

A Retrospective Observational Study for the Evaluation of Laparoscopic Roux-en-Y Gastric By-pass and Laparoscopic Sleeve Gastrectomy for the Treatment of Morbid Obesity: in Security Forces Hospital Program-Dammam (SFHP-D), KSA

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Abstract

Laparoscopic sleeve gastrectomy (LSG) is gaining acceptance in the bariatric community as a definitive weight loss procedure as compare to laparoscopic Roux- en – Y gastric bypass (LRYGB). In a similar effort, a study was conducted in Security Forces Hospital Program - Dammam, Kingdom of Saudi Arabia on 55 patients who were morbidly obese. On the basis of characteristics and needs of each individual two procedures were practiced. During the course of study these patients were subjected to laparoscopic Roux- en – Y gastric bypass (LRYGB) and Laparoscopic sleeve gastrectomy (LSG).

Keywords

Laparoscopic sleeve gastrectomy; Laparoscopic Roux- en – Y gastric bypass; Body mass index

Introduction

The study had been directed to evaluate the outcomes of procedures performed in our facility LRYGB with LSG. In this connection retrospective chart was drawn up during the follow up period of 18 months with the prime objective to remove all morbid obese patients' who underwent LRYGB and LSG. Patients having BMI greater than 40 kg/m² or 35 kg/m² with comorbidities as diabetes mellitus, hypertension, sleep apnea, depression [1-3].

The outcomes measures are as under:

- 1) Effectiveness and safety of these two procedures (Excess weight loss)
- 2) Intra and post-operative complications
- 3) Operative time
- 4) Length of stay
- 5) Mortality and morbidity
- 6) Resolution of co morbidities
- 7) Re intervention needed
- 8) Long term nutritional deficiencies
- 9) Quality of life

The study done at SFHP-D (Security Forces Hospital Program Dammam) in the department of general and bariatric surgery is retrospective observational study. The study group includes patients who were operated from August 2012 to January 2014.

The inclusion criteria for study were [4-11]:

- 1) BMI > 40 or greater than 35 with a significant co morbid (like type 2 DM, hypertension, obstructive sleep apnea, depression)
- 2) Age between 18 to 60 years
- 3) Failed adequate exercise and diet program
- 4) Social stigma (low self-esteem, social discrimination)

The exclusion criteria were significant psychiatric disorders, active gastric ulcer disease, difficult gastro-esophageal reflux disease (GERD), with large hiatal hernia, severe eating disorder, previous bariatric surgery except intra gastric balloon and gastric band. As regards the mean age it was round about 31 and 36 years for gastric LRYGB and LSG respectively. Here it is to be noted that patients who underwent LRYGB were more significantly diabetic and hypertensive as against the patients in who underwent SG. Patients under both the procedures were suffering from sound co morbidities whereas the level of depression was high in patients underwent LRYGB. The operation time remained about 160 minutes for LRYGB whereas about 116 minutes in LSG It was also noticed with satisfaction that there was no post-operative morbidity and mortality under both the groups. Length of stay in hospital under both the groups was 4 days.

Case Presentation

All patients underwent evaluation by bariatric multidisciplinary team [5] (Surgeon nutritionist, psychiatrist, endocrinologist, pulmonologist, anesthesiologist in accordance with SFHP-D guidelines for bariatric surgery). Candidates of surgery were informed about the procedure and intra operative and post-operative consequences and they completed an extensive preoperative work up indicated by multidisciplinary group, upper GI endoscopy and abdominal ultrasonography were performed in all patients, *Helicobacter pylori* infection and associated gastric ulcer disease were treated and controlled before going for surgery.

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Surgical Techniques: Two types of surgical techniques were used.

