

The effect of laparoscopic sleeve gastrectomy on quality of life

Bariatric surgery and quality of life

Fatih Turkoglu, Serdar Yormaz
Department of General Surgery, Faculty of Medicine, Selcuk University, Konya, Türkiye

This study was presented as an oral presentation at the 7th International Ankara Multidisciplinary Studies Congress, Ankara, Türkiye, 2024

Abstract

Aim: Obesity is a worldwide health issue today. The most effective method in the treatment of obesity is surgical treatment. Our study aimed to assess the impact of laparoscopic sleeve gastrectomy (LSG), the most frequently conducted bariatric operation worldwide among several available options, on patients' quality of life.

Material and Methods: The outcomes of patients who underwent LSG in a metabolic surgery clinic between February 2020 and June 2022 were evaluated retrospectively. Participants' quality of life was assessed by analysing the Short Form 36 (SF-36) health questionnaire completed at the time of hospital admission during the preoperative period and again at 6 months after the procedure.

Results: The study sample included 23 female and 22 male patients. The mean age of participants was 41.47 ± 9.15 years, mean weight was 123.73 ± 8.96 kg, and mean body mass index (BMI) was 44.51 ± 4.87 kg/m². The mean postoperative hospital stay was 3.04 ± 0.63 days. There was no mortality among the participants. LSG procedure was performed in all operations.

Discussion: LSG, the most common bariatric surgery method carried out by surgeons today, is a beneficial surgical technique that contributes positively to the health of obese patients and leads to improvement in their quality of life.

Keywords

Laparoscopic Sleeve Gastrectomy, Obesity, Quality of Life

DOI: 10.4328/ACAM.22178 Received: 2024-03-12 Accepted: 2024-05-06 Published Online: 2024-06-11 Printed: 2024-08-01 Ann Clin Anal Med 2024;15(8):566-569
Corresponding Author: Fatih Turkoglu, Department of General Surgery, Faculty of Medicine, Selcuk University, 42101, Konya, Türkiye.
E-mail: drfatih Turkoglu@hotmail.com P: +90 332 241 50 00
Corresponding Author ORCID ID: <https://orcid.org/0000-0001-5128-4419>
Other Author ORCID ID: Serdar Yormaz, <https://orcid.org/0000-0002-6273-3643>
This study was approved by the Ethics Committee of the Faculty of Medicine of the Selcuk University (Date: 2024-02-27, No: 2024/129)

Introduction

Obesity is a worldwide public health issue with an increase in its prevalence [1]. It is a chronic condition affecting individuals of all age groups and is prevalent in both developed and developing countries [2]. It is caused by an imbalance between energy intake and used energy. Healthcare professionals have an active role in the prevention, treatment and control of obesity. While various approaches such as behavioural therapy, diet control, medical interventions, and surgical treatments have been used in the treatment of obesity, surgical intervention stands out as the most effective method among these approaches [3, 4]. The laparoscopic sleeve gastrectomy (LSG) procedure is the most common bariatric surgical method, accounting for 45.9% of cases worldwide [5]. It has also been proven as an effective treatment method for obesity and its related comorbidities, including diabetes, hypertension, and dyslipidemia [6]. The study aimed to retrospectively evaluate the quality of life (QoL), which is as important a parameter as weight loss in determining the success of the bariatric method used, in patients undergoing LSG procedure.

