Original Article

Sleeve Gastrectomy, The Most Feasible Surgical Weight Loss Procedure For Morbidly Obese Patients In Pakistan: Early Results

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Background: The laparoscopic sleeve gastrectomy is a new tool in the surgical treatment of the morbidly obese patients which is now increasingly used as a primary surgical procedure for the morbid obesity as it has comparable weight loss to laparoscopic adjustable gastric banding and better safety profile than the Gastric Bypass with no malabsorption.
We describe initial results of laparoscopic sleeve gastrectomy for morbid obesity in two academic centers of Pakistan.
Materials and Method: Prospective data was collected on consecutive morbidly obese patients undergoing laparoscopic sleeve gastrectomy, and evaluated retrospectively.
Results: Twenty one consecutive patients underwent laparoscopic sleeve gastrectomy from October 2008 to August 2010 with follow up ranging from 2 to 15 months. The 8 men and 13 women had an average age of 42.1 years (range 2152 years) and an average body mass index (BMI) of 49.6 kg/m2 (range 35.272.2 kg/m2). No operation required conversion to laparotomy.
Mean length of stay was 2.1 days (range 110 days). There was no death in the 30 days postoperatively. One patient was admitted with pain abdomen after 10 days of operation with portal pyemia but settled conservatively. Other complications included one suspected clinical leak but no radiological leak. Patient got settled with conservative management in one week. Two patients had repeated vomiting off and on for one month and inability to take water which resolved spontaneously. At 1-year follow-up all patients had lost an average of 52.0% excess body weight.
Conclusion: Laparoscopic sleeve gastrectomy has much to offer for the morbidly obese. We present data showing weight loss rivaling gastric banding and bypass and acceptably low complications.
Keywords: Bariatric surgery, sleeve gastrectomy, weight loss procedures.

Introduction

Obesity has become an epidemic in the world though exact figures are not available in our setup. Worldwide, it is estimated that more than 300 million people are obese. Obesity, particularly abdominal obesity, is associated with increased risks of hypertension, diabetes, hyperlipidemia, sleep apnea, coronary heart disease, and stroke. In the United States, health care expenditures related to obesity and associated medical conditions amount to $100 billion annually and in 2000, obesity was estimated to contribute to approximately 400,000 deaths.[1,2,3,4,5]

Non surgical weight loss methods are all associated with high failure rates and eventual relapse of obesity. This led to the search for more durable and sustained weight loss methods. Although no large, randomized trials have compared current bariatric (weight loss) surgical techniques with medical management of severe obesity but the evidence about the effectiveness of surgery as the method of sustained weight loss and the resolution of co morbidities is growing. National institute of Health,USA consensus panel in 1991 endorsed surgery as the most effective method for long term weight loss in morbidly obese patients.[8,9,10] The current revolution in laparoscopic surgery has resurrected the bariatric surgery. The weight loss surgical procedures are divided into restrictive and malabsorptive. In general, weight loss with malabsorptive procedures tends to be greater than weight loss with solely restrictive procedures.

The greatest impact of weight loss surgery is on resolution of co morbidities and hence quality of life. In a meta-analysis by Buchwald et al., 77% of patients with preoperative diabetes no longer required medication after surgery. Similar improvements were seen for patients with hyperlipidemia (83%), hypertension (66%), and sleep apnea (88%).[11,12,13]

