Mid-Term Outcomes of Laparoscopic Sleeve Gastrectomy in a Single Private Institution

Yasser Tohme (1)
Samer M AlAthath (1)
Tariq M Awidah (1)
Ahmed Bazuhair (1)
Mohammed AlGabbani (1)
Haytham Alabbas (1)
Tahir Yunus (1)
Alaa Jaber Othman (2)
Nouf Alasiri (2)
Ahmed Alathath (2)

(1) Department of surgery, International Medical Center, Jeddah, Kingdom of Saudi Arabia.
(2) Ibn Sina National College for Medical Studies, Jeddah, Kingdom of Saudi Arabia.

Corresponding author:
Haytham Alabbas, MD, MSc, FRCSC, FACS, DABS
Associate consultant of General Surgery
Department of Surgery
Division of General Surgery
International Medical Center
Jeddah, Saudi Arabia
Email: halabbas@imc.med.sa

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Abstract

Background: Overweight and Obesity prevalence in Saudi Arabia is estimated to be more than 75%. This has not really deviated from the prevalence worldwide as the World Health Organization reported that obesity has increased three folds in nearly 40 years. Obesity is a disease of ongoing process with a magnitude of effects on different body systems. There are different approaches to deal with obesity and surgery is one of them. Obesity has been approached vigorously with different types of surgeries such as Laparoscopic Sleeve Gastrectomy (LSG), Laparoscopic Roux-en-Y gastric bypass and band insertion. LSG has gained much popularity pursuant to its safety and having more anatomical and physiological similarity to the body.

Objectives: The aim of this paper is to report the midterm outcomes of LSG in a single private institution in Saudi Arabia.

Subjects and Methods: This is a consecutive retrospective chart review from October 2013 to December 2017 for patients who underwent LSG in a single private institution by a single surgeon. We evaluated patients' demographics, preoperative and postoperative medical conditions, Body Mass Index (BMI), medications, length of hospital stay and short and long-term complications.

Results: A total of 464 obese patients who underwent bariatric surgery were evaluated. Most of our patients were females (57.23%). The mean age at operation was 38.2 years old (11-66). Patients' preoperative mean BMI and mean excess body weight (EBW) were 43.27 (27-77), and 57.58 (23-144), respectively. The overall morbidity in this series was 1.73%. Nearly, 27% of diabetic patients became able to maintain a normoglycemic level without using their treatment. In regard to gastro esophageal reflux disease 42% of our patients were symptomatically free postoperative. From those patients who had obstructive sleep apnea, 46% of them were eased from it post operatively.

Conclusion: LSG exhibits an efficient measure for controlling obesity. Midterm outcomes of this procedure revealed a significant reduction in multiple chronic advanced conditions.

Key words: Bariatric surgery; Sleeve gastrectomy; Morbid obesity; Co-morbidities; Outcomes.

Introduction

The World Health Organization (WHO) has defined obesity as abnormal or excessive fat accumulation that presents a risk to health. Obesity is measured by the body mass index (BMI), which is calculated by a person's weight (in kilograms) divided by the square of his or her height (in meters). A person with a BMI of 30 or more is generally considered obese (1). The prevalence of overweight and obesity worldwide has been estimated in 2016 to be > 1.9 billion adults and > 600 million individuals, respectively (1). In Saudi Arabia, the latest studies showed that the proportion of overweight and obesity has reached up to 75% of Saudi society (2). Alshehri et al reported that overweight and obesity among adult males and females were (30.7% and 28.4%) and (14% and 23.6%), respectively (2). It is counted as the most common cause of morbidity in both genders among all age groups (2,3,4). Obesity has been associated with serious chronic diseases including diabetes, cardiovascular disease and cancer. Preventive measures should be applied vigorously to decrease the rate of obesity.

Laparoscopic Sleeve Gastrectomy (LSG) is the procedure that is performed by removing > 80% of the stomach and forms a tubular structure along the lesser curvature of the stomach. Despite the fact that Roux-en-Y Gastric Bypass (RYGB) is the most frequent bariatric procedure performed universally, LSG is the most common bariatric procedure in the United States, Canada, and Asia (5). LSG is determined as a restrictive procedure; with less nutritional defect expected because it is not a malabsorptive surgery such as RYGB. Short-term studies confirm that the LSG has the same weight loss and metabolic benefits in comorbidities to RYGB (6). The National Institutes of Health (NIH) Consensus Development Board recommends that bariatric surgery be designed for only patients with severe obesity as defined by BMI ≥ 40 or ≥ 35 kg/m2 with high-risk comorbid conditions (7).

