

Video case report

# Conversion from purely restrictive bariatric procedures to laparoscopic Roux-en-Y gastric bypass

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The two most common restrictive surgical procedures for treating morbid obesity are laparoscopic adjustable gastric banding (LAGB) and vertical banded gastroplasty (VBG), either open or laparoscopic. Restrictive procedures are easy to perform and have very low surgical morbidity and almost no surgical mortality. However, they often fail to achieve sufficient weight loss in the long term [1].

The laparoscopic Roux-en-Y gastric bypass (LRYGBP) has in addition to the restrictive component several other mechanisms to induce weight loss: a malabsorptive component, dumping syndrome, and reduction of appetite. Mean weight loss after gastric bypass (GBP) exceeds that of LAGB and VBG in most comparative series [2–4].

When weight loss after a restrictive procedure is insufficient, conversion to a GBP seems appropriate. It has been recognized that revision surgery may be extremely challenging and that it is associated with higher morbidity than primary procedures [5]. The aim of this report is to show our surgical technique and the results of 3 patients who were converted from LAGB and laparoscopic VBG to an LRYGBP.

## Patients and Methods

Three patients who had undergone a laparoscopic restrictive procedure for morbid obesity (two laparoscopic VBG and one LAGB) in the past and regained weight over time were converted to LRYGBP. Details of the surgical procedures are presented in a video (available at [www.SOARD.org](http://www.SOARD.org)), and indications, results, and complications of revision surgery are discussed.

## Case Presentation

The first patient was a 26-year-old woman who underwent laparoscopic VBG in 1997 for morbid obesity (BMI 41 kg/m<sup>2</sup>). Her maximum weight loss was 29 kg a year and a half after surgery. In 2001 she developed progressive weight regain and symptomatic gastroesophageal reflux. A contrasted upper gastrointestinal radiograph showed enlargement of the gastric reservoir and a communication between the pouch and the excluded stomach in the upper part. Conversion to a standard LRYGBP was performed.

The second patient was a 35-year-old woman who underwent laparoscopic VBG in 1999 for morbid obesity (BMI 45 kg/m<sup>2</sup>). Her maximum weight loss was 45 kg two years after surgery. Revision surgery was decided upon due to progressive weight regain despite normal anatomy of the operation in the contrasted radiographic examination. Conversion to a ringed LRYGBP was performed.

The third patient was a 36-year-old woman who underwent LAGB for morbid obesity (BMI 42 kg/m<sup>2</sup>) in 2001. Her maximum weight loss was 44 kg in the first 15 months. In 2003 she presented intolerance to the band, which required multiple adjustments; the band finally had to be deflated with consequent weight regain. A contrasted upper radiograph showed the band in the normal position and an endoscopy ruled out gastric erosion. Conversion to a standard LRYGBP was performed.

## Description of the Video

After neumoperitoneum is installed and trocars are placed in the standard fashion, the first step is to explore the abdominal cavity. Adhesions between the marlex band and the surrounding tissue are dissected with the harmonic scalpel. Using linear staplers, a tubular small gastric pouch is created toward the small curvature of the stomach above the

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gastric band. A 30 F bougie is used to calibrate the size of the pouch. Once the gastric reservoir is constructed, the ligament of Treitz is identified and the jejunum is transected approximately 50 cm distal to the ligament by use of a 45-mm stapler with vascular load. The mesentery is divided by using the harmonic scalpel, and a jejunojejunostomy is performed 100 cm from the transection line. Enterotomies to insert the stapler are performed in both sides and a 45-mm lineal stapler is fired. The common opening is closed by running a 3-0 absorbable suture. The mesenteric defect is then closed using interrupted nonabsorbable suture. The greater omentum is divided, and the jejunal loop is brought up antecolic and antegastric. A 1-cm diameter gastrojejunostomy is performed using two layers of sutures. A bougie 1 cm in diameter is used for calibration.

Conversion from laparoscopic VBG to a ringed LRYGBP is performed using a similar technique. Gastric transection to construct the reservoir is performed below the marlex band. The procedure is completed as described above.