lacking even among the physician and there is a common misconception that it is a cosmetic surgery. This is mainly due to the lack of knowledge. Theother hurdles in acceptance of bariatric surgery are expenditure involved in the bariatric procedures, lack of resources and especially lack of trained bariatric surgeons. In our clinical experience especially in Lahore and Gujranwala where people are fond of eating high calorie diets with little or no exercise, many patients are seen who fall into the category of morbidly obese but are not offered any form of therapy. Bariatric surgery is especially beneficial for our highly prevalent diabetic patients who have higher BMI. Laparoscopic gastric bypass and gastric banding are the two most commonly performed procedures for weight loss surgery but one is more aggressive and irrerversible whereas other is associated with need for frequent adjustment. Sleeve Gastrectomy is safer than bypass and is associated with greater weight loss than the adjustable gastric banding. The laparoscopic sleeve gastrectomy was first performed by in July 1999 by Michel Gagner.It is a new tool in the surgical treatment of the morbidly obese and the super obese patient (BMI 50 kg/m2). It was conceived as the restrictive part of a more complex procedure that combines malabsorptive and restrictive concepts: the biliopancreatic diversion with duodenal switch (BPD-DS).[18,19] The Sleeve Gastrectomy consists of creating a gastric reservoir or tube of 60 to 120 mL. This tube of stomach is based on lesser curvature starting from antrum to GE junction while the antrum is preserved. SG produces weight loss by two mechanisms: Firstly, it produces early satiety as a purely restrictive procedure; secondly, it reduces appetite by decreasing plasma Ghrelin levels. Majority of Ghrelin producing cells are present in the fundus of the stomach.[16,17] Benefits of SG include low cost, lower rate of complication; the avoidance of foreign material to create a restrictive band or placement of a subcutaneous reservoir; the maintenance of normal gastrointestinal continuity with preservation of the antrum and nerve supply permitting adequate gastric emptying; the absence of malabsorption and the ability to convert this procedure into multiple other operations. Despite of its clear advantages, sleeve gastrectomy has not earned the place it deserves in the bariatric procedures as sufficient long term data is not available for this procedure. Moreover, no feasibility or efficacy study has been done in Pakistan about the sleeve gastrectomy so far. Hence we decided to carry out this study.

Aims and Objectives

To determine the feasibility and efficacy of sleeve gastrectomy as a weight loss operation in our population.

Methodology

Study design:

Prospective Cohort

Eligibility criteria

All patients from age 18 to 60 years with BMI of >40 or 35 with co morbidities like Type II diabetes mellitus, Hypertension, Hyperlipidemia, Sleep Apnea, Osteoarthritis and IHD and fit to undergo General Anesthesia.

Exclusion Criteria

All obese patients who are psychologically unfit to undergo surgery. All patients who are alcoholic or having endocrine induced obesity, connective tissue disorders like SLE, Sjogren syndrome and vasculitides and aged less than 18 and more than 60 years or not able to withstand GA would be excluded.

Setting: Surgical Unit 4 of Services Hospital Lahore

Study time period

From October 1, 2008 to September 30,2010

Sample Size: 30 patients

Follow up

1,2,3,6 and 12 months

Primary outcome

Percent Excess weight loss, Overall weight loss in kg

Secondary outcome

Resolution of comorbidities, 30 days hospital mortality, cost of the whole procedure, hospital stay.

Procedure

After thorough evaluation preop workup included blood count, coagulation profile, viral profile, LFT, RFT, HbA1C, Thyroid Function Tests, Abdominal ultrasound for gallstones and endoscopy for Reflux esophagitis; additional testing like ECG, Echocardiography were assessed by an anesthetist. Once declared fit to undergo surgery, an informed consent was taken explaining all the risks and benefits of the Sleeve gastrectomy. All patients would receive DVT and antibiotic prophylaxis at the time of call to OR.A nasogastric tube and foley catheter would be passed in the OR. Pneumatic sequential compression device would be applied to both the legs before the start of surgery. All patients would be admitted to HDU or ICU for the first 24 hours. SG was performed according to the technique described by Gagner16. The patient is positioned in 30° anti-

trocars are used. The division of the vascular supply of the gastric greater curvature starts at 68 cm from the pylorus and proceeds upwards until the angle of His and is performed with ultrasonic energy (Harmonic Scalpel, Ethicon Endo-Surgery, Cincinnati, OH, USA) or with LigaSure Vessel Sealing (ValleylabTM, Boulder, CO, USA) devices. The SG is created using a linear stapler, two sequential 4.8/60-mm green load firings for the antrum, followed by two or three sequential 3.5/60-mm blue loads for the remaining gastric corpus and fundus

The stapler is applied alongside a 36-Fr calibrating bougie. The resected stomach was grasped at the antral tip by a laparoscopic grasper and retrieved through one of the trocar site as we have previously described6, 17. A methylene blue dye test was routinely performed at the end of the procedure in all the cases.

Data Collection

All patients' data was collected prospectively for analysis using especially designed Performa and backup made on computer as well. The variables include age, sex, BMI as Kg/m2, admission weight in Kilograms, co morbidities, and early complications such as leak, fistula, hemorrhage, intraabdominal collection, and late complications like intestinal obstruction, failure to lose weight.

