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Surgery for Obesity and Related Diseases ■ (2018) 00–00

SURGERY FOR OBESITY  
AND RELATED DISEASES

Original article

## Safety and short-term outcomes of laparoscopic sleeve gastrectomy for patients over 65 years old with severe obesity

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Received December 27, 2017; accepted March 1, 2018

### Abstract

**Background:** Laparoscopic sleeve gastrectomy (LSG) is a widely accepted, stand-alone bariatric operation. Data on elderly patients undergoing LSG are scarce.

**Objectives:** The aim of this study was to demonstrate that LSG is safe and effective for patients >65 years old with severe obesity.

**Setting:** Department of Minimally Invasive Digestive Surgery, Antoine-Beclere Hospital, AP-HP, Paris-Saclay University, France.

**Methods:** Prospectively collected data from consecutive patients undergoing LSG were retrospectively analyzed. Patients with >1-year follow-up were included in the analysis for weight loss and co-morbidities evaluation. Quality of life was evaluated using the Short-Form 36 questionnaire.

**Results:** Fifty-four patients >65 years old (range, 65–75 yr) underwent LSG. Median weight was 119 kg, and median body mass index was 43 kg/m<sup>2</sup>. Median duration of surgery was 86.5 minutes. Two patients (3.7%) suffered a gastric staple-line leak, 1 treated by pure endoscopic internal drainage and 1 by relaparoscopy with subsequent endoscopic internal drainage. Mortality was null. Median length of hospital stay was 5 days. Six, 12, and 24 months after LSG, median body mass index decreased significantly to 35, 32.9, and 30.7 kg/m<sup>2</sup>, respectively ( $P < .0001$ ), with mean excess weight loss of 76.3% at 2 years. Type 2 diabetes, hypertension, dyslipidemia, obstructive sleep apnea syndrome, and arthralgia showed statistically significant remission at 1- and 2-year follow-up, while 6 of 8 SF-36 scale scores of quality of life assessment improved significantly.

**Conclusions:** This study suggests that LSG is effective for patients >65 years old, resulting in significant weight loss, co-morbidities remission, and quality of life improvement. Careful patient selection after adequate risk versus benefit evaluation by an expert multidisciplinary team is essential for patient safety and optimal results. (Surg Obes Relat Dis 2018;■:00–00.) © 2018 American Society for Metabolic and Bariatric Surgery. All rights reserved.

### Keywords:

Obesity surgery; Bariatric surgery; Sleeve gastrectomy; Elderly; Laparoscopy

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<https://doi.org/10.1016/j.soard.2018.03.002>

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The proportion of the population >60 years old is increasing worldwide, with an estimated prevalence of 10% to 30% in the European population according to the World Health Organization [1]. Most elderly patients suffer from multiple co-morbid conditions, which are greatly aggravated when severe obesity coexists. Older people with

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a body mass index (BMI)  $>30 \text{ kg/m}^2$  may have higher mortality risks, with the majority of deaths related to cardiovascular disease [2]. Additionally, an increased risk of developing cancer, heart disease, diabetes, lower extremity arthritis, sleep apnea, and stroke is found in elderly obese patients, with all these conditions accelerating the course toward disability [3–5]. Currently, obesity is a disease that has reached epidemic proportions around the world. Consequently, the number of elderly patients with severe obesity is progressively increasing, thus triggering an important health and financial burden for society [6,7].

In the past 2 decades, bariatric surgery has become an increasingly popular form for the treatment of severe obesity [8–10]. Bariatric surgery has been proven to be a safe and effective treatment for obesity with BMI reduction, resolution, or improvement of obesity-related co-morbidities, improved quality of life, and increased life expectancy [11,12]. Currently, laparoscopic sleeve gastrectomy (LSG) has been established as a widely accepted, stand-alone bariatric operation gaining popularity and acceptance among surgeons [13–16]. Reports in the literature on the success and weight loss after LSG have been accumulating for the past few years [10,16,17].

