

A CARE-compliant article: a case of retrograde intussusception with Uncut-Roux-en-Y anastomosis after radical total gastrectomy

Review of the literature

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Abstract

Rationale: Postoperative intussusception is an unusual clinical entity and is rarely encountered as a complication following gastrectomy, especially radical total gastrectomy.

Patient concerns: A 74-year-old woman was admitted to our hospital with complaints of melena and hematemesis. And the endoscopic biopsy confirmed the poorly differentiated adenocarcinoma of the stomach. Radical total gastrectomy with Uncut Roux-en-Y reconstruction was performed. On the third postoperative day (POD3), the patient complained of paroxysmal pain around the umbilicus, accompanied by nausea and vomiting.

Diagnosis: Retrograde intussusceptions after radical total gastrectomy with Uncut Roux-en-Y reconstruction based on exploratory laparotomy.

Interventions: On POD4, the abdominal computed tomography (CT) showed small bowel dilatation and fluid accumulation in the upper abdominal cavity, as well as a small mass of soft tissue on the left side of the pelvis. Small bowel obstruction was considered, and exploratory laparotomy was performed. Retrograde intussusception started just below the jejunojunal anastomosis with possible organic lesions, which was subsequently removed.

Outcomes: The patient recovered well and was discharged 15 days after the second operation.

Lessons: This case report was written for 3 purposes: to increase awareness of this complication after radical total gastrectomy with Uncut-Roux-en-Y reconstruction; to emphasize early diagnosis through clinical manifestation, physical examination, and auxiliary examination with abdominal CT; and lastly, to emphasize that a reasonable surgical procedure should be performed immediately after diagnosis.

Abbreviations: AEJ = anastomosis of the esophagus and jejunum, CT = computed tomography, NJFT = nasojunal feeding tube, POD = postoperative day.

Keywords: intussusception, postoperative complications, radical total gastrectomy, Uncut-Roux-en-Y anastomosis

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YZ, FW, YJ contributed equally to this work and should be considered as cofirst authors.

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1. Introduction

Postoperative intussusception is an unusual clinical entity and is rarely encountered as a complication following gastrectomy, especially radical total gastrectomy with Uncut-Roux-en-Y reconstruction. Here, we report a case of retrograde jejunojunal intussusception at Uncut-Roux-en-Y anastomosis occurring 3 days after radical total gastrectomy, and include a review of the literature on this unusual complication.

2. Case report

A 74-year-old woman was transferred to our institution with complaints of melena and hematemesis. The patient had no significant medical history. On admission, she was hemodynamically stable. Hypoproteinemia (albumin 33.0g/L) and anemia (hemoglobin 75 g/L) were noted on blood examination. The total abdominal enhanced computed tomography (CT) revealed a thickened and strengthened gastric wall the of small curved side of the stomach fundus, without distant metastasis. On gastro-duodenoscopic examination, a poorly differentiated adenocarcinoma of the stomach was found. However, chest X-ray examination showed no pulmonary metastasis.

