

Clinical characteristics and postoperative complications of patients who underwent laparoscopic sleeve gastrectomy due to obesity; A Single Center Experience

Mehmet Patmano^{1*}, Durmuş Ali Çetin¹, Tufan Gümüş¹, Hasan Elkan¹

Abstract

Objective: Obesity, which is considered as a chronic disease today, has become an epidemic problem especially in developed countries. Laparoscopic sleeve gastrectomy (LSG) is currently one of the most common bariatric procedures in obesity treatment. This study aims to present our demographic, clinical, histopathological and postoperative early and late complications of patients who underwent LSG.

Material and Methods: Patients who underwent LSG due to obesity between March 2018 and December 2019 in our clinic were included in the study. The patients' age, gender, comorbid diseases, preoperative body mass index (BMI) and length of hospital stay, postoperative complications and pathology results were recorded retrospectively.

Results: Of the 278 patients included in the study, 201 (72.3%) were female, 77 (27.6%) were male and the mean age was 36.2 (min: 18-max: 60 years). The mean BMI of the patients was 46.4 (min: 35.2-max: 75.1). The average hospital stay of the patients was 4.2 days (3-13 days). When the early and late complications of the patients are examined; it was observed that 25 (8.9%) patients developed early postoperative complications, and 2 (0.7%) patients developed late postoperative complications.

Conclusion: LSG is a reliable surgical method with low mortality and morbidity rates. It is important that we do not have mortality and that our morbidity is within acceptable limits. Bariatric surgery is an effective and reliable application in the treatment of obesity and metabolic surgery today, in terms of its results, if the right patient is selected and performed in experienced centers.

Keywords: Obesity, Laparoscopic sleeve gastrectomy, Postoperative complication

Introduction

Obesity has become an epidemic problem, especially in developed countries, and ranks second after smoking among preventable diseases that cause death. Obesity is a disease that must be fought due to the high cost of treatment and the diseases it brings. Obesity is accepted as a chronic disease that affects life expectancy and comfort negatively (1,2). Obesity is not just a weight problem, it is increasing rapidly especially in young people, and many chronic diseases appear at an earlier age. Venous circulation disorders, especially diabetes and hypertension, coagulopathies and cardiac disorders are the main ones (3). While 67% of the population of the United States of America (USA) is in the overweight or obese group, this rate is 40-50% in many European countries (4).

A sustainable diet has a very important place in the treatment of obesity, but it seems almost impossible to do this in severe obesity.

Surgical treatment emerges as an appropriate and effective option in the treatment of this endemic disease, which causes premature deaths together with the diseases it brings (5,6). These risks should be taken into consideration when planning surgical treatment. In the treatment of morbid obesity, the surgeon has the necessary consultant specialist physicians and special operating room equipment and equipment; needs adequate follow-up facilities. The multidisciplinary approach is important. The main goal in obesity surgery is to achieve the desired body weight in patients. Laparoscopic sleeve gastrectomy (LSG) is the most commonly used bariatric surgical technique today, and it is a restrictive procedure because it is an intervention in which gastric volume is reduced (7).

After surgery, ghrelin hormone produced from the gastric fundus is not produced, it plays an important role in weight loss and resolution of metabolic disorders.



During surgery, after the stomach fundus is resected along the main curve with the straight line up to the gastric-esophageal junction, this hormone cannot be secreted, which strongly reduces the desire to eat and consequently leads to efficient and continuous weight loss. LSG has taken its place among metabolic surgical procedures as in laparoscopic roux-en-y gastric bypass (LRYGB) and biliopancreatic diversion with duodenal switch (BPD-DS). With this study, we aimed to present our demographic, clinical, histopathological and postoperative early and late complications of our patients who underwent LSG in our center.

Materials and methods

Study design and patients

The data of patients who underwent bariatric surgery for obesity between March 2018 and December 2019 in the general surgery clinic of the Şanlıurfa Training and Research Hospital were recorded retrospectively. The study was conducted in accordance with the Helsinki Declaration. Patients who underwent LSG were included in the study. Patients with missing file and computer data, patients who underwent revision surgery with LRYGB, BPD-DS were excluded from the study. Patients' age, gender, comorbid diseases, preoperative body mass index (BMI) and length of hospital stay, postoperative complications and pathology results were recorded retrospectively through file and computer records. Determined as the criteria for commissioning; Patients with a BMI of 35 kg / m² and above, with medical problems such as hypertension, diabetes mellitus and sleep apnea, and patients under 65 years of age with a BMI of 40 kg / m² and above were included in the operation. All patients were consulted with psychiatry, chest diseases, cardiology, internal medicine or endocrinology clinics before surgery. An informed consent form was obtained from the patient and / or patient relative for the surgical intervention. Surgical time, postoperative hospital stay, intraoperative blood transfusion, postoperative blood transfusion, morbidity and complications in the first 30 days of the patients were also determined. Postoperative complications were graded according to Clavien-Dindo classification (8).

Body mass index classification

BMI obtained from anthropometric measurements, body weight and height measurements, accepted by the World Health Organization in Obesity Studies, is the most common and valid standard height-weight index that can be applied to all individuals without gender discrimination. According to the BMI values accepted by the World Health Organization, individuals; The cases can be classified as underweight, normal, overweight and obese as well as obese individuals (9).

