Evaluation of the effectiveness of modified versus standard laparoscopic sleeve gastrectomy and postoperative care in elderly patients with morbid obesity: a single-center randomized clinical study

Sevak S. Shahbazyan

Department of General Surgery, Heratsi Yerevan State Medical University, Yerevan, Armenia
Shengavit Medical Center, Yerevan, Armenia

ABSTRACT

Background: Obesity is a complex pathology resulting from metabolic disorders. It causes a high risk of cardiovascular diseases, insulin resistance, atherogenic dyslipidemia, hypertension and other conditions. Its prevalence has a steady upward trend due to the growing incidence of obesity and type 2 diabetes mellitus. Laparoscopic sleeve gastrectomy (LSG) has proven to be a safe, effective and technically undemanding method of weight loss, which has made this bariatric procedure popular worldwide. However, it does not always provide the desired reduction in excess weight and comorbidities.

Aim: The aim of this single-center, prospective randomized pre-post interventional study was to compare the safety and effectiveness of the modified (MLSG) versus the standard LSG (SLSG) in elderly patients with morbid obesity.

Methods: The study was conducted at the Shengavit Medical Center (Yerevan, Armenia) from February 2020 to February 2022 involving 168 patients aged > 50 years with a body mass index (BMI) of 40 to 50 kg/m^2 who underwent SLSG with conventional postoperative care or MLSG with individualized postoperative management. The efficacy of surgical interventions was assessed by measuring and comparing BMI and quality of life (using the Bariatric Analysis and Reporting Outcome System [BAROS]) of patients pre-LSG, as well as 6 and 24 months post-LSG.

Results: The study did not reveal significant intergroup differences in BMI and BAROS values immediately before surgery and 6 months after surgery. After 6 months, intragroup differences were identified in both groups when compared with the corresponding preoperative values: a significant decrease in the BMI level and a significant increase in the BAROS level. These changes were more pronounced in the MLSG group. When BMI and BAROS values were measured 24 months post-surgery, their progressive changes were still evident with significantly more pronounced effect in the MLSG group.

Conclusion: MLSG in morbidly obese elderly patients can be an effective alternative to SLSG thanks to long-term high impact on weight and quality-of-life indicators.

Keywords: laparoscopic sleeve gastrectomy (LSG), body mass index (BMI), Bariatric Analysis and Reporting Outcome System (BAROS), morbid obesity, elderly, quality of life

INTRODUCTION

Obesity is a complex pathology resulting from metabolic disorders, causing a high risk of cardiovascular diseases, insulin resistance, atherogenic dyslipidemia, arterial hypertension and a number of other conditions. Its prevalence has a steady upward trend due to the growing incidence of obesity and type 2 diabetes mellitus [1,2]. Overweight and obesity are among the top five major risk factors for death. According to the Global Health Observatory, about 2.8 million people die each year as a result of overweight or obesity. The relevance of the problem is also evidenced by the fact that a number of international health organizations have recognized obesity as a separate nosology [3].

Interventions aimed at combating obesity (dietary regulation, radical lifestyle revision, drug intervention) do not have a reliable and stable impact on weight improvement [4,5]. The use of conventional therapy leads to the desired efficacy in no more than 10% of morbidly obese patients. The outcomes of long-term observation of large groups of patients showed that the use of various weight loss programs including diet therapy, drug therapy, and exercise did not result in weight loss over a 10-year period. Moreover, these measures also led to an increase in body mass index (BMI) and comorbidity [4,5].

Safety, effectiveness and technical simplicity have led to widespread option of laparoscopic sleeve gastrectomy (LSG) and made this bariatric procedure popular worldwide [1,6,7]. Nevertheless, LSG does not always provide proper dynamic changes in excess weight loss and comorbidity with a corresponding improvement in quality of life (QoL). On the other hand, the continued prevalence of postoperative short- and long-term complications encourages researchers to elaborate new approaches to LSG techniques and appropriate postoperative care, directly affecting comorbidity and mortality rates as well as QoL indicators.

AIM OF THE STUDY

The aim of this study was to evaluate the safety and effectiveness of the modified versus the standard LSG in elderly patients with morbid obesity.

MATERIALS AND METHODS

Participants and the study design

This single-center, prospective randomized pre-post interventional study was conducted at the Shengavit Medical Center (Yerevan, Armenia) from February 2020 to February 2022, involving the elderly morbidly obese patients who had undergone standard (SLSG) with conventional postoperative care or modified (MLSG) LSG with adapted postoperative management.

