ELSEVIER

Surgery for Obesity and Related Diseases ▮ (2015) 00–00

SURGERY FOR OBESITY AND RELATED DISEASES

Original article

Revisional single-anastomosis gastric bypass for a failed restrictive procedure: 5-year results

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Received April 27, 2015; accepted August 29, 2015

Abstract

Background: Long-term outcomes of revisional laparoscopic single anastomosis-gastric bypass for a failed restrictive procedure (rSAGB) have not been analyzed.

Objectives: To assess 5-year outcomes of rSAGB compared with 5-year outcomes of primary SAGB (pSAGB).

Setting: University public hospital, France.

Methods: One hundred twenty-six patients who underwent SAGB between October 2006 and October 2008 were included in this retrospective study. rSAGB was defined as SAGB performed after failure of a first restrictive procedure. Five-year outcomes of each procedure regarding mortality, morbidity (i.e., Clavien-Dindo score), weight loss (change in body mass index [BMI] and percentage of excess BMI loss [%EBMIL]), co-morbidities remission, and Gastrointestinal Quality of Life Index (GIQLI) score, were assessed.

Results: Thirty patients (24%) who had prior restrictive bariatric surgery (including 22 laparoscopic adjustable gastric bandings, 4 vertical banded gastroplasties, and 4 sleeve gastrectomies) underwent conversion to rSAGB. Ninety-six patients (76%) underwent primary SAGB (pSAGB group). Both groups were comparable in age, gender, BMI, and preoperative co-morbidities. Preoperative mean BMI of the rSAGB group was 45.5 ± 7 kg/m^2. There were no deaths and the major complications rate was 10%. No increase in morbidity was found between the 2 groups. Two patients required conversion to RYGB after rSAGB because of intractable biliary reflux. At 5 years, mean BMI was 32 kg/m^2 and mean %EBMIL was 66% after rSAGB; no significant differences were found compared with pSAGB (BMI = 31 kg/m^2, %EBMIL = 73%). Co-morbidities and remission rates were statically similar. Overall, GIQLI score was significantly lower in the rSAGB group (104.1 ± 17.6 versus 112.5 ± 16.8, $P = .025$). Significant differences were found in "upper gastrointestinal symptoms" and "psychological" scores.

Conclusion: At 5 years, rSAGB for a failed restrictive procedure was safe and effective, but quality of life and upper gastrointestinal function were lower compared with pSAGB. (Surg Obes Relat Dis 2015;▮:00–00.)

Keywords: Mini-gastric bypass; Single-anastomosis gastric bypass; Revision; Failed restrictive procedure; Weight loss; Morbid obesity

As a consequence of the growing numbers of primary bariatric surgeries [1], surgeons now manage more patients who have had a previous failed and/or complicated bariatric restrictive procedure (laparoscopic adjustable gastric banding [LAGB] [2], vertical banded gastroplasty [VBG] [3], or sleeve gastrectomy [SG] [4,5]).

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http://dx.doi.org/10.1016/j.soard.2015.08.521

1550-7289/

Indications for revision surgery include insufficient weight loss, weight regain, and/or surgery-related complications, especially after LAGB [2]. Revision from a restrictive procedure to a sleeve gastrectomy, although sometimes considered [5–9], does not usually provide adequate weight loss [5–9]. Conversion to a biliopancreatic diversion with a duodenal switch also has been described [6], but a revisional laparoscopic Roux-en-Y gastric bypass (rLRYGB) appears to be the procedure of choice for revision because of its efficacy and safety profile [3,6,10,11]. Nevertheless, the literature remains heterogeneous; some authors report lower weight loss [12–14] and/or a higher morbidity rate [15] after an rLRYGB, whereas others have found no difference between an rLRYGB and a primary LRYGB (pLRYGB) [6,16].

