Laparoscopic enteropexy for intussusception at Roux-en-Y anastomosis

Christopher L. Kalmar* and Tananchai A. Lucktong

Department of Surgery, Virginia Tech Carilion School of Medicine, Roanoke, VA

*Correspondence address. Department of Surgery, Virginia Tech Carilion, 1906 Belleview Ave SE, Roanoke, VA 24015, USA. Tel: +1 (301) 758-4270; Fax: +1 (847) 628-0884; E-mail: chriskalmarmd@gmail.com

Abstract
Roux-en-Y gastric bypass (RYGB) is the most commonly performed bariatric procedure in the world. Jejunojunal intussusception after RYGB is a rare but potentially serious complication. Timely radiographic recognition and surgical therapy with laparoscopic enteropexy of all limbs of the enteroenteric anastomosis in our experience allows same-day management with return to work and activities of daily living without recurrence of intussusception.

INTRODUCTION
Roux-en-Y gastric bypass (RYGB) is the most commonly performed bariatric procedure in the world, with 210,874 procedures performed annually [1]. Jejunojunal intussusception after RYGB is a rare but potentially serious complication, with possibility of ischemia and perforation if unrecognized. This diagnosis has the potential to remain unrecognized due to its nonspecific physical exam findings, nonspecific laboratory results, and possible negative imaging studies.

CASE REPORT
A 47-year-old female presented seven years after RYGB complaining of 4-month history of intermittent abdominal pain, abdominal distention, and belching. Eventual workup included CT scan (Fig. 1) with intravenous and oral contrast demonstrating retrograde intussusception of the common limb into the enteroenteric anastomosis.

Surgical technique
Laparoscopic survey revealed an ante-gastric retrocolic Roux limb. There was no internal hernia at the mesocolon. There was no Peterson’s defect. The enterointerostomy was dilated. There was no intussusception at the time of exploration; however, the distalmost end of the Roux limb was easily invaginated into the enterointerostomy with the lead point at the anastomosis. (Fig. 2) On the opposite side of the enterointerostomy, the common channel limb could likewise easily be invaginated into the enterointerostomy. There was no evidence of necrosis.

Given the propensity of the distal Roux limb to intussuscept into the enterointerostomy, enteropexy was performed to eliminate its travel past the anastomosis. The distalmost aspect of the Roux limb was sutured with two pieces of running 3-0 silk to the end of the staple line on the biliopancreatic limb. Two additional sutures were placed slightly more upstream anchoring the roux limb to the mesentery of the transverse colon. An additional 3-0 silk suture was placed on the opposite side of the distal Roux limb anchoring it to the nearby mesenteric root. (Fig. 3) A 3-0 silk suture was placed to fix the common channel to the biliopancreatic limb to similarly limit the risk for intussusception of that limb. After this procedure, the small bowel was immobilized such that there was no longer predisposition for intussusception at the Roux-en-Y enterointerostomy.

Postoperative outcome
The patient tolerated the procedure well and was stable for discharge four hours postoperatively. Follow-up clinic encounter 2
weeks later was significant for left abdominal wall pain prompting CT scan, which remained negative for recurrent intussusception. Pain was distant from our operative site and attributed to nerve impingement secondary to surgical clips placed during previous abdominoplasty. The patient remains without nausea or other sequelae of intussusception two years postoperatively.

DISCUSSION

Jejunojejunal intussusception is a rare but potentially serious complication after RYGB. Estimated incidence of jejunojejunal intussusception is 0.1–1.2% and occurs at a median interval of 36–52 months after the gastric bypass procedure [2, 3]. The classic triad of intussusception (abdominal pain, bloody stools, palpable mass) is only present in 9.8% of adult cases, and is likewise rarely seen with intussusception after RYGB [4, 5]. Nonspecific symptoms, benign physical exam, and nonspecific laboratory results make this diagnosis elusive and necessitate radiographic imaging to achieve the diagnosis. CT with intravenous and oral contrast may demonstrate the classic target sign of intussusception, dilated small bowel, wall thickening, and occasionally vascular compromise. However, 43% of patients with preoperative CT evidence of jejunojejunal intussusception do not have evidence of jejunojejunal intussusception at operative exploration [2]. Due to this dynamic and intermittent process, physicians should remain open to this diagnosis and consider repeated imaging studies if initial scans are negative for intussusception if clinical index of suspicion remains high.

Small bowel intussusception traditionally occurring in adults is due to a pathologic lead point. Although many indicate the staple or suture line to function as a lead point, current thinking implicates abnormal small bowel motility as the culprit predisposing patients to intussusception after RYGB. The duodenum acts as the pacemaker of small bowel motility, but becomes separated from the remainder of the small bowel due to transection of the jejunum to create the Roux limb. Without the presence of the natural pacemaker, ectopic pacemaker potentials

Figures 1: (a) Evidence of intussusception on CT scan (Coronal View). Demonstration of intussusception at the Roux-en-Y enteroenteric anastomosis. (b) Evidence of intussusception on CT scan (Transverse View). Demonstration of intussusception at the Roux-en-Y enteroenteric anastomosis.

Figure 2: Intussusception. Surgeon manually demonstrating the propensity of the common limb to intussuscept into the anastomosis.

Figure 3: Anchoring bowel to mesenteric root. Nonabsorbable polyfilament suture placement between bowel and nearby mesenteric root limiting bowel mobility toward the anastomotic junction to prevent intussusception.

Figure 4: After enteropexy. Demonstration of nonabsorbable suture placement for enteropexy and subsequent inability to intussuscept the common limb into the enteroenteric anastomosis.
CONFLICT OF INTEREST STATEMENT

None declared.

CONSENT

Informed consent was provided by patient for publication of this case report and all accompanying medical history and images. Institutional review board approval not indicated.

DISCLOSURES

Dr Kalmar has no relevant financial or nonfinancial relationships to disclose.

Dr Lucktong has no relevant financial or nonfinancial relationships to disclose.

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