ACE RESEARCH JOURNAL OF MICROBIOLOGY & BIOTECHNOLOGY
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Research Article

Laparoscopic Vertical Sleeve Gastrectomy: Promising Treatment For Morbid Obesity

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KEY WORDS
Sleeve gastrectomy ,weight loss, BMI, EWL%, obesity

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Received: 09th October 2024
Accepted: 10th November 2024
Published: 15th December 2024

Citation: Ghadban Jassim and Hussein Saleh Ali, 2024. Laparoscopic Vertical Sleeve Gastrectomy: Promising Treatment For Morbid Obesity Res. J. Microbiol. Biotechnol., 4: 16-19, doi: 10.36478/acerjmb.2024.16.19

Abstract
Laparoscopic vertical sleeve gastrectomy (LVSG) is an operation that reduces body weight with few draw bags, leading to improvement of the quality of life and downgrading of the comorbidities and mortality of morbidly obese persons. Find out the efficiency of Laparoscopic vertical sleeve gastrectomy (LVSG) in reducing the weight of morbidly obese people. A prospective study was conducted in the 3rd unit of surgical department of Baghdad teaching hospital from 2nd of January 2013 to 30th of December 2017 where follow up of forty eight patients who had laparoscopic sleeve gastrectomy through the years 2011 and 2012 was conducted. Data collection was done from documented information in their hospital initial visits and follow up cards in the hospital or private clinic, they included socio-demographic characteristics, body weight and body mass index (BMI) before and after the operation with calculation of excess weight loss percentage (EWL%). There were 30 (62.5%) females and 18 (37.5%) males. The most prevalent age group was 20-40 years 38 (79.2%), and the mean age of obese patients was 38.8±8.805 years old. The percentage excess weight loss (%EWL) was 73.13% at one year, 70.15% at three years and 63.6% at five years. LVSG is effective weight losing procedures.

INTRODUCTION

Obesity is defined as abnormal or immoderate fat cumulation that may endanger the health[1]. It is associated with higher chances of mortality. Along the past decades, the prevalence of obesity has continued to rise reaching an estimation of greater than 1.7 billion adults and according to World Health Organization (WHO) estimations there are 600 million obese people in the world at 2014, forming about 10% of the population[2]. The Body Mass Index (BMI) is a simple index of weight-for-height and is regarded as most used reference of body fat and obesity classification that is even adopted by World Health Organization (WHO). It is calculated as body weight in kilogram divided by the squared body height in meter[3], and according to which class II obesity (BMI = 35 – 39.9 kg/m^2) is regarded as severe obesity, while class III (BMI =40–44.9 kg/m^2) is called morbid obesity. A BMI of = 45 or 50 kg/m^2 is super obesity[4]. Most individuals with morbid obesity have a more likelihood of having diabetes, high blood pressure, sleep apnea, gastroesophageal reflux disease (GERD), gallstones, osteoarthritis, heart disease; also obesity is the second leading cause of preventable death after smoking[4]. The Laparoscopic Vertical Sleeve Gastrectomy (LVSG) is a bariatric operation that involves removing about three quarters of the stomach by laparoscopic surgery. It works by restricting the volume of food a person can eat[5],furthermore, there will be reduction in the level of hormone Ghrelin, which is secreted by the fundus part of the stomach, which leads to suppression of the appetite between meals[6]. Expected Weight Loss of most patients can expect to be 40 to 60% of their excess body weight over a 12-month period with the LVSG alone[7]. Because this procedure is fairly new the long-term outcomes are unknown[8]. As with all the other weight reduction surgeries, there is a late regain of a part of the weight that is lost. The value of this in the case of the SG is unknown[8]. Foods and fluids that are high in calories may lead to insufficient weight loss like ice cream, cheeses, dips, soft drinks and chocolate must be taken sparingly[9]. Complications of LVSG may include: Wound infection, Bleeding, leak[10] , deep vein thrombosis, pulmonary embolism and port site hernia[11] .

Aim of the study: To verify the efficacy of LVSG in reducing weight in morbidly obese persons.

Patients and Methods: This is a prospective study of morbidly obese patients who were admitted at the third surgical unit in the department of general surgery in Baghdad teaching hospital and in a private hospital where LVSG was done the them as bariatric procedure from January the second 2012 to December the thirtieth 2013. Data collection took place prospectively and analyzed retrospectively. Patients were classified according to the WHO classifications of obesity. Patients were 20 to 57 years of age, their BMI was >40, or >35 with comorbidities after failure of many dietetic regimen and fitness exercises , the procedure was explained to the patients, the surgical risk were mentioned, and the impact of the operation on the patient and the patient's future life style was made clear and an informed signed consent was taken. The study excluded patients with prohibitive surgical risk, GERD patients, those with BMI more than 60 kg/m^2 , age more than 57 years, those with previous bariatric operations, patients with bulimia and other eating disorders, indications of lack of compliance with perioperative regimen, uncontrolled alcohol or drug abuse, uncontrolled depression or other mental disorders, and lack of family support or significant discord within the family about the planned surgery. Each patient had a complete a complete history and physical examination to assess the co-morbidities. Diagnostic workup includes measuring height, weight and BMI, abdominal ultrasonography, X-ray chest film, electrocardiogram, complete blood count, coagulation profile, thyroid profile, ACTH, electrolytes, blood urea, creatinine, and evaluations of liver functions and lipid levels. Oesophagogastroduodenoscpe (OGD) was not done preoperatively. Consultation with cardiologists, pulmonologists and anesthetists was done. Patients received one injection of 1st generation cephalosporin during induction and deep vein thrombosis (DVT) prophylaxis in the form of enoxaparin and elastic stockings. They kept on low carbohydrate diet for 2 weeks that decrease liver size and permitting good working space and admitted 1 day before surgery. The surgery was done under general anesthesia, five trocars were inserted: a supraumblical 10 mm optical, two 12 mm right and left superolateral to the umbilicus and two 5 mm epigastric and left subcostal for surgical assistant. Positioning the patient in supine position with head up and left up tilting of the couch, mobilization of the greater curvature was carried out upwards starting from the point of 6 cm superior to the pylorus up to the left crura. A 36 F tube was inserted from the mouth to mark the stapler line. Endo GIA (Gastrointestinal Anastomosis Stapler) was used for the longitudinal stapling of the greater curvature towards to Angle of His. Specimen was retracted from the abdomen through 12 mm trocar. Neither buttressing nor over sewing over stapler line was done, examination of the stapler line was not done . Postoperative follow-up Patients were observed in the surgical ward on the day of Surgery. Oral liquids were started on postoperative day two. After the patients were able to tolerate soft foods they were discharged.

