One Stage Laparoscopic Sleeve Gastrectomy for Adjustable Gastric Band Failures

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Background: Laparoscopic Sleeve Gastrectomy (LSG) was developed as a first stage operation of a two-stage biliopancreatic diversion with duodenal switch surgery in patients with very high body mass index (BMI). Nowadays, LSG has become one of the most popular bariatric procedure worldwide providing sustained weight loss with comorbidity remissions and limited morbidity.

Patients and methods: Between June 2016 to September 2018, 24 patients underwent one stage conversion of gastric bands to LSG. All patients had completed 6 months follow-up visits.

Results: Mean operating room time was 57 ± 29 minutes. Median post-operative length of stay was 1.3 ± 0.7 days. No conversions to laparotomy were needed. Complications occurred in two patients. On the 1st postoperative day, one patient had intra-abdominal bleeding which was managed by blood transfusion. The other patient had port site hernia at the 15 mm port site. Urgent laparoscopic reduction of hernia contents and closure of the defect were done. Mean BMI has dropped from 44.9 ± 5.2 to 34.1 ± 8.3 kg/m2 at 6 months postoperatively. Mean % excess weight loss (%EWL) is 49.4 ± 3.5% at 6 months postoperatively.

Conclusion: One Stage Conversion of failed adjustable gastric band to laparoscopic sleeve gastrectomy is safe and effective procedure.

Key words: Sleeve gastrectomy; adjustable gastric banding, bariatric surgery; revisional bariatric surgery morbid obesity; metabolic and bariatric surgery; weight loss surgery.

Introduction

Laparoscopic adjustable gastric banding (LAGB) device gained food and drug administration (FDA) approval in 2001.[1]

Nowadays, LAGB is on the decline worldwide as it is associated with high failure rate equal 50% and 20% of patients requiring a revisional operation.[2,3]

LAGB might be associated with complications such as slippage (with an incidence ranging between 1% and 22%), band erosion or a possibility of revision in up to 20% of cases due to pouch or oesophageal dilatation.[4] Many studies have shown a possibility to convert gastric bands to sleeve gastrectomy in the same session.[5-7]

We aimed in this study to evaluate our single-stage conversion of failed gastric bands to sleeve gastrectomy and whether it is a safe and effective rescue procedure.

Patients and methods

This study includes 24 patients with morbid obesity. These patients underwent removal of gastric band and laparoscopic sleeve gastrectomy by a single surgical team from June 2016 to September 2018. The indications of conversion were failed or insufficient weight loss and weight regain. We define insufficient weight loss as excess weight loss [EWL] < 50 % at 18 months post-operation, despite good adjustment of the AGB.

All patients were informed in detail about all the risks of revisional bariatric surgery and the benefits and alternatives of it. We obtained a written informed consent from all patients. Preoperative investigations including upper GI endoscopy, kidney function tests, liver function tests, complete blood count, prothrombin time, fasting blood sugar and Abdominal ultrasound were done. In patients with BMI (body mass index) > 50 kg/m2, preoperative low calorie high protein diet was used for 2 weeks, which would help in minimizing liver size and allow better retraction and exposure of the gastro-oesophageal junction which is crucial for total fundal mobilization and excision. Prophylactic dose of low molecular weight heparin were used 12 hours preoperative.

Surgical technique

General anesthesia was given. The lower extremities are supported and secured with a belt and tape. Nasogastric tube was inserted. Compression stockings were applied.

A 5-trocar approach was used. The adhesions between the band and the liver were dissected. The band was exposed and then transected and removed **(Figure 1)**. We divided the band fibrous ring and the gastrogastric plication to make sure stomach is mobilized for not to leave a large pouch at the gastroesophageal junction **(Figure 2)**.