In the third procedure, the first step is to identify the adjustable gastric band. The surrounding tissue is dissected until the band is completely freed from adhesions. The band is transected using standard scissors and removed through one of the port-side holes. The gastric pouch is constructed with a lineal stapler 2 cm below the scar tissue. The procedure is finished as previously described.

## Results

All three procedures were completed successfully without intraoperative complications or blood transfusions. Patients have been followed-up in our bariatric surgery outpatient clinic for an average of 17 months (range 15–19) after LRYGBP; mean weight loss has been 19 kg (range 16–25) and BMI 30.5 kg/m<sup>2</sup> (range 28–32.5 kg/m<sup>2</sup>).

The first patient lost 16 kg 19 months after revision surgery and currently has a BMI of 28 kg/m<sup>2</sup>. The second patient lost 17 kg 19 months after revision surgery, with an actual BMI of 31 kg/m<sup>2</sup>. Weight loss of 25 kg was documented 15 months after surgery in the third patient, which gives a BMI of 32.5 kg/m<sup>2</sup>.

## Discussion

Purely restrictive operations (laparoscopic VBG or LAGB) have been the procedures of choice for weight reduction in many centers. Among their multiple advantages are their technical simplicity and low incidence of complications [3]. However, common adverse effects of restrictive procedures are erosions, stenosis, and gastroesophageal reflux or regurgitation. Complications have been documented in 15% to 58% of cases [4]. Long-term follow-up after LAGB and VBG has shown suboptimal weight loss [1,6,7]. Complications and/or insufficient weight loss are the most frequent indications for revisional surgery in patients undergoing restrictive operations. In a study by Ortega et al. [8], the most common cause of

conversion in 23 patients (82%) was insufficient weight loss. Gagner et al. [9] also reported inadequate weight loss as the indication for revision surgery in 24 of 27 patients. It has been recognized that up to 56% of patients require revision surgery for failed VBG [10,11], and between 20% and 30% after an LAGB [7,10].

Staple line disruption of the gastric partition with intercommunication between the gastric pouch and the excluded stomach has been responsible for insufficient weight loss in up to 50% of patients after VBG [12]. Stomal stenosis has been reported in 5% of patients undergoing VBG, and the incidence of band erosion is from 1% to 7% at three years [6]. Symptoms of GERD have been reported in 40% of patients after VBG. Conversion to a GBP resolves heartburn symptoms in 96% of patients [13].

Laparoscopic reoperations are challenging and require some experience. Severe adhesions can be encountered, especially after an open surgery. In our experience with our three patients, dissection could be completed with no complications, and adhesions were easily dissected.

Complications after revisional surgery are well recognized. The most common complications include anastomotic leak, gastrointestinal perforation, wound infection, small bowel obstruction, marginal ulcers, stomal stenosis, pulmonary embolus, and atelectasis [9]. A laparoscopic approach may diminish the frequency of some complications. Calmes et al. [10] reported an overall morbidity of 20%, and major morbidity of 4% in their series of 49 patients. Mognol et al. [14] reported a study of 70 patients who underwent laparoscopic revisional surgery with conversion to LRYGBP; early morbidity was 14.3%, and late major complications occurred in 6 patients (8.6%). Late complications included three stenoses at the gastrojejunostomy, and three patients developed marginal ulcers. In a study of 27 patients who underwent reoperative bariatric surgery by Gagner et al. [9], complications occurred in six patients (22%).

Sustained weight loss after conversion to an RYGB has been well documented. Weight loss in our three patients correlates well with what is reported in the literature. Westling et al. [15] reported a decrease in BMI from 35 kg/m<sup>2</sup> to 28 kg/m<sup>2</sup> after conversion of previously unsuccessful gastric restrictive procedures to GBP. Calmes et al. [10] reported satisfactory weight loss and weight maintenance, with BMI <35 kg/m<sup>2</sup> in more than 70% of their patients.

Conversion from a laparoscopic restrictive procedure to an LRYGBP can be safely performed and lead to appropriate weight loss.

## Appendix

### Supplementary data

Supplementary data associated with this article can be found, in the online version, at doi:10.1016/j.soard.2006.03.020.

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