

Laparoscopic one anastomosis gastric bypass for the revision of failed laparoscopic sleeve gastrectomy

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Introduction

Sleeve gastrectomy is gaining more and more popularity among bariatric procedures; however, there is an increasing number of cases with insufficient loss of weight or weight regain after sleeve gastrectomy. Many operations can be used to revise the failed sleeve gastrectomy, and one of them is one anastomosis gastric bypass (OAGB). This study aims to assess the efficiency of the conversion of laparoscopic sleeve gastrectomy to laparoscopic OAGB.

Patients and methods

This is a prospective study that included 16 patients with failed sleeve gastrectomy who underwent revisional OAGB. This study was conducted in Ain Shams University Hospitals from August 2016 to December 2018.

Results

The mean age of the patients was 40.18 ± 7.6 years. At least 24 months separated the sleeve gastrectomy from the revisional OAGB (24–82), with a mean of 49.4 ± 14.4 months. The mean;Deg;BM;Deg;I at conversion was 46.1 ± 7 kg/m². At 12 months after the revisional OAGB, the mean;Deg;BM;Deg;I was 33.5 ± 4 kg/m². There were four cases of intraoperative complications; however, there were no mortalities.

Conclusion

OAGB after failed sleeve gastrectomy is feasible, leading to significant loss of weight and improvement in comorbidities, with minimal perioperative complications.

Keywords:

gastric bypass, redo surgery, sleeve gastrectomy

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Introduction

Sleeve gastrectomy is currently the most popular bariatric procedure. It was first done as a part of a staged operation for high-risk and super obese patients, followed by biliopancreatic diversion with duodenal switch. With the good short-term results, sleeve gastrectomy gained popularity as a standalone weight loss surgery. Although the absence of anastomosis or mesenteric defect closure made it an easier procedure when compared with gastric bypass, many recent publications are discussing the long-term outcome of sleeve gastrectomy, which showed the possibility of pouch dilatation and gaining weight [1,2].

Failure of sleeve gastrectomy may be owing to inadequate gastric resection or reluctance of the patients to commit to the postoperative nutrition advice [3,4].

Many options were used to deal with failed sleeve gastrectomy such as resleeve, conversion to Roux-en-Y gastric bypass (RYGB), and single anastomosis duodenoileal bypass. One anastomosis gastric bypass (OAGB) is a combined restrictive and malabsorptive

operation. With good results and only one anastomosis, it is gaining more and more popularity. OAGB is an attractive option for the failed sleeve gastrectomy; however, there are few publications on revising sleeve gastrectomy to OAGB [5–7].

This prospective study aims to determine the efficiency and short-term success of laparoscopic OAGB as revisional surgery for failed laparoscopic sleeve gastrectomy.

Patients and methods

This prospective study was conducted in Ain Shams University Hospitals from August 2016 to December 2018 after approval of the ethical committee. The study included 16 cases of failed laparoscopic sleeve gastrectomy who underwent revisional laparoscopic OAGB. All the patients had laparoscopic sleeve

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gastrectomy at least 2 years before the revisional surgery; they either failed to lose 50% of excess weight or there was progressive weight regain in this period. Patients with symptoms of reflux or UGI signs of reflux esophagitis, gastritis, or peptic ulcers were excluded from the study to perform RYGB. A detailed history was obtained followed by physical examination. Multidisciplinary team assessment, full laboratory tests, chest radiograph, ECG, pelviabdominal ultrasound, ECHO cardiography, pulmonary function tests, and upper gastrointestinal endoscopy were performed. Computed tomography (CT) volumetry and virtual gastrography to assess the size of the gastric sleeve were done for all patients. The patients signed informed consent before the redo surgery. Patients were followed up 1 week after surgery and then at 3, 6, 9, and 12 months, and also follow-up visits were scheduled with the bariatric dietitian at our institute.