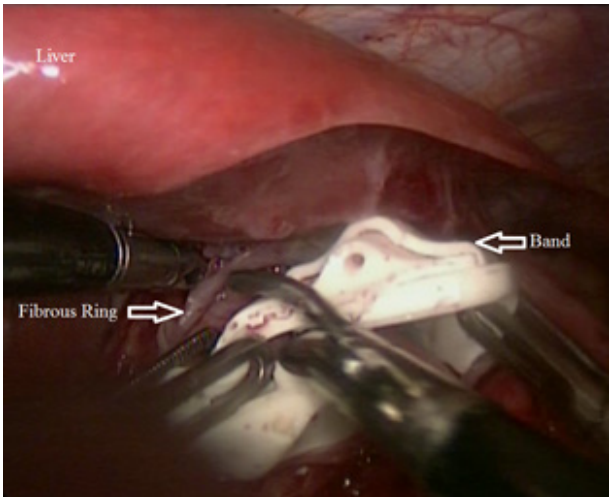
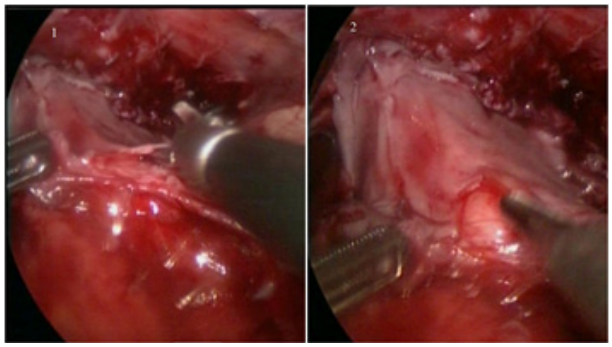


Fig 1: Division of the band.

Division of the vascular supply of the greater curvature of the stomach was done starting 2 cm from the pylorus up to the angle of His. The adhesions between the fundus and the diaphragm were lysed completely. Band fibrous capsule should be removed from the anterior wall of the stomach. All hiatal hernias were dissected and closed with non-absorbable suture when present.

Prior to stapling, the anesthetist passed down a 36 French size gastric calibration tube to guide the gastric division. Using laparoscopic linear staplers (EndoGIA®, Metronic) the stomach was divided parallel to the gastric calibration tube along the lesser curvature. first two cartridges are 6 cm long green (4.8 mm) and the latters are 6 cm long blue (3.5 mm) cartridges. Care was taken not to create a stricture at the level of the incisura angularis.

A methylene blue test was then carried out. Gastric calibration tube was removed. The resected stomach and gastric band were extracted through the right midclavicular port wound. A drain was placed at the left subdiaphragmatic space under vision. The access port was removed.



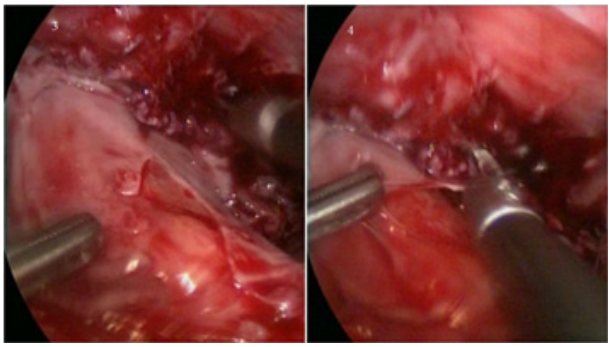


Fig 2: Division of the fibrous ring.

Postoperative care

A gastrograffin study was performed routinely before discharge. All patients started receiving clear fluids on the first postoperative day. Drains were removed and the patients were then discharged. Patients received full liquid diet for 14 days. Patients were then progressed to a soft diet for the next 3 weeks.

Patients were seen on day 10 and at 1, 3, and 6 months postoperatively. Proton pump inhibitors were used in all patients for the first two months postoperatively. Patients were encouraged to have high protein food.

Results

Between June 2016 to September 2018, 24 patients underwent one stage conversion of gastric bands to LSG. Women constituted 79% of patients. The mean initial body mass index was 44.9 ± 6.4 kg/m2

The reason for converting AGB to LSG was either weight regain after initially having an acceptable %EWL but then dropping to an %EWL of > 50% or insufficient weight loss (%EWL < 50 % at 18 months post-operation).

Mean operating room time was 57 ± 29 minutes. All patients had completed 6 months follow-up. Median post-operative length of stay was 1.3 ± 0.7 days. No conversions to laparotomy were needed. No intra-operative complications were recorded.