The aim of this study is to demonstrate the outcomes of LSG in our center and to compare our data to the international institutions.

Method

After institutional review board approval, we retrospectively identified and analyzed all patients in a single center who underwent LSG between October 2013 and December 2017. Data collection included demographic data of the patients, height, weight, BMI, patients' comorbidities, postoperative outcomes and changes in comorbidities postoperatively. SPSS software, version 23 (SPSS Inc., Chicago, Illinois, USA) was used for data entry and analysis. All analyses were carried out at a significance level of 0.05.

Results

Patient demographics

Between October 2013 and December 2017, a total of 464 obese patients who underwent LSG in a single private institution by a single surgeon were enrolled in this study. The study sample included 199 males (42.5%) and 265 females (56.6%) whose mean age at operation was 38.2 (±12.42). Patients' preoperative mean BMI and mean excess body weight (EBW) were 43.27 kg/m2 (±6.93 kg/m2) and 57.58 kg (±17.55 kg) respectively, demonstrated clearly in Figures 1 and 2. The length of hospital stay ranged between 1 to 7 days (mean 3 days). Most of our patients received the scheduled follow-up, with an average follow-up period of 15.2 months.

The 30-days post sleeve gastrectomy morbidity prevalence was not significant (8/463= 1.73%). Only to mention, 4 (0.86%) cases suffered from pain and another 4 (0.86%) cases had perigastric hematoma. Two weeks following LSG, a significant decrease in BMI (43.27 ± 6.93 vs. 40.72 ± 6.22 kg/m2, p-value < 0.001) was achieved. As outlined in Table 1, the number of patients gradually decreased throughout the follow-up period. Although, there is a noted increase in BMI post sleeve gastrectomy at the two and three years' follow-up, these data were considered not significant, as the number of patients during these periods were considerably small compared to the baseline figure. Hence, the results cannot be generalized. On the other hand, regarding the data up to one-year follow-up, as per intention-to-treat strategy, analysis was carried out regardless of the missing data. The prevalence of Gastroesophageal reflux disease (GERD) was significantly reduced postoperatively (p-value < 0.001). In addition, 59 patients (42.45%), diagnosed with pre-operative GERD either on or without medication, were symptomatically free post sleeve gastrectomy.

Furthermore, 146 patients were diabetic preoperatively, and a significant decrease in prevalence in those cases was calculated (p-value < 0.0001), as 40 patients out of 146 (27.40%) stopped their treatment when followed up one-year post surgery. Moreover, there was no significant difference recorded for patients regarding their hypertension status from the baseline (p-value > 0.05).

Linear regression analysis

There was no significant impact for gender or preoperative clinical characteristics (diabetes, hypertension, depression, GERD, glycosylated hemoglobin and obstructed sleep apnea) on the rate of weight loss during the follow-up period post LSG. However, after adjusting for gender and preoperative clinical characteristics, a significant association was interpreted after the regression of weight loss rate 2-weeks and 1-month post sleeve gastrectomy and age at operation. As for every year decrease in the patient's age, there was a significant decrease in the 2-weeks post-operative BMI by 0.062 kg/m2 (p-value = 0.015) Also, a significant decrease in the 1-month post-operative BMI by 0.116 kg/m2 was recorded for every one-year decrease in patient's age (p-value = 0.011). However, patient's age was no longer a significant factor affecting the rate of BMI post sleeve gastrectomy during the remaining of the one-year follow-up period.

Table1: Number of patients who presented for follow-ups postoperatively in different periods.

Follow-up postoperative	Number of patients	Mean BMI (Std. Deviation)	p-value
2 weeks	464	40.73 (6.22	< 0.001
1 month	166	38.55 (6.97)	< 0.001
3 months	184	35.45 (5.84)	< 0.001
6 months	163	32.33 (5.31)	< 0.001
12 months	131	29.97 (5.29)	< 0.001
24 months	19	31.55 (6.92)	NA
36 months	7	33.43 (10.23)	NA