All patients recruited to participate in this study were informed about the risks and benefits of the LSG procedure and its modification. Informed consent was obtained from all the participants included in the study. The follow-up period of the study was 2 years.

The study protocol conformed to the ethical guidelines of the 1975 Declaration of Helsinki, as reflected in the approval by Human Research Committee. All procedures used in the study involving human participants were in accordance with the ethical standards of the Ministry of Health of the Republic of Armenia.

Patient inclusion criteria were as follows: age 50-70 years old (elderly patients), BMI = 40-50 kg/m^2 (morbid obesity).

The exclusion criteria of the study were as follows: active Helicobacter pylori infection, non-treated peptic ulcer, previous gastric resection, drug or alcohol abuse, mental health disorders, age < 50 years old, BMI < 40 kg/m^2 or BMI > 50 kg/m^2.

A total of 168 patients who met the inclusion criteria were selected to take part in the study. The participants were randomly divided into 2 intervention groups in accordance with the preformed protocol of LSG and postoperative management. The first group (n = 82) consisted of patients who underwent MLSG with adapted postoperative management, and the second group (n = 86) comprised of patients who underwent SLSG with standard/conventional postoperative care.

The dynamic changes of BMI and BAROS indicators were assessed via comparison of the parameters at study baseline with the parameters, obtained from the patients of the same group 6 and 24 months after operation. The intergroup discrepancy was determined by comparative evaluation of the results at the same stages of the study between groups.

Preoperative management and surgical intervention

Preoperative management was performed by a multidisciplinary team. Medical, nutritional, endocrine, and psychiatric standard preoperative assessments included abdominal ultrasonography, upper gastrointestinal radiography with barium and esophagogastroduodenoscopy, blood tests,

cardiologic evaluation, and chest X-ray. Psychiatric counseling was performed to identify possible mental health contraindications to surgery. Weight and dieting history, motivation for surgery, and expectations regarding its outcome were recorded in all participants.

All operations were performed laparoscopically by the same surgical team using four ports.

Group 1 – MLSG. The operation was performed according to the standard LSG with our modification [8,16]. Under general anesthesia, carboxyperitoneum up to 15 mmHg was created in the left upper quadrant. Trocars and optical devices were placed. An initial laparoscopy was performed; then the greater curvature of the stomach was mobilized from the pyloric region 2.5 cm proximal to the cardia region. MLSG was performed with a 26-28-F bougie, and gastric resection was performed and reinforced with a linear stapler (ECHELON Endocutter 60-mm (ETHICON)), longitudinal dissection (with simultaneous suturing) of the stomach was performed using a linear cutting ECHELON Endocutter 50-mm (ETHICON) using 4-6 cartridges. The antral part was sewn with 2.0-4.1 mm high staples (the first two pieces), and the remaining part – with 1.5-3.5 mm high staples; their number was determined by the length of the gastric remnant. A drain was placed along the length of the stomach edge. The part of the stomach to be removed was taken out from the right-side incision; the trocar wound was sutured layer by layer with interrupted absorbable (VICRYL 1, (ETHICON)) sutures. The residual volume of the stomach was 110-120 mL. Desufflation is performed, trocars and instruments were removed. The trocar wounds were sutured (Ethilon 3-0 (ETHICON)).

Group 2 – SLSG. Under general anesthesia, a carboxyperitoneum up to 15 mmHg was created in the left upper abdominal quadrant. Trocars and optical devices were introduced. An initial laparoscopy was performed, followed by the mobilization of the greater curvature of the stomach from the pyloric region 2.5 cm proximal to the cardia region. An oro-gastric calibrating 32-34-F probe was fixed. Longitudinal dissection of the stomach was performed using a linear cutting ECHELON Endocutter 60-mm (ETHICON) using 4-6 cartridges. Hemostasis was assessed and a nasogastric tube was placed. A drain was placed along the length of the stomach edge. The part of the stomach to be removed was taken out from the right-side incision; the trocar wound was sutured layer by layer with interrupted absorbable (VICRYL 1 (ETHICON), Ethilon 3-0 (ETHICON)) suture. The residual volume of the stomach was 150 mL. Desufflation was performed, trocars and instruments were removed. The trocar wounds are sutured (Ethilon 3-0 (ETHICON)).