Surgical technique

In patients we used LSG as a surgical method, the operation was performed under general anesthesia after 8 hours of fasting before surgery. 1x0.6 IU was administered to all patients before surgery and 1x0.6 IU low molecular weight heparin (Clexane® and / or Oksapar®) subcutaneously for 5 days postoperatively. The patients were positioned with

their legs open and fifteen mm-Hg intraabdominal pressure was used. Surgery was performed with the help of 5 trocars (Covidien®, Ethicon®) in the surgical procedure. A liver retractor was inserted with a subxiphoid 5mm trocar, an image trocar was inserted approximately 3-4 cm proximal from the umbilicus superior, and 12 mm from the right subcostal midclavicular line (for stapler entry), 10 mm from the left subcostal midclavicular line, and left subcostal mid-axillary line. 5 mm trocar inserts were made. The gastrocolic ligament was opened using ultrasonic energy devices (Harmonic, Ethicon®, Ligasure, Covidien®), adjacent to the greater curvature of the stomach. The gastrocolic ligament was cut from the pylorus approximately 3-4 cm proximal to the angle of His and the stomach was freed by the greater curvature. With the help of 38 F bougie laparoscopic linear staplers (Echelon 45 and 60 Endopath Stapler®, Ethicon Endosurgery, Cincinnati, OH) placed through the orogastric route, approximately 2-3 cm proximal to the fundus was included, and the stomach was resected on the vertical line up to the angle of sensation. Hemoclip was applied to bleeding points on the staple line for hemostasis. No intervention was applied to the stapler line for extra support. The gastric specimen was removed from its 12 mm trocar in the right midclavicular line. Leak test was done with methylene blue. A Jackson-Pratt drain was placed along the stapler line. In addition, bilateral laptop compression stockings were worn in the pre-operative ward until the patients were mobilized. After the leak test with methylene blue on the postoperative 2nd or 3rd day, liquid foods were started and the drains were removed one day later.

Statistical analysis: Statistical Package for the Social Sciences (SPSS 21 Inc., Chicago, IL, USA) computer software was used for bio-statistical analyses. When the data were presented as mean values their standard deviation values were given, when they were presented as median values their minimum-maximum values were also stated.

Results

Total 278 patients included in the study, 201 (72.3%) were female, 77 (27.6%) were male and the mean age was 36.2 (min: 18-max: 60 years). The mean BMI of the patients was 46.4 (min: 35.2-max: 75.1). When the comorbid diseases of the patients were examined, hypertension in 44 (15.8%) patients, cardiac comorbidity in 6 (2.1%) patients, pulmonary comorbidity in 28 (10%) patients, diabetes mellitus in 41 (14.7%), hypothyroidism in 14 (5%) patients, 2 (%) patients. 0.7), the patient had hyperparathyroidism. In the intraoperative period, a mass lesion of approximately 2-3 cm in size was observed on the greater curvature of the stomach in one (0.35%) patient. Since the lesion was in the specimen, no extra intervention was made. The pathology result of the patient was reported as a benign peripheral nerve sheath tumor with myxoid features. When the histopathological results of all patients were examined, it was observed that 83 (29.8%) patients had normal gastric tissue, 195 (70.1%) patients had chronic gastritis, and 66 (23.7%) patients were helicobacter pylori positive. Perioperative hiatal hernia was detected in one patient and repair was performed during surgery.

The average hospital stay of the patients was 4.2 days (3-13 days). When the early and late complications of the patients are examined; It was observed that 25 (8.9%) patients developed early postoperative complications, and 2 (0.7%) patients developed late postoperative complications. In early period compositions; Postoperative hemorrhage was observed in 16 (5.7%) patients.

Despite close postoperative follow-up and blood replacement in 5 patients, relaparoscopy was performed due to hemodynamic instability. 11 (3.9%) patients were followed up conservatively and ES replacement was performed. Since there was no active bleeding from the drain and the patients' vital signs were stable, exploration was not performed.

Postoperative intraabdominal abscess (Figure-1) developed in one (0.35%) patient and percutaneous abscess drainage was performed. It was observed that pneumonia developed in one (0.35%) patient. Postoperative atelectasis developed in two (0.7%) patients.

One (0.35%) patient developed necrosis at the epigastric trocar site due to cautery burn and wound debridement was performed. Trocar site infection was observed in 3 (1%) patients, and postoperative pancreatitis was observed in 1 (0.35%) patient.

When early complications are classified according to Clavien-Dindo Classification; Three patients had grade I, 15 patients had grade II, 2 patients had grade IIIA, and 5 patients had grade IIIB. Late complications; Two (0.7%) patients were diagnosed with polyneuropathy as a result of electromyography (EMG) performed due to the symptoms of muscle weakness and myalgia at the 2nd and 5th months postoperatively.

Clinical improvement was observed in the patients after thiamine replacement. The postoperative complication rate was 9.7%. The major complication rate was 2.5% and the minor complication rate was 7.1%. No mortality due to surgery was observed in any patient in the postoperative period. The demographic, clinical, histopathological characteristics and postoperative complications of the patients are presented in table-1.