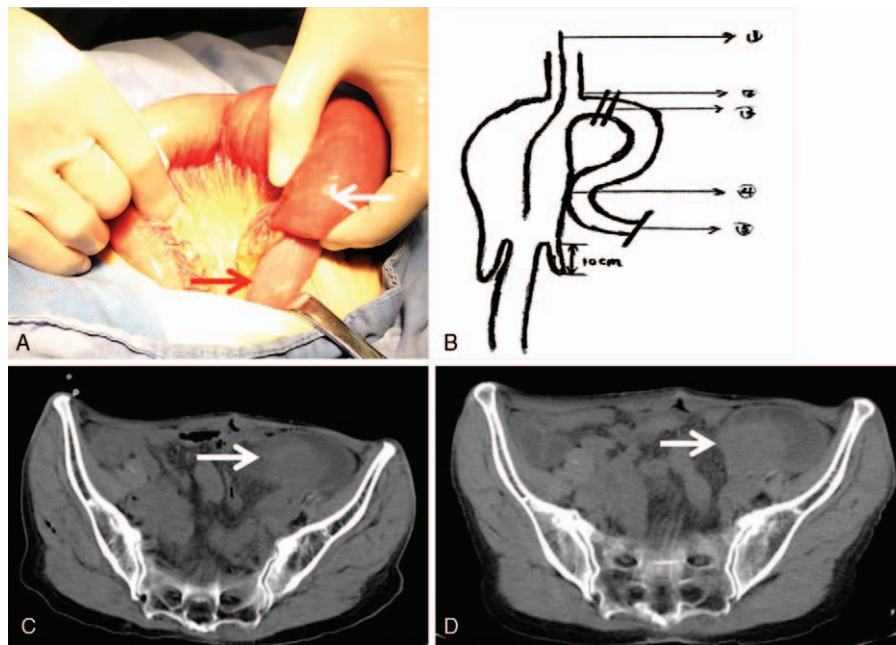


Figure 1. (A) Intraoperative findings revealed that the retrograde jejunojejunal intussusception was found ~20 cm distal to the jejunojejunal anastomosis. The white arrow indicates the intussusciens (proximal jejunum), and the red arrow indicates the intussusceptum (distal jejunum). (B) ①nasojejunal feeding tube, ②the anastomosis of the esophagus and jejunum, ③Double No. 7 suture, ④the jejunojejunal anastomosis, ⑤the ligament of Treitz. (C) A small mass of soft tissue (white arrow) on the left side of the pelvis. (D) On the sixth postoperative day, the small mass of soft tissue (white arrow) was still present.

Radical total gastrectomy with Uncut-Roux-en-Y (Fig. 1B) reconstruction was performed after transfusions and albumin delivery to the patient. The duodenal stump was closed with staples (No. 26 Prius star), with the stapler nail seat placed into the bottom of the esophageal stump. The jejunum was opened at a distance of ~15 cm from the ligament of Treitz, and the stapler was inserted into the distal jejunum at approximately 30 cm and anterior to the colon to complete the anastomosis of the esophagus and jejunum (AEJ). The efferent loop was opened at ~45 cm from AEJ, and a side-to-side jejunojejunostomy was performed, to divert the duodenal fluid, by Albert–Lembert sutures. The afferent loop near AEJ was ligated by a Double No. 7 suture, and Uncut-Roux-en-Y reconstruction was completed. A 10 cm nasojejunal feeding tube (NJFT) was inserted into the distal part of the efferent loop of the jejunostomy, for early postoperative enteral nutrition.

Two days after the operation, the patient did not complain of abnormal symptoms. Normal saline (250 mL) was slowly dripped through NJFT. However, on POD3, the patient complained of paroxysmal pain around the umbilicus, accompanied by nausea and vomiting, which persisted for until POD6 without any apparent relief. During that time, 300 to 950 mL black-green small intestine juice was drained via the NJFT, daily. Laboratory tests indicated no remarkable findings except for elevated C-reactive protein up to (77.66 mg/L). Physical examination revealed a lump in the left lower abdomen, which became smaller and even disappeared after vomiting. On POD4, abdominal CT showed small bowel dilatation and fluid accumulation in the upper abdominal cavity, as well as a small mass of soft tissue on the left side of the pelvis, which was considered a small bowel obstruction (Fig. 1C). Active conservative treatment was given to the patient, including intestinal decompression through NJFT, anti-infection, maintenance of water and electrolyte balance, and adequate parenteral

nutrition; however, the abdominal symptoms were not significantly relieved. On POD6, abdominal CT showed that the small mass of soft tissue was still present with increased abdominal cavity fluid accumulation (Figs. 1D, 2B).

An emergency laparotomy was performed and a retrograde jejunojejunal intussusceptions was found ~20 cm distal to the jejunojejunal anastomosis (Fig. 1A). After the manual reduction was performed carefully, the intussusception came loose subsequently. The distal jejunal segment (intussusceptum) was ~10 cm in length, with good blood supply and peristalsis. However, due to the risk of organic lesions, the intussusception was removed. The jejunojejunostomy was performed using Albert–Lembert sutures. No obvious abnormality was found in pathological examination. Four days after the second operation, abdominal CT examination showed no obvious expansion and effusion of the small intestine (Fig. 2C), while the small mass of soft tissue was no longer present (Fig. 2D). Postoperative recovery was uneventful, and the patient was discharged 15 days after the second operation.

3. Discussion

Intussusception is primarily a disease of children and infants, with only about 5% of cases occurring in adults.^[1,2] Although childhood intussusceptions are idiopathic in 90% of cases, adult intussusceptions have an organic lesion origin in 70% to 90% of cases, with >50% of the lesions reported as malignant.^[2,3] In a large multicenter study of 44 patients with adult intussusception, 37% of small bowel and 58% of colonic adult intussusception were malignant.^[4]

Although postoperative intussusception is a rare clinical entity in both age groups, it is also more common in the pediatric population than in adults. It accounts for 5% to 10% of all cases

