



Case report

Retrograde intussusception of jejunojejunostomy after Roux-En-Y gastric bypass leading to small bowel obstruction – Case report of a rare and serious complication

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ABSTRACT

Introduction and importance: Roux-en-Y gastric bypass (RYGB) is the second most common bariatric procedure performed in the United States. Intussusception post RYGB is a very rare complication that usually presents with vague abdominal symptoms and often leads to partial or complete small bowel obstruction. While it usually occurs on average 36 months postoperatively, we present here a case 32 years after open Roux-En-Y gastric bypass.

Case presentation: A 63-year-old Caucasian female who underwent an uncomplicated open RYGB 32 years prior presented to the emergency department (ED) with a two-day history of acute-onset, intermittent and severe abdominal pain in the left lower quadrant with radiation to the left flank. Clinical symptoms, physical exam, laboratory, and imaging results revealed retrograde intussusception into the jejunojejunostomy (JJ) with small bowel obstruction. She underwent emergency laparoscopy which was converted to a midline laparotomy. En bloc resection of the JJ was performed with two anastomoses reconstruction. She was successfully discharged home on post-operative day four.

Clinical discussion: Female patients who experience very good weight loss post RYGB are prone to developing retrograde intussusception. The pathophysiology remains unknown but bowel dysmotility from ectopic pacesetters has been implicated. Symptoms are usually nonspecific, and laparoscopy should be attempted in stable patients. Prompt surgical intervention is warranted. Resection of the JJ with re-anastomoses has demonstrated the lowest risk of recurrence.

Conclusion: Retrograde intussusception after RYGB is a rare complication with the potential for devastating consequences. Even without a clear lead point on imaging, we recommend a low threshold for surgical intervention.

1. Introduction

Roux-en-Y gastric bypass (RYGB) is the second most common procedure performed in the United States for the surgical management of morbid obesity, only behind sleeve gastrectomy [1]. Intussusception at the jejunojejunostomy (JJ) site is a very rare complication of RYGB. In the general population, intussusception usually occurs in the antegrade (peristaltic) fashion [2]. However, a retrograde (antiperistaltic) intussusception is most commonly seen in post-RYGB patients [2]. The

common channel usually telescopes in a retrograde manner into the jejunojejunostomy resulting in obstruction of the Roux and/or the biliopancreatic limbs.

The reported incidence ranges from 0.07 % to 0.6 % [3,4]. It is commonly seen in female patients who experienced significant weight loss post RYGB [2]. With the very low incidence of this complication, there is currently no consensus on ideal management of this patient population. The median time to presentation for most reported cases is 36 months post bypass surgery [2]. We report here a patient with

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retrograde intussusception at the JJ resulting in small bowel obstruction 32 years after an uncomplicated open Roux-En-Y gastric bypass. It is reported in conformity with the 2020 SCARE guidelines [5].

2. Case presentation

We present the case of a 63-year-old Caucasian female who presented to the emergency department of a community hospital with 24 to 48-hour history of worsening left lower quadrant abdominal pain, radiating to the left flank. Pain was described as sharp, intermittent, and severe in intensity, and rated 10/10 on pain scale. In addition, she complained of nausea, but denied emesis, fever, or chills. She also reported a history of chronic constipation for the last seven years that had worsened in the last six months. Her past medical history included history of urinary tract infection and hypertension. Surgical history included two caesarean sections, laparoscopic cholecystectomy, and an open Roux-en-Y gastric bypass performed 32 years ago.

On physical examination, she was afebrile with vital signs within normal limits. Her abdomen was non-distended but was tender to palpation in the left lower quadrant, left flank and left costovertebral angle. There was no involuntary guarding or peritonitis. Since undergoing open RYGB, she had lost approximately 48 % of her body weight, going from a body mass index (BMI) of 42.7 kg/m² to 22.3 kg/m². This means she went from 226 pounds to 118 pounds, with her height being 5'1". Laboratory results, including a complete blood count, complete metabolic panel, and serum lipase, were within normal limits except for a BUN of 29 mg/dL and Lipase of 227 U/L.

Given her unremitting abdominal pain, a computed tomography (CT) scan of the abdomen and pelvis with intravenous contrast was obtained (Fig. 1). This revealed an entero-enteric intussusception in the left lower quadrant measuring nine centimeters in length, with dilatation of proximal small bowel up to four-point-seven centimeters. There was also swirling haziness of mesentery within the suspected intussusception.