Data on elderly patients undergoing LSG are scarce in the literature, with most studies focusing on patients  $>60$  years old and limited existing data on patients  $>65$  years old [6,7,18–24]. A recent study reported that only 10.1% of all bariatric operations in academic centers were performed on patients aged  $\geq 60$  years [6]. We therefore aimed to demonstrate in a significant population of patients  $>65$  years old with severe obesity that SG is a safe and effective approach regarding short- and mid-term results for weight loss and co-morbidities resolution with a special focus on quality of life.

## Methods

Data from all consecutive patients who underwent LSG in our institution between August 2010 and May 2016 were prospectively collected and retrospectively analyzed after informed consent by patients and institutional review board approval. Before surgery, all patients underwent meticulous evaluation by a multidisciplinary team consisting of an endocrinologist, a gastroenterologist, a psychiatrist, a nutritionist, an anesthesiologist, and a surgeon. Standard investigations were carried out during preoperative follow-up, including esophagogastroduodenoscopy, upper gastrointestinal series, abdominal ultrasonography, polysomnography, and endocrinologic and nutritional evaluations. Patients were eligible for surgery if they had a BMI  $\geq 40 \text{ kg/m}^2$  or a BMI between 35 and  $40 \text{ kg/m}^2$  with significant co-morbidities, according to the French guidelines [25]. Co-morbidities assessed were (1) hypertension: systolic blood pressure  $\geq 140 \text{ mm Hg}$  and/or diastolic blood pressure  $\geq 90 \text{ mm Hg}$  or if patients were on antihypertensive drug

therapy; (2) type 2 diabetes: fasting plasma glucose  $\geq 126 \text{ mg/dL}$  or 2-hour plasma glucose  $\geq 200 \text{ mg/dL}$  during oral glucose tolerance test or patients were on antidiabetic drug with or without insulin therapy; (3) obstructive sleep apnea syndrome: when continuous positive airway pressure was employed after polysomnography assessment; (4) dyslipidemia: fasting high-density lipoprotein  $<50 \text{ mg/dL}$  for women,  $<40 \text{ mg/dL}$  for men, and/or triglycerides  $>150 \text{ mg/dL}$  and/or low-density lipoprotein  $>100 \text{ mg/dL}$  or the use of statins; (5) arthralgia: clinical and radiologic findings. The indication for SG for patients  $>65$  years old was validated during a multidisciplinary staff meeting 1 month before surgery, regardless the age of patients but rather considering their physiologic age. Psychosocial and functional status was preoperatively assessed. Support of family or friends was carefully evaluated. Finally, evaluation by a nutritionist was performed, with boosting of protein intake when necessary to ensure nutrient sufficiency at the time of surgery.

## Operative technique

Since the introduction of LSG in our department, the technique used has been consistent, using a single-incision approach [26]. The first step of the procedure used was the introduction of the multiport single-access device (QuadPort+, Olympus Medical, Nagano, Japan; Octoport, Landanger, Chaumont, France) through a 2- to 4-cm transversal incision, starting 2 fingers left of the midline and 4 fingers below the costal margin. This allowed the simultaneous use of a 10-mm flexible tip laparoscope (Endoeye Flex HD; Olympus, Rungis, France) or a standard 10-mm rigid  $30^\circ$  laparoscope, a double-curved grasper, and a thermofusion device (Ligasure, Medtronic, Boulogne-Billancourt, France; Thunderbeat, Olympus, Rungis, France). Transection of the stomach was done using a 60-mm endoscopic stapler (Endo-GIA Tri-Staple with purple cartridge, Medtronic or Echelon Flex Powered with gold cartridge; Ethicon, Issy-Les-Moulineaux, France) after placement of a 36-Fr orogastric calibration tube. Bioabsorbable staple line reinforcement was used after January 2015 (Seamguard; Gore, Paris, France); reinforcement with sutures or glue and staple-line leakage tests were not performed routinely. The excised gastric specimen was removed through the single-port access, with the trocar's protective skirt preventing parietal contamination. Drainage was not used routinely and was carried out in cases of particularly difficult gastric dissection.

## Follow-up

Postoperative care was applied under appropriate clinical monitoring, and blood count was performed the day after surgery. Every patient had an abdominal computed tomography (CT) scan 2 days after surgery to rule out gastric leak

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