Al-Azhar International Medical Journal

Volume 4 | Issue 12 Article 20

2023

Section: General Surgery

Mini gastric bypass for weight gain after sleeve gastrectomy

Ahmed Sameer Abdelshafy Sherif
Damietta Faculty of Medicine, Al-Azhar University General surgery resident at al-ahrar zagazig teaching hospital, dr.samoo85@gmail.com

Mohammed Arafat Abdel-Maksoud
Professor of General Surgery Faculty of Medicine, Al-Azhar University, Cairo , Egypt

Mohamed Ibrahim Henish
Lecturer of General Surgery Faculty of Medicine, Al-Azhar University, Cairo , Egypt

How to Cite This Article

Sherif, Ahmed Sameer Abdelshafy; Abdel-Maksoud, Mohammed Arafat; and Henish, Mohamed Ibrahim (2023) "Mini gastric bypass for weight gain after sleeve gastrectomy," *Al-Azhar International Medical Journal*: Vol. 4: Iss. 12, Article 20.
DOI: https://doi.org/10.58675/2682-339X.2174

ORIGINAL ARTICLE

Mini Gastric Bypass for Weight Gain After Sleeve Gastrectomy

Ahmed Sameer Abd El-Shafy Sherif [a,b,*], Mohammed Arafat Abd El-Maksoud [c], Mohammed Ebrahem Henish [c]

[a] General Surgery Resident, Al-Ahrar Teaching Hospital, Zagazig Sharkiah Governerate, Egypt
[b] Professor of General Surgery, Faculty of Medicine for Boys, Al-Azhar University, Zagazig, Cairo, Egypt
[c] Lecturer of General Surgery, Faculty of Medicine for Boys, Al-Azhar University, Cairo, Egypt

Abstract

Background: **Surgery for morbid obesity causes a significant, sustained weight loss that lowers obesity-related morbidity and improves survival as compared with those getting optimal medical treatment.**

Long-term sleeve gastrectomy (SG) outcomes with over 10 years of follow-up have recently become available, and they show that those who come with weight loss failure (WLF) due to insufficient weight loss (IWL) or weight regain (WR) and/or complications like gastroesophageal reflux disease (GERD).

So, revisional surgery following SG is becoming more prevalent for bariatric surgeons. Following a failed SG, laparoscopic mini gastric bypass (LMGB) was recently used as a complementary procedure; this study aimed to examine the viability, mortality, morbidity, and short-term weight loss outcomes of LMGB when used as an additional malabsorptive procedure for those who underwent SG but experienced insufficient weight loss or weight regain.

Patients and method: **A prospective observational study comprised 20 patients with weight loss failure either due to insufficient weight loss or weight regain following LSG.**

Between December 2021 and December 2022, LMGB procedures were conducted at Al-Azhar University Hospitals' surgical department in Cairo, Egypt, along with 1 year of postsurgical patient follow-up.

Results and conclusion: **The MGB operation contributed to significant weight loss, with a mean BMI of 53.66 kg/m^2 before the revision and 33.86 kg/m^2 one year following the revision, and it also contributed to a clear improvement in some diseases related to patients with obesity, like type 2 diabetes by 75 % and hypertension by 50 %.**

Keywords: Bariatric surgery, Failed sleeve gastrectomy, Mini/one anastomosis gastric bypass, Redo surgery, Revisional surgery

1. Introduction

The single bariatric procedure now used is laparoscopic sleeve gastrectomy (SG). According to the 2019 IFSO registry, SG was the second procedure only in Latin America, accounting for 58.6 % of primary operations performed globally between 2015 and 2018.[1]

SG is a surgical weight loss procedure in which approximately 75−85 % of the stomach along the greater curvature is removed leaving a cylindrical-shaped stomach.[1]

Due to its fewer technical requirements, shorter operating time, relative safety, reduced micronutrient deficits, and lower demand for substitutive therapy, SG has grown in popularity. SG has effectively promoted weight loss while maintaining duodenal access.[2]

Long-term SG findings of a 10-year follow-up have become accessible for patients reporting

Accepted 23 July 2023.
Available online 24 January 2024

* Corresponding author at: General Surgery Resident, Al-Ahrar Zagazig Teaching Hospital, Al Sharqia, Egypt.
E-mail addresses: dr.samoo85@gmail.com (A.S.A. El-Shafy Sherif), mohammed.arafat21@azhar.edu.eg (M.A.A. El-Maksoud), dr_henish1000@yahoo.com (M.E. Henish).