The patient was resuscitated with intravenous fluids, received appropriate pain medications as well as placement of a nasogastric tube. The general surgery service was consulted, and she was taken emergently to the operating room. An acute care surgeon with 10 years experienced performed the procedure. Laparoscopy was initiated with lysis of adhesions. The small bowel appeared well perfused, very dilated but there was no free intraabdominal fluid. The common channel was identified distal to the intussuscepted area and multiple attempts at

laparoscopic reduction were made, without success (Fig. 2). We then converted to a midline laparotomy and fully eviscerated the small bowel (Fig. 3).

Manual reduction was again attempted by providing gentle traction on the common channel (intussusceptum) while simultaneously *milking* from the proximally dilated Roux limb (intussusciptens). This was unsuccessful. We therefore proceeded to resect, en bloc, the entire jejunojunojejunostomy containing the intussusception using linear staplers.

A re-anastomosis of the dilated Roux and biliopancreatic limbs to the distal common channel was performed. First, we anastomosed the Roux limb to the common channel in an isoperistaltic, side-to-side, stapled fashion. The biliopancreatic limb was similarly anastomosed to the common channel approximately 15 cm distally. Both enterotomies were stapled closed and the mesenteric defects closed with absorbable suture.

Pathology revealed mucosal necrosis of the intussuscepted small bowel with submucosal edema. The patient had an uneventful post-operative course with pain well controlled, diet advanced without issues, and a return of bowel function observed. She was safely discharged home on post-operative day four. Patient was seen in the outpatient clinic three weeks later and has been doing very well without any complications.

3. Discussion

With the growing obesity epidemic in the United States, including in pediatric populations, bariatric procedures are increasingly utilized in the management of morbid obesity, and its associated complications. Of these procedures, RYGB is the second most performed, after being supplanted by the sleeve gastrectomy. Complications from an open or laparoscopic RYGB include internal hernias, bowel obstructions, jejunojunal anastomotic stricture/stenosis and dumping syndrome. However, intussusception is a very rare complication, and occurs almost exclusively in a retrograde fashion and at the jejunojunojejunostomy (JJ) site [6]. It is a surgical emergency that requires prompt identification and operative management.

Intussusception in the general adult population is usually antegrade (peristaltic) and the pathophysiology of the almost exclusively retrograde (antiperistaltic) nature in post RYGB patients remains unclear. Bowel dysmotility has been hypothesized as a leading cause. Specifically, in transecting through the jejunum and re-anastomosing, the duodenum, which is responsible for peristaltic pacesettering, is bypassed. This pacesettering is typically activated when food passes the duodenum.

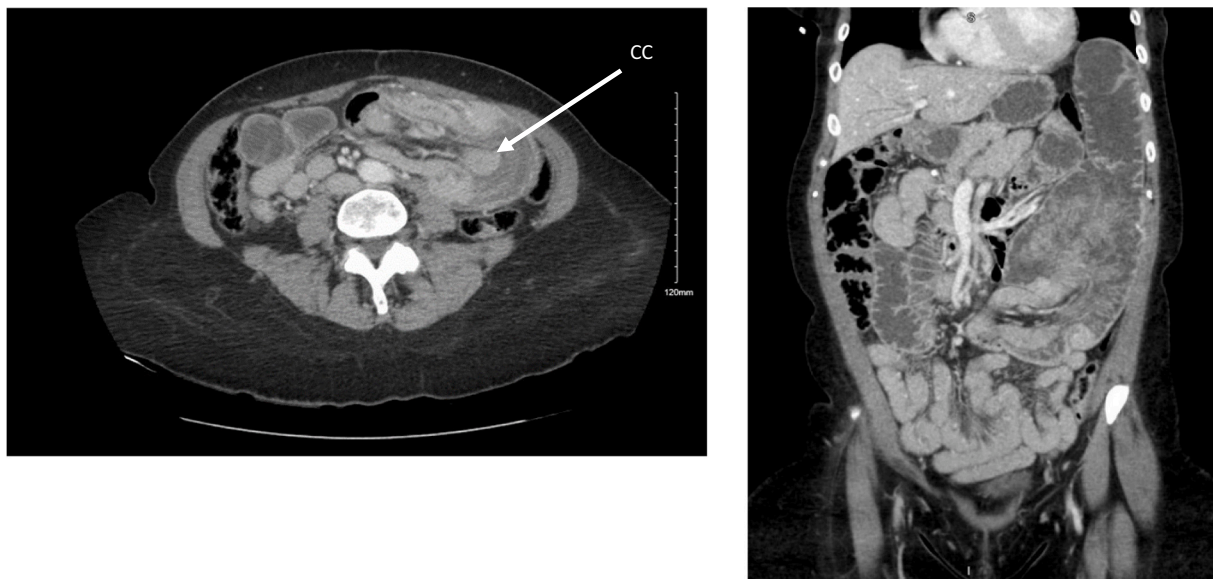


Fig. 1. LLQ intussusception of common channel (CC). Axial (A) and Coronal (B).

