



Case report

Gastrojejunal fistula: case report of a rare late complication of laparoscopic Roux-en-Y gastric bypass and review of the literature

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ABSTRACT

Introduction: Laparoscopic Roux-en-Y gastric bypass (LRYGB) is known as the weight loss surgery to which other bariatric procedures are compared. While morbidity and mortality of this procedure are low, serious complications do exist which can be life-threatening and sometimes require surgical correction.

Case presentation: A 63-year-old woman underwent LRYGB outside of the United States, later complicated by biliary colic treated with cholecystectomy and upper gastrointestinal bleeding secondary to *H. pylori*-related ulcer at her gastrojejunostomy. Following adequate treatment of the patient's marginal ulcer, the patient experienced several months of progressive severe abdominal pain, frequent vomiting and diarrhea, and unintentional weight loss refractory to pharmacologic therapy. The patient underwent multiple medical and endoscopic evaluations unrevealing of an organic cause of her symptoms. At presentation, the patient was found to be profoundly weak, dehydrated and malnourished with metabolic derangements and was subsequently diagnosed with a gastrojejunal fistula via upper endoscopy and radiography. We provided excluded stomach gastrostomy tube feeding to the patient for three months to improve the patient's nutritional status before definitive surgical correction was successfully performed.

Discussion: Large bowel fistulas are a rare and highly morbid late complication following LRYGB and are likely secondary to marginal ulcers and/or instrumentation such as endoscopy. Surgery represents the definitive treatment.

Conclusion: LRYGB is typically a safe and effective intervention for obesity. Large bowel fistulas are rare complications following this surgery. We highlight difficulties in diagnosing and treating this condition.

1. Introduction

Laparoscopic Roux-en-Y gastric bypass (LRYGB) is known as the gold standard weight loss surgery to which other bariatric procedures are compared. Improvements in surgical techniques and perioperative care have led to decreased morbidity and mortality in recent decades [1–3]. Morbidity and mortality appears to be higher among elderly patients (>60 years old at time of surgery) [2,4]. Early perioperative complications of LRYGB include anastomotic leaks, hemorrhage, deep venous thrombosis and venous thromboembolism, and cardiovascular and pulmonary complications such as pneumonia [5,6]. Specific risks of these complications are affected by patient comorbidities, technical factors, and surgeon expertise [7–10]. Reported late (>30 day)

complications of LRYGB are varied and include gastric remnant distension, failure to lose weight/weight regain, stomal stenosis, marginal ulcers, incisional and internal hernias, cholelithiasis, short bowel syndrome, dumping syndrome, small bowel obstruction, nephrolithiasis, gastro-gastric fistulae, and metabolic derangements including micronutrient deficiency, hyperammonemia and hypoglycemia [11,12].

In this case report we describe a patient who presented with profound weight loss and weakness to our tertiary academic medical center several months following LRYGB at another institution. Despite a previous unrevealing endoscopic and medical investigation, the patient was diagnosed with a gastrojejunal fistula (GJCF), which was eventually surgically corrected. Recommended treatment for this type of

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complication is surgical, which may be staged, following correction of metabolic derangements and malnutrition if present [13–15]. We present the following case in accordance with SCARE reporting guidelines [16] and have provided a completed checklist.

2. Presentation of case

A 63-year-old female with past medical history of diabetes and morbid obesity who presented to the hospital emergency department complaining of 5-month history of nausea, watery diarrhea following meals, weight loss of 15 kg, profound weakness and lower extremity edema. Her recent medical history was most notable for a previous laparoscopic Roux-en-Y gastric bypass (LRYGB) ten months prior.

Prior to presentation, the patient initially underwent LRYGB in Mexico after she was denied insurance coverage for surgery in the United States. The patient felt well with achieved weight loss until 2 months following LRYGB, when she developed postprandial right upper quadrant pain. She was diagnosed with biliary colic without stones and was treated with laparoscopic cholecystectomy in her home state. She endorsed continued weight loss totaling 45 kg following LRYGB but then experienced upper gastrointestinal bleed 3 months prior to presentation at our institution. Upper endoscopy at that time revealed a small hiatal hernia, normal Roux-en-Y anatomy and an ulcerated gastrojejunal (GJ) anastomosis which was biopsied and returned positive for *H. pylori*.

