Laparoscopic Gastric Plication Versus Laparoscopic Sleeve Gastrectomy

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Abstract

Background: Since 2006 laparoscopic gastric plication technique has been evaluated to eliminate AGB and VSG associated complications, by restriction without gastric stapling resection and without an implant used. The aim of this study is to compare the effectiveness of LSG and LGCP in short term weight loss.

Material and Methods: The study included 12 patients who underwent LSG and 12 patients who underwent LGCP and compared for excess weight loss within 4 months follow-up in Fayoum and Mansoura University Hospitals from July 2009 to July 2011.

Results: There were no conversions in both procedures; mean operative time in LSG was 102.7 ± 15.4, in LGCP was 62.5 ± 11.2, post-operative complications 1% in LSG, 3% in LGCP in the form of nausea, vomiting which were treated conservatively. Mean hospital stay was 13.3 ± 1.4 in LSG and 7.2 ± 2.5 in LGCP, loss of weight post LSG was 20.8 ± 0.6%, 30.23 ± 4.5% post LGCP.

Conclusion: LGCP seems safe simple method in short term weight loss with lower cost for patients and least hospital stay.

Key Words: LSG – LGCP – Obesity.

Introduction

MECHANICAL food restriction by bariatric surgery has proven achievement outcome in weight loss [1,2].

Vertical sleeve gastrectomy (VSG) and Adjustable gastric banding (AGB) are the most commonly used restrictive approaches in bariatric surgery [3,4].

These procedures proved good therapeutic methods for many patients but also they were associated with many complications, in gastric band like slippage of the band or erosion, gastric leaks which may occur in VSG [5-9].

Since 2006 laparoscopic gastric plication technique has been evaluated to eliminate AGB and VSG associated complications by restriction without gastric stapling resection and without an implant used.

The aim of this study is to compare the effectiveness of LSG and LGCP in short term weight loss.

Patients and Methods

The study included 12 patients (Group A) underwent LSG and 12 patients underwent laparoscopic greater curvature plication LGCP (Group B), both groups were compared for the excess weight loss within 4 months follow-up.

From July 2009 to July 2011 in El-Fayoum and El-Mansoura University Hospitals using the National Institute of Health’s (NIH) inclusion criteria for bariatric surgery (patients with a body mass index >40kg/m² or BMI over 35kg/m² with at least one comorbidity), we took an informed consent from all our patients, it was a prospective comparative study, 10 (83.3%) female patients, age between 35-52 years and 2 (16.6%) male patients, age 47-56 years considered clinically obese with a mean BMI 48.095 ± 5.6 (range 38-60Kg/m²), mean age 43.4 ± 13.6 (range 35-56 years). Group A: Underwent LSG, the outcome included loss of weight in short time, change in BMI. Group B: Included 8 (66.6%) female patients, age between (25-44 years) and 4 (33.3%) male patients, age between (37-46 years) considered clinically obese with a mean BMI 43.81 ± 4.2 (range 33-45Kg/m²), mean age 38.4 ± 10.5 (range 25-46 years). Group B: Underwent LGCP, the outcome included loss of weight in short time, change BMI. All patients had full history taking especially for family history of similar condition, BMI, age, social habits of...
smoking and alcohol consumption, present medical history of any drug intake especially steroids, salicylic acid and non-steroidal anti-inflammatory drugs (NSAIDs) ... etc., their past history of any deep venous thrombosis (DVT), any post surgical morbidities in the abdomen, any current clinical disease in the abdomen (e.g. hernia, post surgical scarring, etc.). The results of their preoperative laboratory tests (including complete blood count (CBC), blood sugar, liver, kidney functions, their coagulation profile and of their pre-operative abdomino-pelvic ultrasound. Upper GIT endoscopy was done preoperatively for all patients to exclude gastritis, pulmonary functions tests, ECG, and anaesthetic consultation were done for all patients preoperatively. 10 of the patients were smokers with no alcohol consumption.

Their imaging studies revealed non cancerous abdomino-pelvic ultrasound and chest X-ray. Their preoperative laboratory tests revealed mild anaemia in 3 patients. Group A were scheduled for one staged LSG under general anaesthesia.

Surgical procedure:

The procedure was done under general anaesthesia, and started by division of the greater curvature blood supply. Then resection of the fundus and greater curvature from 6cm from the pylorus till the angle of His Endo GIA stapler (60-mm cartridge) for division of the stomach along side a bougie (46 French).

Prolene sutures were used to reinforce the staple-line, we injected intraoperatively methylene blue to check for any leakage. Postoperative gastrografin study was done for all patients. The patients started eating on the 7th day post-operative, follow-up were at 4 months after surgery.

In LGCP the procedure was done under general anaesthesia, and started by dissection of angle of His and pad of fat removal then division of the greater curvature blood supply using the Harmonic scalpel distally till the pylorus and then proximally till the angle of His. Then the stomach is folded into itself over a 32-Fr bougie applying a first row of extramucosal stitches of 2-0 vicryle, this row guided 2 subsequent rows created with extramucosal running suture lines of 2-0 prolene. Methylene blue was injected intraoperatively to check for leakage. The patients started eating on the 7th day post-operatively, follow-up were at 4 months after surgery.

Results

There were no conversions in both procedures, mean operative time in LSG was 102.7±15.4 (85-120min), in LGCP was 62.5±11.2 (50-120min) (p=1), postoperative complications in LSG was 1% in the form of postoperative nausea and vomiting which was treated conservatively and spontaneously resolved, in LGCP was 3% in the form of nausea and vomiting treated within ten days. There were no intraoperative complications in both procedures.

Mean hospital stay in LSG was 13.3±1.4 (range 10-16 days), and was 7.2±2.5 (range 4-10 days) in LGCP, (p<0.05).

Loss of weight post LSG was 20.8±0.6%, pre-operative BMI was 48.095±5.6 (range 38-60 Kg/m²), postoperative BMI was 38.034±4.4 (range 28-49Kg/m²).

Loss of weight post LGCP was 30.23±4.5% (preoperative BMI was 43.81±4.2) (range 36-45 Kg/m²), (postoperative BMI was 30.91 ± 1.3) (range 23-32Kg/m²).

Figs. (1,2): Division of the vascular supply of the greater curvature of the stomach.
Fig. (3): Gastrectomy by stapler 6cm proximal to the pylorus.

Fig. (4): The staple line is reinforced with sutures.

Fig. (5): The excised part of the stomach.

Fig. (6): Steps of gastric plication.
### Discussion

There are 2 bariatric procedures promoting weight loss by restriction food intake mechanically which are VSG and AGB. Extra weight loss (EWL) by AGB about 50% but failure rate about 25% and needs surgical revision [7].

VSG shows >60% (EWL) in medium-term results [6,9], but was associated in some studies with complications gastric leaks and fistulas [6,9]. LGCP is similar to VSG by generating a gastric tube some studies showed satisfactory weight loss till 3 years [10,11].

This study compared the complication rate between 2 procedures 1% in LSG vs 3% in LGCP.

In our study LGCP showed no major complication rate compared to other studies with gastric leak [11]. Weight loss post LSG 20.8±0.6% was compared to LGCP was 30.23±4.5.

### Conclusion:

LGCP seems safe, simple method in short term weight loss with lower cost for patients and least hospital stay.

### References