Surgical technique

Under general anesthesia, patients were positioned supine with the legs apart in the anti-Trendelenburg position. A prophylactic dose of Clexane 40 mg was received with antibiotics on induction. Using six ports (one 10 mm for the camera two handbreadth below the xiphoid process; two 12 mm one on right midclavicular line, whereas the other on the left midclavicular line; and three 5 mm, one for liver retraction 2 cm below the xiphisternum, one on the right anterior axillary line, and one for the assistant on left anterior axillary line), dissection of adhesion was performed first, followed by dissection of the greater curvature till reaching the hiatus using vessel sealing system. The anesthetist then passed a 40-Fr bougie. Large gastric sleeve was managed by trimming of the pouch (13 patients) followed by transection of the stomach horizontally

distal to incisura using green reloads (Ethicon Endo-Surgery Inc., USA) (Figs 1 and 2).

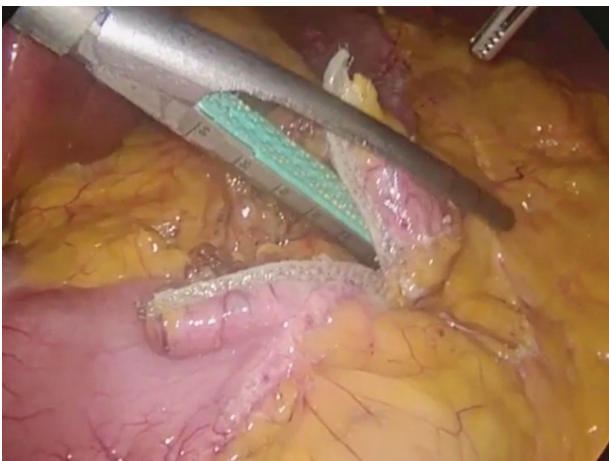
After creating a long gastric pouch and measuring 200 cm of the small intestine from duodenojejunal flexure, posterior gastrojejunal anastomosis 4 cm in width was done using Ethicon blue reload. Enterotomy was closed in two layers with Vicryl 2.0. Test with methylene blue was done before drain insertion (Figs 3 and 4).

Patients were kept on antibiotics, analgesics, anticoagulants, and proton pump inhibitor. Patients were encouraged to start walking 4 h after surgery. Patients were kept on intravenous fluids until a dye study was obtained after 24 h, and then the patients started drinking sugar-free clear liquids. Patients were assessed regarding the period between the sleeve and revisional surgery, operative time, weight, BMI, perioperative complications, and improvement of comorbidities, with a minimum of 1-year follow-up.

Results

In this study, there were 12 females and four males, and their mean age was 40.18 ± 7.6 years. At least 24 months separated the sleeve gastrectomy from the revisional OAGB (24–82), with a mean of 49.4 ± 14.4 months. A total of seven (43.7%) patients were sweet eaters, and five of them started eating sweets after sleeve gastrectomy. The mean BMI at conversion was $46.1 \pm 7 \text{ kg/m}^2$. At 12 months after the revisional OAGB, the mean BMI was $33.5 \pm 4 \text{ kg/m}^2$. The mean operative time of revisional OAGB was 156 ± 28 min. Only one case was converted to open surgery owing to dense adhesions.

Figure 1



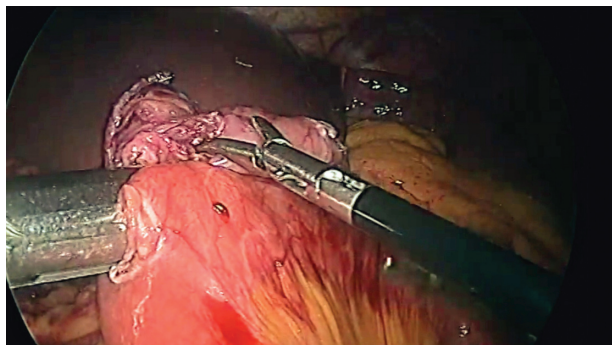
Dissection of omentum.

Figure 2



Transection of stomach horizontally.

Figure 3



Creating gastrojejunostomy.

