

Transit Bipartition with Duodeno-Ileal Anastomosis, without Duodenal Exclusion, as a First Stage of Bariatric Surgery in Severely Obese Patients: Case Report

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Abstract

Obesity is a difficult disease to control; bariatric surgery is one of the tools used to treat obesity and its comorbidities. The present case was chosen because it concerns a very obese patient whose proposed surgery—duodenal switch—resulted in traoperatively difficult to the medical team because the esophagogastric junction could not be reached due to the presence of hepatomegaly. Due to this unfavorable condition, we decided to perform a duodeno-ileal anastomosis with gastric preservation and without duodenal exclusion. The patient has been under follow-up for 14 years. She has lost 55 kg and maintains the comorbidities controlled to date.

Keywords

Bariatric Surgery, Biliopancreatic Diversion, Gastric Bypass, Duodenal Switch

1. Introduction

Obesity has gained prominence on the international public agenda in the last three decades. It is characterized as a multifactorial and complex event of global proportions and increasing prevalence and presents difficult treatment and control [1]. Obesity is characterized by a high body weight related to the excess of fat in subcutaneous and visceral regions resulting from a complex interaction between individual genetics, endocrine and neuroendocrine changes, and a life-

style characterized by high consumption of very caloric food and low physical activity levels [2].

In Brazil, overweight and obesity have been increasing in all age groups and income levels and in both sexes, especially in the population with lower family income. In adults, overweight and obesity affected 56.9% and 20.8% of the population in 2013, respectively. The World Health Organization (WHO) considers obesity as a worldwide epidemic conditioned mainly by the dietary and physical activity profile [3]. From 2013 to 2019, the prevalence of obesity in Brazil increased significantly from 20.8% to 25.9% [1], what has been attributed to several biopsychosocial processes. Among them, the “environment” (political, economic, social, cultural), and not only the personal choices of the patient, have a strategic role in the analysis of the problem and in the proposals for interventions. However, part of the challenges lies in understanding how these multiple factors interact [3].

The effectiveness of weight loss strategies at a cohort level is variable and there is also marked heterogeneity among individuals as to the extent and sustainability of weight loss and improvements in metabolic and cardiovascular risk factors [4] [5] [6]. Lifestyle interventions generally result in modest weight loss and improved glycemic control [7] leading to partial or complete type 2 diabetes (T2D) remission in 11.5% of subjects at year 1 and 7.3% at year 4 [8].

For individuals with severe obesity, bariatric surgery is the treatment of choice. The results involve significant and sustained weight loss and amelioration or resolution of most co-morbidities, including T2D (COURCOULAS *et al.*, 2013) [9]. T2D remission at 1, 3, and 5 years has been observed in 71.2%, 69.4%, and 64.6%, respectively, of patients undergoing Roux-en-Y gastric bypass (RYGB), and 30.7%, 29.3%, and 29.2% of those undergoing adjustable gastric banding (AGB) [4] [10]. Among the treatments for obesity, bariatric surgery has been shown to be effective in reducing mortality compared to non-operative methods, being an important tool for the treatment of this serious disease [11].

The objective of presenting this case is to show the possibility of performing the first stage of a bariatric surgery when there is an adverse surgical situation in the intraoperative period. In the case reported here, we performed the intestinal stage of duodenal switch but the gastric phase was not performed due to the impossibility of approaching the esophagogastric junction caused by hepatomegaly. Despite the completion of only one stage of the technique, the patient lost 60 kg and maintains control of comorbidities during 14 years of follow-up.

2. Presentation of the Case

A 50-year-old female patient sought care at the Paulo Reis Institute in Goiania/Goias, Brazil for bariatric surgery. At the time, the patient weighed 130 kg, was 1.55 m tall, and had a BMI of 54.1 kg/m² associated with hypertension and insulin resistance. The patient met the criteria for indication of bariatric surgery and the proposed technique was duodenal switch. Preoperative exams and prep-