The patient was initiated on triple therapy but soon thereafter began to experience diarrhea almost immediately with any oral intake, which continued after completion of antibiotics. Stools were watery, loose, non-bloody and non-fatty but occasionally appeared undigested. The patient also complained of epigastric abdominal pain with meals radiating to bilateral lower abdominal quadrants, with occasional nausea and vomit that smelled of stool. After a primary care visit, the patient was initiated on antidiarrheals including diphenoxylate/atropine and loperamide with minimal benefit. Patient was again referred to a gastroenterologist where she had a negative workup including stool studies for *C. difficile*, *H. pylori* and *Giardia lamblia* as well as colonoscopy with biopsies of colon and terminal ileum negative for microscopic colitis and inflammatory bowel disease.

The patient was then referred to the gastroenterology (GI) department at our institution. Her outpatient presentation was concerning for a protein-losing enteropathy versus complication from LRYGB; labs results revealed anemia consistent with anemia of chronic disease (Hgb 9.4 g/dL, MCV 91 fL/cell, TIBC 92 dL, 100% saturation Fe/TIBC, transferrin 73.7 mg/dL) and a negative GI PCR panel. She was scheduled for repeat outpatient upper endoscopy one month later but in the meantime had multiple emergency room visits at her local hospital for dehydration and pre-syncope episodes requiring intravenous (IV) fluid resuscitation. She eventually presented to our institution emergency department (ED) with the previously described symptoms and inability to tolerate per oral (PO) intake.

In the ED, the patient's vitals were weight 61.3 kg, BP 100/75, HR 94, RR 18, Temp 37.1, SpO₂ 100%. On physical exam, heart and lungs were unremarkable, abdomen was soft, non-distended, with epigastric tenderness without frank peritonitis. Labs demonstrated persistent anemia with hemoglobin 9.3 g/dL, hypokalemia to 2.7 mEq/L, hypocalcemia to 7.4 mg/dL, magnesium 1.7 mEq/L, total protein 4.8 g/dL with albumin 2.1 g/dL. White blood cell count, troponin, lipase, bilirubin and liver function tests were within normal limits and electrocardiogram was performed without changes. A CT scan of the abdomen and pelvis with contrast was performed in the ED and demonstrated gastritis with diffuse bowel wall edema, hepatic steatosis and bilateral pleural effusions. The patient was admitted for severe malnutrition and electrolyte repletion after failed PO challenge with diarrhea immediately following ingestion and GI was consulted. She was given a clear diet as tolerated and esophagogastroduodenoscopy (EGD) was performed the following day.

During EGD, the esophagus was normal. There was a small

superficial erosion near the GJ anastomosis; random gastric pouch biopsies returned negative for *H. pylori*. Two gastro-colonic limbs originating from the gastric pouch were visualized with yellow stool, one limb ending in the cecum and the other limb extending into the transverse colon and distally (Fig. 1). Endoscopy was completed with deep intubation of Roux limb, with random biopsies obtained which were normal. During endoscopy, contrast was injected into the colonic limbs and a follow-up abdominal radiograph 2 h following endoscopy demonstrated contrast throughout the large bowel, confirming by radiography a gastrocolic fistula (Fig. 2). GI surgery was consulted for further evaluation.

The surgical team evaluated the patient and opted for 3 days of total parenteral nutrition before the patient was taken to the OR and an excluded stomach gastrostomy tube (GT) was placed for nutritional optimization. The patient tolerated the procedure well. Tube feeds were started post-operative day (POD) 1, and the patient was discharged on POD 4, and the patient's serum albumin improved from 1.2 to 2.8 g/dL over three months.

