

Original Research Article

Bariatric surgery between encouragement and inhibition: Sohag experience of first 50 cases with encouraging results

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ABSTRACT

Background: The advantages of bariatric surgery are improved co-morbidity, quality of life and survival in obese patients. Nowadays, many studies compare effectiveness of different bariatric surgery procedures. Our aim is to evaluate effectiveness of two laparoscopic bariatric surgery procedures performed in our centre (SG and OAGB) as regard outcome and post-operative complications.

Methods: A retrospective study for our first 50 cases of bariatric surgery. Primary outcome was weight loss expressed as kilograms, body mass index (BMI) reduction and percentage excess weight loss % EWL. Secondary outcomes were remission or control of associated diabetes mellitus type 2, hypertension and dyslipidaemia.

Results: LSG was done in 38 cases and OAGB in 12 cases. Mean operating time for LSG was 75.6±10.5 min and for OAGB was 98.5±11.5 min. Mean length of hospitalization for LSG was 3.7±1.4 days and for OAGB was 5.2±1.6 days. Post-operative complication occurred in one patient (2.6%) with LSG and in two patients (16.6%) with OAGB. No significant statistical differences were found as regard short term complications or death. Mean EWL at 6 months was higher in patients receiving OAGB (59%) compared to those receiving LSG (47%). After 1 year it was (73% vs. 62%) and at 1.5 years (87% vs. 76%), respectively. At 6 months, associated comorbidities showed significant improvement in both groups but more with OAGB.

Conclusions: For the short term, OAGB appears to achieve better %EWL and remission of obesity-associated comorbidities compared with the LSG.

Keywords: Bariatric surgery, Sleeve gastrectomy, Mini gastric bypass, %EWL

INTRODUCTION

Obesity is a major health problem of pandemic proportions. Recent studies show that 13% of the world's adult population were categorized as obese in 2014.¹ The increased risk of premature death up to 50-100% was observed in people with morbid obesity or BMI \geq 30 compared to individuals of healthy weight.² Nowadays Bariatric surgery has been proved to be the most valid and durable treatment for morbid obesity.³ It leads to significant weight loss and prevents or improves a lot of

obesity-related diseases including type 2 diabetes, hypertension and hyperlipidaemia.^{4,5}

Researches show that bariatric surgery reduces the risk of premature death by 30-40%.^{6,7} Nowadays most weight loss surgeries are performed using laparoscopic surgery. The most common bariatric surgery procedures are sleeve gastrectomy, RYGB and OAGB but the adjustable gastric band, and bilio-pancreatic diversion with duodenal switch are less common bariatric procedures. Each of these bariatric surgery procedures has its own advantages and disadvantages.⁸ A significant improvements in bariatric

surgery safety, was observed in recent clinical studies, the risk of death is 0.1%, and the overall likelihood major complications is about 4%.^{9,10} In this study we tried to compare the effectiveness of two laparoscopic bariatric procedures, one anastomosis gastric bypass OAGB and sleeve gastrectomy SG, performed in our centre as regard weight loss and to evaluate rates of post-operative morbidity and mortality.

METHODS

From November 2015 to March 2017, this is single institution retrospective study done in general surgery department, Sohag university hospital, Egypt included fifty patients presented to bariatric surgery clinic. Their age ranged from 20 to 58 years. Inclusion criteria include both genders with failed weight loss attempts in the past and good motivation for surgery, BMI 40 kg/m² or more with or without coexisting medical problems or a BMI 35 kg/m² or more with one or more obesity-related comorbidities. Exclusion criteria were; age less than 18 and more than 65 years, previous major gastrointestinal surgery, pregnancy, known malignant diseases, renal insufficiency, major psychiatric disorders and chronic liver disease. All patients were subjected to detailed history and clinical examination; routine labs, total cholesterol, and low-density lipoprotein (LDL) mineral and vitamins screening such as iron, ferritin, calcium, vitamin B12, cardiopulmonary evaluation with plain x ray chest, abdominal ultrasound, echocardiography, gastro-intestinal evaluation (upper GI series or upper endoscopy if clinically indicated) Endocrine evaluation (fasting blood sugar, HbA1c, TSH, 24- hour serum cortisone level).

