

## Non-surgical treatment of high-output fistula after gastric bypass in a patient with superobesity: case report

*Tratamento não-cirúrgico de fistula de alto débito pós-“bypass” gástrico em paciente portador de superobesidade: relato de caso*

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### ABSTRACT

**Introduction:** Bariatric surgery is currently the indicated treatment for morbid obesity and the Roux-en-Y gastric bypass (RYGB) technique is widely used worldwide, even for super obese patients. In Brazil, RYGB is the most chosen technique of bariatric surgeons. Although, anastomosis or stapling line dehiscences are one of the most feared surgical complications. **Case Report:** A patient with gastrojejunal anastomosis fistula after Roux-en-Y gastric bypass communicating with the surgical wound was successfully treated with conservative endoscopic treatment. After diagnosis, the patient underwent upper digestive endoscopy in operating room with introduction of a nasoenteral tube. Eleven days later, a second endoscopy was performed with dilation of the gastrojejunal anastomosis with a Savary-Gilliard bougie. The fistula closed at the day 21 counting from the date of his diagnosis. **Conclusion:** From this report, it's concluded that the conservative approach of post-RYGB fistulas in stable patients with endoscopic aid for positioning the nasoenteral tube and dilation with a bougie can reserve good therapeutic results for the management of this complication and avoid more surgical interventions complex.

**Keywords:** Bariatric Surgery; Gastric Bypass; Anastomotic Leak; Conservative Treatment; Endoscopy, Gastrointestinal.

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## RESUMO

**Introdução:** A cirurgia bariátrica é atualmente o tratamento indicado para a obesidade mórbida e a técnica do *bypass* gástrico em Y de Roux (BGYR) largamente utilizada em todo o mundo, mesmo para pacientes superobesos. No Brasil, o BGYR é a técnica de escolha da maioria dos cirurgiões bariátricos. As deiscências de anastomose ou da linha de grampeamento estão entre as complicações cirúrgicas mais temidas. **Relato de Caso:** Paciente com fístula da anastomose gastrojejunal após *bypass* gástrico em Y de Roux comunicando com a ferida operatória, foi tratado com sucesso com tratamento endoscópico conservador. Após o diagnóstico, o paciente foi submetido à endoscopia digestiva alta em ambiente de centro cirúrgico com passagem de sonda nasoenteral. Onze dias após, foi realizada uma segunda endoscopia com dilatação da anastomose gastrojejunal com vela de Savary-Gillard. A fístula fechou em 21 contando da data de seu diagnóstico. **Conclusão:** A partir desse relato, conclui-se que a abordagem conservadora de fístulas pós-BGYR em pacientes estáveis com auxílio endoscópico para o posicionamento da sonda nasoenteral e dilatação com vela pode reservar bons resultados terapêuticos para a condução dessa complicação e evitar intervenções cirúrgicas mais complexas.

**Palavras-chave:** Cirurgia Bariátrica; “*Bypass*” Gástrico; Fístula Anastomótica; Tratamento Conservador; Endoscopia Gastrointestinal.

## INTRODUCTION

The Brazilian research of Surveillance of Risk and Protection Factors for Chronic Diseases by Telephone Survey (VIGITEL) of 2018, from the Ministry of Health, showed that Brazilians reached the highest rate of obesity in the last thirteen years - with an increase of 67, 8% of the obese population between 2006 and 2018<sup>1</sup>. Facing this very significant statistics, Brazil through the Unified Health System (SUS) has been proposing actions and approaching the issue in a preventive, therapeutic and curative manner. Due to studies with substantial results in favor of incorporating bariatric surgery for the treatment of obesity<sup>2</sup>, in Brazil, since 2001, bariatric surgeries started to be performed with SUS' resources<sup>3</sup>. According to SUS data, 93.22% of bariatric procedures performed in Brazil by the public system in 2017 were using the Roux-en-Y gastric bypass technique<sup>4</sup>.

The rate of complications of this procedure has become greatly reduced over time, especially when surgery is performed in specialized centers, with a large volume of operated patients and experienced surgeons<sup>5</sup>. Fistulas represent one of the possible complications of surgical intervention for the treatment of obesity, occurring in between 0.1% and 8.3% of cases<sup>6</sup>. This complication is defined by inadequate tissue healing that allows communication between two epithelialized surfaces (e.g., gastrocutaneous fistula, such as our case), while the pure output of gastrointestinal content through the suture line is defined as leakage or anastomosis dehiscence. The scenario of inadequate healing represents a challenge for medical

staff, often with difficult initial diagnosis, prolonged hospitalization, high financial expenditures and requiring complex, multidisciplinary treatment, with control of sepsis, nutritional deficit and fistula itself, and may also be fatal, with a mortality rate between 37.5% and 50%<sup>7-9</sup>.

