ORIGINAL ARTICLE

Conversion to a Banded Gastric Bypass is a Safe and Effective Option after Sleeve Gastrectomy: A Indian Single-center Experience

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Abstract

Revision bariatric surgery has become a standard technique in bariatric surgery processes. Patients who have experienced insufficient weight reduction or subsequent weight gain following an initial surgery have a variety of options for revision. The objective of this report was to explore the role of a sleeve gastrectomy (SG) revision to a banded gastric bypass (BGBP) for inadequate weight loss or weight gain. Patients who had BGBP revision surgery after SG were identified in a prospectively kept database and information on comorbidity resolution and weight was obtained. The effects of the revision activities were evaluated and analyzed. Sixty-two patients underwent reconsideration of SG to BGBP. The average time for the revision was 27 months in the range 7–60 and the follow-up after BGBP was 6–36 months. In this study the average initialism weight before the SG was 113.5 ± 20.5 kg and the body mass index (BMI) was 41.71 ± 8.1 kg/m^2. The mean percentage of weight loss %TWL at revision and at the nadir weight was 18.5 and 13.5%, respectively. The average %TWL was 25.9 ± 10.1, 29.7 ± 9.2, and 26.9 ± 9.6 at first-, second-, and third-year follow-up, respectively, after revision to BGBP. Type II diabetes (T2D) and hyperaeration (HTN) were resolved in 70 and 78.6% of the patients, respectively. With no complications or mortality AI revisions were done laparoscopically. It is practically feasible and safe to switch from SG to BGBP. The weight reduction from the BGBP sleeve is not only more desired than the weight loss from the primary sleeve, but it also results in successful comorbidity resolution. BGBP is a better bet to changing for altering SG for insufficient weight regain or weight loss.

Keywords: Banded gastric bypass, Insufficient weight-loss, Revision, Sleeve gastrectomy.

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Introduction

As a primary weight loss procedure, the sleeve gastrectomy (SG) has gained growing acceptability as a safe and effective surgery for morbid obesity. Good weight reduction, resolution of comorbidities, a very straightforward surgery with a short operation time, and a low incidence of complications are all advantages of laparoscopic SG. Over the years, several bariatric surgeons have contemplated it as a standard bariatric operation. Despite many advantages following SG, as with all other bariatric procedures, with time and increased number of cases performed, After the SG, significant numbers of patients experience insufficient weight loss and weight return.[1–3] Patients who require revision due to insufficient weight reduction or weight gain have had endoscopic plication, surgical re-SG, or both,[4,5] or a Roux-en-Y gastric bypass (RYGB),[6] one anastomosis gastric bypass (OAGB),[7] banded gastric bypass (BGBP), or biliopancreatic diversion with a duodenal switch (BPD-DS).[8,9] We offer patients with sleeves who have inadequate weight loss or significant weight regain revision to a BGBP based on our experience with the BGBP, which we have reported to provide better weight loss than the RYGB and systematic analysis has shown the BGBP to be equivalent to the BPD-DS. This retrospective study was conducted to investigate the result of SG to BGBP revision for insufficient weight loss and weight recovery in our experience with up to 3 years of follow-up after the revision.

Materials and Methods

This is a retrospective analysis of data gathered from a prospectively maintained database at a dedicated high-volume bariatric center, India. Patients who had a SG and subsequent revision to BGBP between February 2009 and December 2019 were identified from the database. The patient profile, age, gender, BMI, comorbid conditions, the year of the first operation, the year of the revision, the starting weight, the weight at the time of the revision, the weight 3 years later, additional comorbidity resolution, and complications, if any, were also recorded.

Surgical Technique

All of the initial and revision surgeries were performed laparoscopically. There was no conversion to open surgery.