Ethical committee approval for the study was obtained. All patients have been informed that they will be participating in a research. Informed consent was signed by all patients after full explanation of the surgical procedure and possible benefits and side effects. The surgical options in our centre were laparoscopic sleeve gastrectomy done in 38 cases and laparoscopic mini gastric bypass (single anastomosis) done in 12 cases. In sleeve gastrectomy (LSG), the greater omentum was divided by a harmonic scalpel starting from the greater curvature close to the stomach wall, starting 4cm from the pylorus. The greater curve was completely dissected till the angle of His was delineated and mobilized. The sleeve of the stomach was created using a linear stapler starting distally towards the angle of his over a 36 Fr gastric tube. Leakage is tested using methylene blue test. The specimen of the stomach was removed and a passive drainage was placed close to the suture. The drain was removed on the 2nd post-operative day.

In mini gastric bypass, a long gastric pouch about 2 cm width is created from the antrum distal to the crow foot

all the way to esophagogastric junction. Counting of two meters biliary limb from the ligament of Trietz then antecolic antegastric side-to-side gastro-jejunostomy was constructed by linear stapler 45 mm. The remaining opening was closed by Hand-sewn technique using non-absorbable sutures. Antireflux suture was performed for all patients to minimize the biliary reflux. A passive drainage was placed close to the gastrojejunostomy. The drainage was removed on the 4th postoperative day. The study variables included operative time, intraoperative bleeding, leakage, and wound infection, length of hospital stay and mortality rates. Primary outcome was weight loss expressed as kilograms lost, body mass index (BMI) reduction, (%TWL), and percentage excess weight loss (%EWL).

Continuous variables were presented as means and standard deviation, while categorical variables were expressed as percentages. A $p < 0.05$ was considered statistically significant. All statistical tests were performed using IBM SPSS Statistics for Windows, Armonk, NY: IBM Corp, Version 20.

RESULTS

In period from November 2015 to March 2017, fifty patients (8 male/42 female) met our inclusion criteria. Laparoscopic sleeve gastrectomy was done in 38 cases (Figure 1 A-D).

Laparoscopic mini- gastric bypass (single anastomosis) was done in 12 cases (Figure 2 A-D).

The mean age was 32 ± 12 years for LSG and 30 ± 16 for OAGB, the mean weight was 144.4 ± 34.4 in LSG and 140 ± 34 in OAGB, BMI was 40.4 ± 12.2 for LSG and 42 ± 13.6 for OAGB associated comorbidities observed as hypertension in 6 and 7 cases, diabetes in 12 and 11 cases and hyperlipidemia in 14 and 10 cases respectively (Table 1). The mean operating time for LSG was 75.6 ± 10.2 min and for OAGB was 98.5 ± 11.5 min ($p < 0.01$). Mean length of hospitalization for LSG was 3.7 ± 1.4 days and for OSGB were 5.2 ± 1.6 days ($p < 0.01$) with follow up of vital signs of the patient. Enteral feeding in form of fluids started 24 post-operatives and continued for one week then 2 weeks soft diet then start solid diet.

Post-operative complication occurred early (within 30 postoperative days) in 3 patients, one (2.6%) in LSG group and 2 (16.6%) in OAGB group in the form of deep venous thrombosis in lower limb. All treated by only conservative measures. No significant statistical differences were found as regard short term complications (leakage, bleeding, and wound infection) between the two groups of patients. Late (more than 30 post-operative days) one patient died from pulmonary embolism in LSG group.