https://doi.org/10.58675/2682-339X.2174

weight loss failure (WLF) "due to insufficient weight loss (IWL) or weight regain (WR) and/or complications like de novo gastroesophageal reflux (GERD).[3]

Failure of weight loss has been observed in ~40–50 % of cases,[4] whereas GERD has been documented in around 31 % of patients with symptoms appearing between the third and sixth year after surgery.[5]

Loss of weight is caused by a combination of factors, including inadequate adherence to nutritional habits and a new lifestyle, as well as technical error or procedural failure.[6]

As a result, bariatric surgeons are doing revisional surgery more commonly following SG. According to reports, it takes 4 years on average before the second surgery.[7]

For the detection and management of behavioral or eating issues, psychological counseling ought to be recommended to patients who are candidates for revision.[8]

Increased doses of proton pump inhibitors (PPI) ought to be the first-line therapy for GERD patients. Revisional surgery ought to be given to those who have no response to PPI or who develop esophagitis while taking it.[9]

As soon as the need for revisional surgery has been established, the surgeons have to make choices about which of several procedures to perform depending on the morphological, functional, and WR/IWL issues: revisional SG (ReSG), converting to mini gastric bypass (MGB), biliopancreatic diversion with duodenal switch (BPD-DS), and Roux-en-Y gastric bypass.[10]

MGB is the most commonly documented in the literature about outcomes and safety, particularly when PPI treatment fails to relieve symptoms of GERD.[11]

MGB is both a restrictive and malabsorptive weight loss procedure in which the stomach is divided into upper and lower pouches then the upper pouch is anastomosed to the jejunum bypassing around 150–200 cm of small intestine.[11]

Nowadays the term MGB is replaced by anastomosis gastric bypass (OAGB).[12]

This study aimed to evaluation of laparoscopic mini-gastric bypass (LMGB) as an operative solution following the failure of a SG operation and reasons for repeating the surgery, percentages of weight loss, and possible complications.

2. Patients and methods

Twenty patients with weight loss failure because of IWL or WR following LSG have been recruited in this prospective observational study between December 2021 and December 2022 at Al-Azhar University Hospitals' surgical department, Cairo, Egypt.

2.1. Ethical approval

An approval was obtained from the Ethical Research Board (ERB) of the Faculty of Medicine, Al-Azhar University, Cairo, Egypt. Before the study proceeding, all patients assigned informed consent after the obvious explanation of the possible adverse events.

2.2. Inclusion criteria

Patients who have insufficient weight loss/regain as well as failed medical and conservative weight loss therapy approaches.

2.3. Exclusion criteria

Patients with leakage of retrospective data, active gastric ulcer disease, and uncooperative patients, exhibit noncompliant behavior, and are unable or unwilling to alter their lifestyles after surgery.

All recruited patients were applied to routine preoperative assessment, complete medical history, clinical examination, and laboratory data.

2.4. Operative procedures

All patients received LMWH (Clexane subcutaneous injection) twelve hours prior to surgery, along with an intraoperative and postsurgical crepe bandage for the lower extremities, as antithrombotic prophylaxis. In addition, a third-generation cephalosporin dosage of 1 g has been administered intravenously together with the anesthesia induction.

MGB is performed by identifying the Treitz ligament, then measuring the small intestine's 200 cm length in 5 cm increments, and after that, bringing it up and suturing it to the stomach stump. After making a small incision at the jejunum's and stomach's anterior walls with an ultrasonic dissector, an antecolic gastrojejunostomy is carried out with a 60 mm blue Endo gastrointestinal anastomosis (GIA) stapler load.

Vicryl 2/0 continuous suture is used for closing the residual stoma over a ryle tube that has been carefully inserted via the nasal cavity and into the efferent intestinal loop via the stoma opening. Following that, a methylene blue test is used for examination for any leaks in the staple line and anastomosis. Additionally, the staple line is assessed for hemorrhage, which endoclips can control.

A tube drain is positioned along the staple line to avoid bowel herniation, and the sites of the trocar are sealed using 0 Vicryl.

2.5. Follow-up

Following the operation, follow-up visits are often planned for 2 weeks, 3 months, 6 months, and 1 year. Thereafter, patients will regularly go in for routine checkups every 6 months.

2.6. Statistical analysis

Using SPSS 26.0 for Windows, all data have been analyzed. The mean ± SD, and median (range) were employed for expressing continuous data, whereas a number (%) was used to express categorical variables. Comparing groups of normally distributed data was done using a one-way ANOVA test. Statistics have been deemed significant at P less than 0.05.

3. Results

The basic demographic data of the studied group are demonstrated in (Table 1).