Postoperative Management
All of the 168 patients underwent early mobilization 8-12 hours post-LSG:

1. MLSG – Adapted (individualized) postoperative management: Physical activity was moderated taking into consideration the patient's age, degree of obesity, and comorbidities. After 1 month, patients gradually started to include in their nutritional plan a low-fat, low-carbohydrate and high-protein solid diet. The diet was prescribed according to the guidelines but was subject to modification in subgroups of patients depending on their age, degree of obesity and comorbidities. Intake of liquids was also scheduled according to the patient's age, degree of obesity, and severity of related diseases [17].

2. SLSG – Standard postoperative care: The recommended course of action was conventional postoperative care. Dietary guidelines comprised a 15-day liquid and pureed meal diet followed by a 15-day semisolid diet. After 1 month, the patients progressively began to incorporate a substantial meal that was rich in protein, low in fat, and low in carbohydrates into their nutritional regimen. The prescriptions were not associated with the patients' age, primary BMI and comorbidity.

Body Mass and Quality of Life Assessment
Pre- and post-operative BMI values and BAROS scores were compared both within and between the two study groups in before and 6 and 24 months after LSG.

BMI was calculated in accordance with the standard formula [9].

BAROS has five options and is scored from –3 to 3 points in each of the following three parts: weight loss, changes in underlying disease, and QoL; 1 point for the most desirable option, 0.5 points for the remaining four options; –1 point for the least desirable option and –0.5 points for the remaining four options [10,11].

For the examined patients, the somatic **comorbidity burden index (CBI)** was calculated, based on which a generalized analysis of dynamic changes in the severity of diseases caused by pathological obesity or the severity of combined factors was performed. A score of 0, 1, 2, or 3 was given for the corresponding degree of each comorbidity. The maximum number of points is 3, the minimum is 0. The somatic comorbidity burden index (CBI) pro-

Table 1. Baseline characteristics of the study groups

Baseline Characteristics		MLSG, n = 82	SLSG, n = 86	p-value
Age (mean±SD), years		67.4±10.2	68.1±9.9	
Gender, n (%)	Male	42 (51.2%)	44 (51.1%)	
	Female	40 (48.8%)	42 (48.8%)	
BMI (mean±SD), kg/m^2	Male	48.0±4.9	48.1±4.9	>0.05
	Female	48.8±4.2	47.6±5.01	
Family history of obesity, n (%)		40 (48.8%)	46 (53.5%)	
CBI (mean±SD)		14.9±2.16	14.6±3.13	

BMI – body mass index, CBI – comorbidity burden index, F – female, M – male, MLSG – modified laparoscopic sleeve gastrectomy, SD – standard deviation, SLSG – standard laparoscopic sleeve gastrectomy

Table 2. Mean BMI values and BAROS scores in MLSG and SLSG groups

Group	Parameter	Baseline		6 Months after Operation		24 Months after Operation	
		Male (n = 86)	Female (n = 82)	Male (n = 86)	Female (n = 82)	Male (n = 86)	Female (n = 82)
MLSG N = 82	n	42	40	42	40	42	40
	BMI (mean±SD), kg/m^2	48.0±4.9	48.8±4.2	44.8±3.2	42.6±3.6	31.0±3.9	29.6±3.0
	BAROS (mean±SD)	N/A	N/A	3.9±0.62	4.4±1.23	7.0±1.51	7.4±1.06
SLSG N = 86	n	44	42	44	42	44	42
	BMI (mean±SD), kg/m^2	48.1±4.9	47.6±5.01	44.9±3.53	43.5±2.32	38.2±3.42	38.0±3.27
	BAROS (mean±SD)	N/A	N/A	4.0±1.72	4.1±1.65	5.2±2.10	5.9±1.91

BAROS – Bariatric Analysis and Reporting Outcome System, BMI – body mass index, MLSG – modified laparoscopic sleeve gastrectomy, N/A – not applicable, SD – standard deviation, SLSG – standard laparoscopic sleeve gastrectomy

posed by the author (and its calculation methodology) has been patented [8,17].