Figure 1: Distribution of the studied sample according to the gender

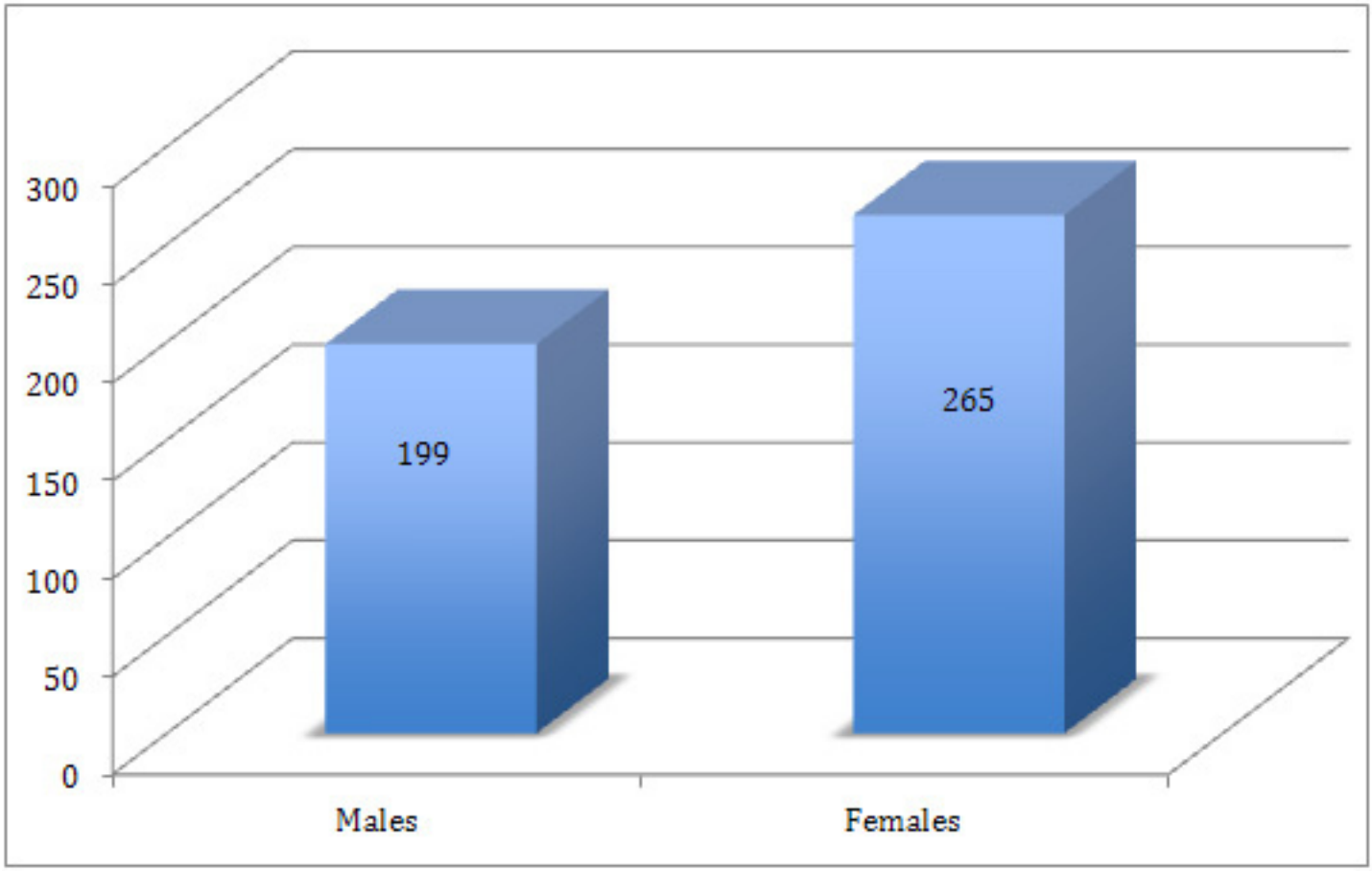
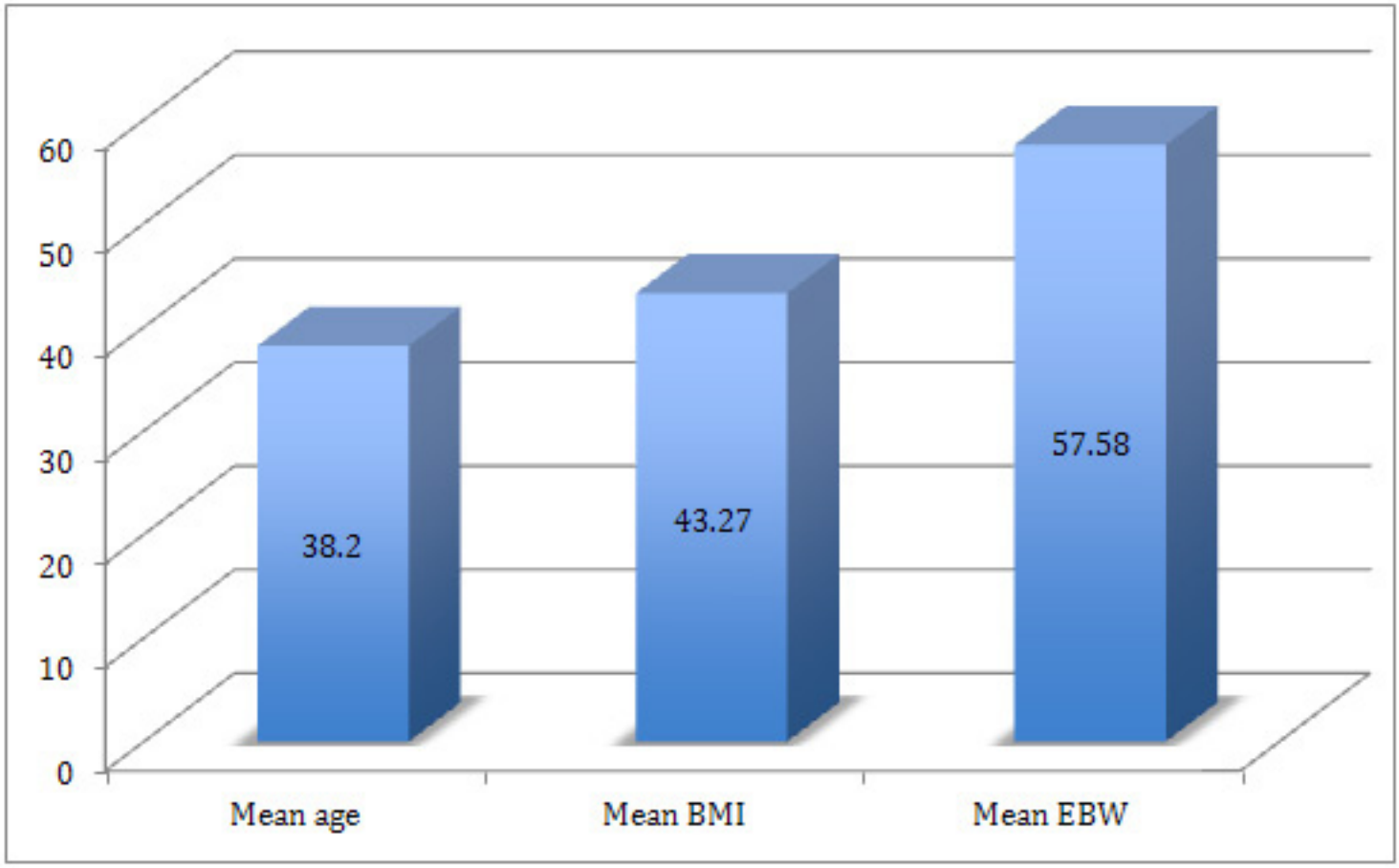