- Lap Sleeve gastrectomy
- Lap Roux –en-Y gastric bypass (Figures 1and 2)

All procedures were done laparoscopically, none of them were converted into open surgery, the two patients in the LRYGB group had gastric balloon and one patient in LSG group, which were removed endoscopically 3 months before surgery and two patients of LSG group having gastric band. The mean operating time for the LRYGB group of 160 min was significantly longer than that for the LSG group of 116 min ($P<0.001$). The mean length of hospitalization was 04 days for both LRYGB group and LSG group. The satisfaction of the patients assessed by the medical team was 97% in the LRYGB group and 91% in the LSG group. The mean Percent of EWL for 3, 6, 12 months was 7.9%, 15.6%, 30% respectively in LRYGB group and mean Percent of EWL for 3, 6, 12 months was 6.5%, 17.3%, 32.5% respectively in LGS group and the overall EWL at the end of study (18 months) 53.5% and 56.3% in LRYGB and LSG respectively [10]. Similarly, a significant difference in the BMI was observed between LRYGB and LSG. At 6 months, the mean BMI was 38.1kg/m^2 in the LSG group and 34.2kg/m^2 in the LRYGB group. At 12 months, mean BMI was 35.1kg/m^2 in the LSG group and 31.1kg/m^2 in the LRYGB group. The comorbidities, diabetes was resolved in 83% in LRYGB and 16% in LSG in the rest of the patients the dosage of medications was decreased, the resolution was considered as a significant change in pre meal and post meal sugars with prominent modification of medications [6]. Hypertension was resolved in 66% in LRYGB and 6% in LSG. Sleep apnea was resolved equally in both groups (50%), depression was resolved in 66% of the patients who underwent LRYGB were none was having depressing who underwent LSG [7]. There was no mortality at the end of 12 months intra or post operatively. However there was one intraoperative complications in LYGB for which spleenectomy was done due to the reason of excessive intra operative bleed however no major post opt morbidity was measured in both the groups except few minor complaints which was constipation, hair loss and micro nutrient deficiencies in LRYGB. Two surgical site infections were noted postoperatively. No post-operative leak or obstruction detected in either of two procedures (Figures 3-6) (Tables I and II).

Discussion

LRYGB is a safe and effective bariatric procedure with excellent results reported over long term follow up, and it is evidenced that besides its significance in reducing the weight, it has a favorable effect on comorbidities also. However in recent years, LSG has been identified as an innovative approach to the surgical management of morbid obesity. It is technically simpler and faster procedure with the lower learning curve compared to LRYGB. It is pylorus preserving hence there is no occurrence of dumping syndrome. There is lower chance of developing nutritional deficiencies when compared to LRYGB. There no risk of developing anastomotic ulcers, intestinal obstruction or internal hernias. The remnant stomach is always easily accessible to upper gastrointestinal endoscopy. In our study the same maneuvers (mentioned in method) were used in all the patients. Although most of available data suggest that morbidity related to LSG is lower than in LRYGB. Our results confirm that no morbidity in patients who underwent LSG. For diabetic control, although LRYGB surgery originally advised to treat obesity, it has also shown to help diabetes [8]. Two hypotheses have been proposed to explain the effects of bariatric surgery on diabetes, namely, the hindgut and the foregut hypothesis. The former states that diabetes control results from the more rapid delivery of nutrients to distal small intestine, thereby enhancing the release of hormones such as glucagon like peptide-1. The later theory contends that exclusion of proximal intestine reduces or suppresses the secretion of anti-incretin hormones leading to improvement blood glucose control as a consequence. Increased level of these hormones in plasma stimulates insulin secretion and suppresses glucagon secretion,

thereby improving glucose metabolism [9]. Recent studies have shown that improved intestinal gluconeogenesis may also be involved in the amelioration of glucose homeostasis following LRYGB. On the other hand, restriction of food intake and changes in appetite and satiety due to alteration in gut hormone named as ghrelin is probably key mechanism for weight loss after both procedures especially