Regarding the risk factors for the development of, an analysis performed through the Metabolic and Bariatric Surgery Accreditation and Quality Improvement database, which included more than 77,000 patients, concluded that the level of serum albumin is an important predictor for the development of fistulas and leaks - here emphasizes the relevance of a good contribution and multidisciplinary nutritional guidance in the preoperative period of bariatric surgery. In addition to albumin levels, other parameters were analyzed and correlated with significant statistics: body mass index (BMI), age, duration of surgery, American Society of Anesthesiologists (ASA) score >3, previous pulmonary embolism and partially dependent functional status<sup>8</sup>. It is also observable in the literature that male individuals with preoperative oxygen dependence, sleep apnea, systemic arterial hypertension and diabetes, as well as the surgeon's experience are also contributing factors to increase the incidence rates of anastomosis leaks<sup>5,9,10</sup>.

The management of this complication ranges from conservative clinical treatment to exploitative laparotomy with primary fistula closure, as well as radiological or laparoscopic drainage in cases of intra-abdominal collection formation. Although the surgical approach of the fistula is still the standard procedure in many bariatric surgery centers, this alternative is generally little resolute for leakage, resulting in a resurgence of the fistula and the

need for consecutive surgical approaches in the patient, although there are still controversies<sup>11</sup>. At the same time, the totally conservative conduct of cases can result in chronic fistula, which makes the conduct of these cases even more challenging.

Endoscopic interventions have been proposed as the basis for the treatment of several complications of gastrointestinal surgeries and, recently, several minimally invasive therapeutic alternatives have shown successful outcomes or with promising results<sup>12</sup>. Given this specific scenario, the endoscopic approach has been proposed as treatment of post-gastric bypass fistulas. Several modalities of this type of treatment are under evaluation and being put into practice by bariatric surgery teams nationally and internationally, including the application of glues, clips and drains, in addition to the use of self-expansive prostheses, sutures and septotomies. Due to these advances, bariatric teams have been incorporating endoscopists into their own team of specialists or in direct referencing.

The purpose of this report is to show the clinical evolution of a superobese patient submitted to open gastric bypass, whose fistulous condition developed and proved to be different from the routine, as well as to discuss the options for clinical and endoscopic treatment that culminated in its total resolution and complete closure of the fistulous orifice and incision.

## CASE REPORT AND METHODS

The Free and Informed Consent Form was approved by the Research Ethics Committee of Anhembi Morumbi University – opinion number 4,419,093 and signed by the patient.

LFB patient, male, 27 years old, white, height 1.76 m, initial weight 243.6 kg, initial BMI 78.64 kg/m<sup>2</sup>, entered the Care Center for Severely Obese Patients at the Hospital "Fornecedores de Cana", from Piracicaba (state of São Paulo - Brazil) on May 13, 2019, with multidisciplinary outpatient care at the Bariatric Clinic. He had the following comorbidities: systemic arterial hypertension and obstructive sleep apnea (he did not use CPAP, although it was indicated). Smoking with smoking load of 10 packs/year. Alcohol consumption of 34g of alcohol/day. A former cocaine user, he referred to a statement for eight months before surgery. Preoperatively, after a brief weight gain reaching 247.20kg (+3.4kg), he lost weight to 227kg, with BMI of 73.28kg/m<sup>2</sup> prior to the operation. After the preoperative preparation, he signed informed consent of the surgery. Submitted to Roux-Y gastric bypass, without ring, by laparotomy on December 18, 2019, kept under observation in the intensive care unit for 24 hours. The surgical technique used in anastomosis was terminolateral, in two planes of continuous suture of polydioxanone 3-0, interrupted at angles, checked with methylene blue test infused through orogastric tube (Faucher 11). No (cavity) drains are used in the routine of elective gastroplasties of this service. He evolved unchallenged in the immediate OP, was discharged to home on the third postoperative day.