Most patients had low obesity surgery mortality risk score (OSMRS): 12 (60 %) patients, six (30 %) patients had medium OSMRS, and only two (10 %) patients had high OSMRS (Table 2).

The surgery lasted an average of 107 ± 13.33 min, ranging from 90 to 140 min (Table 3) shows that hospital stay is ranged between 3 and 6 days, with an average stay of 4.13 ± 0.99 days.

Table 1. Participants Baseline demographic data.

	N (%)
Sex	
Female	14 (70)
Male	6 (30)
HTN	4 (20)
DM	4 (20)
	Mean ± SD
Age (y)	47.53 ± 8.88
Weight (Kg)	142.6 ± 5.26
Height (cm)	164.06 ± 7.26
BMI (Kg/m^2)	53.66 ± 2.63
Excess weight (Kg)	79.86 ± 4.68

Table 2. OSMRS score distribution.

	N (%)
Low	12 (60)
Medium	6 (30)
High	2 (10)

OSMRS, obesity surgery mortality risk score.

Table 3. Operative data.

	Mean ± SD
Operative time (min)	107 ± 13.33
Hospital stays (days)	4.13 ± 0.99

The mean excess body weight decreased significantly from 79.86 ± 4.68 kg preoperatively to 39.82 ± 2.5 kg 6 months after surgery and to 26.85 ± 3.84 kg 1 year postoperatively, with a mean percent of extra weight loss of 49.92 ± 0.87 after 6 months and 66.3 ± 0.98 after 1 year (P value < 0.001) (Table 4).

Early postoperative complications (wound infection) were recorded in 10 % of study group while there were no late postoperative complications (stenosis, marginal ulcer, dumping). The study group had no deaths.

4. Discussion

While the majority of patients with bariatric surgery have successful results following their primary surgery, some patients might require revisional procedures that are expected to be more complicated and risky than primary bariatric procedures if they exhibit inadequate loss of weight, regain of weight, continued co-morbid illness, chronic or acute complications, or any combination of these.[12]

MGB is an efficient revisional choice for sustaining weight loss in morbidly obese individuals, and it resolves co-morbidities in over 70 % of patients.[13]

In comparison to Roux-en-Y gastric bypass (RYGB), MGB is thought to be a secure approach for the revision of a failed primary restrictive bariatric procedure because it only needs one anastomosis. As a result, it is more technically simple, has a lower learning curve, requires less time during surgery, and may result in fewer anastomotic leak sites and fewer internal hernia sites with only one Petersen defect.[14]

Revisional surgeries are complicated and technically challenging. In comparison to primary procedures, they often carry a higher risk of complications following surgery, with perioperative morbidity rates of roughly 19–50 %.[15]

This study was conducted in the period from December 2021 to December 2022 at Al-Azhar University Hospital, surgery department Cairo, Egypt. It comprised 20 patients who had been chosen to match our inclusion criteria and had surgery following a careful prior-to-surgery evaluation with the same surgical group and a one-year minimum follow-up.

The mean time of operation in our study was 107 ± 13.33 min. In comparison to the reported

Table 4. Comparison of anthropometric measurements.

	Preoperative	Postoperative		*P*-value
		6 months	12 months	
Weight (Kg)	142.6 ± 5.26	102.78 ± 4.82	89.67 ± 4.42	<0.001
BMI (Kg/m^2)	53.66 ± 2.63	38.77 ± 1.36	33.86 ± 0.9	<0.001
Excess weight (Kg)	79.86 ± 4.68	39.82 ± 2.5	26.85 ± 3.84	<0.001
Excess weight loss (%)	–	49.92 ± 0.87	66.3 ± 0.98	<0.001

findings from Mario Musella and his coworkers' study on converting from LAGB and LSG to MGB in 300 cases, the average operating duration for revisional MGB has been 94.4 ± 3.1 min following SG.[16]

In comparison to Sonja Chiappetta and colleagues' reported findings comparing MGB and RYGB as a second step surgery following SG, the average surgical duration for revisional MGB has been 78.7 ± 35.7 min17.

In contrast to published findings from Sonja Chiappetta and colleagues' study comparing MGB and RYGB as a second step procedure following SG, where an average stay in the hospital following revision of SG to MGB had been 5 days in all patients after their intern procedure, the average stay in the hospital following revision in the current study was 4.13 ± 0.99 days.[17]

When compared with the outcomes of Poghosyan and colleagues' study on failure to lose weight following conversion of a SG to a single anastomosis gastric bypass, the mean duration of stay in the hospital for all patients following SG to MGB revision was 3.1 days.[18]

In comparison to the reported outcomes from Debs and colleagues on laparoscopic conversion of SG to one anastomosis gastric bypass for failure of losing weight, the average stay in the hospital following SG to MGB revision has been 3 days.[19]

Among all studied cases, complications occurred only in two (10 %) patients. These two patients experienced infection in their wounds, which was enhanced by frequent dressings.