Restrictive Vertical Gastrectomy/Gastroplasty

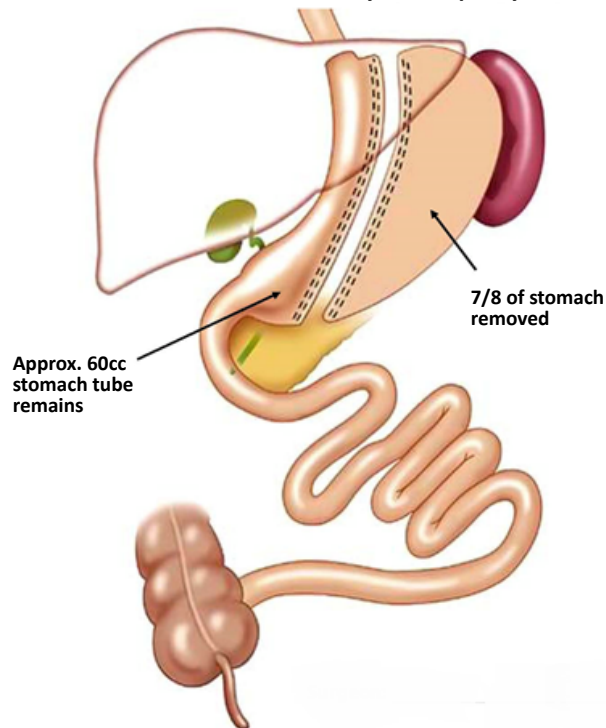


Figure 1: Restrictive vertical gastrectomy/gastroplasty.

ROUX-EN-Y GASTRIC BYPASS

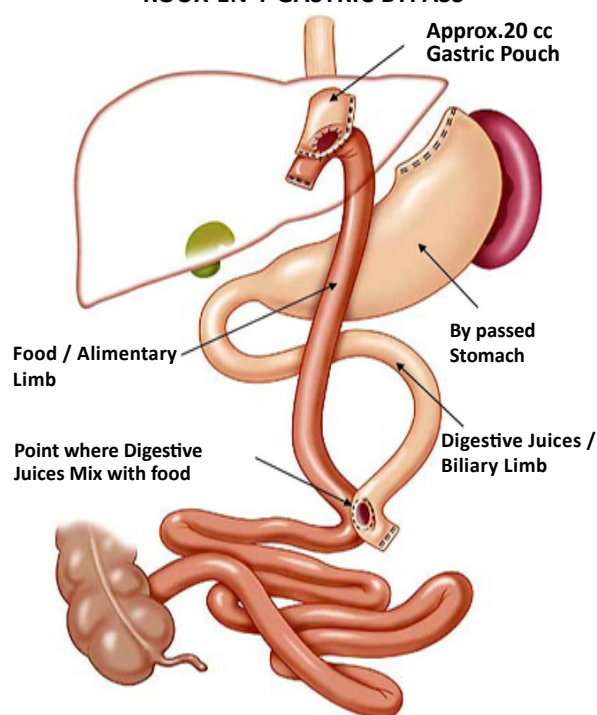


Figure 2: ROUX-EN-Y gastric bypass.

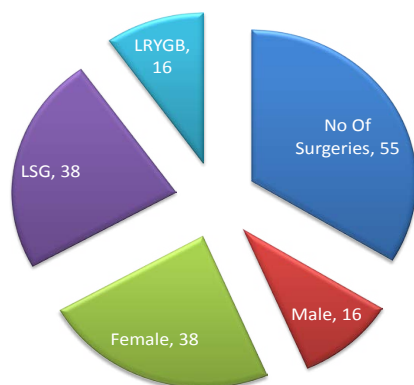


Figure 3: Ratio.