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Sleeve Gastrectomy

Veress needle is used to get access to the abdomen. The optics are implanted through a 12 mm supra umbilical port. In the midclavicular line, a second 12 mm port is put under vision in line with the optical port. In the midclavicular line, two 5 mm ports are inserted in the right and left subcostal regions. The liver is retracted using a Nathanson liver retractor. Transecting the omentum along the larger curvature away from the stomach, commencing at a location 2–3 cm from the pylorus up to the gastro esophageal junction, exposing the left crus, is how a laparoscopic SG is conducted. The sleeve is created by transecting the stomach with a green Ethicon stapler starting 5 cm from the pylorus. The stapled resection of the stomach is completed using blue staplers and a 36 Fr bougie in the stomach, resulting in a 70–90 cc sleeve. Endoscopy is used after surgery to check for leaks, internal hemorrhage, pouch patency, and a clean distal channel. Clips are used to produce hemostasis. Normally, no drains are installed. If vital indicators are normal, patients are started on a liquid diet the day after.

Banded Gastric Bypass

To get access within the abdomen, a veress needle is utilized. For the optics, a 12 mm supra umbilical port is used. In the midclavicular line, another 12 mm port is put under eyesight in line with the optical port. In the midclavicular line, two 5 mm ports are inserted in the right and left subcostal regions. For the retraction of the liver, a Nathanson liver retractor is used. A harmonic scalpel is used to detach adhesions. To minimize harm to the remaining sleeve's serosa, careful dissection is performed to mobilize the omentum linked to the larger curvature.

The lesser omentum is dissected at a location 6–7 cm from the gastroesophageal junction to create a gastric pouch. A horizontal blue cartridge is shot when the smaller sac is inserted, followed by two vertical loads fired close to a 36 Fr bougie. The specimen is the extra sleeve pouch that has been transected. A 7-cm GaBP ring is wrapped around the pouch 3–5 cm below the gastroesophageal junction. A nonabsorbable suture is used to secure the ring to the staple line on the larger curvature. The ligament of Treitz is used to produce a 120 cm Roux limb and an 80 cm biliopancreatic limb. End to side, a gastrointestinal anastomosis of 2–3 cm is created between the pouch and the Roux limb. At least 2 cm above the anastomosis, the ring should be placed. Nonabsorbable sutures are used to close the Peterson's and mesenteric defects. Clips are used to produce hemostasis. Normally, no drains are installed. If vital indicators are normal, patients are started on a liquid diet the day after.

Statistical Analysis

The means and standard deviations of descriptive and continuous variables were provided. The number of cases (*n*) and percentages was used to represent categorical variables. In continuous variables, a general linear repeat measurement test was used to estimate averages between revision surgery at one, two, and 3 years. To determine if differences were significant, the two-sample *t* test or two-proportions technique was utilized. All two-sided *p* values of <0.05 were commonly considered statistically significant.

Results

A total of 62 patients underwent conversion of a SG to BGBP at our institution. The mean time to revision was 27.0 ± 13.1 months (range 7–60). Follow-up rate was 70.2% after the revision at 1, 2, and 3 years, for patients eligible for a 3-year follow-up after BGBP.

Mean patient age was 43.2 ± 12.8 years and 32 (51.6%) were female. Before the SG, the average starting weight in this study was 113.5 ± 20.5 kg and the BMI 41.71 ± 8.1 kg/m^2. Thirteen (20.9%) had Type II diabetes mellitus (T2D), 21 (33.8%) hypertension (HTN), and 10 (16.12%) sleep apnea (SA) (Table 1). At the nadir, the average weight was 92.4 ± 16.1 kg and at revision was 100.5 ± 14.9 kg. After conversion, the average additional weight loss was 15.02.6 kg, which was statistically significant ($p = 0.001$). The mean weight after conversion were 25.9 ± 10.1, 29.7 ± 9.2, and 26.9 ± 9.6 at 1-, 2-, and 3-year follow-up, respectively. Weight loss trends %TWL and %EWL and rates are summarized in Figure 1 and Table 2.