Surgical correction was performed via minimally-invasive technique using robotic assistance. Intraoperatively, the gastrojejunostomy was overlying and fused to the transverse colon (Fig. 3A). A smaller gastric pouch was made by stapling above the fistula. Adhesiolysis was performed between the Roux limb and the excluded stomach. The Roux limb was divided beneath the transverse colon to isolate the GJCF (Fig. 3B). The vascularity to the pouch was separated from the excluded stomach. The fistula was lifted and sharply dissected off the colon using scissors (Fig. 3C). The colotomy was closed in two layers and covered with an omental leaf to prevent exposure of the suture line to the gastrojejunostomy. After forming a stapled gastrojejunostomy, a 34-French Ewald tube was passed and the common was enterotomy closed in two layers. The mesentery defect was then closed. The new Roux limb was measured to be 80 cm. The G-tube was again identified in the excluded stomach. The specimen was extracted, the port sites were closed, and the patient was then awakened and taken to the postoperative suite in stable fashion. The patient was discharged on POD 5 after advancement to her home tube feeding regimen. In follow-up clinic, the patient was pleased that her pain was well-controlled, she was ambulatory and tolerating a pureed diet in addition to her continued GT feeds. Her diarrhea had improved to one bowel movement per day, and her albumin level had improved to 3.8 g/dL. Her GT was removed in clinic, and she was instructed to gradually advance her diet. Her care is ongoing at the time of publication.

3. Discussion

Historically, GJCF have been described as an unusual complication secondary to peptic ulcer disease, Crohn's disease, and stomach and colon cancer [15]. Large bowel fistulas following bariatric surgery have been more frequently reported following sleeve gastrectomy (versus Roux-en-Y gastric bypass) in association with staple line leaks [17,18]. In our literature review, only one case report of a gastrocolic fistula and one case of a jejunocolic fistula following LRYGB have been published [13,19].

Diagnosis of GJCF can be made via barium enema, endoscopy, or CT scan [14]. Definitive treatment for GJCF is surgical, although options range from single-stage to 2–3 staged operations [14,15]. Depending on fistula size and location, endoscopic closure may be possible. Single-stage en-bloc revisions are preferred in patients who have amenable nutritional status, but TPN or tube enteral feeding should be considered in patients presenting with malnutrition as in this case [14]. Malignancy should be excluded prior to surgery.

This case underscores that while several other etiologies may have explained many of this patient's symptoms, the complaints of feculent emesis and undigested-appearing stool immediately following oral intake should raise concern for a surgical complication in a patient with a marginal ulcer following LRYGB.