Statistical Analysis

Statistical data processing was performed using the statistical software package SPSS 23 (Statistical Package for Social Science 23). For the comparative analysis of group results obtained before and 6 and 24 months after LSG, the Kolmogorov-Smirnov test was used to identify the pattern of data distribution, followed by parametric Student's t-test to determine significant intergroup differences. The chosen level of significance was at 0.05 with 95% confidence interval (CI). The ABS.DIF. (Absolute Difference - difference in absolute means, calculated by subtracting one mean from the another, then dividing into the first mean and multiplying by 100%) parameter was determined to assess the amplitude of shifts inside the group as well as between groups at the same stage of the study.

RESULTS

The baseline characteristics of the patients are presented in Table 1. As per inclusion criteria, all included patients were older than 50-70 years and

had a BMI of 40-50 kg/m^2. There were 42 (51.2%) and 44 (51.2%) males in the MLSG and SLSG groups, respectively. Family history of obesity was stated in 48.8% and 53.5% of patients in MLSG and SLSG groups, respectively. The average Comorbidity Burden Index was 14.9±2.16 and 14.6±3.13 for the MLSG and SLSG groups, respectively. At study baseline, no significant differences were recorded between the intervention groups (p > 0.05).

Study data were collected prior to LSG and compared to assessments performed 6 and 24 months after LSG. As shown in the follow-up assessments, LSG led to BMI reduction in both groups. Tables 2 and 3 provide descriptive data and statistical results illustrating variations in BMI parameters during follow-up assessments performed in the study groups.

BMI Changes
Intragroup comparison

At baseline in patients of MLSG group, the initial BMI values were 48.0±4.9 kg/m^2 in men and 48.8±4.2 kg/m^2 in women. These values significantly decreased at 6 months post-MLSG (ABS. DIF.= −6.7%, p = 5.19E-11, 95%CI [43.80-45.80; 46.9749.53] and ABS.DIF= −12.8%, p = 5.85E-

Table 3. Intragroup comparison of BMI values and BAROS scores in MLSG and SLSG groups

Group and Parameter	6 Months after Operation vs. Baseline		24 Months after Operation vs. 6 Months after Operation	
	Male (n = 86)	Female (n = 82)	Male (n = 86)	Female (n = 82)
MLSG Group				
Number of patients	42	40	42	40
BMI				
t-value	7.405	18.104	29.173	3.163
p-value	5.19E-11	5.85E-40	23E-45	4.46E-46
95%CI	[43.80-45.80] vs. [46.47-49.53]	[41.45-43.75] vs. [47.46-50.14]	[29.78-32.22] vs. [43.80-45.80]	[28.64-30.56] vs. [41.45-43.75]
ABS.DIF., %	–6.7	–12.8	–30.8	–30.5
BAROS				
t-value	N/A	N/A	2.971	21.211
p-value	N/A	N/A	1.207E-46	6.73E-35
95%CI	N/A	N/A	[6.53-7.47] vs. [3.71-4.09]	[7.06-7.74] vs. [4.01-4.79]
ABS.DIF., %	N/A	N/A	79.0	85.0
SLSG Group				
Number of patients	44	42	44	42
BMI				
t-value	6.575	8.588	0.518	14.342
p-value	1.8E-09	2.38E-13	0.303	0.234
95%CI	[43.84-45.96] vs. [46.61-49.59]	[42.78-44.22] vs. [46.04-49.16]	[37.17-39.23] vs. [43.84-45.96]	[37.0-39.0] vs. [42.78-44.22]
ABS.DIF., %	–6.7	–8.6	–15.0	–12.6
BAROS				
t-value	N/A	N/A	6.153	-9.125
p-value	N/A	N/A	1.09E-08	1.657E-14
95%CI	N/A	N/A	[4.54-5.85] vs. [3.48-4.52]	[5.31-6.50] vs. [3.59-4.61]
ABS.DIF., %	N/A	N/A	30.0	34.0

BAROS – Bariatric Analysis and Reporting Outcome System, BMI – body mass index, CI – confidence interval, MLSG – modified laparoscopic sleeve gastrectomy, N/A – not applicable, ABS.DIF.- absolute difference, SLSG – standard laparoscopic sleeve gastrectomy

40, 95%CI [41.45-43.75; 47.46-50.14] in male and female patients, respectively). Further remarkable decline in BMI values was revealed between the 6- and 24-month follow-up data (ABS.DIF= –30.8%, p = 23E-45, 95%CI [29.78-32.22; 43.80-45.80] and ABS.DIF.= –30.5%, p = 4.46E-46, 95%CI [28.64-30.56; 41.45-43.75] in male and female patients, respectively).