Material and Methods

Forty-five patients who underwent LSG operation between February 2020 and June 2022 in the bariatric surgery clinic of our hospital were included in the study. Patients, between 18-65 years of age, with preoperative body mass indexes >40 or >35 and obesity-related comorbidities such as type 2 diabetes mellitus, hypertension, dyslipidemia and obstructive sleep apnea syndrome who underwent LSG were included in the study. Patients who had a history of previous bariatric surgery were excluded. The data obtained from hospital archive files and the hospital's electronic operating system were evaluated retrospectively. No difficulty was encountered in accessing information and data. Patients were selected as per the criteria of the International Federation for the Surgery of Obesity. All patients undergoing LSG were thoroughly informed preoperatively about the treatment procedure, efficacy of the procedure, postoperative care, expectations and possible complications. In accordance with the protocols of our bariatric surgery clinic, patients underwent consultations with the cardiology, pulmonology, psychiatry, and endocrinology departments. Additionally, abdominal ultrasonography and endoscopy were conducted for all patients before surgery. Following these procedures, patients who were deemed ready for the operation underwent consultations with the anaesthesia department. Anaesthesia consent was obtained as per the practices and criteria outlined by the American Society of Anesthesiologists. The LSG procedure was performed in our clinic after these steps. Quality of life assessment The QoL of the participants was measured with the SF 36 general health questionnaire, which was completed when they were admitted to the hospital in the preoperative period in our bariatric surgery clinic and at the time of follow-up at the 6th month after the operation. The SF 36 health questionnaire is a valid scale evaluating general health perception consisting of 36 items [7]. With the 36 items in the SF 36, the individual

is evaluated in eight categories. These categories are physical functioning, physical role, emotional role, pain, general health, vitality, social functioning and mental health. The questionnaires completed by the patients were evaluated according to these categories. In the SF-36 questionnaire, scoring ranges from 0 to 100, with a higher score showing a better QoL. Statistical analysis Statistical analysis of the data was performed with the IBM SPSS (Statistical Package for the Social Sciences) version 20.0 program. The Kolmogorov-Smirnov/Shapiro-Wilk tests were used to check if the parameters had a normal distribution. Descriptive statistics were calculated as mean ± standard deviation for normally distributed variables. Since body weight, BMI, and SF-36 scores showed normal distribution, comparisons between preoperative baseline and postoperative 6th-month values were conducted using a dependent groups Student t-test (Paired Samples test). For comparing paired groups, the Student's T-test was used for normally distributed parameters, while the Mann-Whitney U test for parameters without a normal distribution. p<0.05 was taken as the statistical significance. Ethical Approval The study was approved by the ethics committee of the Faculty of Medicine of the Selcuk University (Date: 2024-02-27, No: 2024/129).

Results

The study sample consisted of 45 patients who underwent the LSG procedure. While 23 of them were female (51.1%), 22 were male (48.9%). The mean age of the participants was 41.47±9.15 years. The mean preoperative BMI of the patients was 44.51±4.87 kg/m2 and the mean body weight was 123.73± 8.96 kg. Among the 38 obesity-related comorbidities, 14 cases of type 2 diabetes (36.8%), 12 cases of hypertension (31.5%), 7 cases of dyslipidemia (18.4%), and 5 cases of obstructive sleep apnea syndrome (OSAS) (13.1%) were identified. The mean hospital stay following the surgery was 3.04±0.63 days. There was no case of mortality among the patients after the operation. (Table 1). Patients' QoL was assessed across eight subcategories of the SF-36 based on their responses to the

Table 1. Demographic and clinical characteristics

Study group (n=45)	
Age (years)A	41.47±9.15
GenderB	
Female	23 (51.1)
Male	22 (48.9)
Preoperative mean weight (kg)A	123.73±8.96
Preoperative mean BMI (kg/m²)A	44.51±4.87
Mean length of hospital stay (days)A	3.04±0.63
ComorbiditiesB	38
DM	14 (36.8)
HT	12 (31.5)
Dyslipidemia	7 (18.4)
OSAS	5 (13.1)
Mortality	0

A Mean ± standard deviation; B n (%); BMI: body mass index; DM: type 2 diabetes mellitus; HT: hypertension; OSAS: obstructive sleep apnea syndrome