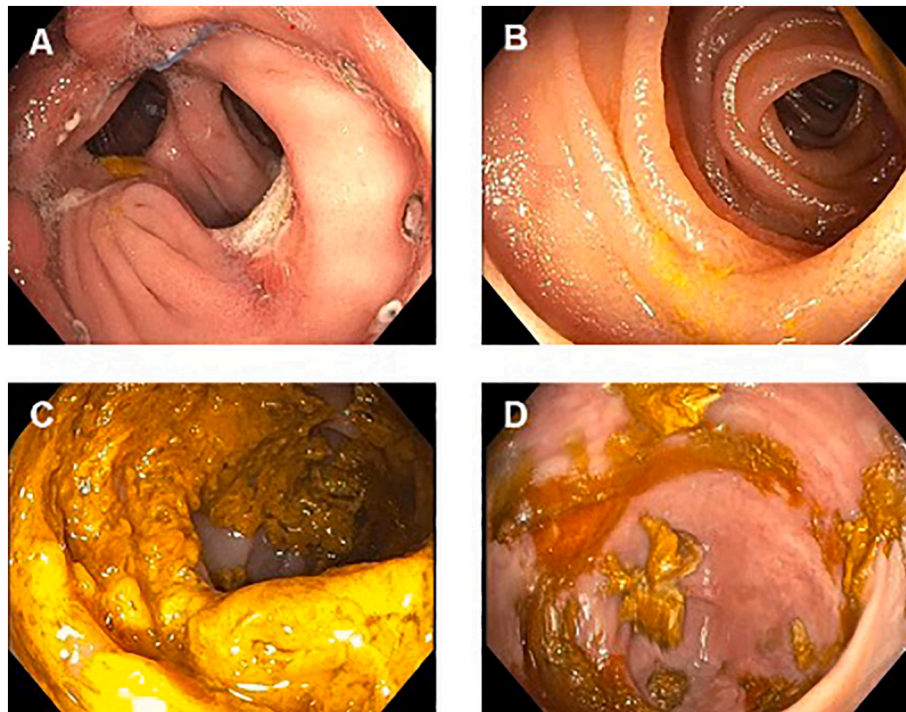


Fig. 1. Images from upper endoscopy at presentation. A) Three limbs visualized originating from the distal gastric pouch; B) Roux limb; C) Stool visualized in the transverse colon; D) Cecum.



Fig. 2. Abdominal radiograph 2 h post-EGD with contrast seen throughout the colon.

4. Conclusion

LRYGB is typically a safe and effective surgery in the treatment of obesity and related comorbidities. Despite having a thorough negative workup for medical or structural causes of her symptoms prior to presentation, this patient was found to have a rare large bowel fistula as a complication of her previous LRYGB. This report adds experience of the challenges of diagnosing and treating patients with this condition.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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Ethical approval

No ethical committee approval was required for this case report.

Author contribution

Daniel Gehle: Drafted the manuscript, created figures and conducted literature review.

Rana Pullatt: Operated on the patient, edited manuscript and figures.

Puja Elias: Performed endoscopy on the patient, edited the manuscript and figures.

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N/A

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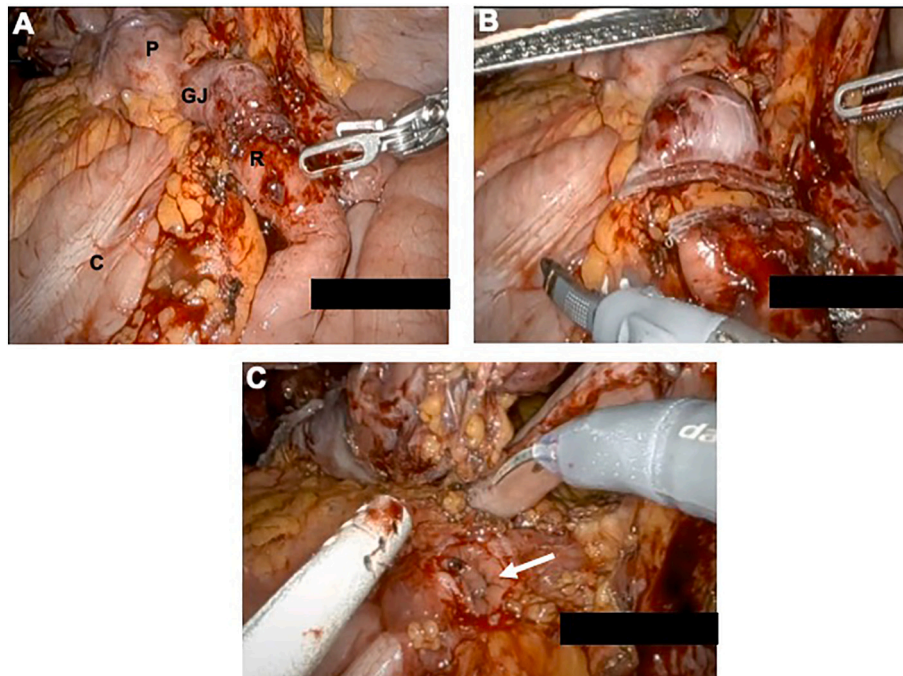


Fig. 3. Images of fistulous anatomy from video recording of surgical correction. A) Gastric pouch (P) and Roux limb (R) visualized with gastrojejunostomy (GJ) overlying transverse colon (C). B) Following division of the Roux limb distal to the fistula. C) Colotomy (arrow) is visualized after sharp dissection of fistula off of the transverse colon.

Declaration of competing interest

None to disclose.

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