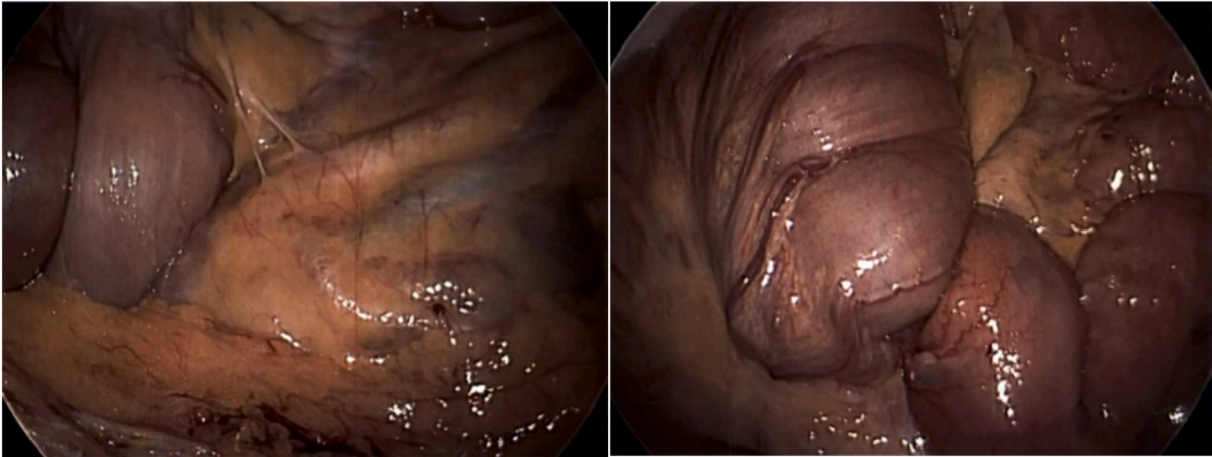


Fig. 2. Laparoscopic pictures of LLQ intussusception.