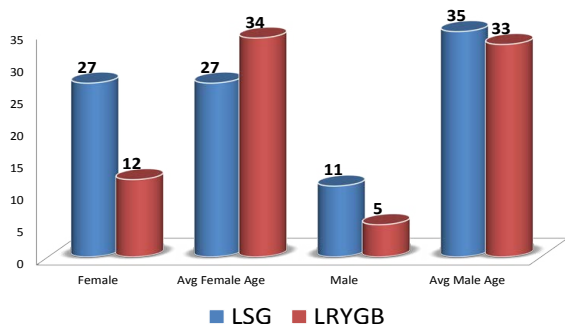
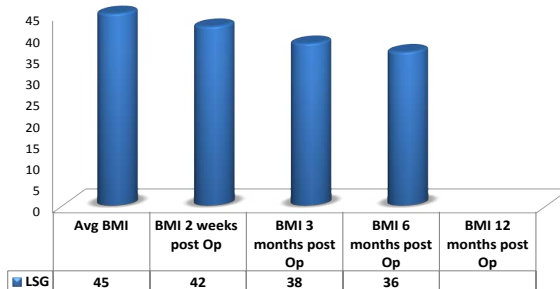


Figure 4: LSG vs. LRYGB.

LSG Average BMI Loss Follow Up



LRYGB Average BMI Loss Follow Up

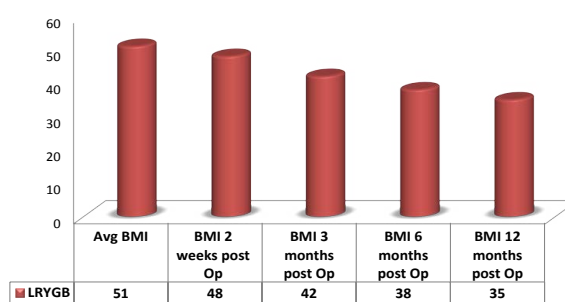


Figure 5: Average BMI loss.

Co-Morbid

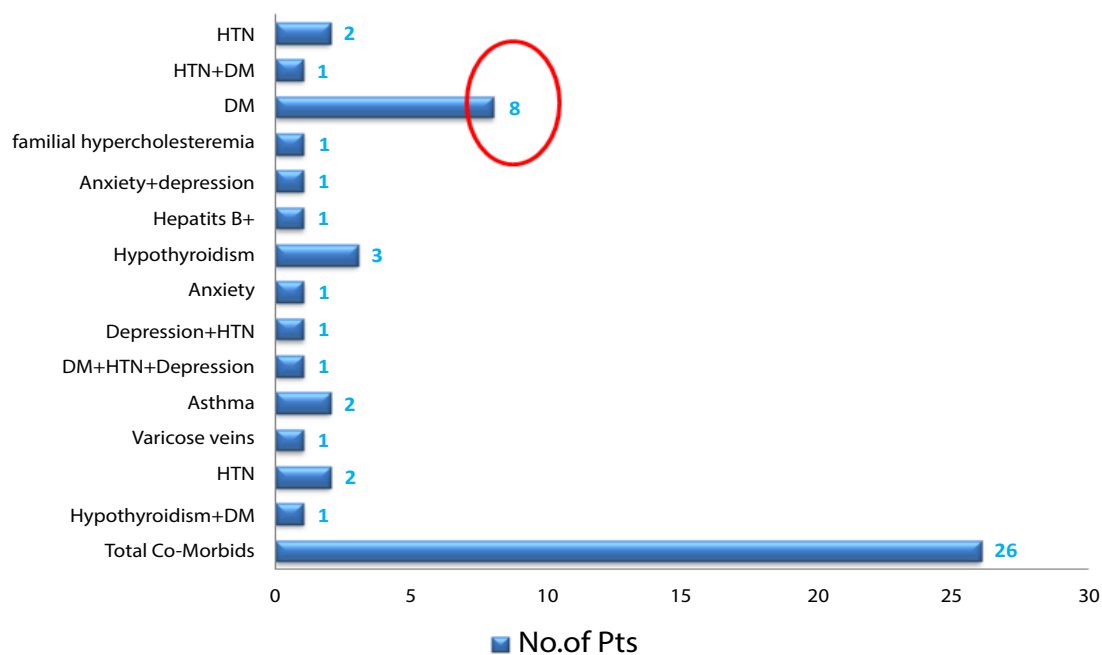


Figure 6: Co-morbid.