Complications occurred in two patients. On the 1st postoperative day, one patient had intra-abdominal bleeding which was managed by blood transfusion. The other patient had port site hernia at the 15 mm port site. This patient presented 4 days after operation with a swelling and pain at the 15 mm port site. Abdominal CT scan revealed port site hernia. Urgent laparoscopic reduction of hernia contents and closure of the defect were done.

There is significant weight reduction after the procedure. Mean BMI has dropped from 44.9 ± 5.2 to 34.1 ± 8.3 kg/m2 at 6 months postoperatively. Mean %EWL is 49.4 ± 3.5% at 6 months postoperatively.

Discussion

The use of AGB is on the decline due to high incidence

of insufficient weight loss, weight regain, intractable nausea and vomiting, band slippage, band erosion, oesophageal dilatation and patient dissatisfaction with the band. This lead to an increasing need for revision to other bariatric surgeries.[5,6]

Among the different bariatric procedures for failed AGB, sleeve gastrectomy has gained wide acceptance among surgeons as an alternative to other more complex procedures such as biliopancreatic diversion or LRYGB.[6]

Revisional bariatric surgery is technically demanding and the incidence of intraoperative and postoperative risks is higher than primary procedures.[8] One of the major complications of LSG is the risk of leakage at the gastroesophageal junction, which has greater incidence in the case of revision of adjustable gastric banding procedures to laparoscopic sleeve gastrectomy.[9]

There are many benefits to revising the AGB to LSG in one session. We only have to release the adhesions once and also avoid allowing weight regain in the period between the removal of the band and the revisional sleeve gastrectomy which might lead to more comorbidities and increased risk of complications. The last benefit of single stage revision of ABG failures is the reduction of the financial costs as only one hospital stay is required.[10]

Aarts et al. have reported removing the AGB without concomitant bariatric procedure would definitely allow for dramatic increase in weight.[11]

The EWL at 6 months following LAGB conversion to LSG was 49.4% and this is consistent with the results in the literature **(Table 1).**

Table 1: Studies of revisional LSG after AGB

Study	Concomitant conversion to LSG (n)	LSG conversion performed as a two-stage procedure	% EWL after conversion to LSG at 6 m	Complications after conversion to LSG (n)	
				Leakage	Bleeding
Goitein et al.[12]	26	-	37%	2	1
Carandina et al. [13]	-	34	52.2%	1	-
Jacobs et al.[14]	32	-	60%	-	1
Iannelli et al. [15]	-	41	42.7%	1	-
Alqahtani et al.[16]	56	-	48%	-	-
Silecchia et al.[17]	-	76	46.5%,	-	-
Yeung et al.[18]	72	-	30%	1	-
Goitein et al.[12]	-	20	37%	-	-

Khoursheed et al. reported that of 693 patients, who underwent primary LAGB patients, 42 patients underwent revisional LSG and 53 patients underwent RYGB. Before conversion, the median body weight of the RYGB group was 117.7 kg, and median BMI was 43.2 kg/m2 while the median body weight of the LSG group was 107.7 kg, and median BMI was 38.5. After one year, both procedures did not differ significantly as regard mean weight-loss outcomes (BMI for SG 32.3 kg/m2 vs 34.7 kg/m2 for RYGB; p = 0.29 and LSG EBWL 47.4% vs 45.6% LRYGB; p = 0.77).[19]

Carr et al. have shown that overall weight loss outcomes were similar for revising the LAGB to LSG or RYGB in a single stage, with mean EBWL 2 years after surgery of 60.1%.[20]

Foletto et al. reported that there are no major differences between the primary and revisional sleeve gastrectomy groups as regards weight loss and also there is enough room for subsequent biliopancreatic diversion after revisional sleeve gastrectomy.[21]

Conclusion

One Stage Laparoscopic Sleeve Gastrectomy for Adjustable Gastric Band Failures can be done safely with low morbidity and mortality when performed by specialized bariatric surgeon.

Conflict of Interest

The author declares that they have no conflict of interest.

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