

ORIGINAL ARTICLE

Reasons for sleeve gastrectomy, postoperative complications and self-reported patient satisfaction in Saudi Arabia

Mona A. Alfadeel¹, Eman M. Aldraihim^{1*}, Ethar F. Algheshem¹, Abeer A. Aldughayyim¹, Reham H. Hammouda¹, Kadi T. Alsayed¹, Norah M. Redwan¹, Maha S. Alotaishan¹, Rana Abdullah Alansari¹, Rana H. Alaprah¹

ABSTRACT

Background: Obesity has become a major public health concern around the world. Bariatric surgery is gaining popularity as an effective and safe solution, particularly for patients with a body mass index greater than 40 kg/m². The goal of this study is to examine the reasons for having a sleeve gastrectomy and postoperative complications and patient satisfaction in Riyadh, Saudi Arabia.

Methods: This is a community-based, observational, descriptive, and cross-sectional study. An online questionnaire was randomly distributed using social media, generating 279 responses.

Results: Among the 279 participants, 92% were satisfied with their postoperative weight, of whom 73% were married. Additionally, 41% chose open surgery, while 56% chose laparoscopic sleeve gastrectomy (LSG). Among the latter, 40% had no postsurgical complications and 62% were satisfied with the results. Furthermore, 75% of the participants tried to lose weight more than three times and 73% were over 35 years of age.

Conclusions: Most of the participants were satisfied with the postoperative results. Participants chose LSG mainly to reduce the adverse effects of conditions such as diabetes, hypertension, and asthma. The chief postoperative complications were nutritional deficiencies, gastroesophageal reflux disease, and strictures.

Keywords: Obesity, laparoscopic sleeve gastrectomy, postoperative complications, patient satisfaction.

Introduction

Obesity is increasingly recognized as a significant public health issue on a global scale. Obesity has been estimated to range from 13% to 70% in Saudi Arabia and is projected to increase further [1]. In morbidly obese patients, laparoscopic sleeve gastrectomy (LSG), commonly known as bariatric surgery, has become the treatment of choice. LSG is a safe and efficient treatment for obesity. It has shown positive results in terms of percentage excess weight loss, percentage total weight reduction, and resolution of comorbidity. Better weight loss and superior glycemic control can be seen in patients with a preoperative body mass index (BMI) <40 kg/m² [2].

However, there are certain postoperative problems with LSG, such as gastroesophageal reflux disease (GERD), which has been observed in 47% of patients. Other early postoperative problems of LSG include hemorrhage (1%-6%), staple line leak (5%), abscess formation (0.7%), and

Correspondence to: Eman Mohammed Aldraihim

*Department of Medicine, AlMaarefa University College of Medicine, Riyadh, Saudi Arabia.

Email: eman.mm.d@hotmail.com

Full list of author information is available at the end of the article.

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nutritional deficits [3]. This research aims to examine the reasons for undergoing gastric sleeve surgery and to discuss its outcomes in Saudi Arabia.

Materials and Methods

This is a descriptive observational study with a cross-sectional case series design. The study was carried out in Saudi Arabia through an online survey. The research participants were men and women (both Saudi nationals and non-citizens) over the age of 18 who had undergone LSG 6 months to 5 years before the commencement of this study.

In total, 279 individuals who underwent LSG in Saudi Arabia were found through an online survey. A non-probability quota sampling technique was used to select participants. A questionnaire was created specifically to collect data from participants. The questionnaire was prepared in English and translated into Arabic. It contained four sections: (i) personal information (age, sex, weight, and BMI); (ii) reasons for performing this surgery; (iii) satisfaction with the postoperative outcomes; and (iv) any postoperative complications. The BMI is the weight of the person in kg divided by his or her height in meters squared. The validity and reliability of the questionnaire was tested before data collection.

The online survey was conducted on social media to facilitate access to people who underwent LSG. The questionnaire was available in both Arabic and English languages.

The collected data were cleaned, coded, and descriptively analyzed using the Statistical Package for Social Science. The proportions were calculated and a chi-square test was performed. Values with $p < 0.05$ were deemed statistically significant.

Results

Of the 279 participants, 210 (75%) attempted to reduce their weight three times or more, whereas the others attempted it less than three times. The difference in the number of participants in these two groups was significant ($p = 0.0004$). In addition, 73% of the participants who tried to lose weight were ≥ 35 years old, and the rest were between the ages of 25 and 34 years (Table 1).

As can be seen in Table 2, 14% of the respondents chose open surgery, while the rest opted for LSG. Among the total participants, 28% reported stricture as a postoperative complication. In particular, 54% of those who underwent open surgery reported strictures, compared to only 23% of participants who underwent LSG. This difference in the number of participants who reported stricture as a postoperative complication was statistically significant ($p = 0.0001$). On the contrary, 38% of the participants reported no postoperative complications. Of these, 40% chose LSG. The difference in the number of participants who reported postoperative complications was statistically significant ($p = 0.0955$).

As shown in Table 3, 240 (86%) participants underwent LSG and the rest chose open surgery. Importantly, 172 (62%) of the respondents reported being very satisfied with the

Table 1. Number of serious attempts to lose weight by participants of ≥ 25 years of age.