Table I: Demographic data.

Characteristics	LRYGB		LSG		Value(mean)
Age in years Mean	F-27 yr, M-35 yr		F-34 yr, M-33 yr		31, 36
BMI(kg/m ²)	34-62.4		34-62.2		50.9
Sex No (%)	M-5 (9.09%) F-12 (21.81%)		M-11 (20%) F-27 (49.09%)		
Co morbidities	LRYGB No of patients in %		LSG No of patients in %		Resolution LRYGB: LSG
	No.	%	No.	%	
Diabetes	6	35	2	5	83% : 16%
Hypertension	3	17	1	2.5	66% : 06%
Depression	3	17	0	0	66% : 0%
Sleep apnea	2	11	2	5	50% : 50%
Mean operating time (minutes)	160		116		
Hospital Stay	04 days		04 days		
Intra operative complications	01		0		
Post-operative complications	0		0		
Satisfaction (%)	97		91		

M: male, F: female, yr: years, %: percentage

Table II: Body mass index vs. estimated weight loss.

BMI (kg/m ²)	LRYGB	LSG	LRYGB: LSG
Pre operative			
	51	45	
Post operative			
2 Weeks	48	42	
3 M	42	38	
6 M	38	36	
12 M	35		
% EWL			
3 M	7.9%	6.5%	
6 M	15.6%	17.3%	
12 M	30%	32.5%	53.5% : 56.3%

The scheduled follow up visit for both the procedures was 100% 2 weeks and 98% 3 months, 90% after 6 months and 88% after 1 year.

BMI: Body Mass Index, EWL: Estimated Weight Loss

in LSG. We believe that patient should be informed in detail on the advantages and disadvantages of each available procedure. We suggest that LSG procedure can be adopted in cases where co-morbidities are not taken into consideration. Postoperative aftercare or follow-up visits are important after both restrictive and malabsorptive procedures [10,11]. Percentage of excess weight loss after LSV has been shown to be significantly related to the adherence to postoperative aftercare. Patients who undergo procedures with a malabsorptive component like LRYGB are at higher risk of nutritional deficiencies including deficiencies of protein, vitamins, and micronutrients. As such consistent postoperative follow-up in this group of patients is necessary to prevent nutritional deficiencies and assure appropriate weight loss [12]. Moreover, poor retention in postoperative bariatric aftercare has detrimental effects on patient safety due to delayed diagnosis of complications. Most bariatric surgery centers have standardized patient postoperative aftercare protocols, but regardless, patient attrition is a consistent problem in the field, particularly beyond 1 year after surgery. Improving postoperative follow-up attrition rates, and potentially the long-term health outcomes in bariatric surgery patients, requires the identification of patient characteristics that predict both satisfactory and poor follow-up. By identifying specific patient characteristics, surgery programs could incorporate specific strategies to improve attendance at surgical aftercare programs [13,14].

Conclusion

As a matter of fact both the procedures are effective tools of reducing

excess weight but in cases where a patient, showed disinclination towards LRYGB, then LSG can be offered as an alternative because both the procedures are more or less equally effective in reducing the excess weight. The point to be noted with the sense of satisfaction is that patients treated to be either of the procedures did not show any early or late complication like (gastric leak, obstruction abscess formation etc.). Although both the procedures have produced encouraging results but complications cannot be ruled out in toto. The rate of success depends on the surgical skill and deftness, coupled with how meticulously the procedure is performed. While analyzing our study one thing should be kept in mind that this study was restricted to limited period (18 months). In order to evaluate the final impact of these procedures the study needs to be spread over a period of 3 to 4 years [15].

Conflict of Interest

Authors have no conflict of interests to declare.

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