At every follow up all patients underwent recording of weight and BMI and change in BMI was tabulated as percentage. Baseline blood work included complete blood count, serum albumin, HbA1c, RBS, calcium and serum transferrin levels.

All data was entered in the SPSS 16.0 for analysis .

Results

21 consecutive patients underwent laparoscopic sleeve gastrectomy from October 2008 to August 2010 with follow up ranging from 2 to 15 months. The 8 men and 13 women had an average age of 42.1 years (range 2152 years) and an average body mass index (BMI) of 49.6 kg/m2 (range 35.272.2 kg/m2). Number of co morbidities were as shown in table 1.

No operation required conversion to laparotomy. Mean length of stay was 2.1 days (range 110 days). There was no death in the 30 days postoperative period. One patient was admitted with pain abdomen after 10 days of operation with portal pyemia but settled conservatively. Other complications included one suspected clinical leak but no radiological leak. Patient got settled with conservative management in one week. Two patients had repeated vomiting off and on for one month and inability to take water which resolved spontaneously.

Net weight loss at one, six and 12 months was 15 kg (9-21), 35Kg (43-55), 42Kg (37-95) whereas Excess weight loss at one year was 52% (45-77%) (See. Fig. 1). Diabetes was resolved in 5 out of 7(77%), Hypertension in 5 out of 5(100%), Hyperlipidemia in 80% and sleep apnea in both patients.

Table-1: Co morbidities

Comorbidity	No. Of Patients
Diabetes	7
Hyperlipidemia	6
Sleep Apnea	2
Hypertension	5
None	13

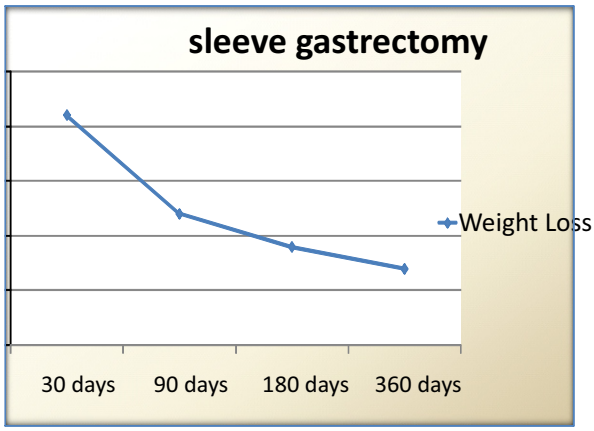

Fig-1: Excess weight loss with sleeve gastrectomy.

Discussion

Sleeve Gastrectomy is gaining popularity worldwide. Originally this operation was indicated in super-obese and high-risk patients as the first step of BPD-DS but 70% of the patients would not need a second step procedure. In the past 5 years, there was a great increase of the number of procedures and now it is done as a one step primary bariatric procedure. The reasons for the "sleeve explosion" were: technically not difficult operation; efficacy in terms of weight loss with low rate of morbidity and mortality; no nutrients malabsorption; no "blind" stomach; no dumping syndrome; feasibility of postoperative endoscopic cholangiography; absence of foreign bodies; standard second stage (BPD-DS or GBP) in case of failure.[18,19]

done in all except one case; it is proven to reduce bleeding and leak. The stomach has a thick wall with three very well-vascularized layers of muscle fibers; because of the long suture line needed to perform SG, a high risk of endoluminal and/or extraluminal bleeding exists. We had one suspected case of leak Gastric leak that occurred on the uppermost part of the suture line at the esophagogastric junction. Different techniques have been utilized to avoid this complication without complete solution.

In all our cases the intraoperative methylene blue test was negative. Lee et al. reported a 1.4% incidence of leaks after LSG procedure; however, this rate is less than the 1.4 to 3% shown after LRYGBP[19,20,21] but it is higher than the 0.07% demonstrated after LAGB.[19,20,21]

As for its effectiveness, the mean %EWL from published series that have reported results of 12 months or more was 57.7% at 12 months, while Lee et al. had reported the highest EWL of 83% at 2 years[21]. Our results were similar to that of Gagner et al., who have performed a review of 15 current reports on sleeve gastrectomy in which the mean %EWL was 49% and 56% at 6 and 12 months, respectively, and the complication rate was 9%.[21]

Conclusion

Laparoscopic sleeve gastrectomy has much to offer for the morbidly obese. We present data showing weight loss rivaling gastric banding or bypass and acceptably low complications.

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