Age	Number of attempts				Total
	0	1	2	≥ 3	
<25	0 (0%)	2 (11%)	3 (16%)	14 (74%)	19 (100%)
25-34	3 (4%)	8 (11%)	18 (26%)	41 (59%)	70 (100%)
35-44	2 (4%)	0 (0%)	4 (9%)	39 (87%)	45 (100%)
≥ 45	8 (6%)	8 (8%)	13 (9%)	116 (80%)	145 (100%)
Total	13 (5%)	18 (6%)	38 (14%)	210 (75%)	279 (100%)

* $p = 0.009$.

Table 2. Postoperative complications and type of sleeve gastrectomy procedure.

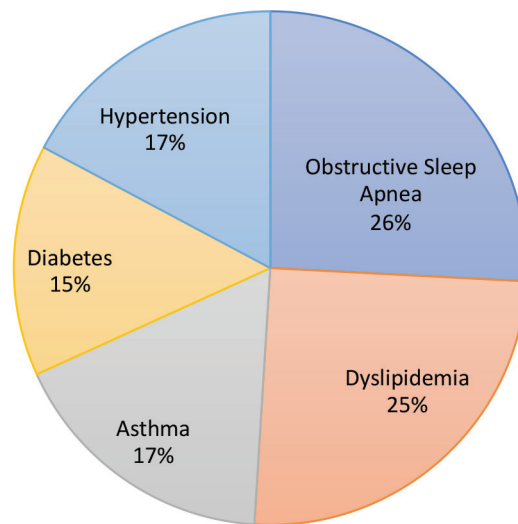
Procedure type	Postoperative complications			
	Structure	Nutritional deficiencies	GERD	No complications
LSG 240 (86%)	56 (23%)	116 (48%)	57 (24%)	95 (40%)
Open surgery 39 (14%)	21 (54%)	21 (54%)	8 (21%)	10 (26%)
Total 279 (100%)	77 (28%)	137 (49%)	65 (23%)	105 (38%)

* $p = 0.005$.

Table 3. Type of procedure for sleeve gastrectomy and level of satisfaction with the postoperative result.

Satisfaction with the postoperative result	Procedure type		
	LSG	Open surgery	Total
Very satisfied	154 (64%)	18 (46%)	172 (62%)
Satisfied	72 (30%)	19 (49%)	91 (33%)
Unsatisfied	11 (5%)	2 (5%)	13 (5%)
Very unsatisfied	3 (1%)	0 (0%)	3 (1%)
Total	240 (100%)	39 (100%)	279 (100%)

* $p = 0.0319$.



■ Obstructive Sleep Apnea ■ Dyslipidemia ■ Asthma ■ Diabetes ■ Hypertension

Figure 1. Preexisting health-problems in patients treated with sleeve gastrectomy.

postoperative results; 152 of them underwent LSG, while 18 had open surgery. This difference in the total number of participants was statistically significant ($p = 0.0319$). Furthermore, 16 (6%) of the patients were unsatisfied or very unsatisfied with the postoperative outcome.

Only 151 individuals had preexisting health problems (Figure 1) and reported improved health after surgery.

Discussion

In this study, most of the patients were 35 years old and most had made three or more attempts to lose weight. This result was expected, as patients older than 35 years are likely to face harsher consequences for being overweight than young adults. A study in Berlin found that the coping style has a great impact on postoperative success. The older age group has a better coping style than young adults [4].

A study conducted in the United States examined weight reduction efforts in individuals with varying BMI,

ethnicities, and ages. Men in the 40-49-year age group made the best effort to lose weight. A similar association with age was observed in women. Note that the attempt to lose weight in both men and women is strongly related to BMI [5]. Haynes conducted a systematic review and showed that perceived overweight is related with the attempt to lose weight, regardless of the weight, age, and gender of the participants [6]. A study in Norwegian women showed that weight loss attempts were strongly related to BMI and that the success of weight loss attempts can be predicted to some extent based on age, lifestyle, and socioeconomic factors [7].

This study reported a higher rate of no complications because most of the study participants opted for LSG, which results in fewer or no complications. In contrast, open sleeve gastrectomy increases the incidence of strictures as a postoperative complication. This result was highly expected, as the minimally invasive approach of LSG offers greater safety and lower complications than open surgery.

A study conducted in Alexandria suggests that it is essential for all practicing general surgeons to have a basic understanding of common complications and available treatment options. LSG is a safe and effective procedure. Hence, it is important to standardize the LSG procedure and perform an early diagnosis and treatment to reduce major complications [3]. Reoch et al. [8] showed that compared to open surgery, laparoscopic surgery reduced the risk of wound infection by 79% and the risk of incisional hernia by 89%. However, both open and laparoscopic operations have similar risks of reoperation and anastomotic leaks. Because laparoscopic bariatric surgery is characterized by smaller incisions, less healing time is needed with reduced exposure to microorganisms. Therefore, laparoscopic bariatric surgery is associated with a lower risk of wound infection and incisional hernia than open surgery [8].

