ELSEVIER

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

SURGERY FOR OBESITY AND RELATED DISEASES

Original article

The role of endoscopic stents in the management of chronic anastomotic and staple line leaks and chronic strictures after bariatric surgery

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Received August 7, 2013; accepted December 6, 2013

Abstract

Background: The use of endoluminal stents has been proposed for the management of fistulas and anastomotic strictures after bariatric surgery. The objective of our study was to determine the success of endoscopically placed, self-expandable metal stents (SEMS) in bariatric patients specifically with either chronic persistent anastomotic or staple line leaks/fistulas or chronic, persistent anastomotic strictures.

Methods: We treated 21 patients including 5 with chronic staple line leaks/fistulas (4 from the gastric sleeve after biliopancreatic diversion with duodenal switch [BPD/DS] and 1 after removal of an eroding laparoscopic adjustable gastric band) and 16 with chronic anastomotic strictures (15 at the gastrojejunostomy after Roux-en-Y gastric bypass and 1 at the duodenoileal anastomosis after BPD/DS). Patients with early leaks or anastomotic strictures were excluded.

Results: All but one of these patients had been referred to our institution after chronic treatment elsewhere was unsuccessful with prior stent placement for fistulas or multiple endoscopic dilations for strictures. Their bariatric operations had been performed a mean of 386 days beforehand. Stent placement was performed successfully in all patients without complications but was successful in only 4 of 21 patients (19%)—2 with chronic fistulas and 2 with chronic anastomotic strictures. Stent migration occurred in 10 patients (47%); the migrated stents were removed/replaced endoscopically in 7 patients but required elective operative removal in 3 with concomitant correction of the leak, fistula, or anastomotic stricture; none were operated emergently.

Conclusion: Only 4 of 21 patients with a chronic persistent leak or anastomotic stricture were treated definitively using a SEMS. Although endoluminal stents may not lead to resolution of a chronic leak or stricture, SEMS may suppress ongoing sepsis and allow patients to undergo nutritional resuscitation orally before operative correction. (Surg Obes Relat Dis 2014;▮:00–00.)

Keywords: Self-expandable metal stents; Anastomotic strictures; Staple line leaks; Anastomotic leaks; Roux-en-Y gastric bypass; Sleeve gastrectomy

The global epidemic of obesity has resulted in a marked increase in demand for bariatric surgery [1,2]. Currently, Roux-en-Y gastric bypass (RYGB) and, more recently, sleeve gastrectomy (SG), alone or in combination with a duodenal switch/biliopancreatic diversion (DS/BD) are the most commonly performed procedures [3]. With the increasing number of bariatric procedures being performed, postoperative complications, such as anastomotic and staple line leaks and strictures, have become more prevalent [4,5]. The incidence of postoperative anastomotic leaks after

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http://dx.doi.org/10.1016/j.soard.2013.12.018
1550-7289/

RYGB has ranged from .1%–5.6% [4,6–14] and are the second leading cause of death in patients undergoing RYGB [4,7–10,12]. The traditional treatment of anastomotic/staple line leaks is operative, however, endoscopic placement of covered, self-expandable metal stents (SEMS) has become a common treatment for early leaks [15,16]. Recently, SEMS have also been suggested for chronic leaks, especially after SG [17,18]. Other anastomotic and staple line problems include stricture formation often subsequent to a prior leak or anastomotic ulceration. Endoscopic treatment of these strictures includes dilation, with or without SEMS placement, in an attempt to prevent restenosis [15].

Our anecdotal impression with the use of endoscopically placed SEMS for the treatment of chronic persistent leaks and chronic persistent anastomotic strictures seemed unsatisfactory. Therefore, we studied retrospectively our outcomes in treating these late complications of bariatric surgery with SEMS. We specifically did not include patients with early leaks, because we and others [15,16] have found SEMS to be quite successful. Our hypothesis was that definitive treatment with endoscopic stents in the select subgroup of patients with chronic persistent leaks and chronic persistent anastomotic strictures was unsatisfactory and rarely successful.

Methods

We performed a retrospective review of all patients who underwent placement of an endoluminal covered SEMS from 2001–2010 specifically for chronic leaks and chronic strictures complicating bariatric surgery using an institutional endoscopic database and electronic medical records. Multiple patients treated for leaks in the early postoperative period (<2 wk) were specifically excluded, and we only included patients referred to us with chronic persistent anastomotic staple line leaks or patients with chronic persistent anastomotic strictures or persistent staple line strictures after SG. Data were abstracted for age, sex, type of complication (anastomotic leak after RYGB, staple line leak after SG, or late anastomotic stricture after RYGB or SG), time from bariatric operation to onset of complication, number and type of prior endoscopic sessions, stent-related adverse events, and clinical success (defined as resolution of the postbariatric complication using stent therapy and without the need for operative revision). Follow-up was completed until the complication resolved.

Results

A total of 21 patients were identified who underwent endoscopic SEMS placement for treatment of chronic anastomotic or staple line leaks and for chronic, persistent anastomotic strictures. The cohort included 16 women and 5 men with a mean age of 51 years (range 36–71 yr). The bariatric surgical procedures were 15 (71%) RYGB, 5 (24%) DS/BD, and 1 (5%) laparoscopic adjustable gastric band; 11 of the 21 patients had already undergone some type of revisionary operation before endoluminal stent placement. Twenty of the 21 patients were referred to the Mayo clinic at a mean of 386 days (range 11–1875 d) after the initial bariatric procedure and had been managed unsuccessfully locally; only one of these patients underwent initial bariatric surgery at our institution.

The primary indications for stent placement were fistulas (4 gastrocutaneous and 1 distal esophagopleural) and strictures (15 gastrojejunal after RYGB and 1 duodenoileal after DS/BD). In 4 of the 5 patients with chronic leaks, stents with or without fibrin glue injection had been placed without success before referral to our institution. Before referral to the Mayo clinic, 8 of the 16 patients with chronic persistent strictures had undergone multiple attempts to manage anastomotic strictures with endoscopic dilation and stent placement.

At the Mayo clinic, an endoscopy was performed as an initial assessment. For selected patients with chronic anastomotic strictures, an endoluminal stent was placed after endoscopic dilation in an attempt to improve stricture resolution and to allow for oral nutrition. Several of the patients were malnourished and required nutritional resuscitation before planned definitive operative correction. The stents allowed oral enteral nutritional resuscitation rather than a nasoenteric tube or total parenteral nutrition. In several other patients, an attempt at endoscopic dilation with postdilation placement of a SEMS was decided on with the thought at that time that the SEMS might prevent restricturing.

Stents were placed under endoscopic and fluoroscopic guidance using moderate sedation or anesthesia support. The types of SEMS, both partially and fully covered, included the Alimaxx (Merit Medical Systems, Merit Endotek, South Jordan, UT, USA), WallFlex (Boston Scientific Endoscopy, Natick, MA, USA), and Evolution (Cook Medical, Winston-Salem, NC, USA). There were no immediate adverse events after stent placement, specifically no perforations or hemorrhage. Stents remained in place for a mean of 65 days (range 6–194 d). This wide range of SEMS duration varied with patient request, referring physician request, need for nutritional resuscitation, and difficulties with the distance patients needed to travel for further therapy. Endoscopic stent removal, repositioning, and replacement were required in 4 (19%) patients; 2 patients required placement of a second stent in an attempt to fully cover or control the fistula. Distal stent migration occurred in 10 patients (47%) (Fig. 1). Seven stents were retrieved endoscopically, but 3 stents required elective operative removal (none emergently) from the Roux limb, small bowel, and colon due to distal migration; operative revision of the stricture was performed during these operations.