In the SLSG group, baseline BMI was 48.1±4.9 kg/m² and 47.6±5.01 kg/m² in men and women, respectively. Compared to baseline, the BMI values decreased at 6 months post-SLSG (ABS. DIF.= –6.7%, p = 1.8E-09, 95%CI [43.8445.96; 46.61-49.59] and ABS.DIF. = –8.6%, p = 2.38E-13, 95%CI [42.78-44.22; 46.04-49.16] in male and female patients, respectively). Compared to the 6-month assessment data, BMI values did not significantly decrease at 24-month follow-up (ABS. DIF. = –15.0%, p = 0.303, 95%CI [37.17-39.23;

43.84-45.96] and ABS.DIF.= –12.6%, p = 0.234, 95%CI [37.0-39.0; 42.78-44.22] in male and female patients, respectively).

Intergroup comparison
There was no significant difference in baseline BMI between the MLSG and SLSG groups (ABS. DIF.= 0.21% p = 0.261, 95%CI [46.47-49.53; 46.61-49.59] and ABS.DIF. = 2.5%, p = 0.057, 95%CI [47.46-50.14; 46.04-49.16] for men and women, respectively) and (despite the apparent difference in absolute means) 6 months post-LSG (ABS.DIF.= 0.22%, p = 0.372, 95%CI [43.80-45.80; 43.84-45.96] and ABS.DIF. = 2.4%, p= 0.160, 95%CI [41.4543.75; 42.78-44.22] in male and female patients, respectively). When comparing BMI values recorded 24 months after surgery, a significant difference was revealed between MLSG and SLSG groups (ABS.DIF.= 23.0%, p = 2.64E-45, 95%CI

Table 4. Intergroup comparison of BMI values and BAROS scores between MLSG and SLSG groups

Parameter	MLSG Group vs. SLSG Group					
	Before Operation (Baseline)		6 Months after Operation		24 Months after Operation	
	Male	Female	Male	Female	Male	Female
BMI						
t-value	0.644	3.477	0.327	–1.00	–29.737	20.102
p-value	0.261	0.057	0.372	0.160	2.642E-45	2.589E-33
95%CI	[46.47-49.53] vs. [46.6149.59]	[47.46-50.14] vs. [46.0449.16]	[43.80-45.80] vs. [43.8445.96]	[41.45-43.75] vs. [42.7844.22]	[29.78-32.22] vs. [37.1739.23]	[28.64-30.56] vs. [37.039.0]
ABS.DIF., %	0.21	2.5	0.22	2.4	23.0	28.4
BAROS						
t-value	N/A	N/A	–0.292	–0.582	11.539	6.417
p-value	N/A	N/A	0.386	0.281	6.326E-19	6.44E-09
95%CI	N/A	N/A	[3.71-4.09] vs. [3.48-4.52]	[4.01-4.79] vs. [3.59-4.61]	[6.53-7.47] vs. [4.56-5.85]	[7.06-7.74] vs. [5.316.50]
ABS.DIF., %	N/A	N/A	2.6	7.3	26.0	20.3

BAROS – Bariatric Analysis and Reporting Outcome System, **BMI** – body mass index, **CI** – confidence interval, **MLSG** – modified laparoscopic sleeve gastrectomy, **N/A** – not applicable, **Abs.Dif.** - absolute difference , **SLSG** – standard laparoscopic sleeve gastrectomy

[29.78-32.22; 37.17-39.23] and ABS.DIF.= 28.4%, p = 2.589E-33, 95%CI [28.64-30.56; 37.0-39.0] in male and female patients, respectively).

BAROS Changes
Intragroup comparison
At 6 months after MLSG, the mean BAROS score was 3.9±0.62 in males and 4.4±1.23 in females. These values increased significantly 24 months post-MLSG (7.0±1.51; ABS.DIF.= 79.0%, p = 1.207E-46, 95%CI [6.53-7.47; 3.71-4.09] and 7.4±1.06; ABS.DIF.= 85%, p = 6.73E-35, 95%CI [7.06-7.74; 4.01-4.79] in male and female patients, respectively).