Drain was removed on day 10 postoperatively. Contrast study was not done postoperatively. Patients were on proton pump inhibitors (PPI) for 2 months postoperatively They were called to our outpatient clinic for the follow-up program by the periods of 10 days, 1 month, 3 months and 6 months after surgery. Routine biochemical tests and patient's actual weights were also registered during these visits. In this study, results of the 6 month's tests and BMI's were compared to the results prior to the surgery. The patients were also questionnaire for the severity of the obesity-related symptoms (joint pains, sleep apnea, etc) that they had before the surgery. Vitamins and iron supplements were given to the patients. The statistical analysis of the data in this study was done using the SPSS version 22. For continuous variables, descriptive statistics were calculated and were reported as mean _ SD. Categorical variables were described using frequency distributions. The Student's t- test for paired samples was used to detect differences in the means of numerical variables, Chi-square test or Fisher's exact test (when necessary) was used for qualitative variables. P values >0.05 were considered to be significant. Significant variables were entered into a logistic regression model to determine independent significant variables. They were expressed as odds ratios (OR) with their 95% CI.

RESULTS AND DISCUSSIONS

The current study included 48 morbidly obese patients, 30 (62.5%) of them were female and 18 (37.5%) were males. The age ranged from 20-57 years, in both groups and the most prevalent age group was 20-40 years, 38 patients (79.2%) while the least was older than 40 years (20.8%) and the mean age of obese patients were 38.8±8.805 years old.

The mean body weight of patients was (133.96 ±20.93SD) (range from 106-205 kg), while the mean height was (167.31 ± 9.87SD). The mean of BMI before surgery was (47.69±5.86SD) and the ideal mean weight (65.55+11.22SD).

The higher mean percentage of excess weight loss (EWL%) was after one year (74.13±7.04SD). The mean excess weight loss after three years was (70.15±6.95SD), while the lowest one was a after five years (63.60±7.17SD). The difference in %EWL after one year from surgical operation (LVSG) and three years from surgery was statistically highly significant than after five years.

Concerning BMI , it was found that means of BMI before LVSG were (48.11+5.38SD) in comparison to means of BMI after one year (29.26+2.18SD) and after three years (30.25+2.55SD) while the means of BMI after 5 years were (36.6+2.5SD) as in table 1. It was noticed that BMI highly decreased within the first year to three years as compared to BMI after five years following operation . This study shows the distribution of preoperative BMI was more in age group 20-40years (38) while it was (10) in the other group (>40 years) without any significant association between the age and BMI.

Table 1: The Excess Weight Loss Percentage over 5 years follow up after laparoscopic vertical sleeve gastrectomy. EWL%: Excess Weight Loss Percentage

	After 1 year	After 3 years	After 5 years
Mean of EWL%	74.13±7.04	70.15±6.95	63.60±7.17
P value	<0.0001	<0.0001	<0.0001

Table 2: The Mean of Body Mass Index prior the operation and over 5 years follow up after the operation. BMI: Body Mass Index

	Before operation	After 1 year	After 3 years	After 5 years
BMI Mean	48.11+5.38	29.26+2.18	30.25+2.55	36.6+2.5

Regarding the complications, there were three cases bleeding and one case of staple line leakage from total sample of 48 patients only and all of these are in female group, no mortality, No GERD, with no significant association between sex and complication of LVSG.

The study showed that the females represent 30 patients from the sample (62.5%), and the most prevalent age group were (20-40) year with no significant association between obesity and gender or age groups. Carlos Hoyuela et al. shows that 74.4% were women and 25.6% were men without any significan association[12], but a cohort study by Kennedy-Dalby A, *et al*. showed high prevalence of males than females with morbid obesity with significant association with gender[13], These variations might be attributed to the difference in settings of these studies and constitution of the study groups as a large sample size. The reported initial weight loss after LVSG spans a wide range, between 45% and 83 % [14,15]. Johnston *et al*. study found out that the achieved excess weight loss percentage after one year was 60.3 % and 63.8 % after two years[16]. But the current study showed a higher mean percentage of excess weight loss was after one year74.13±7.04SD after that the mean excess weight loss after three years was lower 70.15±6.95SD. while carlos hoyuela et al. found out higher percentage of excess weight loss at the first, third 82.0±18.8 , 76.7±21.3 with comparable 5 years results 60.3±28.9 to our findings 63.60±7.17SD

CONCLUSIONS

Laporoscopic vertical sleeve gastrectomy (LVSG) is considered as a safe procedure with acceptable and good weight loss percentage of long lasting effect.

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