Readmitted to 4<sup>th</sup> postoperative day after suffering fall from bed height while sleeping, with abdominal trauma, according to the report, with effort to get up. He reiterated that he was asymptomatic, that he had no vertigo or any sign of presyncope before the event, and that he did not lose

consciousness at any time. He denied abdominal pain prior to the accident and stated that he was feeding on a liquid diet as recommended. On physical examination he was in good general condition, eupneic, hearted and hydrated. He presented large hematoma in the incision, with blood secretion outflow through a small dehiscence of 4 cm in the middle portion. Vital signs: BP=134x65mmHg; heart rate of 73 beats per minute; respiratory rate of 15 breaths per minute; temperature of 36.9°C. Saturating 96% in ambient air. The abdomen was globose, flaccid on palpation, with no signs of peritonitis. Cardiovascular and pulmonary physical examination were without noteworthy alterations. In laboratory tests performed on admission, hemoglobin (Hb) was observed to drop since his hospital discharge from surgery (Hb [12/18/2019 - immediate postoperative] = 16.7g/dL → Hb [12/21/2019 - 4<sup>th</sup> postoperative day] = 12.3g/dL), as well as mild leukocytosis (leucocytes = 11,140/mm<sup>3</sup>, reference = 4,000-11,000/mm<sup>3</sup>).

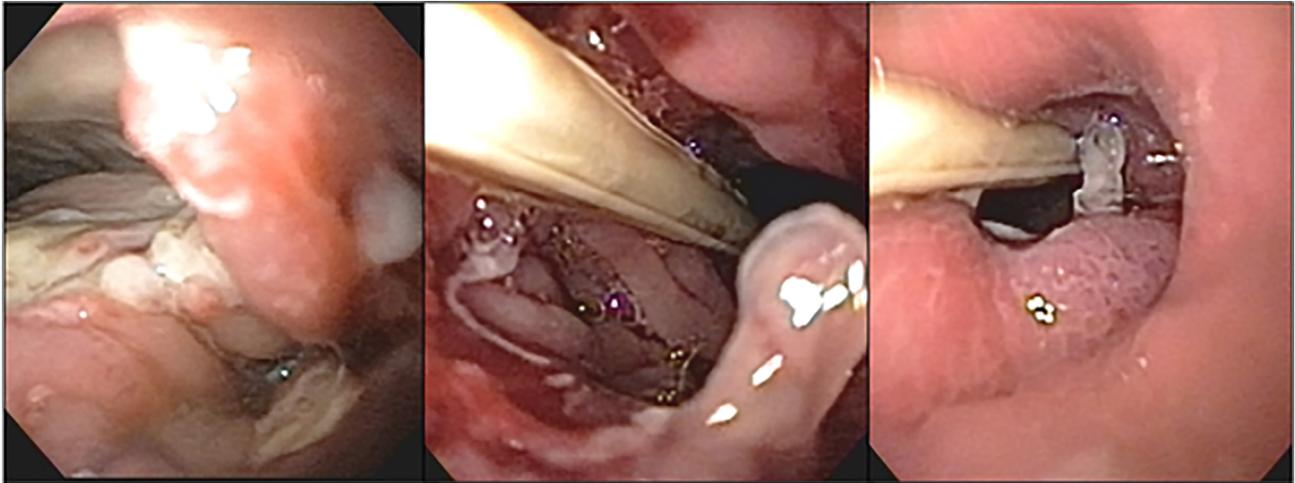
The initial approach was clinical observation, with hospitalization, rest and antibiotics. Maintained in a liquid diet without residues, the patient progressed well and was discharged from the hospital in four days (7<sup>th</sup> postoperative day).

Two days after discharge, she returned to the same hospital service complaining of suspected discharge from the diet by the incision after feeding. Physical examination showed saliva release through the surgical wound. At the time, he was in good general condition, without abdominal pain or alteration of vital parameters.

He was again admitted to hospitalization, with clinical support and antibiotic therapy. Requested upper digestive endoscopy (AE), performed in 10<sup>th</sup> postoperative day (12/27/2019), which showed large fistula at the site of gastrojejunal anastomosis, with a large gastrocutaneous fistulous path, which was possible to enter the device, containing food debris. Nasoenteral probe was passed with positioning 20cm below the efferens loop for enteral diet administration. A second AED was performed (21<sup>th</sup> postoperative day - 07/01/2020) to evaluate the progression of fistula closure and dilation of gastrojejunal anastomosis with Savary-Gillard bougie No. 16, with an excellent advance in its healing. Test with methylene blue was performed orally on 01/17/2020, resulting in negative. A third EDA was performed five days later (01/21/2020), with a finding of the complete resolution of the fistula. All steps have been documented (Figure 1).

