ELSEVIER

Surgery for Obesity and Related Diseases ▮ (2014) 00–00

SURGERY FOR OBESITY AND RELATED DISEASES

Original article

Laparoscopic gastric greater curvature plication versus laparoscopic sleeve gastrectomy: early outcome in 140 patients

Tamer N. Abdelbaki, M.D., M.R.C.S.*, Mohamed Sharaan, M.D., Nabil A. Abdel-Baki, M.D., Khaled Katri, M.D.

Department of Surgery, University of Alexandria Faculty of Medicine, Alexandria, Egypt

Received December 12, 2013; accepted March 17, 2014

Abstract

Background: Laparoscopic gastric greater curvature plication (LGGCP) is a novel bariatric procedure. Its outcome as a standalone procedure has been studied in the literature. We herein describe a comparative study between LGGCP versus laparoscopic sleeve gastrectomy (LSG). The objective of this study was to analyze %excess weight loss (%EWL) co-morbidity improvement and complication rate in both groups at 1, 3, 6, 12 months follow-up.

Methods: Retrospective study of 140 patients undergoing LGGCP and LSG between July 2011 and March 2012 at University of Alexandria, Egypt. Data on patient demography, operative time, length of stay, body mass index (BMI) were collected.

Results: Baseline characteristics were similar for both groups, except for preoperative BMI that was higher among the LSG group. Follow up rate was 98% (n = LGCCP: 68 – LSG: 69) at 6 months and 81% (n = LGGCP: 54 – LSG: 60) at 1 year. The mean operative time and mean length of stay were longer in the LSG group ($P = .03$) and ($P = .02$), respectively. There were 4 (6.5%) readmissions and 2 (3.2%) reoperations in the LGGCP group compared to 3 (3.8%) readmission and 2 (2.6%) reoperations in the LSG group. At 6 months follow-up the mean %EWL for LGGCP and LSG was 40.4 ± 11.9% and 47.1 ± 13.9% ($P < .001$), while at 1 year it was 52.1 ±15.1% and 68.1 ± 15.8% ($P < .001$), respectively. Both techniques showed similar results in co-morbidity improvement at 1 year.

Conclusion: In the short term, both techniques were comparable as regards to co-morbidity resolution. However, LSG appears to have achieved a higher weight loss. (Surg Obes Relat Dis 2014;▮:00–00.)

Keywords: Laparoscopy; Sleeve gastrectomy; Gastric plication; Greater curvature plication

Obesity has been well recognized as a worldwide epidemic with compelling evidence documenting a lower life expectancy among the obese patients [1–3]. Researchers continue to search for an ideal surgery with minimal complications, which helps patients lose weight and hence increase their life expectancy and improve their quality of life.

Over the past decade, laparoscopic sleeve gastrectomy (LSG) has gained popularity and has been widely accepted as an effective stand-alone bariatric procedure. However, complications were reported after LSG owing to its long staple line [4]. On the other hand, laparoscopic gastric greater curvature plication (LGGCP) is an emerging bariatric procedure that involves the use of multiple rows of sutures to imbricate the gastric greater curvature. This

*Correspondence: Tamer N. Abdelbaki, M.D., M.R.C.S., Department of Surgery, University of Alexandria Faculty of Medicine, 11 Hussein Nouh St, Alexandria, Egypt.

E-mail: tamerbaki@hotmail.com

http://dx.doi.org/10.1016/j.soard.2014.03.014

results in a gastric restriction that partly mimics the effects of LSG without leaving behind a staple line. Data are being published about its potential for providing a safe and significant weight loss without the need for a resection, a bypass, or the use of an implantable device [5]. However, trials comparing the 2 procedures are limited. We here in, describe a comparative study between LGGCP and LSG, aiming to assess the degree of weight loss and to compare the complication rate of both procedures.

Methods

After ethical committee approval, this study was conducted at the University of Alexandria Faculty of Medicine, Egypt. It is a nonrandomized observational retrospective study of patients undergoing LGGCP and LSG.

