



Original article

Gastric leaks after sleeve gastrectomy: no impact on weight loss, co-morbidities, and satisfaction rates

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Abstract

Background: No data are available concerning the results on weight loss, correction of co-morbidities, and satisfaction rates in patients with healed gastric leak (GL) after sleeve gastrectomy (SG).

Objective: Evaluate weight loss, correction of co-morbidities, and satisfaction rate of patients with healed GL after SG.

Setting: University hospital, France, public practice.

Methods: Between March 2004 and October 2012, all patients managed for GL after SG with a minimum of 1 year follow-up were included. These patients (GL group) were matched in terms of preoperative data and type of surgical procedure (first- or second-line SG) on a 1:2 basis with 74 patients without GL (control group) selected from a population of 899 SGs. Primary endpoint was the weight change over a 1-year period after performing SG. Secondary endpoints were GL data, co-morbidities data, and satisfaction rates 1 year after SG.

Results: The GL group consisted of 37 patients (27 first-line SG [73%]). The mean EWL in the GL group was 52.2% and 68.8% at 6 and 12 months, whereas the mean EWL in the control group was 58.9% and 72.2%, respectively ($P = .12$; $P = .46$). No significant difference was observed between the 2 groups in terms of correction of co-morbidities. At 12 months follow-up, mean BAROS score was 6.02 in the GL group and 7.14 in the control group ($P = .08$). No significant difference was observed between the 2 groups in terms of the SF-36 questionnaire.

Conclusion: Despite the morbidity associated with GL, the results on weight loss, correction of co-morbidities, and satisfaction rates were similar in patients with healed GL and in patients without GL. (Surg Obes Relat Dis 2015;■:00–00.) © 2015 American Society for Metabolic and Bariatric Surgery. All rights reserved.

Keywords:

Sleeve gastrectomy; Gastric leaks; Weight loss; Case-matched study; BAROS score; SF-36 questionnaire

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Roux-en Y gastric bypass [RYGBP]. SG has become increasingly popular because of its apparent technical ease, good results (in terms of weight loss and improvement of co-morbidities) [1], low postoperative complication rate, and low mortality rate of .33% [2]. SG is considered to have a lower

complication rate than DS [3] or RYGBP [4,5] because of the absence of anastomosis [6].

The main complication after SG is GL, with a GL rate of 2.2% according to a recent meta-analysis [7]. The main problem associated with GL is the difficulty of treatment, suggesting that this procedure may be too dangerous [8]. The difficulty of management of this type of complication is reflected by the various types of endoscopic procedures proposed as treatment for GL [9,10] and the absence of adequate material to ensure a significant reduction of gastric leak rates [11,12].

SG has become very popular and is currently the surgical procedure most commonly performed for treatment of morbid obesity in France [13]. It is a relatively short procedure with a mean operating time of 100 minutes [14]. Nevertheless, the complexity of sleeve gastrectomy is probably underestimated and it is wrongly considered to be an easy bariatric surgical technique. With a GL rate of 2.2% after SG, a large number of patients all over the world consequently develop postoperative GL. According to the data of the literature, most of these patients (85%–90%) are cured by an endoscopic procedure [9,15]. However, no data are available concerning patients with healed GL, particularly in terms of the results on weight loss, correction of obesity-related co-morbidities, and quality of life.

The objective of the present study was to evaluate the results of patients with postoperative GL after SG compared with patients undergoing SG with no postoperative complications in terms of weight loss, resolution of co-morbidities, and quality of life 1 year after SG.

Materials and methods

Population

This study was based on retrospective review of a prospective database comprising all patients with GL after SG (GL group) performed in our institution between March 2004 and October 2012.

The SG-GL group was matched 1:2 with another group of patients selected from among 899 patients undergoing first-line or second-line SG (control group) during the same period (i.e., March 2004 to October 2012) in our institution.

Inclusion criteria

Patients included in the study had to meet all of the following criteria: morbid obesity according to the French definition [16], first-line or second-line SG, postoperative GL requiring a reoperation and/or endoscopic procedures, and patients with a minimum follow-up of 12 months after performing SG. Patients with GL after SG and with follow-up < 12 months, GL after other bariatric surgical procedures (gastric banding [GB], duodenal sleeve [DS], and Roux-en-Y gastric bypass [RYGB]), patients undergoing SG with postoperative complications other than GL and

requiring surgical (postoperative bleeding) or endoscopic (gastric stricture) procedures, and patients with gastrobronchial fistula and chronic gastric fistula were excluded (Fig. 1).

Indication for surgery

The indication for bariatric surgery in our institution was validated by a multidisciplinary staff meeting in accordance with French guidelines [16]. All patients attended a surgical consultation and a nutritional and dietetic consultation, and pulmonary, endocrine, and psychological assessments were performed. Screening for hiatus hernia and *Helicobacter pylori* infections was performed gastroscopically. An overnight sleep test was performed to screen for obstructive sleep apnea syndrome (OSA).

Sleeve gastrectomy procedures

The first-line SG technique was described by Dhahri et al. [17]. A 34F bougie was used when stapling the greater curvature of the stomach. Gastric section started 6 cm above the pylorus (antrum). For patients in whom SG was performed between January 2004 and December 2009, stapling was performed with an Endo GIA Universal XL 60 with two 3.5-mm green reloads and then three or four 4.8-mm blue reloads (Covidien France SAS, Elancourt, France). For patients in whom SG was performed between January 2010 and February 2012, Tri-Staple purple reloads (Covidien) were used [18]. A methylene blue test was always performed at the end of the procedure. All patients underwent an upper gastrointestinal tract examination with oral contrast agent (diatrizoic acid) on postoperative day (POD) 1 to check for the absence of complications and to authorize oral refeeding. Between 2004 and 2009, a 10F drain was always left in place along the gastric resection line. Drainage was not used from 2010 onward. The technique for simultaneous gastric banding removal and SG in the same procedure and repeat SG has been described previously [19,20]. Second-line SG was the SG procedure with previous history of bariatric surgery (gastric banding or SG).

Definition and management of gastric leaks

The clinical presentation, time to onset, and site of gastric leaks on the staple line were classified according to the modified U.K. Surgical Infection Study Group definitions [21,22]. The patient's clinical presentation was further described in terms of systemic signs of inflammation (tachycardia [>100 beats/min] and hyperthermia [$>38^{\circ}\text{C}$]), peritonitis (diffuse abdominal tenderness), pulmonary symptoms (cough and expectoration), and intra-abdominal abscess (localized abdominal tenderness). We distinguished between early-onset gastric leakage (from POD 1 to POD 7) and late-onset gastric leakage ($\geq$ POD

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