In the SLSG group, the mean BAROS score at 6 months after operation was 4.0±1.72 and 4.1±1.65 in male and female patients, respectively. Remarkable elevation of BAROS scores was revealed at 24-month follow-up, compared with the 6-month scores (5.2±2.10; ABS.DIF.= 30.0%, p = 1.09E-08, 95%CI [4.54-5.85; 3.48-4.52] and 5.9±1.91; ABS.DIF.= 34.0%, p = 1.657E14, 95%CI [5.31-6.50; 3.59-4.61] in men and women, respectively).

Intergroup comparison
There was no significant difference in mean BAROS scores between the MLSG and SLSG groups 6 months after operation (ABS.DIF.= 2.6%, p = 0.386, 95%CI [3.71-4.09; 3.48-4.52] and ABS.DIF.= 7.3%, p = 0.281, 95%CI [4.014.79; 3.59-4.61] for men and women, respectively), while comparison of mean BAROS scores recorded at 24-month follow-up revealed a significant difference in favor of MLSG (ABS.DIF.= 26.0%, p = 6.326E-19, 95%CI [6.537.47; 4.56-5.85] and ABS.DIF.= 20.3%, p = 6.44E-09, 95%CI [7.06-7.74; 5.31-6.50] in male and female patients, respectively).

DISCUSSION

The present study aimed to verify the dynamic changes in BMI and BAROS indices in morbidly obese patients over 50 years of age 6 and 24 months after standard and modified LSG. The LSG modification included not only a modified procedure technique but also an individualized postoperative management depending on the patient's age, BMI, comorbidity and lifestyle habits (smoking), which is fully represented as the somatic Comorbidity Burden Index (CBI) [8].

The study demonstrated a significant decrease in BMI (p < 0.05), i.e. an excess weight loss, in both intervention groups 6 months after surgery compared to preoperative values. Despite a moderate decline of BMI values in the group of patients receiving SLSG, there was no significant difference between the SLSG and MLSG groups in terms of BMI measured 6 months postoperatively. At 24-month follow-up, BMI showed further significant decrease in the MLSG group compared to 6-month values (p < 0.05), whereas its decrease was not statistically significant in the SLSG group (p > 0.05). Subsequent comparison of mean BMI values 24 months after surgery revealed a significantly faster and greater reduction of BMI in the MLSG group compared to the SLSG group (p < 0.05).

Another reliable and widely used indicator that provides a straightforward, impartial, objective and evidence-based approach to outcome analysis is BAROS. It is implemented to assess alternative medicinal interventions for the management of obesity. This approach is taken into consideration while evaluating the effectiveness of bariatric treatments and comparing the outcomes of different surgical series. It also depicts the long-term effects of surgery [10-12].

Similar to mean BMI values, mean BAROS scores demonstrated identical dynamics in the study groups at 6- and 24-month follow-ups. With significant improvement in mean BAROS scores in both groups, there was no significant difference between groups at 6-month follow-up. However, further BAROS survey revealed intergroup differences. Although mean BAROS scores continued to improve significantly over time in both study groups, improvement appeared to be faster and greater in the MLSG group, and subsequent comparison of mean BAROS scores 24 months postoperatively revealed a significant difference in favor of MLSG compared to SLSG ($p < 0.05$ in both gender subgroups).

Our results are in agreement with some other studies aimed at examining patients' BMI and QoL at different time points after bariatric surgery. Analyzing the relationship between bariatric surgery and its impact on weight loss, it has been observed that bariatric surgery was proved to be quite effective not only in terms of BMI decline (mean BMI before and after surgery was 45.9 kg/m^2 and 31.3 kg/m2, respectively) [13], but also thanks to significant reduction in mortality and associated improvement of QoL [14,15,]. The present study is the first research performed to discover the effect of modified LSG technique and individualized postoperative management on BMI values and BAROS scores in morbidly obese patients over 50 years of age.

CONCLUSION

The study showed that both MLSG and SLSG lead to a significant decrease in BMI (weight loss) and a significant increase in BAROS score (QoL improvement) compared to baseline, with no intergroup differences 6 months after surgery and with significantly better results 24 months after MLSG compared to SLSG.

Thus, intergroup comparison of BMI values showed that MLSG was significantly more effective in terms of weight loss compared to SLSG. The data also showed a significant difference in BAROS scores between the MLSG and SLSG groups, indicating better and faster improvement in QoL after MLSG. The lower efficacy of SLSG in morbidly obese elderly patients is supposedly explained by a higher rate of comorbidities and lower level of physical activity, not taken into account by conventional postoperative care.

