

Original article

Single-port sleeve gastrectomy for super-obese patients

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Abstract

Background: Laparoscopic sleeve gastrectomy, which has become a primary bariatric procedure in super-obese patients (SOPs), is associated with considerable weight loss. Traditionally, laparoscopic sleeve gastrectomy requires 4–7 skin incisions. Single-port laparoscopic surgery is now feasible for bariatric surgery.

Objectives: To evaluate the feasibility and safety of single-port sleeve gastrectomy (SPSG) for SOPs.

Setting: Department of Abdominal and Minimally Invasive Surgery, Antoine Beclere Hospital, Assistance Publique-Hôpitaux de Paris, Paris-Sud University, France.

Methods: Evaluation of the outcomes on patients who underwent surgery consecutively from June 2010 to June 2013 with follow-up of >1 year.

Results: In total, 62 patients (46 women, 16 men) underwent SPSG. The median age was 41 years (range 19–67), median preoperative body mass index was 52.2 kg/m² (range 50–87), median operative time was 89 minutes (range 42–212). Twelve patients required additional trocars, and 4.8 % developed complications. The median postoperative stay was 4 days (range 3–9 days) and median follow-up period was 21 months (range 12–48 months) with no loss of follow-up. The median percentage of excess weight loss was 69.7% (range 52%–100%) and percentage of weight loss was 36% (28%–56%) for the same period.

Conclusion: SPSG for SOPs was found to be technically feasible, reproducible, and safe in this series. (Surg Obes Relat Dis 2016;12:522–527.) © 2016 Published by Elsevier Inc. on behalf of American Society for Metabolic and Bariatric Surgery.

Keywords:

Super-obese; Bariatric; Single port; Sleeve

Bariatric surgery is a widely accepted treatment for morbid obesity with very encouraging outcomes [1,2]. It induces long-term weight loss and leads to improvement or remission of associated diseases, such as type 2 diabetes mellitus and hypertension [1,3]. Laparoscopic sleeve gastrectomy (LSG) has become an established primary bariatric surgical technique, gaining popularity among surgeons during the last 5 years. LSG has an acceptable morbidity

and long-term weight loss results compared with the laparoscopic Roux-en-Y gastric bypass and adjustable gastric banding [4–6].

It is a relatively simple operation, thus being especially attractive for high-risk patients [7–9]. Recent studies have shown that male gender, advanced age, presence of multiple co-morbidities, and increased body mass index (BMI) are associated with higher morbidity and mortality rates in

bariatric surgery patients [10–12]. LSG has been used for super-obese patients (SOPs), defined by a BMI > 50 kg/m², providing satisfactory weight loss and the desired results [11,13].

Single-port laparoscopy has been shown to be safe and minimally invasive for performing a variety of abdominal procedures. The first single-port laparoscopic sleeve gastrectomy (SPSG) was described in 2008 by Saber et al. [14]. SPSG could also be of particular interest for high-risk patients, such as SOPs. However, only 2 studies have evaluated the operative and postoperative effects of SPSG on SOPs, with each study analyzing < 10 patients [14,15].

The aim of this study was to report our experience of SPSG for SOPs in our series of consecutive patients.

Patients and methods

All SOPs (BMI > 50 kg/m²) who underwent SPSG in our department from June 2010 to June 2013 were included in our study. The indications for bariatric surgery were in accordance with the French recommendations [16]. All patients underwent meticulous evaluation before surgery by a multidisciplinary team consisting of an endocrinologist, a gastroenterologist, a psychiatrist, a nutritionist, an anesthesiologist, and a surgeon. Appropriate preoperative investigations were performed, as indicated (esophagogastroduodenoscopy, upper gastrointestinal series, abdominal ultrasonography, polysomnography, and endocrinologic and nutritional evaluations). All patients were informed about the innovative nature of this technique and gave written informed consent before surgery, and the study was approved by the hospital institutional review board. Comorbidities were defined according to the international standard criteria (Table 1)—gastroesophageal reflux disease: need for proton pump inhibitor agents and/or esophagitis diagnosed on endoscopy and/or abnormal manometry; arthralgia: clinical and radiological findings. Remission and improvement of co-morbidities were defined by the endocrinologist/physician responsible for the follow-up. Remission was considered to have occurred when the value was normalized and improvement when the treatment was decreased.

Table 1
International criteria defining the co-morbidities

Co-morbidities	Definitions
Hypertension	Systolic blood pressure 140 mm Hg or more and/or diastolic blood pressure \geq 90 mm Hg or antihypertensive drug therapy.
Type 2 diabetes	On plasma glucose criteria, either the fasting plasma glucose (FPG), pathologic value is FPG > 126 mg/dL (7.0 mmol/L) or the 2-hour plasma glucose value > 200 mg/dL (11.1 mmol/L) after a 75-g oral glucose tolerance test. Recently, an International Expert Committee added the A1C (threshold \geq 6.5%) as a third option to diagnose type 2 diabetes
Dyslipidemia	Fasting high-density lipoprotein < 40 mg/dL for men, < 50 mg/dL for women, and/or triglycerides > 150 mg/dL and/or low-density lipoprotein > 100 mg/dL or the use of statins.
Obstructive sleep apnea syndrome	Repeated upper airway occlusions during sleep with or without sleepiness and high apnea/hypopnea index and the need for continuous positive airway pressure during sleep.

Operative technique

Since the introduction of SPSG in our department, we have employed the same technique, as previously described [17]. Briefly, access is obtained through a 2- to 4-cm skin incision in the left upper quadrant, using an open technique for the introduction of the single port. The single-port device (Quad-Port, Olympus Medical, Nagano, Japan) consists of 2 ports of 5 mm, 1 port of 15 mm, and 2 ports of 12 mm. A 10-mm flexible tip laparoscope (LTF-VH or EndoEYE LS, Olympus Medical) or a 10-mm rigid co-axial 30° laparoscope is used. A double-curved nontraumatic grasper is used in the left hand for exposure, and a 5-mm thermofusion device (LigaSure, Covidien, France; or Thunderbeat, Olympus Medical) or the stapler in the right hand. The omentum is initially separated from the stomach, and the corpus is freed up to the left pillar of the diaphragm. This gastrolisis is obtained with the posterior dissection, section, and coagulation of the right gastro-omental vessels around the stomach and the short gastric vessels by using thermofusion grasper. When the angle of His is freed, the sleeve of the stomach is created over a 36-F bougie, after introduction of the orogastric tube along the lesser curvature, and transection of the stomach is done with the use of 60-mm endoscopic staplers, starting 6 to 7 cm proximal to the pylorus and heading toward the left side of the gastroesophageal junction. We use the same stapling over the stomach (Endo-GIA Tri-Staple by Covidien, Elancourt, France; or Echelon Flex powered by Ethicon, Issy-les-Moulineaux, France). For patients with a history of Lap-band, we use a reinforced stapler (Perstrip by Baxter or Syngard by Gore).

At the end of transection, the specimen is easily removed through the single port. The parietal wall incision is closed for all patients with 2 layers by using Vicryl 1. Then the skin is closed as usual with Vicryl fast 3/0. Drainage is not performed routinely but is only done in cases of particularly difficult gastric dissection. A urinary catheter or a nasogastric tube is never used.

Postoperative management and follow-up

In our study, abdominal computed tomography (CT) was routinely performed 2 days after surgery to rule out gastric

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