Compared with 5 years outcomes presented by Matthieu Bruzzi and colleagues, who had around 30 cases with failed restrictive procedures and were converted to MGB, two of the cases (6.6 %) had major early complications, one of which was a perianastomotic abscess on postsurgical day 14, and the other was small bowel incarceration at the port site on postoperative day 4.[20]

Mario Musella and colleagues study, which involved converting 104 patients from LSG to MGB, found that two (1.9 %) patients had postoperative complications; one of them was pleural effusion within 1 month postoperative, and the other was anastomotic stenosis after 1 month postoperative.[16]

In comparison to the study by Poghosyan and colleagues on the conversion of a SG to one anastomosis gastric bypass for failing to lose weight, three (4.2 %) patients experienced early postoperative complications; two (2.7 %) patients developed significant complications necessitating a reoperation; one patient developed hemorrhage on the staple line, while the other experienced intestinal strangulation at the site of the trocar port. One patient experienced a postsurgical bile leak following concurrent cholecystectomy, which healed spontaneously with drain extraction on day 7.[18]

In comparison to the reported outcomes of Debs and colleagues on laparoscopic conversion of SG to one anastomosis gastric bypass for failing to lose weight, three (3.9 %) patients had complications following the surgery. Antibiotics were administered to one patient who had pneumonia after surgery. The gastrojejunal anastomosis fistula from the second patient was discovered during a laparoscopic exploration, and a Kehr tube was put into the anastomosis, and a drain has been established at the point of contact. This patient experienced stomach fluid leaking into the abdominal drain, which resolved in a few days, enabling the drain to be removed and discharged. After one month, during the postsurgical consultation, the Kehr tube was removed. The third patient experienced hematemesis, which was treated conservatively and resulted in no need for blood transfusions.[19]

At 1, 3, and 12 months following conversion to MGB, the average BMI in the present study decreased statistically significantly. Before revision, the average BMI was 53.66 ± 2.63 kg/m^2, but following 1 year of follow-up, it had reduced to 33.86 ± 0.9 kg/m^2. This is regarded as appropriate when compared with the research conducted by Matthieu Bruzzi and colleagues, in which the average BMI prior to revision was 45.5 ± 7 kg/m^2 and fell to 33 ± 45 kg/m^2 following a year of follow-up.[20]

The average BMI before revision was 41.4 ± 6.8 kg/m^2 that decreased to 31.2 ± 5.1 kg/m^2 following one year of follow-up, according to Mario Musella and colleagues study, which had 104 patients who had been converted from LSG to MGB.[16]

In comparison to the reported outcomes from Sonja Chiappetta and colleagues study comparing MGB and RYGB as a second step treatment following SG, the average BMI prior to MGB revision was 45.7 ± 8 kg/m^2, which reduced to 36.6 ± 6.3 kg/m^2 following a year of follow-up.[17]

The average BMI prior to revision in Bhandari Mohit and colleagues study on revisional OAGB for failed SG was 38.53 ± 6.26 kg/m^2, but after 1 year of follow-up, it had decreased to 34.33 ± 5.83 kg/m^2.[21]

The average BMI prior to revision was 43.6 ± 7 kg/m^2, and it dropped to 34.6 ± 5 kg/m^2 following 1 year of follow-up, according to Poghosyan and colleagues study regarding the conversion of SG to one OAGB for weight reduction failures.[18]

The average BMI prior to revision was 40.1 kg/m^2 and fell to 29.8 kg/m^2 following a year of follow-up, according to Debs and his colleagues study regarding laparoscopic conversion of a SG to one OAGB in weight loss failures.[19]

4.1. Conclusion

Over the last 10 years, SG has been growing in popularity; however, recently, failures in the medium and long term have been witnessed. So far, only a few small cohort investigations on revisional surgery in weight loss failures have been published. Our findings illustrate the safety and efficacy of converting a SG to a MGB, as well as its ability to produce reliable outcomes in regards to weight loss and co-morbidity resolution.

Conflicts of interest

There is no conflicts of interest to be declared.

