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None.

Conflicts of interest

The authors declare no conflicts of interest.

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