## DISCUSSION

Leaks after RYGB occur between 0.1% and 8.3% of cases, and may present as acute or late scenarios. According to the International Sleeve Gastrectomy Expert Panel Consensus<sup>13</sup> we can classify leaks according to the time of appearance - acute (1<sup>o</sup> postoperative day - 7<sup>th</sup> postoperative day); early (7<sup>o</sup> postoperative day - 42<sup>th</sup> postoperative day), late (42<sup>th</sup> postoperative day - 84<sup>th</sup> postoperative day) and chronic (PO>84<sup>th</sup> postoperative day). The classification also applies to fistulas, which retain the potential for a rather unfavorable outcome<sup>7,12,13</sup> - according to the literature, anastomotic leaks that had fistulas, end up being even more challenging, demanding more time and a wider range of therapeutic options<sup>17</sup>. Although this complication currently has a low incidence, it still represents a challenge in its direct



**Figure 1.** From left to right, sequence of images of diagnosis, evolution and fistula closure.

treatment and in the systemic repercussions of infection and inflammatory response, in the management of patients with large body mass, with multiple associated diseases and with psychosocial aspects involved in prolonged hospitalization and multiple interventions.

Furthermore, fistulas after RYGB are considered less severe than those after sleeve gastrectomy, since the existence of the excluded stomach apparently blocks the leak area, in addition to the intraluminal pressure being considered lower and because it has less pulmonary involvement (bronchial fistula). In the RYGB technique, gastrojejunal anastomosis fistulas are the most frequent, representing approximately 67.8% to 69% of the total<sup>15,16</sup> and was the diagnostic finding of the case reported.

This was not the first case of fistula treated without surgery and with minimal endoscopic observation/intervention in this bariatric service, but the dimensions of the fistula, the high body mass index and the unusual history of abdominal trauma differentiate it and deserve to be highlighted. In this regard, two points call the discussion.

First, a few reflections can be made here on the causative mechanism of fistula. The first is that it existed before the patient had the fall, as an occurrence within the normal pathophysiology of post bariatric fistulas, causing or contributing to cause orthostatic hypotension and the fall with abdominal trauma. As a message, we highlight the search for early signs of fistulas, such as tachycardia. However, the patient was with all vital parameters within normal limits at his first hospital discharge, as well as readmission on the day of the fall.

It is important to note that the symptoms of abdominal pain and fever are later in fistulas, and may even be absent, especially in the superobese. Ballesta et al. (2008)<sup>15</sup> reviewed the patients who attended fistula in the postoperative period of RYGB and 49.2% were asymptomatic at the time of diagnosis (the service routinely had the drainage of the cavity). Some studies have shown that sustained aquicardia with heart rate above 120 beats per minute is a sensitive indicator of dehiscence<sup>17,18</sup>. Therefore, the hypothesis of fistula should be considered in all occurrences that have some clinical repercussion or non-favorable evolution in the postoperative period of a gastropasty. Given the suspicion, computed tomography is mandatory when available. The

results will be sensitive enough to depend on the patient's body mass index, as well as the experience of the radiologist.

Thus, the consumption of solids during the period of the liquid diet can contribute to cause fistulas. The first endoscopy of this case showed food residues, although the patient denied the consumption of solids. The third possibility is an accidental fall and that the fistula GJ occurred after abdominal trauma, as a consequence of a sudden elevation of intrabdominal pressure caused by the impact of the abdomen against a fixed and rigid bulkhead, leading to rupture of the suture line of the gastrojejunal anastomosis. A recent postoperative abdominal trauma of bariatric surgery is of rare and unexpected occurrence, referring us to the same message as the previous hypothesis: suspecting a fistulous condition in the face of a clinical occurrence in this period, as is the case of the fall.

A fourth possibility, also after accidental fall, is that there was an acute eventraction at the time of abdominal trauma, not diagnosed at hospital admission because it is contained by the outermost layers of the abdominal wall. The abdominal loops gutted by the incision may have generated an intestinal subocclusion, increasing the pressure on the recent GJ anastomosis, leading to its opening and consequent leakage. It is necessary to record, long already published, the benefits of laparoscopic procedures against laparotomic procedures (technique used in the case), especially with regard to abdominal wall complications. A posteriori reflection on the initial approach would be the earlier surgical approach to aponeurotic dehiscence of the wall, which could minimize the pressure inside the anastomosis.

