

# Resuturing of Stomach in Endoscopic Sleeve Gastroplasty 8 Months After Original Procedure

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## ABSTRACT

Endoluminal treatments such as endoscopic gastroplasty have been gaining ground in obesity treatment. A 52-year-old woman gained weight 5 months after endoscopic gastroplasty. Thus, it was decided to resuture the greater curvature of the stomach 8 months after the initial procedure by reducing the gastric pouch even further. The patient lost 16% of her total body weight with this procedure. Endoscopic gastroplasty, which can be reperformed in patients who regain weight, reach a plateau, or do not achieve the initial planned weight loss, is an effective and safe first-line obesity treatment.

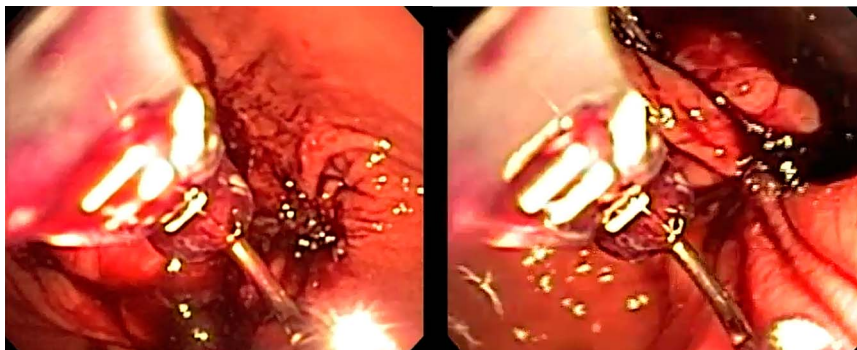
## INTRODUCTION

Bariatric surgery is the most effective obesity treatment, but only a minority of patients qualify for bariatric surgery (body mass index [BMI] of  $>40 \text{ kg/m}^2$  or BMI  $>35 \text{ kg/m}^2$  and comorbidities).<sup>1</sup> In this context, endoscopic techniques play an increasingly important role in bridging the gap between medical/lifestyle therapies and surgery. With the objective of reducing the gastric pouch using the OverStitch suturing system (Apollo Endosurgery, Austin, TX), endoscopic sleeve gastroplasty (ESG) is worth mentioning as a minimally invasive approach with low complication rates. This device is Food and Drug Administration-approved for tissue apposition and is increasingly used to perform ESG in obese patients who do not meet the criteria for bariatric surgery; however, more work needs to be performed in bridging the procedure for super obese and high-risk patients.<sup>2</sup>

## CASE REPORT

A 52-year-old obese woman (BMI:  $36 \text{ kg/m}^2$ ) with no comorbidities underwent ESG after the failure of clinical and endoscopic treatments (intra-gastric balloon) for obesity. ESG was performed using the OverStitch suturing system with 4 plications (6 needle run-throughs) in a “U-shape” according to the technique previously described by the authors (Figure 1).<sup>3</sup> After the procedure, the patient was followed up by a multidisciplinary team according to the institution’s protocol, with nutritional guidance and the prescription of adequate physical exercise; the patient lost 12% of her total weight, achieving a BMI of  $32.2 \text{ kg/m}^2$ , 5 months after the procedure. However, she stopped losing weight with the prescribed regimens, with loss of postprandial feeling of satiety 8 months after the procedure, and progressive weight regain reaching a BMI of  $33.9 \text{ kg/m}^2$ . Laboratory tests did not show any significant changes. The psychologist reassessed the patient and did not detect any eating disorder. The upper gastrointestinal endoscopy showed a wider gastric lumen than in the immediate postoperative period (Figure 2).

At this point, repetition of an endoscopic gastroplasty procedure with additional sutures to decrease the gastric lumen was proposed and the patient accepted. The OverStitch system was used with 2 plications in the distal body and the proximal body, performed in the following order: anterior wall, greater curvature, posterior wall that was then repeated in the opposite direction. Each plication corresponded to 6



**Figure 1.** Endoscopic images of the first endoscopic sleeve gastroplasty.

needle run-throughs. The final result was a gastric lumen of noticeably smaller caliber. The procedure was completed within 50 minutes, without incidents (see Video 1, Supplementary Digital Content 1, <http://links.lww.com/ACGCR/A4>). The patient was fasted for 2 hours and prescribed antiemetic drugs and proton-pump inhibitors. After starting a liquid diet, the patient's tolerance was confirmed, and she was discharged on the same day. She was again counseled by the multidisciplinary team about physical activity (light exercises without increasing the intra-abdominal or Valsalva pressure) and an adequate dietary plan was drawn up (low caloric liquid diet for 30 days, followed by 15 days of a pureed diet and 20 days of mashed foods) according to the normal protocol after this procedure. After 6 months of follow-up, the patient had a BMI of 30.5 kg/m<sup>2</sup>, corresponding to a loss of 16% total body weight loss (TBWL) following nutritional guidance.