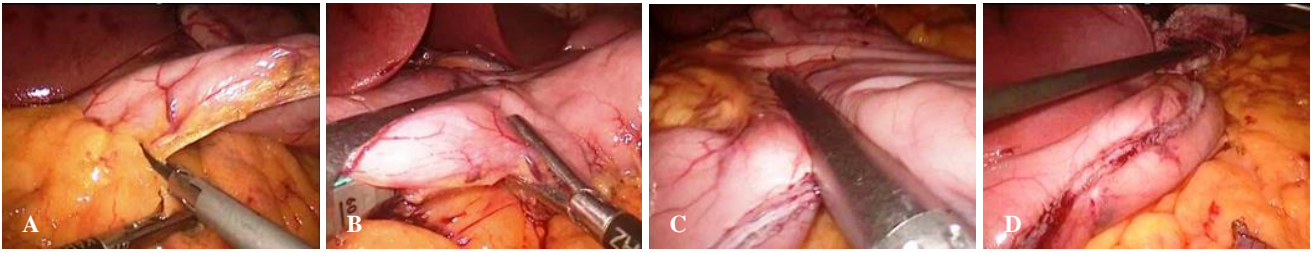


Figure 1 (A-D): Laparoscopic gastrectomy.

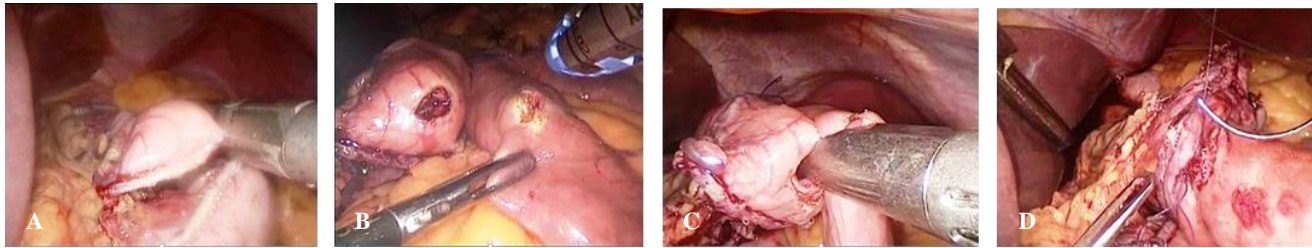


Figure 2 (A-D): Laparoscopic mini-gastric bypass.

Table 1: Demographic data of the study population.

Parameters	LSG (n=38)	OAGB (n=12)
Gender (f/m)	32/6	10/2
Age (years) mean	32±12	30±16
Body weight(kg)	144.4±34.5	140±34
BMI (kg/m ²)	40.4±12.2	42±13.6
Diabetes type 2	12	11
Hypertension	6	7
Hyperlipidemia	14	10

Table 2: Post-operative outcome.

Operative Data	LSG	OAGB	P value
Operative time (mean ±SD) min	75.6±10.2	98.5±11.5	p<0.0012
Hospital stay (days) mean±SD	3.7±1.4	5.2±1.6	p <.0001
Conversion rate	0	0	0.000 (NS)
Post-operative complications			
DVT	1 (2.6%)	2 (16.6%)	p<0.001
Others	0	0	0,000(NS)

NS =not significant, (p≤0.05) = significant.

After one years, complete remission (normal glycemic control with no medical treatment for at least one year postoperatively) was observed in 75% (9/12 patients) and 90.9% (10/11) for LSG and OAGB respectively. Complete remission of hypertension was 66.6% (4/6 patients) and 71.4% (5/7 patients) for LG and OAGB respectively. Remission of hyperlipidemia was observed in 64.2% (9/14 patients) and 80% after LSG and OAGB respectively. There was statistical difference as regard BMI reduction, EWL% and TWL% during the follow up period as shown in Table 3.

Table 3: Postoperative BMI alterations and EWL% and TWL% (values expressed as mean).