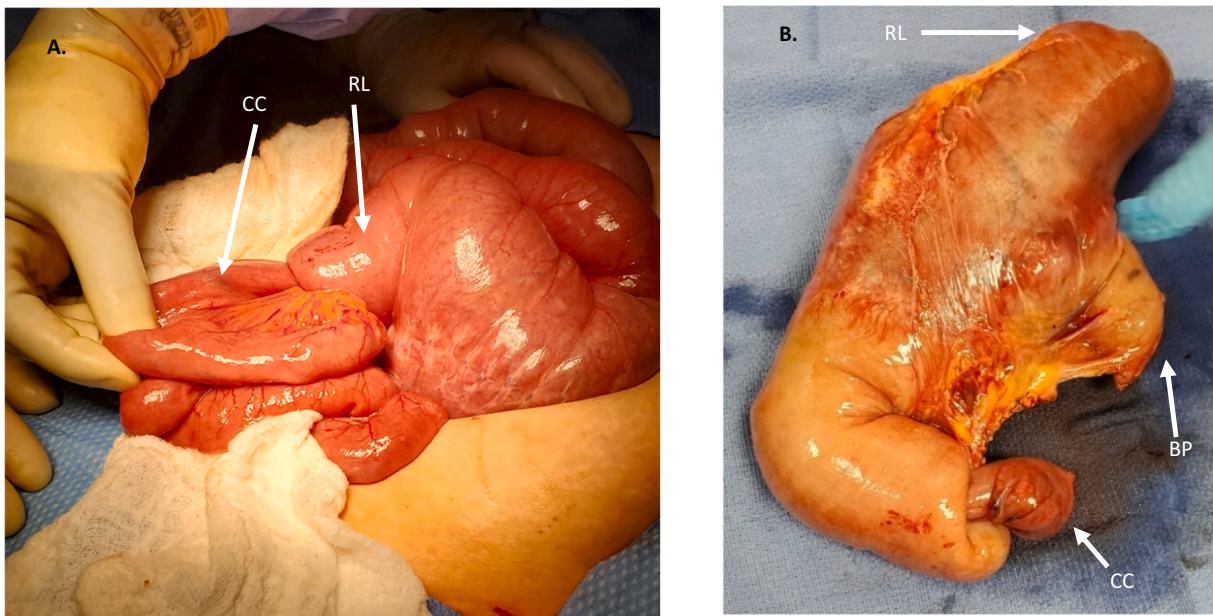


Fig. 3. Retrograde intussusception of the common channel (CC) into the Roux limb (RL) and biliopancreatic (BP) limb. (A) In-situ (B) Resected specimen.

By bypassing the duodenum, it allows for foci of ectopic pacemakers along the jejunum, ultimately leading to dysmotility and the potential for retrograde intussusception [7,8].

Retrograde intussusception is classically seen in female patients who experienced robust weight loss. It is also thought to be due to loss of mesenteric fat resulting in hypermobility of the fixed mesentery of the bypassed jejunum [9]. Our patient, with a recorded 48 % weight loss post RYGB, is consistent with the finding that patients with interval drop in BMI of 15.8 kg/m^2 are at increased risk of developing retrograde intussusception [10].

The median time at presentation for reported cases is 36 weeks post procedure [2]. Our patient, on the contrary, presented 32 years after a very successful open RYGB. It indicates that post RYGB complications such as intussusception can occur at any time and physicians must always maintain a high level of clinical suspicion.

Clinically, patients often present with vague symptoms such as abdominal pain, nausea, and vomiting which are indistinguishable from other more commonly encountered complications such as internal hernia or marginal ulcers [11]. The physical exam tends to be unimpressive although a palpable mass in the left upper or lower quadrant has been

reported. Patients may also present with transient intussusception, a diagnosis that is often missed on routine evaluation. These patients usually have chronic, colicky abdominal pain which may be associated with chronic constipation. Our patient had these symptoms for months prior to acute presentation in the emergency department and her constipation was misdiagnosed as functional in nature.

As laboratory findings are usually unremarkable, except in cases with associated bowel ischemia and/or necrosis, cross-sectional imaging remains the most reliable diagnostic methodology. CT scan is most utilized in non-obstetric patients. Findings usually include: “target” sign; swirling of the mesentery; dilatation of the Roux and BP limbs, with decompressed common channel distally, and distention of the gastric remnant.

Intussusception with associated bowel obstruction is a surgical emergency warranting prompt general or bariatric surgery consultation. Operative intervention should not be delayed after appropriate resuscitation. Except in cases with frank perforation or hemodynamic instability, a laparoscopic approach should be considered. Laparoscopy has also been attempted in pregnant patients with gravid uterus [12,13].

Most surgeons agree to attempt laparoscopic reduction if the bowel

appears viable. If successful, there is considerable debate on what option to pursue: (a) reduction without resection, (b) formal resection with the creation of two anastomosis, (c) other techniques, such as plication. Recurrence has been reported in patients that did not undergo resection with re-anastomoses [2]. Our preference is to resect the jejunojejunos-tomy as this improves chronic pain and constipation symptoms while minimizing risk of recurrence.

There is currently very little data comparing incidence of JJ intus-susception in open vs laparoscopic RYGB. Given the rarity of the complication, any difference is likely to be clinically irrelevant as RYGB is almost exclusively performed laparoscopically.

4. Conclusion

Retrograde intussusception is a rare but very serious complication after RYGB. The exact etiology remains unknown. Symptoms are usually nonspecific, and diagnosis is often made on cross-sectional imaging. Prompt surgical intervention is indicated, and a laparoscopic approach is preferred in hemodynamically stable patients. Given the rarity of the condition, a high level of clinical suspicion is warranted especially in post RYGB patients with chronic, intermittent, or colicky abdominal pain.

Consent

Written informed consent was obtained from the patient for publi-cation 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

Ethical approval is not required for the publication of case reports at the University of Tennessee Health Science Center in Memphis.

Research registration

Not applicable.

Author contribution

Angel Doño: Conceptualization, formal analysis, writing – original

draft.

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Nia N. Zalamea: Writing – review and editing.

Denis A. Foretia: Conceptualization, data curation, formal analysis, supervision, project administration, writing – original draft, and writing – review and editing. All authors approved the final manuscript.

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Declaration of competing interest

None.

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