Figure 2: This Chart shows the Mean of each of age, BMI and EBW



Discussion

In consideration of best practice guidelines and recommended surgical techniques of LSG, many peer review studies have been assessing and reporting safety and reproducibility of this procedure in obese patients with different categories (8,9,10,11,12).

The current study assesses the midterm outcome of LSG in different end points including morbidity, mortality and desired outcomes. The well-known 2 complications postoperatively are staple line bleeding and leakage from the anastomotic area (10). A description of morbidities ranged from 0%-24% in published papers with a mortality of 0.39% (10). This series states a 0% mortality rate and non-significance 30-days morbidity rate; which was 1.73%, and was managed conservatively.

Approaching the planned endpoints of LSG starting with DM type 2, as this study continued to solidify that bariatric surgery is superior to medical therapy in terms of glycemic control. Schauer et al (13) reported a similar outcome, which reveals a significant result of maintaining HA1C of 6% in absence of anti-diabetic medications. This series showed 27% of patients had good glycaemic control while stopping their anti-diabetic treatment when followed up one-year post surgery. Obesity has been established as a strong risk factor for OSA (14). Although the diagnosis of OSA might involve different methodological approaches (15,16), In this series, patients who had been on CPAP or BiPAP were titled as OSA in preoperative data. These included 41 patients. Significant reductions with 46% of those patients at ease of OSA postoperatively.

Stenard et al managed to review 25 studies stating the negative and positive impacts of LSG on GERD (17) albeit the diagnosis of GERD was established among those studies in different ways, ranging from clinical evaluation up to endoscopy. 13 out of 25 studies showed negative impact where 84% of patients showed persistence of GERD rather than worsening symptoms. However, in those patients with hiatal hernia repair, GERD was significantly decreased from 42.1% to 3.1% (17). The remaining twelve studies showed the positive impact of LSG on GERD where they came out with results in favour of LSG, hence they brought attention to the surgical technique (17). Our paper shows a significant reduction of GERD postoperatively in 42.45% of patients who were diagnosed preoperatively and who became symptomatically free postoperative. This research reinforces the efficacy of weight reduction of this procedure especially in short and midterm periods, as shown in many other studies, (8, 11,13) although this paper presents only the overall reduction in BMI in different periods which are shown in Table 1.