References

1. Welbourn R, Hollyman M, Kinsman R, et al. Bariatric surgery worldwide: baseline demographic description and one-year outcomes from the fourth IFSO global registry report 2018. *Obes Surg*. 2019;29:782–795.
2. Rosenthal RJ, Panel ISGE. International Sleeve Gastrectomy Expert Panel Consensus Statement: best practice guidelines based on experience of >12,000 cases. *Surg Obes Relat Dis*. 2012;8(1):8–19.
3. Gu L, Huang X, Li S, et al. A meta-analysis of the medium- and long-term effects of laparoscopic sleeve gastrectomy and laparoscopic Roux-en-Y gastric bypass. *BMC Surg*. 2020;20:1–10.
4. Sepúlveda M, Alamo M, Saba J, Astorga C, Lynch R, Guzmán H. Long-term weight loss in laparoscopic sleeve gastrectomy. *Surg Obes Relat Dis*. 2017;13:1676–1681.
5. Himpens J, Dobbeleir J, Peeters G. Long-term results of laparoscopic sleeve gastrectomy for obesity. *Ann Surg*. 2010; 252:319–324.
6. Bastos ECL, Barbosa EMWG, Soriano GMS, Santos EA dos, Vasconcelos SML. Determinants of weight regain after bariatric surgery. *Arq Bras Cir Dig*. 2013;26(Suppl 1):26–32.
7. Iannelli A, Treacy P, Sebastianelli L, Schiavo L, Martini F. Perioperative complications of sleeve gastrectomy: review of the literature. *J Minimal Access Surg*. 2019;15:1–7.
8. Van Zyl N, Andrews L, Williamson H, Meyrick J. The effectiveness of psychosocial interventions to support psychological well-being in post-operative bariatric patients: a systematic review of evidence. *Obes Res Clin Pract*. 2020;14: 404–420.
9. Ashrafi D, Osland E, Memon MA. Bariatric surgery and gastroesophageal reflux disease. *Ann Transl Med*. 2020;8(Suppl 1):S11. S11.
10. D'Urso A, Vix M, Perretta S, Ignat M, Scheer L, Mutter D. Indications and long-term outcomes of conversion of sleeve gastrectomy to Roux-en-Y gastric bypass. *Obes Surg*. 2021;31: 3410–3418.
11. Georgiadou D, Sergentanis TN, Nixon A, Diamantis T, Tsigris C, Psaltopoulou T. Efficacy and safety of laparoscopic mini gastric bypass. A systematic review. *Surg Obes Relat Dis*. 2014;10:984–991.
12. Saarinen T, Juuti A. Reply to 'Key features of an ideal one anastomosis/mini gastric bypass pouch. *Obes Surg*. 2017;27: 1632.
13. Piazza L, Di Stefano C, Ferrara F, Bellia A, Vacante M, Biondi A. Revision of failed primary adjustable gastric banding to mini-gastric bypass: results in 48 consecutive patients. *Updates Surg*. 2015;67:433–437.
14. Lin YH, Lee WJ, Ser KH, Chen SC, Chen JC. 15-year follow-up of vertical banded gastroplasty: comparison with other restrictive procedures. *Surg Endosc*. 2016;30:489–494.
15. Tevis S, Garren MJ, Gould JC. Revisional surgery for failed vertical-banded gastroplasty. *Obes Surg*. 2011;21:1220–1224.
16. Musella M, Vitiello A, Susa A, et al. Revisional surgery after one anastomosis/minigastric bypass: an Italian multi-institutional survey. *Obes Surg*. 2022;32(2):256–265.
17. Chiappetta S, Stier C, Scheffel O, Squillante S, Weiner RA. Mini/one anastomosis gastric bypass versus Roux-en-Y gastric bypass as a second step procedure after sleeve gastrectomy-a retrospective cohort study. *Obes Surg*. 2019;29: 819–827.
18. Poghosyan T, Alameh A, Bruzzi M, et al. Conversion of sleeve gastrectomy to one anastomosis gastric bypass for weight loss failure. *Obes Surg*. 2019;29:2436–2441.
19. Debs T, Petrucciani N, Kassir R, et al. Laparoscopic conversion of sleeve gastrectomy to one anastomosis gastric bypass for weight loss failure: mid-term results. *Obes Surg*. 2020;30: 2259–2265.
20. Bruzzi M, Voron T, Zinzindohoue F, Berger A, Douard R, Chevallier JM. Revisional single-anastomosis gastric bypass for a failed restrictive procedure: 5-year results. *Surg Obes Relat Dis*. 2016;12:240–245.
21. Bhandari M, Humes T, Kosta S, et al. Revision operation to one-anastomosis gastric bypass for failed sleeve gastrectomy. *Surg Obes Relat Dis*. 2019;15(12):2033–2037.