	LSG	OAGB	P value
BMI reduction			
6 months	-8.1±4.1	-12.1±5.1	<0.0017
12 months	-10.2±4.1	-17.1±5.1	<0.0018
18 months	-18.3±3.2	-20.1±6.1	<0.009
EWL% (mean)			
6 months	47%	59%	<0.001
12 months	62%	73%	<0.001
18 months	76%	87%	<0.001
%TWL			
6 Months	20.6%	24.1%	<0.0016
12 Months	26.4%	29.5%	<0.0015
18 months	30.7%	33.9%	<0.007

(P≤0.05)=significant.

DISCUSSION

Laparoscopic bariatric surgery has been performed 30 years ago and has quickly become more popular than open surgery due to its substantially lower risk of wound infection, incisional hernia, venous thromboembolism, and pulmonary complications.¹¹ A systematic review and meta-analysis for the common associated conditions (type II diabetes, hypertension & hyperlipidemia) has shown that effective weight loss and remission or improvement of comorbidities is achieved in obese patients after bariatric surgery.¹² Laparoscopic sleeve gastrectomy and gastric bypass (OAGB), are two common bariatric procedure done nowadays. The advantage of LSG over gastric bypass, in addition of being technically easier, is allowing endoscopic access to the upper alimentary canal, avoidance of intestinal anastomosis and dumping

syndrome.¹³ Data available in the literature showed significant improvement of the results of bariatric procedures, showing that the risk of death is about 0.1% and the overall likelihood of major complications is about 4.3%.¹⁴⁻¹⁷ In our study both groups showed no (0%) major complications (bleeding, leakage, obstruction, abscess formation or wound infection) only we reported 3 cases (6%) of DVT treated conservatively and one case (2.6%) died from pulmonary embolism in LSG patients so, our overall postoperative morbidity was similar after OAGB compared with LSG. Bariatric surgery helps to improve or cure many obesity-related diseases and conditions.¹⁸⁻²⁰ In our study, improvement of diabetes, hypertension and hyperlipidemia was observed early post-operative but after one year, Complete remission (normal glycemic control with no medical treatment for at least one year postoperatively) was observed in 75% (9/12 patients) and 90.9% (10/11) for LSG and OAGB respectively. This came in accordance to results of Carline et al who reported Remission rates for type 2 diabetes after LSG ranging between 60% and 80%, complete remission of hypertension was 66.6% (4/6 patients) and 71.4% (5/7 patients) for LSG and OAGB respectively.²¹ Remission of hyperlipidemia was observed in 64.2% (9/14 patients) and 80% after LSG and OAGB respectively. Both LSG and OAGB have proved to be safe and effective bariatric procedures resulting in significant weight loss and favorable effects on comorbidities.²²⁻²⁵ Clinical studies have demonstrated different results of EWL comparing OAGB and LSG with a wide range (fluctuating from 35% to 84%) at 1 year after surgery.²⁶⁻³⁰ Many studies described that OAGB had better effectiveness than LSG in BMI decrease and EWL in the first year ($p < 0.05$), whereas there was no significant difference after 1 year ($p > 0.05$) (31-35) In this study, the mean EWL at 6 months was higher in patients receiving OAGB (59%) compared to those receiving LSG (47%) ($p < 0.001$). After 1 year it was (73% vs. 62%; $p < 0.001$) and at 1.5 years (87% vs. 76%; $p < 0.001$), respectively. Total weight loss (TWL) was also significantly higher with OAGB compared with LSG (24.1% vs. 20.6%) after 6 months, (29.5% vs. 26.4%) after 12 months and (33.9% vs. 30.7%) after 18 months. Other several randomized studies reported a range from 69% to 76% excess body weight loss at 12 months for LSG (36-37) and 67% to 68% at 36 months (38-40). The length of hospital stay was equivalent between groups (2 days).

CONCLUSION

For the short term, OAGB appears to achieve better encouraging results of weight reduction and management of obesity-associated-morbid conditions compared with the LSG and a Sohag program seems to give promising results. A prospective study with long time follow-up is needed to assess the impact of these two surgical procedures on the long-term weight loss beyond the period of follow up.

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