Short- and long-term results from our first laparoscopic single-anastomosis gastric bypasses (SAGB) have been previously reported [17,18], and SAGB appears to be a simple, well tolerated, and effective alternative to LRYGB [19]. However, long-term outcomes for revisional SAGB for a failed restrictive procedure (rSAGB) have not yet been analyzed. Therefore, the aim of this study was to present the 5-year results of rSAGB and to compare these results with primary SAGB (pSAGB).

Materials and Methods

Between October 2006 and October 2008, 175 patients underwent an SAGB (either a pSAGB or an rSAGB) for morbid obesity in the Department of Digestive Surgery at the Hôpital Européen Georges Pompidou, Paris, France. The present investigation analyzes and compares mortality, morbidity, weight loss, evolution of obesity-related co-morbidities, and quality of life at 5 years after pSAGB and rSAGB. Data were collected from a prospectively maintained database.

Preoperative evaluation

An extensive preoperative evaluation was performed [18]. All patients underwent preoperative abdominal ultrasonography and upper endoscopy with systematic gastric biopsies. *Helicobacter pylori* infection was treated if diagnosed. Obesity-related co-morbidities were recorded.

Indications to perform a SAGB relied on guidelines published by the National Institutes of Health [20]. Indications for an rSAGB were mostly insufficient weight loss and/or weight regain despite dietary counseling. The objective criteria for reoperation was a percentage of excess BMI loss (%EBMIL) of $<50\%$. In some cases, a revisional procedure was performed for complications after an LAGB (slippage, pouch dilation, stenosis).

Surgery

Surgical procedures were carried out by 6 senior members of the surgical staff using the same standardized technique [21]. Briefly, a long, narrow gastric tube was constructed. Vertical bivalving of the greater omentum was performed. The jejunum was ascended in a precolic position and an end-to-side mechanical anastomosis was performed with the gastric tube at 200 cm from the Treitz's ligament.

Revisional procedures after LAGB were performed concomitantly with lap-band removal, when possible (1-stage procedure), or after a delay (2-stage procedure). The band was always deflated a few weeks before the surgical procedure. When a 1-stage procedure could be performed, the port was initially removed. Then the identified band was dissected from its attachments to the liver; the gastrogastric sutures were carefully separated, and the fibrous capsule at the level of the His angle was dissected to see and liberate the left crus of the diaphragm. The rest of the scar tissue was not removed. After band removal, an SAGB was performed, as described previously [21]. Concerning revisional SAGB after VBG, all patients had a silastic ring VBG procedures. Silastic ring removal and rSAGB were performed in a 1-stage procedure.

Patients were placed on routine antisecretory medicine after surgery for 6 months and were also discharged under multivitamins and preventive anticoagulation.

Postoperative evaluation

Patient follow-ups were conducted at months 1, 3, 6, and 12 after surgery, and annually thereafter. Morbidity at 90 days (early morbidity) and thereafter (late morbidity) were recorded and classified according to the Clavien-Dindo classification for surgical complications [22]. For early morbidity, major complications were defined as adverse $\geq$grade IIIb events; complications that required surgical treatment were classified as a major complication in late morbidity.

Weight loss was expressed as evolution in body mass index (BMI) and %EBMIL. Severe malnutrition was defined as %EBMIL $>100\%$ associated with a serum albumin level <30 g/L, and weight loss failure was defined as %EBMIL $\leq 25\%$.

Resolution of co-morbidities was considered as normalization of preoperative co-morbidities at the end of the complete follow-up. Type 2 diabetes mellitus (T2DM) remission required glycated hemoglobin (HbA_{1c}) to be $\leq 6.5\%$ with an absence of any specific treatment.

Quality of life was assessed using the Gastrointestinal Quality of Life Index (GIQLI) [18,19,23]. All patients included in the study completed postoperative GIQLI questionnaires after 5 years, and the results were compared between the rSAGB and pSAGB groups.

Lost to follow-up

Patients lost to follow-up were not included in the study because of incomplete 5-year follow-up. Preoperative