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Editorial

Therapeutic flexible endoscopy after bariatric surgery: a solution for complex clinical situations[☆]

Endoscopia flexible terapéutica tras cirugía bariátrica: una solución a situaciones clínicas complejas

The inter-relationship of advanced therapeutic endoscopy and bariatric surgery makes it easier to manage postoperative complications with a minimally invasive approach while avoiding complex reoperations that could increase morbidity and mortality. For these reasons, endoscopy after bariatric surgery can be used in surgical situations that are difficult to manage, such as: infection/fistula, weight regain, choledocholithiasis, stenosis and complications associated with the gastric band.¹ This technique is becoming more frequently used and could be considered an endoscopic surgery subspecialty based on the growing number of publications.

Fistulas of the gastric bypass pouch and after gastric sleeve procedures can cause peritonitis or perigastric abscess, which would need reoperation in the first case or a conservative approach in stable patients treated with abdominal drainage. This type of abscess can be treated without surgery by means of trans-abdominal percutaneous drainage or internal endoscopic drainage, which represents a lower risk of injury to adjacent organs.

Endoscopic therapy can be used in conjunction with surgical treatment mainly in early postoperative stages, and even during reoperation, with the intention to resolve the 3 main mechanisms that maintain the fistula: (1) distal gastric stenosis; (2) intragastric hypertension; and (3) persistence of the fistulous tract. These principles can be applied to Roux-en-Y bypasses,² but they seem to be more beneficial after gastric sleeve procedures.^{3,4}

The type of endotherapy (stent, stricturotomy or dilatation) depends on the time of the postoperative period, which is divided into 4 stages: acute (<7 days), early (7–45 days), late (1.5–3 months) and chronic (>3 months). The widest (28 mm) and longest (15 cm) self-expandable metallic stents promote the occlusion of the fistula orifice, rectify the deviation from

the axis of the gastric pouch and expand distal stenosis, resulting in decreased endoluminal pressure. These stents are used in acute and early stages, sometimes in late stages and very rarely in chronic stages.

Stricturotomy is the incision made in the gastric stenosis, which is called septotomy when there is a septum involving the pouch wall; it is usually adjacent to the orifice of the fistulous tract and causes persistent flow as it directs the digestive secretions toward the fistula. Dividing this septum with electrocautery or argon plasma coagulation was the first effective endoluminal method for the treatment of chronic fistula after gastric sleeve surgery. We began using this approach some years ago due to the failure of isolated endoscopic dilatation in areas of intense tissue fibrosis, in late stages and in chronic cases.⁴ Thus, immediately after the incision in the tough, stenotic area, we use dilatation with a 30-mm balloon, which corrects anatomic and functional alterations.⁵

This early endoluminal approach reduces hospitalization and intensive care times especially in gastric sleeve procedures. In these cases, chronic fistula is difficult to treat and there is a tendency for recurrence or even progression into a gastrobronchial fistula and afterwards a long-term subphrenic abscess. This situation explains why bariatric endoscopy has been substituting the riskier, more invasive classic approach of total gastrectomy.^{3,4}

Weight regain is secondary to several causes, one of which is the increased diameter of the gastrojejunal anastomosis (>15 mm), which can be reduced through endoscopic methods favoring to weight loss. The application of argon plasma on the anastomosis is an endoscopic therapeutic option as it causes an inflammatory reaction resulting in reduction of the diameter, when it heals it causes fibrosis that is difficult to dilate. Another device, the *Apollo Overstitch*, is the newest

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device for endoscopic suture that allows us to reduce the diameter of the pouch and the anastomosis, and it provides internal suture of the anastomosis, reducing its diameter.^{6,7} Even so, these methods are recent and require long-term studies.⁷

Cholelithiasis appears in up to 30% of patients who undergo gastric bypass surgery. Its combined treatment (endoluminal and laparoscopic) can be done with transgastric endoscopic retrograde cholangiopancreatography (ERCP).

Simultaneously with the laparoscopic cholecystectomy, a 1-cm transgastric incision is made on the anterior side of the excluded stomach for the passage of the duodenoscope, which is introduced into the abdomen through a 15-mm trocar. The technique involves identifying the excluded stomach and performing a gastrotomy. The sterile duodenoscope is passed through the gastrotomy with the aid of the second surgeon; the endoscope reaches the duodenal papilla and the biliary duct for procedures like conventional oral ERCP.⁸

The main complications of the *adjustable gastric band* (AGB) are distal slippage and gastric erosion, which can be treated endoscopically. In the initial stage of erosion, we recommend a wait-and-see approach until there is penetration in the stomach greater than 50% of the circumference of the AGB due to the risk of gastrointestinal bleeding or perigastric abscess, which can also be resolved by endotherapy.^{9,10} When an adequate area of intragastric migration is identified, it is resected and extracted endoscopically, with an insignificant rate of complications and excellent possibilities for success.¹¹

Band slippage causes proximal dilatation of the gastric pouch and obstructive symptoms.¹ Classic laparoscopic removal is indicated, and there is a risk for pulmonary aspiration. In order to avoid this complication, we recommend an endoscopic approach under mild sedation in order to aspirate the gastric stasis. Afterwards, the endoscope passes through the compression area of the AGB, it is hyperinflated and this causes slippage of the device, which can result in the repositioning of the band to its previous position.

In gastric bypass, the *gastrojejunal anastomosis* (GJA) can develop stenosis or marginal ulcer, which are treated with TTS balloon dilatation and the use of proton-pump inhibitors and sucralfate, respectively.¹² When there are unabsorbable sutures or surgical staples, their endoscopic removal is also indicated to favor ulcer healing.¹³ This can cause stenosis due to scar retraction, which may require stenotomy in the fibrotic area, followed by balloon dilatation.

Reduction of the pouch diameter at the GJA or the area of compression can cause *impaction*, which initially improves with clinical measures, although the definitive solution involves endoscopic extraction.

Gastric bypass rings can cause intragastric erosion, slippage and food intolerance. In these cases, the ring that has migrated toward the lumen is cut with an endoscopic clamp-scissor and extracted with foreign-body forceps. Ring slippage and food intolerance with or without gastric stenosis are treated with dilatation using a 30-mm balloon, which has a low rate of complications.¹⁴ However, weight may still be regained due to the increased pouch diameter, which may be treated with the application of argon plasma. Another preventive measure is the introduction of a self-expandable metallic stent that causes an inflammatory process around the ring and

promotes intragastric erosion, which is extracted together with the prosthesis after 10 days. In this region, there is fibrosis and controlled reduction of the pouch diameter, aimed at maintaining weight and proper tolerance of solid intake.¹⁵

In short, bariatric endoscopy is a minimally invasive surgery and most procedures are done in the outpatient setting under sedation. This endotherapy can also be used in conjunction with surgical approaches to control complications. Furthermore, it plays a fundamental role in severe and challenging situations for surgeons, such as gastric fistulas with associated sepsis, in which the endoluminal approach has reduced morbidity and mortality compared with the traditional surgical approach. In addition, it reduces hospitalization time and intensive care requirements, which lowers overall treatment expenses.

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Manoel Galvão Neto^{a,b,*}, Josemberg Marins Campos^{b,c,d}

^aGastro Obeso Center, São Paulo, Brazil

^bInvestigational Surgical and Endoscopic Procedures Committee, International Federation of the Surgery of Obesity (IFSO), Brazil

^cSociedad Brasileña de Cirugía Bariátrica y Metabólica, Brazil

^dUniversidade Federal de Pernambuco, Pernambuco, Brazil

*Corresponding author.

E-mail address: Galvaon@gmail.com (M. Galvão Neto).

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