Therefore, it can be concluded that MLSG may be an effective alternative to SLSG in morbidly obese (BMI = 40-50 kg/m^2) patients older than 50 years with favorable long-term high impact on weight and QoL indicators.

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Оценка эффективности модифицированной и стандартной лапароскопической продольной резекции желудка и послеоперационного ведения у пожилых пациентов с морбидным ожирением: одноцентровое рандомизированное клиническое исследование

Севак С. Шахбазян

Кафедра Общей Хирургии, Ереванский Государственный Медицинский Университет им. М. Гераци, Ереван, Армения
Медицинский центр «Шенгавит», Ереван, Армения

АБСТРАКТ

Введение: Ожирение – поликомпонентное заболевание, возникающее в результате метаболических нарушений. Оно вызывает высокий риск сердечно-сосудистых заболеваний, инсулинорезистентности, атерогенной дислипидемии, гипертонии и других состояний. Его распространённость имеет устойчивую тенденцию к увеличению за счёт роста заболеваемости ожирением и сахарным диабетом II типа. Лапароскопическая продольная резекция желудка (ЛПРЖ) зарекомендовала себя как безопасный, эффективный и технически нетребовательный метод снижения веса, что сделало эту бариатрическую процедуру популярной во всем мире. Однако она не всегда обеспечивает желаемое снижение избыточного веса и сопутствующих заболеваний.

Цель: Целью данного одноцентрового проспективного рандомизированного «до-после» исследования было сравнение безопасности и эффективности модифицированного (МЛПРЖ) и стандартного (СЛПРЖ) проведения ЛПРЖ у пожилых пациентов с морбидным ожирением.

Методы: Исследование проводилось в медицинском центре «Шенгавит» (Ереван, Армения) с февраля 2020 по февраль 2022 года с участием 168 пациентов старше 50 лет с индексом массы тела (ИМТ) от 40 до 50 кг/м², перенёсших СЛПРЖ с традиционным послеоперационным уходом или МЛПРЖ с индивидуализированным послеоперационным ведением. Эффективность хирургического вмешательства оценивалась путём измерения и сравнения ИМТ и качества жизни (с помощью системы Bariatric Analysis and Reporting Outcome System [BAROS]) пациентов до операции, а также через 6 и 24 месяца после неё.

Результаты: В процессе исследования не было выявлено достоверных межгрупповых различий в показателях ИМТ и BAROS непосредственно перед операцией и через 6 месяцев после операции. По прошествии 6-и месяцев внутригрупповые различия были выявлены в обеих группах при сравнении с соответствующими показателями до операции: достоверное понижение уровня ИМТ при достоверном повышении уровня BAROS. При этом, указанные сдвиги носили более выраженный характер у пациентов группы МЛПРЖ. При измерении показателей ИМТ и BAROS после 24 месяцев терапии были выявлены их прогрессирующие изменения, причём при межгрупповом сравнении выявлены достоверные различия в уровнях обоих показателей в пользу МЛПРЖ.

Выводы: Сделан вывод, что у пациентов старше 50 лет с ИМТ 40-50 кг/м² МЛПРЖ может быть эффективной альтернативой СЛПРЖ за счёт стабильного долгосрочного влияния на показатели массы тела и качества жизни.

Ключевые слова: лапароскопическая продольная резекция желудка (ЛПРЖ), индекс массы тела (ИМТ), Bariatric Analysis and Reporting Outcome System (BAROS), морбидное ожирение, пожилые пациенты, качество жизни.

Ստամոքսի լապարոսկոպիկ երկայնակի մասնահատման և հետվիրահատական վարման մոդիֆիկացված և ստանդարտ եղանակների արդյունավետության գնահատում III աստիճանի ճարպակալմամբ տարեց հիվանդների մոտ. միակենտրոն ռանդոմացված կլինիկական հետազոտություն

Սահակ Ս. Շահբազյան

Ընդհանուր վիրաբուժության ամբիոն, Մ. Հերացու անվ. Երևանի պետական բժշկական համալսարան, Երևան, Հայաստան