Table 1: Demographic, clinical, histopathological and postoperative complications of the patients

Variable		Numeric (Total:278)	Percentage (%)	
Age (year) (median)		36,2 years		
Sex	Female	201	72,3	
	Male	77	27,6	
Co-morbidities	DM	41	14,7	
	HT	44	15,8	
	Pulmonary comorbidity	28	10	
	Cardiac comorbidity	6	2,1	
	Hypothyroidism	14	5	
	Hyperparathyroidism	2	0,7	
BMI (Body Mass Index)		46,4		
Hospitalization		4,2 days		
Postoperative early complications	Postoperative bleeding	16	5,7	
	Abdominal abscess	1	0,35	
	Postoperative pancreatitis	1	0,35	
	Pneumonia	1	0,35	
	Postoperative atelectasis	2	0,7	
	Trocar site infection	3	1	
	Necrosis due to cautery burn at the trocar site	1	0,5	
Postoperative late complications	Polyneuropathy	2	0,7	
Claviendindo classification (Postoperative complications)	Grade-1	3	1	
	Grade-2	15	5,3	
	Grade-3a	2	0,7	
	Grade-3b	5	1,7	
	Grade-4	-	-	
	Grade-5	-	-	
Histopathological results	pathology	Normal gastric tissue	83	29,8
		Chronic gastritis	195	70,1
		H.pylori positive	66	23,7
		Gastro intestinal stromal tumor	1	0,35



Figure 1: Intraabdominal abscess

Discussion

In societies with a high socio-economic level, lack of physical activity and changes in nutritional habits together with technological advances constitute the most important environmental causes of obesity. In societies with low socio-economic levels, limited opportunities to find suitable food and consequently one-way nutrition of people lead to an increase in the incidence of obesity. Basal metabolic rate slows down with advanced age, energy consumption decreases, and obesity frequency increases. In this case, if energy intake is not reduced, body weight increases with age (10,11).

Since obesity and cholelithiasis are common, preoperative imaging of the gallbladder is important. It has been reported that the risk of gallstones formation in patients during the rapid weight loss period is 38% in the 6-month follow-up (12). Simultaneous cholecystectomy was performed in 4 patients. The possibility of cholelithiasis should be considered in addition to the effects of the surgery performed on patients' complaints of abdominal pain and bloating, dyspeptic. Routine ultrasonography control or even prophylaxis with cholesterol-sparing drugs is recommended in the 2nd and 5th years after bariatric surgery (13).

One of the issues that reduce the treatment success rate in obese patients is eating behavior and patient compliance. Publications investigating the relationship between obesity and neural circuits report a connection between pleasure and reward circuits and the success of the operation (14). Although obesity is not seen as a surgical problem, it will be difficult to achieve expected weight loss.

Although the concepts of successful and unsuccessful bariatric procedures have been recognized until recently, many researchers consider the 15–50% weight loss resulting from this procedure to be successful (15). In our series, this rate is 42.6% and it is seen that our transactions are generally successful.

The most important and early complications of LSG are bleeding and leakage (2%) and it is often seen in the area close to the staple line. Placing the last stapler line close to the esophagus, incisura angularis stenosis, and twisting of the tubular stomach can be considered among the causes of leakage. Many methods have been tried to prevent this complication, but no technique has been defined to eliminate the possibility of complications. Stapler line disintegration occurs due to mechanical and ischemic reasons. Mechanical leaks occur within the first 2 days, while ischemia sources decomposition occurs between the 5th-7th days when the inflammatory and fibrotic response is most intense (16). It is recommended to suture the stapler line with 2/0 Vicryl or silk with a continuous technique to prevent bleeding and leak complications (16). They also reported that the use of absorbable polymer membranes with the stapler strengthened the stapler line and significantly prevented bleeding and leakage (17). In our patients, no routine suture was placed on the stapler line, and sutured in case of bleeding or perioperative suspicion. Omarov et al. (18) reported that there was 1.1% anastomotic leakage and 1.1% bleeding. Bleeding requiring relaparoscopy was observed in 5 (1.7%) patients. Conservative ES replacement was performed in 11 (3.9%)

patients without the need for surgery. Laparoscopic abscess drainage was performed in 1 patient due to intraabdominal abscess. The abscess seen in one of our patients was thought to be due to leakage from the specimen during the exit of the surgery specimen due to the presence of the abscess in the right quadrant and the passage of the contrast material administered to the small intestines during CT scan and the absence of extralumination from the stapler line. There was no leak in our cases.

The limitation of our study is that it is retrospective and single centered. In conclusion, LSG, which can be applied in obesity surgery, is a safe surgical method with low mortality and morbidity rates. However, LSG is a unique procedure that may have serious postoperative complications and postoperative morbidity is likely to be encountered. It is important that we do not have mortality and that our morbidity is within acceptable limits. Bariatric surgery is an effective and reliable application in the treatment of obesity and metabolic surgery today, in terms of its results, if the right patient is selected and performed in experienced centers.

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