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Original article

Persistent gastric fistula after sleeve gastrectomy: an analysis of the time between discovery and reoperation

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Abstract

Background: Gastric leak (GL) represents one of the main early-onset postoperative complication of sleeve gastrectomy (SG). Most studies of GL featured short series and no data on the time to reoperation for persistent GL.

Objectives: Characterize the time between discovery of persistent post-SG GL and the implementation of reoperation.

Setting: University hospital, France, public practice.

Methods: All patients treated for post-SG GL between November 2004 and December 2013 were included. The primary efficacy criterion was the time interval between discovery of a persistent GL and reoperation. The secondary efficacy criteria were demographic, surgical, and endoscopic data; mortality rate; time to GL healing; treatment success rate; and risk factors for failure treatment.

Results: Eighty-six patients were treated for post-SG GL. Forty patients (46.5%) had early-onset GL (postoperative day ≤ 7). Two patients (2.3%) presented primary gastrobronchial fistula. Fifty-six patients (70%) underwent immediate reoperation. Endoscopic treatment was required to treat the GL in 92.7% of the cases ($n = 77$). The mortality rate was 1.2% ($n = 1$). The treatment success rate was 89.1%. The median time to healing GL was 84 days (14–423 d). Eighty percent of the GLs had healed 120 days after discovery. After 120 days, the incidence of complications related to GL increased and few additional GLs healed. The only identified risk factor for treatment failure was large retained gastric fundus ($P \leq .05$).

Conclusions: Most cases of GL can be adequately treated by incorporating endoscopic stenting. Surgery for persistent GL should be performed within 120 days of discovery; after this cut-off, the incidence of GL-related complications increases. Large retained gastric fundus is a risk factor for treatment failure and may prompt the surgeon to consider earlier reoperation. (Surg Obes Relat Dis 2015;■:00–00.) © 2015 American Society for Metabolic and Bariatric Surgery. All rights reserved.

Keywords: Sleeve gastrectomy; Gastric leak; Persistent gastric leak; Double pigtail stent; Gastric covered stent; Roux-en-Y gastrojejunal anastomosis

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Along with postoperative hemorrhage, gastric leak (GL) is the main surgical postoperative complication of sleeve gastrectomy (SG). According to a recent meta-analysis, the incidence of this complication is 2.2% [1]. Early-onset and/

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or poorly tolerated GLs may require further reoperation [2]. Ancillary treatment involves endoscopy, with implantation of a coated stent (CS) [3–5], a double pigtail stent (DPS) [6], or both [7] (depending on the series). Additional options include percutaneous radiologic drainage [8] or stricturotomy combined with endoscopic dilation [9,10].

Persistent GL occurs in between 0% and 41% of cases [3–6] and requires reoperation such as total gastrectomy with esophagojejunal anastomosis [11], proximal gastrectomy with esophagojejunal anastomosis [12], Roux-en-Y gastric bypass (RYGB) [13], or Roux-en-Y side-to-side gastrojejunal anastomosis [14].

Most published studies of post-SG GL have been performed in small ($n < 45$) group of patients [3–6]. Furthermore, these studies had several limitations: The management of GL was not standardized, GL healing was not clearly defined and no information on the criteria for performing reoperation for persistent GL (despite endoscopic treatment) was provided.

The objective of the present study was to assess the time interval between discovery of persistent GL and the performance of reoperation (despite optimized endoscopic treatment).

Methods

Population

A retrospective analysis of prospectively gathered data on a group of patients with GL after the performance of primary SG (with no history of bariatric surgery) or revisional SG (with a history of gastric banding, gastric banding removal, and SG in the same procedure), between November 2004 and March 2014, was performed.

Inclusion criteria

Patients included in the study had to meet the following criterion: post-SG GL visualized during an abdominal computed tomography (CT) scan, endoscopy, or surgery.

Exclusion criteria

Patients who underwent bariatric procedures other than SG were excluded from the study. Patients with primary gastrobronchial fistula (GBF) after SG were excluded from the data analysis because the diagnosis of GL was based on pulmonary symptoms (i.e., endoscopic treatment had not failed). Patients with secondary GBF were not excluded because these cases followed on from the failure of endoscopic treatment.

Surgical procedures for SG

Surgical procedures for primary and secondary SGs [15–17] and the related patient management procedures [18] have been described elsewhere.

A 34-gauge French bougie was used when transecting the greater gastric curvature. Gastric resection was initiated 6 cm above the pylorus (in the antrum). For patients having undergone SG between January 2004 and December 2009, stapling was performed using Endo GIA Universal XL 60 (COVIDEN France SAS, Elancourt, France), with 2 4.8-mm green reloads, and then 4 or 5 3.5-mm blue reloads. For patients having undergone SG between January 2010 and December 2013, purple Tri-Staple reloads (COVIDEN France SAS) were used. In the authors' institution, the staple line is not reinforced for first-line SGs. For SGs performed after 2010, the abdominal drain was not left in place. For second-line SG, black Tri-Staple reloads (COVIDEN France SAS) with GORE SEAMGUARD bioabsorbable staple line reinforcement (WL GORE & Associés, Paris, France) for the last 2 staples (in cases of previous gastric banding or cases of gastric banding removal and SG in the same procedure). For repeat SG, black Tri-Staple reloads (COVIDEN France SAS) with GORE SEAMGUARD bioabsorbable staple line reinforcement (WL GORE & Associés) for all stapling. A methylene blue test was always performed at the end of the surgical procedure. All patients underwent an upper gastrointestinal swallow study with oral contrast agent (a gastrografin study test) on postoperative day (POD) 1 or 2, to check for the absence of complications and thus to enable oral refeeding.

These data were not available for SG performed in other institutions.

Definition of GL

The presentation, time to onset, and staple line site of gastric leakage were classified according to the modified UK Surgical Infection Study Group definitions [19,20]. 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 intraabdominal abscess (localized abdominal tenderness). The time to onset after SG was used to differentiate between early-onset gastric leakage (from POD 1 to 7) and delayed-onset gastric leakage (\geq POD 8). The definition for early- versus delayed-onset GL was decided on the authors' experience of GL after the first cases managed for GL. Oral contrast-enhanced abdominal CT was used to determine the site of leakage along the staple line.

Management of GL

All cases of post-SG GL were discussed in a multidisciplinary staff meeting that included bariatric surgeons, a radiologist, an endoscopist, and an intensive care physician. This allowed for the development of a standard protocol for standardized management of post-SG GL, on the basis of leak-related data and the patient's clinical status.

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