Շենգավիթ բժշկական կենտրոն, Երևան, Հայաստան

ԱՄՓՈՓԱԳԻՐ

Ներածություն. Ճարպակալումը նյութափոխանակության խանգարումների հետևանքով առաջացող բազմաբաղադրյալ հիվանդություն է, որը բարձրացնում է սիրտանոթային հիվանդությունների, ինսուլինակայունության, աթերոգեն դիսլիպիդեմիայի, զարկերակային գերճնշման և այլ հիվանդությունների ռիսկը։ Դրա տարածվածությունը կայուն աճի միտում ունի՝ կապված գիրության և 2-րդ տիպի շաքարային դիաբետի դեպքերի աճի հետ։ Ստամոքսի լապարոսկոպիկ երկայնակի մասնահատումն (ՍԼԵՄ) իրեն դրսևորել է որպես քաշի կորստի ապահովագ, արդյունավետ և տեխնիկապես ոչ այդքան պահանջկոտ եղանակ՝ այս բարիատրիկ միջամտությունը հանրաճանաչ դարձնելով ամբողջ աշխարհում։ Այնուամենայնիվ, այն միշտ չէ, որ ապահովում է ավելորդ քաշի և համակցված հիվանդությունների ցանկալի նվազում։

Նպատակը. Սույն միակենտրոն, առաջահայաց, ռանդոմացված, «առաջ-հետո» հետազոտության նպատակն է եղել համեմատել մոդիֆիկացված (ՄՍԼԵՄ) և ստանդարտ (ՍՍԼԵՄ) ՍԼԵՄ-ի անվտանգությունն ու արդյունավետությունը III աստիճանի ճարպակալմամբ տարեց հիվանդների մոտ:

Մեթոդներ. Հետազոտությունն իրականացվել է «Շենգավիթ» բժշկական կենտրոնում (Երևան, Հայաստան) 2020 թ. փետրվարից մինչև 2022 թ. փետրվարն ընկած ժամանակահատվածում: Ներառվել է 40-50 կգ/մ² մարմնի զանգվածի ցուցիչով (ՄԶՑ) 50 տարեկանից բարձր 168 բուժառու, որոնց կատարվել է ՍՍԼԵՄ ավանդական հետվիրահատական խնամքով և ՄՍԼԵՄ անհատականացված հետվիրահատական վարմամբ: Վիրահատական միջամտության արդյունավետությունը գնահատվել է հիվանդների ՄԶՑ և կյանքի որակի (Bariatric Analysis and Reporting Outcome System [BAROS]) չափման և համեմատման միջոցով՝ նախքան վիրահատությունը և վիրահատությունից 6 ու 24 ամիս հետո:

Արդյունքներ. Հետազոտությունը չի հայտնաբերել հավաստի միջխմբային տարբերություններ ՄԶՑ և BAROS-ի ցուցանիշների միջև՝ վիրահատությունից անմիջապես առաջ և դրանից 6 ամիս հետո: Կես տարի անց երկու խմբերում էլ հայտնաբերվել են ներխմբային հավաստի տարբերություններ՝ նախավիրահատական համապատասխան ցուցանիշների համեմատությամբ: ՄԶՑ մակարդակի նշանակալի նվազում և BAROS մակարդակի նշանակալի աճ: Ընդ որում, փոփոխություններն ավելի ցայտուն են եղել ՄՍԼԵՄ խմբում: Բուժումը սկսելուց 24 ամիս անց ՄԶՑ և BAROS-ի ցուցանիշների համեմատությունը բացահայտել է հավաստի ներխմբային փոփոխություններ, իսկ միջխմբային համեմատությամբ բացահայտվել են մակարդակների զգալի տարբերություններ երկու ցուցանիշների առումով հօգուտ ՄՍԼԵՄ խմբի:

Եզրակացություն. Այսպիսով, 50 տարեկանից բարձր և 40-50 կգ/մ² ՄԶՑ-ով հիվանդների մոտ ՄՍԼԵՄ-ը կարող է արդյունավետ այլընտրանք լինել ՍՍԼԵՄ-ին՝ առաջինի՝ մարմնի քաշի նվազմանը և կյանքի որակի բարելավմանն միտված կայուն երկարաժամկետ ազդեցության շնորհիվ:

Հիմնաբառեր. *սպամոքսի լապարասկոպիկ երկայնակի մասնահատում (ՍԼԵՄ), մարմնի զանգվածի գունչ (ՄԶՑ), Bariatric Analysis and Reporting Outcome System (BAROS), III աստիճանի ճարպակալում, տարեց հիվանդներ, կյանքի որակ*