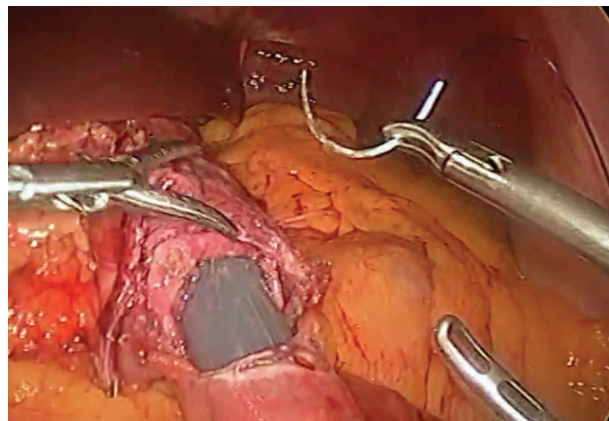
We had two cases of intraoperative bleeding, one from a branch of the left gastric artery, whereas the other during mobilization of omentum to identify the duodenojejunal flexure; they were controlled by compression and sealing of the bleeding vessels. There was a case of traumatic jejunal perforation caused by the grasper during loop mobilization to perform the anastomosis, and this perforation was identified and sutured using Vicryl 2.0. Two patients needed postoperative ICU admission, one patient had obstructive sleep apnea, whereas the other had a lengthy operation because of conversion to open procedure owing to dense adhesions. The mean postoperative hospital stay was 3 days, except for the patient whose surgery was converted to open procedure; his admission was extended for 5 days. There were no mortalities in this study. As for comorbidities, three (18.75%) patients had type 2 diabetes mellitus; two (66.6%) of them resolved completely, whereas medications were decreased in the third patient (33.3%). A total of seven (43.75%) patients had hypertension; five (71.4%) of them resolved after the revisional surgery, whereas medications were decreased in one (14.2%) patient, and there was no improvement in one (14.2%) patient. Overall, five (31.2%) patients had dyslipidemias; three (60%) of them resolved after surgery, whereas there was no improvement in the other two (40%) patients. One (6.25%) patient had obstructive sleep apnea which was resolved after surgery (100%).

Preoperative CT volumetry and virtual gastrography revealed that the mean gastric volume before revisional surgery was 352.56 ml (208–542).

A total of 11 (68.75%) patients had dilated gastric fundus (three of them were sweet eaters), and they all needed gastric trimming.

The other five (31.25%) patients had dilated gastric tube; two of them needed gastric trimming, whereas

Figure 4



Closure of enterotomy.

the other three did not undergo gastric trimming as the gastric tube was mildly dilated by mean of CT volumetry, and also during assessing, it intraoperatively. It worth mentioning that those three patients were all sweet eaters.

One patient complained of symptoms of reflux 7 months after surgery, which was completely relieved by lifestyle modification, proton pump inhibitors, and ursodeoxycholic acid (Table 1).

Discussion

The efficacy of a bariatric procedure depends on the durability of weight loss, improvement in comorbidities, and associated risk of mortality and morbidity [8]. In this study, failed laparoscopic sleeve gastrectomy was revised by laparoscopic OAGB. We have chosen OAGB as a revisional surgery, as it results in fatty food and sweet intolerance. Owing to the longer biliopancreatic limb, OAGB has more malabsorptive effect than RYGB on one hand and less nutritional deficiency than biliopancreatic diversion with duodenal switch on the other hand.

In a study by Bhandari and colleagues, 32 patients were revised from sleeve gastrectomy to OAGB. Of the 32 revised patients, nine (28%) were diabetic (type 2), 15 (47%) had hypertension, and two (6.25%) experienced sleep apnea before sleeve gastrectomy. At the time of the revision, only two (6.25%) of 32 were diabetic (type 2), three (9.4%) had hypertension, and no patient experienced sleep apnea. The average weight before sleeve gastrectomy was 118 kg and BMI was 44.04 kg/m². The lowest average weight was 92.1, whereas the average weight before the revision was 103.5 kg. After the revisional surgery, the average weight was 93.5, 94.3, and 100.6 kg at 1-, 2-, and 3-year follow-up, respectively.