At the time of revision, T2D and HTN resolution rates were 50.0 and 62.5%, respectively. With the revision procedure, the resolution of comorbidities was marginally improved (70.0 and 78.6%). All of the T2D patients had a hemoglobin A1-C (HbA1-c) level of less than 6% and were not on any diabetic medicines. Patients with HTN now had blood pressure (BP) of less than 120/80 mm Hg without taking any drugs, and there were no patients with SA based on no subjective symptoms. Comorbidity resolution trends showed in Figure 2.

At our center, the average operational time for primary BGBP is 693.5 minutes. As a result, reoperative surgery took 21 minutes longer on average ($p = 0.003$). The average length of stay in the hospital after surgery was 3 days. There were no anastomotic

Table 1: Preoperative: patient profile at baseline

Initial SG (n = 62)	
Age*; years	43.24 ± 12.84
Gender Male/Female†; *n* (%)	30 (48.4%)/32 (51.6%)
Weight*; kg	113.5 ± 20.5
Height*; cm	1.65 ± 0.10
Body mass index*; kg/m^2	41.71 ± 8.1
Diabetes†; *n* (%)	13 (20.9%)
Hyperseptation†; *n* (%)	21 (33.8%)
Sleep apnea†; *n* (%)	10 (16.12%)

*Data showed as means with standard deviation; †Categorical variables showed as number of cases (*n*) and percentages

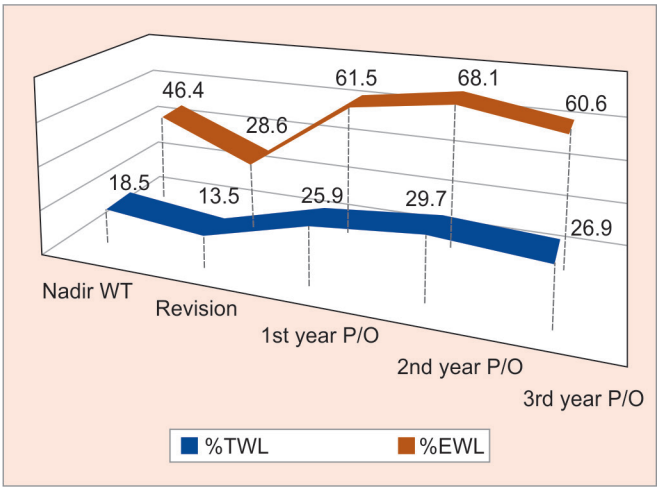

Fig. 1: Weight loss trends after BGBP conversion (%TWL and %EWL)

Table 2: Change in weight loss metrics from nadir weight to 3-year follow-up after BGBP conversion

	Nadir WT	*Revision*	*1st year P/O*	*2nd year P/O*	*3rd year P/O*
WT	92.4 ± 16.1	100.5 ± 14.9	85.5 ± 10.5	82.5 ± 9.7	85.9 ± 7.1
BMI	32.5 ± 4.3	35.7 ± 4.3	29.9 ± 3.8	30.1 ± 3.8	31.3 ± 4.2
%TWL	18.5 ± 12.2	13.5 ± 10.3	25.9 ± 10.1	29.7 ± 9.2	26.9 ± 9.6
%EWL	46.4 ± 14.3	28.6 ± 11.4	61.5 ± 10.3	68.1 ± 9.4	60.6 ± 9.2

WT, weight; BMI, body mass index; %EWL, percentage of excess weight loss; %TWL, percentage of total weight loss

