



VIDEO SUBMISSION

Gastrogastric Fistula: an Unusual Cause for Severe Bile Reflux Following Conversion of Sleeve Gastrectomy to One Anastomosis Gastric Bypass

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Published online: 4 May 2018
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Abstract

Introduction One anastomosis gastric bypass/mini-gastric bypass (OAGB/MGB) was first described in 2001 as a safe and effective procedure. It has been gaining popularity worldwide. Multiple authors have reported the need to re-operate on patients for bile reflux. We report a patient with severe bile reflux after laparoscopic conversion of sleeve gastrectomy (LSG) to OAGB/MGB.

Methods A 33-year-old patient underwent a LSG in 2014. Postoperatively, she developed severe gastroesophageal acid reflux. In 2016, she underwent conversion of LSG to OAGB/MGB at the original institution for the treatment of her reflux symptoms. In 2017, she presented to us with epigastric pain, worsening reflux symptoms, steatorrhea, hypoproteinemia (6 g/dl), and body mass index of 25 kg/m². Preoperative endoscopy revealed bile reflux, suture bezoar, and ulceration at the anastomosis.

Technique Laparoscopic exploration started by identifying the anatomy and measuring the lengths of the biliopancreatic limb (350 cm) and the common channel (450 cm). Upon dissecting the pouch, a gastrogastric fistula extending from the antrum to the pouch was encountered. This was confirmed with intraoperative endoscopy with bile refluxing to the pouch. The fistula, antrum, and part of the pouch were resected. The patient was converted to Roux-en-Y gastric bypass. She had an uneventful postoperative recovery. At 3 months of follow-up, her weight was stable and her steatorrhea resolved.

Conclusion Patients with bile reflux after OAGB/MGB need a high index of suspicion to detect unusual causes. Gastrogastric fistula is an unusual etiology of bile reflux that was never reported in the literature previously.

Keywords Gastrogastric fistula after one anastomosis gastric bypass

One anastomosis gastric bypass/mini-gastric bypass (OAGB/MGB) was first described in 2001 by Rutledge as a safe, effective procedure that meets the criteria of an “ideal” weight loss operation [1]. The procedure has been gaining popularity worldwide especially in the Asia-Pacific and Middle East regions [2]. Because OAGB/MGB involves a loop gastrojejunostomy, concerns over long-term

consequences of bile reflux gastritis and esophagitis were raised. Although the risk is reported to be low in published series [3–6], multiple authors have reported the need to re-operate on multiple patients for bile reflux [3–9]. We report a patient that presented to our institution with severe bile reflux after laparoscopic conversion of sleeve gastrectomy to OAGB/MGB.

Electronic supplementary material The online version of this article (<https://doi.org/10.1007/s11695-018-3288-7>) contains supplementary material, which is available to authorized users.

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History

A 33-year-old patient was referred to our institution complaining of epigastric pain and reflux symptoms. In 2014, she underwent a laparoscopic sleeve gastrectomy (preoperative body mass index (BMI) was 38). Postoperatively, she developed severe gastroesophageal acid reflux not fully controlled with maximum medical therapy. In 2016, she underwent conversion to OAGB/MGB at the original institution for the treatment of her reflux

symptoms and her BMI was 28 kg/m² at the time of conversion to OAGB/MGB. Postoperatively, she had worsening of reflux symptoms that were not responding to proton pump inhibitors. In 2017, she presented to our institution and previous medical records were not available. She was complaining of epigastric pain, worsening reflux symptoms, and steatorrhea (six times/day) after conversion of laparoscopic conversion of sleeve gastrectomy (LSG) to OAGB/MGB. Her laboratory workup revealed hypoproteinemia (6 g/dl), and her Hb A1C was 4.0%. A preoperative contrast study was not performed, but endoscopy revealed severe bile reflux, suture bezoar (Silk Sutures), inflammation, and ulceration at the anastomosis. She was optimized preoperatively with oral protein supplements, but her symptoms did not improve with conservative management.

Technique

Trocars were placed as described by Higa et al. [10]. After establishing pneumoperitoneum, the laparoscopic exploration started by identifying the anatomy and measuring the lengths of the biliopancreatic (BPL) limb and the common channel (CC). The BP limb was 350 cm and the CC was 450 m (44% of her intestine was bypassed). This is longer than usual as most surgeons would bypass 150 to 200 cm or one third of the total small bowel length.