aration with a multidisciplinary team were requested. After performing the exams and approval by the multidisciplinary team, the surgery was scheduled. During the procedure, in the initial phase of the abdominal approach, we encountered hepatomegaly, preventing the safe access to the esophagogastric junction and making one of the stages of the duodenal switch, namely, sleeve gastrectomy, unfeasible. At that moment, faced with this difficulty, we decided to perform only the intestinal stage of the surgery in order to help the patient lose weight and complete the procedure with sleeve gastrectomy after 12 months. Differently from the classic duodenal switch, a bipartition of intestinal transit was made, performing duodeno-ileal anastomosis in the second portion of the duodenum, without duodenal exclusion, in order to simplify the operative act at that moment. Manual duodeno-ileal anastomosis was performed in the second portion of the duodenum 250 cm from the ileocecal valve, in a Roux-en-Y shape, measuring approximately 4 cm (**Figure 1**). We concluded that the surgery and the patient were discharged on the second postoperative day without complications. After 12 months the patient presented a successful weight loss and the team, in agreement with the patient, identified no need for sleeve gastrectomy. Today, after 14 years of follow-up, the patient is 64 years old, lost 55 kg, has a BMI of 31.2 kg/m² and has the comorbidities controlled. The excess weight lost (EWL) was 78.7%, what means the surgery was successful [12]. During this period, the patient presented complaints of gas and episodes of diarrhea, mainly related to the ingestion of fatty foods, which are common in patients after this kind of surgery. Such interurrences were controlled with clinical treatment and nutritional guidance.

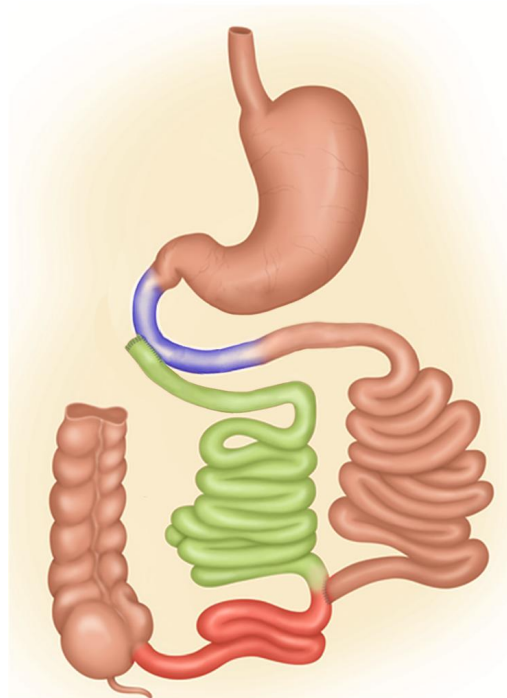


Figure 1. Transit bipartition with duodeno-ileal anastomosis.

3. Discussion

A 50-year-old female patient with severe obesity and comorbidities, as mentioned above, underwent intestinal transit bipartition with duodeno-ileal anastomosis, without duodenal exclusion.

Obesity is a chronic and recurrent disease associated with several complications which cause and worsen other acute and chronic diseases and reduce life expectancy [13] [14] [15]. Although highly stigmatized and perceived by many as a “choice of lifestyle” easily treatable by behavioral changes, obesity is associated with considerably high rates of treatment failure and a progressive life-long course [13] [16] [17].

In this context, bariatric surgery has become an effective safe tool to treat this serious disease. Surgical principles of gastric restriction and/or gastrointestinal bypass (malabsorption) have remained practically unchanged over the years, although some mechanisms of action have been elucidated concomitantly with advances in the knowledge of the molecular biology of energy balance and appetite regulation [11]. Enterohormones are one of these mechanisms that have attracted much attention in recent years. The neuroendocrine concept contributes to a better understanding of the mechanisms of satiety mediated by adaptive changes in the gastrointestinal tract through bariatric/metabolic surgeries [18]. Based on this concept, the distal intestine (ileum) gains importance in the satiety mechanism: when food arrives earlier in the ileum, enterohormones are released causing, thus, satiety (GLP-1, PYY, others) [19]. This explanation calls attention to the idea that getting fat is not only related to excess eating, but mainly to the site where food is arriving and the type of food that is being absorbed: the more proximal is the site (duodenum/jejunum) the lower is the satiety, the greater is the food intake, the greater is the absorption, and the lower is the stimulation by satiety-related enterohormones.

Bariatric surgery in very obese patients, those with morbid obesity, is challenging due to the risks inherent to this class of patients [20] [21]. In these cases, intraoperative technical difficulties, early surgical complications, and insufficient weight loss in the long term are often observed [22] [23] [24].

In an attempt to reduce perioperative risks, a two-stage approach has been advocated: first, sleeve gastrectomy followed by biliopancreatic diversion (BPD), after the patient has lost a substantial amount of weight [25].