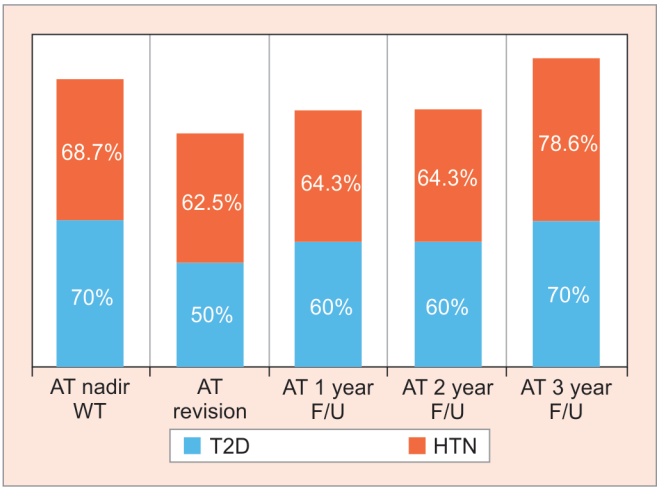

Fig. 2: Comorbidity resolution trends (revision from SG to BGBP)

leaks or marginal ulcers after surgery. In this study, there were no early or late problems. There was also no mortality in this series. Patients with epigastric discomfort were identified by endoscopy and treated well with medication therapy.

Discussion

Weight regains should be expected following all bariatric procedures to some extent, but a considerable rise in weight, defined as a 10 kg increase in body weight from nadir, might suggest a surgery failure.[9,10] Age more than 40 and a preoperative BMI greater than 50 are immutable risk factors for failure.[11] Procedures that do not include an intestinal bypass, such as the SG, are particularly vulnerable. Re-sleeve was described by Gagner and Rogula in a patient with a dialled pouch. UGIs revealed a dilated antrum and/or a dilated stomach fundus. The causes of residual gastric dilatation, on the other hand, are unknown; it might be due to a technical fault or a natural process of stomach tissue dilatation. A dissection that began more than 6 cm from the pylorus might be the most technical reason for wider antrum. In prospective randomized research,[9] Abdallah et al. found that a 2 cm pylorus resection length is associated with improved weight reduction without an increase in the risk of problems. After 2 years, there was a reduced weight recovered rate of 1.9% at 2 cm as opposed to 9.4% at 6 cm (distance from the pylorus). As a result, the stomach should be removed at a distance of less than 4 cm from the pylorus. Lemmens[12] attempted to avoid pouch dilation by strengthening the gastroenterostomy anastomotic site with a silastic ring prosthesis, which he did. This method, however, was abandoned due to an overwhelming rate of band erosion. Fobi[13] reintroduced the ring by placing a silastic ring 2–3 cm below the OG junction and 2 cm above the anastomosis on a vertical pouch. Since then, a variety of prosthetic devices have been released to the market, the most of which are silastic rings that may be inserted around the pouch, proximal to the anastomosis, and are either (laparoscopically) convertible (MiniMizer®) or nonconvertible (GaBP Ring™). Other materials, such as linea alba, fascia lata, porcine, meshes, and bovine grafts, have been developed; nonetheless, surgeons favor silastic rings.[14] It has been reported that a silicone band forms a pseudocapsule, which leads to less adhesion and is simpler to remove than other materials, but other meshes have been demonstrated to cause scar tissue and are harder to remove.[15]

We believe that dilatation of the proximal jejunum, distal to the gastroenterostomy, plays a significant role in the creation of the neo-stomach, leading to a complete loss of restriction. The stomach pouch becomes more flexible over a period of time, and (all) stomas dilate. As a result, all unsuccessful SG conversions have been addressed by converting them to bypass procedures and placing a band across the RYGB's small gastric pouch. This has the effect of restricting and starvation in the patients, resulting in successful weight loss.

Conclusion

Revisional surgery is challenging but safe when performed by professional. Revision from SG to BGBP is technically feasible and safe. For insufficient weight loss or weight regain, conversion SG to BGBP should be one of the possibilities. The overall weight reduction following the BGBP revision is greater than the main SG's maximal weight loss. The resolution of comorbidities improves marginally after revision surgery, but not significantly. More research and a longer follow-up period are needed to corroborate the findings of this study.

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