A meta-analysis of 6 randomized and 14 observational studies was performed and data on 185,328 patients were obtained. Pulmonary complications have been reported in 1.6% and 3.6% of laparoscopic and open procedures, respectively. Pneumonia was reported in 0.5% and 1.1% of laparoscopic and open procedures, respectively. In addition, available evidence suggests a lower pulmonary morbidity with the laparoscopic procedure [9]. Hegland et al. [10] reported satisfaction levels 5 years after laparoscopic bariatric surgery. Of the 261 patients, 82.4% were very satisfied or satisfied, while the remaining were uncertain or dissatisfied [10]. Edholm et al. [11] investigated satisfaction levels after open gastric bypass in 384 patients, 79% of whom were satisfied with the result.

Interestingly, married participants reported significantly more satisfaction with the postoperative outcome than the others. Most of the respondents (51%) were married. In particular, women tend to gain weight after labor, affecting their physical and psychosexual functions. Goitein et al. [12] showed that bariatric surgeries significantly improve sexual function in both men and women. In fact, women reported a 59% increase in sexual function after the operation.

We expected to find that participants would be significantly more satisfied with the postoperative result of LSG than with open surgery. LSG is more popular because it allows a significant weight reduction and fewer postoperative complications. A study conducted in Poland showed that people who underwent LSG did not need a second bariatric surgery. Although LSG is an excellent surgical option to manage obesity, it should only be used when necessary [13].

Excess weight is the source of many complications; therefore, it was not surprising to see that more people were satisfied with their postoperative results. Participants with preexisting health conditions are expected to be very satisfied or satisfied with the postoperative results. LSG has the potential to substantially improve health problems such as diabetes mellitus, hypertension, and dyslipidemia over an extended period of time. Therefore,

LSG is highly recommended for people with such health conditions [14]. In a study conducted in Cleveland, Ohio, and Chicago, 24% of the patients were completely cured of diabetes, 20% had partial remission, and 34% showed significant improvement in their condition, while the rest did not experience any change. Gastric sleeve surgery is the best option when people have a chronic illness, a life-threatening condition, or are unable to lose excess weight using other conventional methods [15].

Multiple studies have shown good results in comorbidity improvement and sustained weight reduction more than 5 years after surgery, indicating that sleeve gastrectomy is an effective main treatment in most cases around the world [16]. Sleeve gastrectomy improves sleep quality in morbidly obese individuals by directly affecting obstructive sleep apnea and reducing respiratory distress [17]. After a sleeve gastrectomy, the regulation of lipid indicators is also affected (75% remission in lipid disorders). A considerable reduction in the levels of triglycerides, total cholesterol, and Very Low Density Lipoprotein (VLDL) and Low Density Lipoprotein (LDL) cholesterol has been reported. In fact, significant growth has been observed in serum High Density Lipoprotein (HDL) cholesterol levels after surgery [18]. Recent studies showed that among obese patients (BMI = 27-43) with type 2 diabetes, sleeve gastrectomy along with intensive medical therapy is more effective and practical to reduce hyperglycemia than intensive medical therapy alone [18]. Several reports have also shown that high blood pressure resolves after sleeve gastrectomy [19,20].

Conclusions

The objective of this study was to investigate the reasons for LSG and to document the postoperative outcome. LSG was performed in people with conditions, such as diabetes, hypertension, and asthma. Although certain postoperative complications of LSG, including nutritional deficits, GERD, and strictures were observed, most of the research participants were satisfied with the postoperative outcome.

Doctors must assess the patient's condition before performing gastric sleeve surgery (either laparoscopic or open). This assessment should take into account the BMI of the patients, pre-existing health problems, and the number of serious efforts they have made to reduce extra weight, such as exercising, following a balanced diet, or changing from a sedentary to an active lifestyle. At the same time, both doctors and patients must be aware of postoperative complications. To avoid loose skin and nutritional deficits after surgery, early intervention should include exercise and the use of a nutritional supplement.

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List of Abbreviations

HDL	High Density Lipoprotein
IRB	Institutional Review Board
LDL	Low Density Lipoprotein
LSG	Laparoscopic Sleeve Gastrectomy
VLDL	Very Low Density Lipoprotein

Conflict of interest

The author declares that they have no conflict of interest.

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Consent to participate

Written consent was obtained from each participant before performing this study. The data used only for the present study. Anonymity was observed, and confidentiality was promised and maintained.

Ethical approval

Ethical approval for this study was obtained from The Local Research and Ethical Committee Board of AlMaarefa University numbered (4/203). Written consent was obtained from each participant before performing this study. The data were used only for the present study. Anonymity was observed, and confidentiality was promised and maintained dated 04/07/2021.

Data and materials availability

All data associated with this study are presented in the paper.

Author details

Mona A. Alfadeel¹, Eman M. Aldraihim¹, Ethar F. Algheshem¹, Abeer A. Aldughayyim¹, Reham H. Hammouda¹, Kadi T. Alsayed¹, Norah M. Redwan¹, Maha S. Alotaishan¹, Rana Abdullah Alansari¹, Rana H. Alaprah¹

1. Department of Medicine, AlMaarefa University College of Medicine, Riyadh, Saudi Arabia

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