Gastric bypass was also proposed in two stages in order to reduce risks and complications in severely obese patients undergoing bariatric surgery [26].

This method contributes to patient safety. Yet, problems may occur during surgery, mainly with respect to anatomy. For example, the approach to the esophagogastric junction region can be prevented by an enlarged steatotic liver. In addition, the approach poses potentially serious risks and complications, such as bleeding and fistulas in the sleeve gastrectomy or gastric pouch [23].

Isolated transit bipartition has been proposed in cases of difficulty in approaching the upper abdomen in patients with severe obesity, mainly related to

hepatomegaly [23]. Godoy *et al.* [23] proposed a gastroileal anastomosis, isolated intestinal transit bipartition performed in the pre-pyloric region without excluding intestinal segments and without performing sleeve gastrectomy. The sleeve gastrectomy is to be performed in a second moment after the patient loses weight, thus completing the classic transit bipartition [27].

In the case presented here, the isolated duodeno-ileal anastomosis was used in a patient who had the difficulties listed above: morbid obesity associated with hepatomegaly preventing gastric approach for conventional bariatric surgery. In this procedure, there was no exclusion of the intestinal segments and the stomach was preserved. This did not affect the result of weight loss and metabolic control. Further, the sustained weight loss observed over 14 years can probably be attributed to the neuroendocrine mechanism, because the food arrives earlier in the distal intestine (ileum), as described earlier [28].

The duodeno-ileal anastomosis divided the intestinal transit without generating exclusion similarly to the transit bipartition described by other authors, but in the bipartitions described by these authors, the anastomosis is performed between the gastric antrum and ileum [27] [29].

The fact that the stomach is preserved allows, if necessary, a sleeve gastrectomy in a second stage to complete and/or optimize the metabolic effect of the surgery [23] [26].

The patient in this study showed a weight loss of 19.2%, similar to other patients of other studies [30] [31]. A review showed that the BMI may drop about 10 - 15 points and the excess weight loss may reach 70% within 2 years after surgery [32]. In another study, patients had a 60% excess weight loss after 18 months of surgery and there was no difference among RYGB, sleeve gastrectomy or sleeve gastrectomy with jejunal bypass (SGJB) [33]. The patient in the present study had 78.7% of excess weight loss, more than patients in other studies.

The results of bariatric surgery go far beyond considerable and sustained weight loss. For severely obese (grade III) patients undergoing surgery, a total reversal rate of type II diabetes can be found in 76.8% of cases; obstructive apnea is usually resolved in up to 85.7% of cases; systemic arterial hypertension tends to improve in 78.5% of cases; and the hyperlipidemic condition can be corrected by 88%, with a reduction in serum triglyceride and cholesterol levels. The ultimate consequence is the reduction of global mortality by up to 35% after surgery, as well as morbidity and risk of death related to cardiovascular diseases [34] [35] [36].

Another aspect that points to the effectiveness of bariatric surgery is the fact that the mortality resulting from complications of this surgery is low. A longitudinal, observational, prospective, multicenter study performed of more than 4500 patients led to the conclusion that the mortality rate ranged from 0.3% to 4.1% for patients who underwent a surgical procedure for weight reduction. These rates are comparable to other high-complexity surgeries [37].

In general, several studies in the literature point to an improvement in the

quality of life of patients undergoing any type of bariatric surgery [38] [39]. Improvement is observed in the first three months after surgery, and in 18 months the quality of life can be comparable to normal populations in terms of weight [40].

The procedure reported in this article allows the endoscopic access to the stomach and the entire duodenum and the food travels through the first and second portions of the duodenum before reaching the duodeno-ileal bipartition, which probably improves the absorption of some nutrients in this region, which does not occur in other bariatric surgeries with duodeno-ileal anastomosis, such as duodenal switch, which excludes practically the entire duodenum [41] [42].

4. Conclusion

Bariatric surgery is a safe and effective treatment. However, some patients may need special strategies, as in the case of patients with severe obesity. The proposal to perform the procedure in two stages is an option that can offer greater safety in this class of patients, especially when there are technical difficulties in the intraoperative gastric approach. In the case of the patient presented here, the duodeno-ileal anastomosis provided effective weight loss during a follow-up of 14 years, without need, until now, for the second stage of the surgery for the gastric approach. Thus, we can conclude that intestinal transit bipartition with duodeno-ileal anastomosis and without duodenal exclusion may be an option in patients with severe obesity to be performed as the first stage of bariatric surgery.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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