The second point called to the discussion and objective of this report is the clinical conduction of a severe, high-output GJ fistula in a superobese patient, based on the endoscopic approach, whose intervention was small but sufficient to ensure the resolution of the condition. In principle, in classical algorithms, the surgical approach is imposed in view of the suspicion or confirmation of acute/early fistula, with the presence of organized collection or not, aiming at the path and cleaning of the cavity. There is rarely an intention to resuture, strengthen or occlusion of the fistulous orifice, since there is often tissue unviability to

do so, although almost invariably some attempt is made to close the fistula primary.

In cases where the diagnosis of anastotic fistula occurs in clinical stability, a range of non-surgical options are opened, among them the variants of endoscopic management. The benefits of endoscopic treatments are notified in this way, with gains in the abbreviation of hospitalization time and cost reduction<sup>6</sup>. They require, however, a multidisciplinary team of gastroenterologists, endoscopists and radiologists in union with the bariatric surgeon. There are few clinical trials comparing surgical, endoscopic and purely clinical/non-interventional options, given the low occurrence of these complications, the heterogeneity of patients and treatment options, as well as the ethical aspects involved. However, the available literature points to the endoscopic approach with good results in view of the resolution of the fistulous picture<sup>20-22</sup>.

Therapeutic endoscopy has gained a field in several post-bariatric complications. In addition to fistulas, susterlasts, hemorrhages, removals of silicone bands and silastic rings, argon plasma applications and endoscopic suture techniques have been improved and put into daily practice. Specifically in fistulous complications, internal drainage techniques with enlargement of the fistulous orifice through septotomy and balloon dilation, and external drainages with allocation of vacuum or capillary drains, both transparietal, have promising results in the conduction of complications that presented relatively stable clinical<sup>23</sup>.

Stents, clips and biological materials such as fibrin glue are the most commented options in the literature, with effective results and high success rates in fistula closure<sup>14</sup>. However, the association of adjuvant materials for fistula closure eventually requires, in many cases, the performance of several endoscopies for stent repositioning or glue reapplication, for example, in addition to complications resulting from migration<sup>13</sup>. From this, one of the endoscopic approaches to be put on the agenda is balloon dilation associated or not with septotomy.

Fistulas usually occur with increased intragastric pressure due to downstream reactional snosis, which can be solved by dilation, which will act allowing natural internal drainage of the perigastric abscess when present, reducing the passage of secretion through the fistula - which, in turn, are measures that allow the gradual closure of the fistulous orifice. Therefore, some factors that feed the existence of the fistula, such as undrained abscess, important inflammatory reaction and increased intraluminal pressure are addressed in order to facilitate healing within an adequate clinical and nutritional support environment.

Furthermore, the simple endoscopy with access to the efferent loop helps drainage, because there is a decrease in pressure inside the loop due to the passage of the endoscope. The patient underwent three endoscopies: in the first, there was an effective diagnosis of fistula and positioning of the nasoenteral tube below the gastrojejunal anastomosis and in the second there was dilation of the anastomosis with Savary-Gillard bougie No. 16, already with observation of good excellent progress in healing. As described in the EDA report, anastomosis dilation provides a reduction in the downstream stenosis area to accelerate fistula closure by allowing better drainage of secretions. The last endoscopy observed fistula closure.

As reported, a nasoenteral tube was allocated with distal access to the fistula, about 20 cm below the defect at the time of the first endoscopy. Within this item, enteral nutrition with distal access to leakage, being offered as early as possible promotes more physiological support, reduces the risk of mortality in the management of gastrointestinal fistulas, as evidenced, in addition to reducing the costs involved in strictly parenteral nutrition<sup>24,25</sup>.

## CONCLUSION

From this report and the experience of the service, it is concluded that the conservative approach with endoscopic aid for the positioning of the nasoenteral tube and dilation with bougie can reserve good therapeutic results for the conduction of fistulas after RYGB. As a message, attention is paid to the development of endoscopic techniques as an alternative in cases of post-bariatric fistulas and incorporation of qualified professionals in the teams, whose current state has already contributed to the bariatric therapeutic arsenal.

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