Losing patients during the follow-up period was considered one of the limitations of this paper. This has been a known problem and would require another study to identify its constraints. In addition, this is a retrospective study with its own known limitations. In fact, a prospective randomized controlled and multi-centric study could help to answer these questions appropriately.

Conclusion

LSG exhibits an efficient measure for controlling obesity. Midterm outcomes of this procedure revealed a significant reduction in multiple chronic advanced conditions.

References

1.Ulijaszek S. Obesity: Preventing and Managing the Global Epidemic. Report of a WHO Consultation. WHO Technical Report Series 894. Pp. 252. (World Health Organization, Geneva, 2000.) SFr 56.00, ISBN 92-4-120894-5, paperback. Journal of Biosocial Science. 2003;35:6-8.
2. Obesity and overweight [Internet]. Who.int. 2019 [cited 24 May 2019]. Available from: https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight.
3. Al-Shehri F, Moqbel M, Abu-Melha W, Al-Khaldi Y, Al-Shahrani A. Management of obesity: Saudi Clinical Guideline. Saudi Journal of Obesity. 2013;1(1):13-20.
4- Angrisani L, Santonicola A, Iovino P, Formisano G, Buchwald H, Scopinaro N. Bariatric Surgery Worldwide 2013. Obesity Surgery. 2015;25(10):1823-1826.
5- NIH conference. Gastrointestinal Surgery for Severe Obesity Consensus Statement. Nutrition Today. 1991;26(5):33-34.
6. Tiffany Y, Kim, Anne L. Schafer. Bariatric Surgery, Vitamin D, and Bone Loss. In: David Feldman, editor. Vitamin D, 4th ed. Amsterdam: Elsevier; 2018 .p.130.
7. Fuks D, Verhaeghe P, Brehant O, Sabbagh C, Dumont F, Riboulot M, et al. Results of laparoscopic sleeve gastrectomy: A prospective study in 135 patients with morbid obesity. Surgery. 2009;145(1):108-09.
8. Lin M, Mehdi Tavakol M, Sarin A, Amirkiai S, Rogers S, Carter J, et al. Laparoscopic sleeve gastrectomy is safe and efficacious for pretransplant candidates. Surgery for Obesity and Related Diseases. 2013;9(5):658.
9.Rosenthal R. International Sleeve Gastrectomy Expert Panel Consensus Statement: best practice guidelines based on experience of >12,000 cases. Surgery for Obesity and Related Diseases. 2012;8(1):12-16.
10. Sánchez-Santos R, Corcelles Codina R, Vilallonga Puy R, Delgado Rivilla S, Ferrer Valls J, Foncillas Corvinos J, et al. Prognostic Factors for Morbimortality in Sleeve Gastrectomy. The Importance of the Learning Curve. A Spanish-Portuguese Multicenter Study. Obesity Surgery. 2016;26(12):2834-35.
11.Deitel M, Gagner M, Erickson A, Crosby R. Third International Summit: current status of sleeve gastrectomy. Surgery for Obesity and Related Diseases. 2011;7(6):751.
12.Schauer P, Bhatt D, Kirwan J, Wolski K, Aminian A, Brethauer S. Bariatric Surgery versus Intensive Medical Therapy for Diabetes — 5-Year Outcomes. New England Journal of Medicine. 2017;376(7):643,646.
13.Young T, Palta M, Dempsey J, Skatrud J, Weber S, Badr S. The Occurrence of Sleep-Disordered Breathing among Middle-Aged Adults. New England Journal of Medicine. 1993;328(17):1233.
14.Sillo T, Lloyd-Owen S, White E, Abolghasemi-Malekabadi K, Lock-Pullan P, Ali M, et al. The impact of bariatric surgery on the resolution of obstructive sleep apnoea. BMC Research Notes. 2018;11(1):1,2.
15.Lee W, Nagubadi S, Kryger M, Mokhlesi B. Epidemiology of obstructive sleep apnea: a population-based perspective. Expert Review of Respiratory Medicine. 2008;2(3):350,353.
16.Stenard F, Iannelli A. Laparoscopic sleeve gastrectomy and gastroesophageal reflux. World Journal of Gastroenterology. 2015;21(36):10350-53.
17.Hoyuela C. Five-year outcomes of laparoscopic sleeve gastrectomy as a primary procedure for morbid obesity: A prospective study. World Journal of Gastrointestinal Surgery. 2017;9(4):112.