Table 2. Preoperative and postoperative SF 36 scores

Parameter	Preop mean ± SD	PO 6th month mean ± SD	Change mean ± SD	r	p
Physical functioning	65.33±8.12	84.40±7.30	19.06±8.45	0.403	<0.001
Physical role	67.84±7.52	83.16±7.27	15.31±8.91	0.275	<0.001
Emotional role	70.80±6.84	86.62±6.51	15.82±5.71	0.635	<0.001
Pain	61.04±6.50	83.60±5.77	22.55±7.78	0.201	<0.001
General health	61.31±5.77	78.78±6.30	17.46±6.50	0.423	<0.001
Vitality	55.04±6.12	72.07±7.85	17.02±8.72	0.239	<0.001
Social functioning	75.40±5.73	88.93±4.99	13.53±4.86	0.596	<0.001
Mental health	72.20±5.67	86.40±4.61	14.20±5.21	0.502	<0.001

Preop: preoperative; PO: postoperative; mean: mean; SD: standard deviation; r: correlation coefficient; statistically significant values are shown in bold.

Table 3. Preoperative and postoperative mean BMI and weight values

Parameter	Preoperative	Postoperative 6. Month	Change	r	p
Body weight	123.73±8.96	91.84±8.23	-31.88±7.17	0.654	<0.001
BMI	44.51±4.87	34.67±4.30	-9.84±1.55	0.951	<0.001

BMI: body mass index; r: correlation coefficient; preoperative, postoperative 6th month and change values in the table are given as mean±standard deviation and statistically significant values are shown in bold.

questionnaire completed both preoperatively and 6 months after LSG. In the physical functioning subcategory, the mean score of the patients in the preoperative period was 65.33±8.12, while the mean score in the same category was 84.40±7.30 in the 6th postoperative month. When comparing the scores between the two different periods, a statistically significant increase was found in the postoperative period (p < 0.05). When all the data were analysed, statistically significant increases were also recorded in the postoperative scores of the patients in the other subcategories of physical role, emotional role, pain, general health, vitality, social functioning, and mental health compared to the preoperative scores (p<0.05) (Table 2). When comparing the preoperative and postoperative mean weight and mean BMI of the participants, a statistically significant decrease was found in both parameters during the postoperative period (p < 0.05) (Table 3).

Discussion

Bariatric surgery has evolved since 1954 when its first documented instance was carried out by Kremen [8]. Especially in the 1990s, when obesity was acknowledged as a global epidemic by the World Health Organization and laparoscopic surgery entered its golden age, this development accelerated even further [9, 10]. During this period of advancement, the LSG procedure emerged and gained traction, eventually becoming one of the bariatric surgery methods carried out most frequently worldwide [11]. LSG is a preferred method compared to others used in bariatric surgery due to its shorter operation time, lower morbidity and complication rates, shorter hospital stay, absence of anastomosis, lack of anatomical changes disrupting gastrointestinal tract continuity aside from gastric volume reduction, as well as acceptable weight loss and decrease in obesity-associated comorbidities [12]. Despite its widespread use, the number of studies on how LSG affects QoL is limited. In this study, the SF-36 questionnaire, which provides an objective assessment of quality of life was used.