Next, adhesions between the liver and the pouch were taken down, the hiatus was dissected, and a hiatal hernia was repaired. The patient had a short pouch and loop of jejunum at the gastrojejunostomy was transected without compromising the lumen. Upon dissecting the pouch from the antrum of the remnant sleeve gastrectomy stomach (s/p conversion of LSG to OAGB/MGB), a gastrogastric fistula extending from the antrum to the pouch was encountered. This was confirmed with intraoperative endoscopy through which bile may have been refluxing to the pouch.

The fistula tract was skeletonized and resected along with the antrum and part of the pouch (we trimmed the pouch). The patient was converted to Roux-en-Y gastric bypass (RYGB) with 30-cm BPL limb, and 100-cm Roux limb in an antecolic antegastric fashion was performed, with closure of all mesenteric spaces and a two-layer hand-sewn gastrojejunostomy. Intraoperative air leak test was performed and it was negative.

She had an uneventful postoperative recovery and was discharged home on the second postoperative day. At 3 months of follow-up, her weight is stable and her steatorrhea resolved. The epigastric pain and reflux resolved and she is off all medications except the standard postoperative vitamins.

Discussion

This patient underwent conversion of LSG to OAGB/MGB to treat gastroesophageal acid reflux (GERD). Recent reports have shown that GERD can occur in the long term in up to 50% of patients and Barrett's esophagitis in 15–17% of patients 8–10 years after LSG [10–14]. Since her BMI was 28 kg/m² at the time of conversion to OAGB/MGB, it would have been most appropriate for her to undergo objective testing for GERD such as 24 pH testing followed by RYGB if there was objective evidence of GERD. Other options could have included endoscopic options [15, 16]. In addition, at a BMI of 27 kg/m², conversion to a malabsorptive procedure such as OAGB/MGB is not appropriate. Furthermore, the length of OAGB/MGB BPL was longer than usual at 350 cm. Studies have shown that BPL length longer than 200 cm in OAGB/MGB is associated with more weight loss and higher incidence of protein calorie malnutrition and need for revision or reversal of OAGB/MGB [17–20].

The incidence of long-term bile reflux after OAGB/MGB has been reported to range from 0.4 to 4% [3–6, 21–23]. Musella et al. and Carbajo and colleagues reported that all patients in their series were managed conservatively and none required surgical intervention for bile reflux [20–22]. Other authors reported several patients requiring revisional surgeries for bile reflux. Noun and colleagues reported that 0.4% of their patients required conversion to RYGB for bile reflux while Bruzzi et al. reported a 1.6% conversion rate to RNY for bile reflux [5, 20]. Musella in a more recent publication reported that 12 of 28 patients who developed postoperative duodenogastroesophageal reflux required surgical intervention, options included conversion to RYGB, and laparoscopic Braun enteroenterostomy [4].

The technique of OAGB/MGB involves forming a long narrow pouch to avoid the complication of bile reflux gastritis [8, 9, 19]. Hence, a patient with a short pouch, OAGB/MGB as a revisional procedure after a failed restrictive procedure, and preexisting gastroesophageal reflux all seem to be associated with higher percentage of postoperative bile reflux requiring surgical intervention [4–9, 21]. Our patient had most of these risk factors as she had a short pouch and preexisting acid reflux, and her procedure was a revisional procedure.

The surgical choices we had included were transection of the BPL only and re-anastomosis downstream, conversion to RYGB, or a Braun enteroenterostomy. We elected to convert her to RYGB especially after the recent report from Nimeri et al. of a failed Braun in controlling bile reflux after an OAGB/MGB requiring conversion to RYGB [9]. In addition, if we had elected to do a Braun or just divide the afferent limb and add a jejunojejunostomy, we would have not recognized the gastrogastric fistula which was refluxing bile into the pouch as we discovered this upon dissecting the pouch in

preparation to transect the gastrojejunostomy for conversion to RYGB.

Conclusion

Patients after bile reflux after OAGB/MGB need a high index of suspicion and may require operative exploration to detect unusual causes such as gastrogastic fistula. Gastrogastic fistula is an unusual etiology of bile reflux after OAGB/MGB that was never reported in the literature previously. Conversion to RYGB with revision of the gastrojejunostomy is safe and effective.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

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