One hundred and forty patients were included and operated upon between July 2011 and March 2012. The inclusion criteria for the study were patients undergoing either a LGGCP or a LSG with a body mass index (BMI) > 40 or BMI ≥ 35 with a significant co-morbidity related to obesity, and patients who failed to lose weight on different diet regimens after 1 year of trial. Our exclusion criteria were patients with active gastric ulcer disease, large hiatal hernia (Types II–IV), severe esophagitis or gastroesophageal reflux disease and previous bariatric surgery.

All patients were subjected to a multidisciplinary evaluation by endocrinologist, psychiatrists, and surgeons. Baseline laboratory tests, abdominal ultrasonography, and upper endoscopy were performed preoperatively.

The study coordinator collected data on patient demography, operative time, length of stay, and BMI at the primary evaluation and was responsible for postoperative follow up at 1, 3, 6, and 12 months. All procedures were conducted by the same surgeon who had a learning curve of at least 40 cases of either procedure.

Surgical technique

Initial steps for both procedures. The patient was positioned in a 15° reverse Trendelenburg position with both arms placed in abduction and with a split leg position. The surgeon stood in-between the legs, the camera operator stood on the right of the patient, and the assistant stood on the left of the patient. Elastic stockings were applied and pressure points were padded. Access to the peritoneum was achieved through a closed pneumoperitoneum technique using a Veress needle with a pressure setting of 14–15 mm Hg. A 5 trocar technique was used and the trocar placement was as follows one 10-mm trocar above and slightly to the right of the umbilicus for the 30° laparoscope; one 5-mm trocar in the right upper quadrant at the right midclavicular line for the surgeon's right hand; one 5-mm trocar on the left anterior axillary line 3–4 cm below the costal margin for the surgeon's assistant; one 5-mm trocar below the xiphoid process for liver retraction; and one 10-mm trocar in the left upper quadrant for the surgeon's left hand. Using the Harmonic scalpel (Ethicon Endo-Surgery, Inc., Cincinnati, Ohio) dissection of the gastric greater curvature was started at a point 3–4 cm proximal to the pylorus and then extended upwards until the angle of His. Careful dissection of any posterior gastric adhesion was done. In both techniques, pouch calibration was achieved by passing a 32-Fr orogastric bougie toward the pylorus.

Laparoscopic gastric greater curvature plication. Plication was commenced by applying 2 rows of extramucosal sutures. The first row was composed of interrupted stitches of 2-0 Ethibond (Ethicon, Inc., Somerville, New Jersey) sutures. This was followed by a second row of running 2-0 Prolene (Ethicon, Inc.) suture. At the end of the procedure, an upper gastrointestinal endoscopy was routinely performed to assess the final stomach capacity and to confirm the patency of the created gastric pouch. A drain was then placed next to the gastric pouch.

Laparoscopic sleeve gastrectomy. In LSG, we routinely removed the esophageal pad of fat. The first firing of the linear stapler was started 4–5 cm from the pylorus. We used a blue load (3.5 mm) for the entire stapling except for the first fire where we used a gold load (3.8 mm). No buttress material was used. After completion of the stapling, we covered the suture line with a running 3-0 Prolene (Ethicon, Inc.) suture. The specimen of the stomach was then removed. In LSG, a leak test was routinely performed with methylene blue. A drain was then placed next to the gastric pouch.

Postoperatively, patients were monitored for any complications. Oral fluids were started on day 1. In the LGGCP group, antiemetics and antispasmodics were given by intravenous route and on discharge were switched to oral pills. In the LSG group, a postoperative gastrograffin study was not routinely done but was only resorted to on select patients. Patients were kept on a liquid diet for the first 2 weeks postoperatively and soft foods diet was started thereafter. Solid foods were slowly introduced after 30 days from surgery.

Study outcomes

Our primary outcome was %excess weight loss (%EWL). Weight was measured at a regular follow up schedule of 1, 3, 6 and 12 months after surgery. Weight loss was then measured and %EWL was accordingly calculated.

Co-morbidity improvement or resolution was analyzed. We defined co-morbidity resolution as patients who no longer require any medications to control their symptoms, and we defined co-morbidity improvement as a reduction in their medication dosage. Complications were carefully monitored. Complications were defined as early (<30 d) and late (>30 d). Readmission, reoperation and mortality rates were documented and analyzed.