Table 1 Data of the patients

	Age	Sex	Time between 2 surgeries	Preoperative BMI	BMI 12 m	Comorbidities	Improvement of comorbidities	Gastric volume	Trimming of a gastric pouch
1	33	F	55	49	32			380	
2	31	F	29	45	34	Hypertension	Resolved	430	
3	45	F	66	59	34	Dyslipidemia	Resolved	520	
4	46	M	29	46	32	obstructive sleep apnea	Resolved	390	
5	54	F	49	50	33	Hypertension	Resolved	452	
6	33	M	43	42	34	DM	Resolved	244	No trimming
7	48	F	82	37	31	DM and hypertension	Hypertension resolved	225	No trimming
8	43	F	73	47	35			288	
9	46	M	61	39	32	Hypertension	Resolved	463	
10	31	F	34	51	36	Hypertension and dyslipidemia	No	383	
11	50	F	69	43	32			208	No trimming
12	35	M	38	49	35			542	
13	34	F	47	52	37	DM and dyslipidemia	DM resolved	393	
14	29	F	27	43	33			354	
15	39	F	24	39	32	Hypertension and dyslipidemia	Resolved	417	
16	46	F	63	57	36	Hypertension and dyslipidemia	Resolved	472	

DM, diabetes mellitus; F, female; M, male.

One patient had recurrent type 2 diabetes mellitus at 3 years after revision owing to weight regain, with no complications reported in this study. They concluded that there is weight regain 3 years after converting failed sleeve gastrectomy to OAGB [9]. Moszkowicz *et al.* [10] revised 23 failed sleeve gastrectomies to MGB. A total of four patients were converted to open surgery. The 30-day postoperative mortality rate was 0, with a morbidity rate of 9.5%. The mean BMI before revision was 44 ± 7.7 kg (35.8 – 55.4), achieving 39.9, 36.5, 36.2, and 35.7 after 3, 12, 18, and 24 months, respectively.

Conclusion

OAGB after failed sleeve gastrectomy is safe and effective. Significant loss of weight and improvement of comorbidities were achieved accompanied by minimal perioperative complications.

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Nil.

Conflicts of interest

There are no conflicts of interest.

References

- Baltasar A, Serra C, Pérez N, Bou R, Bengochea M. Re-sleeve gastrectomy. *Obes Surg* 2006; 16:1535–1538.
- Himpens J, Dobbelaire J, Peeters G. Long-term results of laparoscopic sleeve gastrectomy for obesity. *Ann Surg* 2010; 252:319–3242.
- Rebibo L, Fuks D, Verhaeghe P, Deguines JB, Dhahri A, Regimbeau JM. Repeat sleeve gastrectomy compared with primary sleeve gastrectomy: a single-center, matched case study. *Obes Surg* 2012; 22:1909–1915.
- Dapri G, Cadiere GB, Himpens J. Laparoscopic repeat sleeve gastrectomy versus duodenal switch after isolated sleeve gastrectomy for obesity. *Surg Obes Relat Dis* 2011; 7:38–43.
- Poghosyan T, Lazzati A, Moszkowicz D, Danoussou D, Vychnevskaia K, Azoulay D, *et al.* Conversion of sleeve gastrectomy to Roux-en-Y gastric bypass: an audit of 34 patients. *Surg Obes Relat Dis* 2016; 12:1646–1651.
- Homan J, Betzel B, Aarts EO, van Laarhoven KJ, Janssen IM, Berends FJ. Secondary surgery after sleeve gastrectomy: Roux-en-Y gastric bypass or biliopancreatic diversion with duodenal switch. *Surg Obes Relat Dis* 2015; 11:771–777.
- Dijkhorst PJ, Boerboom AB, Janssen IMC, Swank DJ, Wiezer RMJ, Hazebroek EJ, *et al.* Failed sleeve gastrectomy: single anastomosis duodenoileal bypass or Roux-en-Y gastric bypass? A multicenter cohort study. *Obes Surg* 2018; 28:3834–3842.
- Golomb I, Ben David M, Glass A, Koltitz T, Keidar A. Long term metabolic effects of laparoscopic sleeve gastrectomy. *JAMA Surg* 2015; 150:1051–1057.
- Bhandari M, Humes T, Kosta S, Bhandari M, Mathur W, Salvi P, Fobi M. Revision operation to one-anastomosis gastric bypass for failed sleeve gastrectomy. *Surg Obes Relat Dis* 2019; 15:2033–2037.
- Moszkowicz D, Rau C, Guenzi M, Zinzindhoué F, Berger A, Chevallier JM. Laparoscopic omega-loop gastric bypass for the conversion of failed sleeve gastrectomy: early experience. *J Vasc Surg* 2013; 150:373–378.