Studies are showing that obesity is associated with reduced physical functioning [13, 14]. In our study, obese patients with low preoperative physical functioning scores were observed to have a statistically significant increase in postoperative scores. This result is in line with a meta-analysis of 1779 patients by Adil et al. [15] from Luton and Dunstable University Hospital. According to this study, improvement in physical functioning in patients who underwent bariatric operation starts within six months. In studies conducted within the physical and emotional role categories, favourable outcomes were achieved after bariatric surgery in patients. Major et al. [16] examined the preoperative and postoperative 1-year follow-up periods of patients who underwent LSG and laparoscopic Roux-en-Y gastric bypass and reported an increase in physical and emotional role scores in both surgical techniques [16]. In our study, specifically focused on LSG, a statistically significant increase in scoring was noted in both categories within a period of 6 months. As observed in many diseases, body pain is one of the factors directly impacting the quality of life in obesity. Studies conducted in the past have indicated a relationship between chronic pain and obesity [17]. From this perspective, adipose tissue is not merely a passive unit for storing fat cells but also serves as a structure with endocrine properties, producing and secreting proinflammatory cytokines [18]. Thus, obesity leads to many endocrine changes in the body. Obesity triggers body pain through systemic inflammation-induced mediators [18, 19]. Based on these data, it is known that weight loss contributes positively to body pain. Our study results showed a significant improvement in patients’ body pain in the 6th month after the LSG procedure in the pain category of the SF-36 scale. The results of our study also showed significant increases in the vitality and mental health subcategories in the 6th-month scores after LSG compared to the preoperative period. The fact that obesity has negative consequences on psychosocial behaviours and mental health has been proven in the literature [20]. Therefore, it is not surprising that the mental health of individuals improves with the treatment of obesity. Diseases such as depression and social dysfunction have also been associated with obesity [21]. Treating obesity and obesity-related depression leads to improvements in individuals’ emotional, mental, and social functions, along with significant enhancements in their quality of life. Kubik et al.’s [22] systematic review analysis revealed an improvement in psychopathology, depressive symptoms, eating behaviour, body image and QoL following bariatric surgery. Our study focused

on LSG procedures aligns with existing literature regarding improvements in mental health, vitality, and social function. The LSG method, demonstrated as effective across all categories in quality of life assessment by our study, also resulted in an improvement in general health perception. There are studies showing improvement in general health perception in long-term follow-up after LSG [23]. The data obtained in our study in our short-term follow-up after LSG are comparable to the existing studies. Besides the positive outcomes in QoL, LSG also leads to significant reductions in body weight and BMI values [24, 25]. Our data are also in line with the literature in this respect. The limitations of the study included its single-centre nature, limited ethnic diversity, and the lack of comparison with other surgical methods. However, there is a shortage of studies in the literature focusing on quality of life and surgical efficacy evaluation with short-term follow-up results after LSG.

Conclusion

In line with the data presented in our study, LSG is an effective bariatric procedure not only in improving QoL but also in decreasing body weight and BMI, even with short-term results such as 6 months. We believe that an increase in the number of studies on LSG would further underscore the effectiveness and reliability of LSG as a surgical method.

Scientific Responsibility Statement

The authors declare that they are responsible for the article’s scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and Human Rights Statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Funding: None

Conflict of Interest

The authors declare that there is no conflict of interest.

References

1. Lifshitz F, Lifshitz JZ. Globesity: The root causes of the obesity epidemic in the USA and now worldwide. *Pediatr Endocrinol Rev.* 2014;12(1):17-34.
2. Jastreboff AM, Kotz CM, Kahan S, Kelly AS, Heymsfield SB. Obesity as a disease: The obesity society 2018 position statement. *Obesity (Silver Spring).* 2019;27(1):7-9.
3. Astrup A, Raben A, Geiker N. The role of higher protein diets in weight control and obesity-related comorbidities. *Int J Obes (Lond).* 2015;39(5):721-6.
4. Panteliou E, Miras AD. What is the role of bariatric surgery in the management of obesity? *Climacteric.* 2017;20(2):97-102.
5. Lazzati A. Epidemiology of the surgical management of obesity. *J Visc Surg.* 2023;160(25):S3-6.
6. Kikkas EM, Sillakivi T, Suumann J, Kirsimägi Ü, Tikk T, Värk PR. Five-year outcome of laparoscopic sleeve gastrectomy, resolution of comorbidities, and risk for cumulative nutritional deficiencies. *Scand J Surg.* 2019;108(1):10-6.
7. Greenan E, Pilson Q, Ni Gabhann-Dromgoole J, Murphy CC. Relationship between clinical parameters and quality of life in primary Sjögren's Syndrome: A prospective study. *Eye (Lond).* 2023;37(13):2685-92.
8. Faria GR. A brief history of bariatric surgery. *Porto Biomed J.* 2017;2(3):90-2.
9. James WPT. WHO recognition of the global obesity epidemic. *Int J Obes (Lond).* 2008;32(7):S120-6.
10. Sundbom M. Laparoscopic revolution in bariatric surgery. *World J Gastroenterol.* 2014;20(41):15135-43.
11. Sakran N, Soifer K, Hod K, Sherf-Dagan S, Soued S, Kessler Y, et al. Long-term reported outcomes following primary laparoscopic sleeve gastrectomy. *Obes Surg.* 2023;33(1):117-28.
12. Karmali S, Schauer P, Birch D, Sharma AM, Sherman V. Laparoscopic sleeve gastrectomy: An innovative new tool in the battle against the obesity epidemic in Canada. *Can J Surg.* 2010;53(2):126-32.
13. Riebe D, Blissmer BJ, Greaney ML, Garber CE, Lees FD, Clark PG. The relationship between obesity, physical activity, and physical function in older adults. *J Aging Health.* 2009;21(8):1159-78.