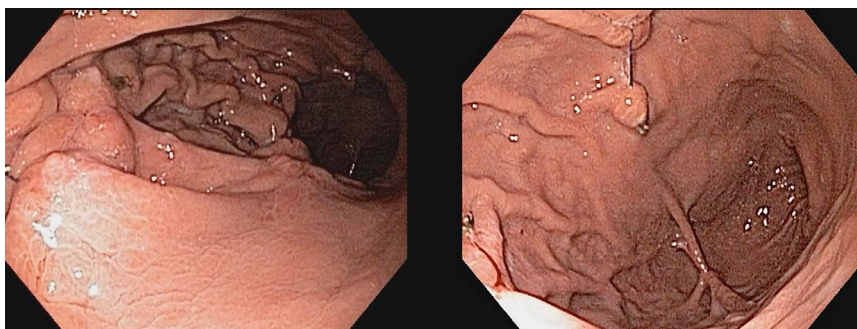
## DISCUSSION

Bariatric endoscopy is increasingly a nonsurgical treatment option for obesity and associated comorbidities. In 2008 and 2010, Fogel et al and Brethauer et al, respectively, described the reduction of the gastric lumen using an endoscopic suturing device.<sup>4,5</sup> However, the sutures were superficial and nondurable. Endoscopic suturing devices have evolved since these reports and, in 2013, Abu Dayyeh et al reported the feasibility of endoscopic gastroplasty in 4 patients with parallel sutures applied to the lesser curvature of the stomach, resulting in a tubular aspect of the gastric lumen similar to the sleeve gastrectomy and surgical gastric plication.<sup>6</sup> In 2016, Lopez-Nava et al published one of the

largest series of endoscopic gastroplasty cases comprising 242 patients in 1 European center and 2 American centers. The TBWL was 16.8% and 19.8% at 6 and 18 months (data available for 137 [57%] and 30 [12%] patients), respectively.<sup>7</sup> The Primary Obesity Multicenter Incisionless Suturing Evaluation: The PROMISE Trial (ClinicalTrials.gov Identifier: NCT01662024), a multicenter study to evaluate the efficacy of this procedure in the United States, was recently completed, but the results are not yet available.

Weight loss is more significant in the first months after endoscopic gastroplasty with this being a predictor of TBWL at 24 months. In fact, the probability of a patient reaching  $\geq 10\%$  TBWL at 24 months is only 18% if this patient does not reach  $>10\%$  TBWL at 6 months.<sup>8</sup> It should be noted that with endoscopic gastroplasty there is no irreversible anatomical alteration of the gastric cavity.<sup>9</sup> In a series of 25 patients who achieved an average TBWL of 18.7%, Lopez-Nava et al reported that in only 1 case it was necessary to perform a second endoscopic gastroplasty because of loss of plications.<sup>10</sup>

In the current case, a few months after the first endoscopic gastroplasty procedure, the patient stopped losing weight and stopped feeling early satiety, which, as mentioned above, is highly predictive of long-term failure of the technique. Although the loss of plications was not identified in the follow-up endoscopy, the luminal diameter was larger than would be expected for the intervention performed. The authors hypothesize that an initial poor compliance to the diet (although denied by the patient), vomiting in the first month, or loose gastric



**Figure 2.** Upper endoscopy showing loosened stitches after the first endoscopic sleeve gastroplasty.

sutures may explain the unintentional increase in the gastric lumen width. We stress that in the presence of unsatisfactory results after endoscopic gastroplasty, with insufficient weight loss, the gastric anatomy must be re-evaluated and the follow-up must be checked by a multidisciplinary team. The endoscopic gastroplasty may be repeated if necessary in the future to achieve long-lasting results. Alternatively, a Y-roux gastric bypass or vertical sleeve surgery may be performed.<sup>8,9</sup>

In cases that do not meet the criteria for bariatric surgery, a second endoscopic gastroplasty is the safest and the easiest option to achieve weight losses again, although in cases of weight regain that reach surgical criteria, probably a surgery is currently the best option until further studies are carried out.

## DISCLOSURES

Author contributions: Mdp Galvão Neto approved the final version of the manuscript. M. Silva, LL Baldim, A. Teixeira, and S. Gomes collected data and wrote the manuscript. E. Grecco wrote and edited the manuscript. TF de Souza wrote the manuscript. G. Macedo and LG de Quadros revised the manuscript. M. Silva is the article guarantor.

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