14. Shirazi D, Haudenschild C, Lynch DH, Fanous M, Kahkoska AR, Jimenez D, et al. Obesity, multiple chronic conditions, and the relationship with physical function: Data from the national health and aging trends survey. *Arch Gerontol Geriatr.* 2023;107:104913.
15. Adil MT, Jain V, Rashid F, Al-Taan O, Whitelaw D, Jambulingam P. Meta-analysis of the effect of bariatric surgery on physical function. *Br J Surg.* 2018;105(9):1107-18.
16. Mazer LM, Azagury DE, Morton JM. Quality of life after bariatric surgery. *Curr Obes Rep.* 2017;6(2):204-10.
17. Okifuji A, Hare BD. The association between chronic pain and obesity. *J Pain Res.* 2015;8:399-408.
18. Ronti T, Lupattelli G, Mannarino E. The endocrine function of adipose tissue: An update. *Clin Endocrinol (Oxf).* 2006;64(4):355-65.
19. Paley CA, Johnson MI. Physical activity to reduce systemic inflammation associated with chronic pain and obesity. *Clin J Pain.* 2016;32(4):365-70.
20. Milaneschi Y, Simmons WK, van Rossum EFC, Penninx BW. Depression and obesity: Evidence of shared biological mechanisms. *Mol Psychiatry.* 2019;24(1):18-33.
21. Rabbani MIA. Depression in adolescent patients with obesity. *Scientia Psychiatrica.* 2021;4(1):346-51.
22. Kubik JF, Gill RS, Laffin M, Karmali S. The impact of bariatric surgery on psychological health. *J Obes.* 2013;2013:837989.
23. D'Hondt M, Vanneste S, Pottel H, Devriendt D, Van Rooy F, Vansteenkiste F. Laparoscopic sleeve gastrectomy as a single-stage procedure for the treatment of morbid obesity and the resulting quality of life, resolution of comorbidities, food tolerance, and 6-year weight loss. *Surg Endosc.* 2011;25(8):2498-504.
24. Armstrong J, O'Malley SP. Outcomes of sleeve gastrectomy for morbid obesity: A safe and effective procedure? *Int J Surg.* 2010;8(1):69-71.
25. Burchett MA, McKenna DT, Selzer DJ, Choi JH, Mattar SG. Laparoscopic sleeve gastrectomy is safe and effective in elderly patients: A comparative analysis. *Obes Surg.* 2015;25(2):222-8.

How to cite this article:

Fatih Turkoglu, Serdar Yormaz. The effect of laparoscopic sleeve gastrectomy on quality of life. *Ann Clin Anal Med* 2024;15(8):566-569

This study was approved by the Ethics Committee of the Faculty of Medicine of the Selcuk University (Date: 2024-02-27, No: 2024/129)