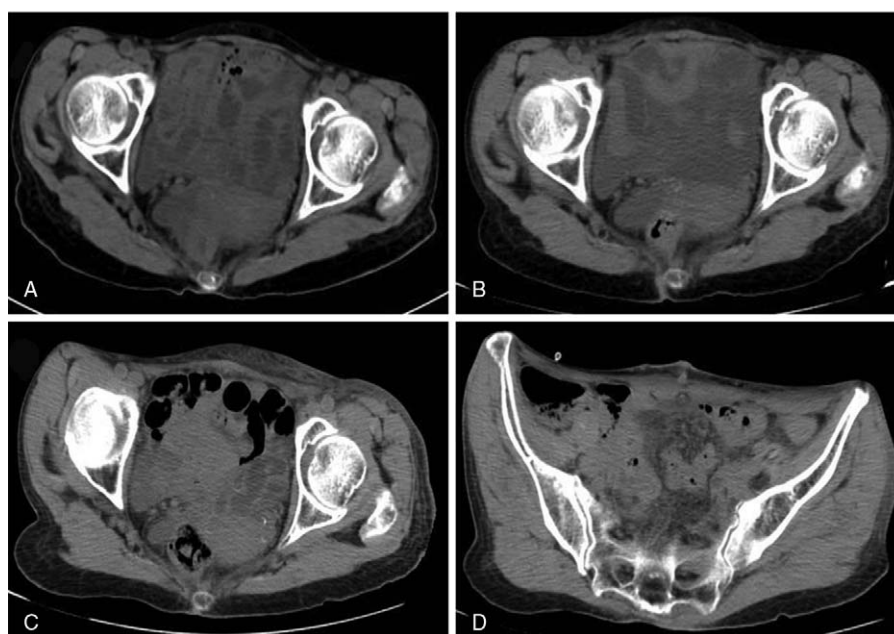


Figure 2. The volume of the abdominopelvic cavity fluid displayed in B is significantly more than that of A. Four days after the second operation, there was no obvious expansion and effusion of the small intestine (C), while the small mass of soft tissue was no longer present (D).

of postoperative ileus in infancy and childhood,^[5] but only ~1% of cases in adults.^[6]

Intussusception is an extremely rare complication after gastric surgery, with the incidence is reported to be <0.1%.^[7] Jejunal intussusceptions after total gastrectomy were first reported by Bozzi^[8] and are recognized as an uncommon complication, occurring in only 0.07% to 2.1% of patients who undergo gastrectomy.^[9] A review of the literature revealed 27 cases of retrograde intussusception occurring after total gastrectomy, including the current case.^[10,11] Reported digestive tract reconstructions included Roux-en-Y reconstruction and Billroth II method, and only 1 case with Uncut-Roux-en-Y reconstruction. Furthermore, while 5 cases developed in the early postoperative period, the current case is the earliest reported and occurred 3 days after the first operation. Other cases developed within 1 to 22 years after surgery. Given the wide time course of postoperative incidence, we should be highly vigilant for this complication at any time after operation, especially in the early postoperative period.

In adults, the exact mechanism behind intussusception is unknown. In the present case, neither functional nor mechanical causes were identified as leading causes of intussusception. A variety of postoperative conditions, such as adhesions around the suture lines,^[1,12] a long intestinal tube,^[13] increased intra-abdominal pressure,^[7] excessive length of afferent loop,^[9] and reverse peristalsis,^[12,14] have been proposed as possible mechanisms of intussusception after gastric surgery, but a prevailing cause has not been confirmed.

As the exact cause of postoperative intussusception cannot be confirmed, attention should be focused on the identification and diagnosis of the condition. In fact, determination of whether emergency surgery is needed rather than the causes of intussusception should be considered priority, especially for early postoperative patients. Early diagnosis is crucial for early surgical intervention; when the operation is performed within

48 hours of diagnosis, the mortality rate is ~10%. In contrast, operations delayed beyond 48 hours may be associated with a mortality rate of up to 50%.^[15] Abdominal CT is extremely useful for the diagnosis of this condition, with the identification of multiple concentric rings being the characteristic sign of intussusception.^[16] Furthermore, CT can provide important information on whether an emergency operation is required. On POD3 in the present case, the patient complained of paroxysmal pain around the umbilicus, accompanied by nausea and vomiting. Meticulous physical examination revealed a lump in the left lower abdomen, which became smaller and disappeared after vomiting. In addition, the most severe abdominal pain occurred when bowel sounds were the most active. After vomiting, abdominal pain was relieved and intestinal gurgling sounds recovered. According to the above description, paralytic ileus was excluded and mechanical bowel obstruction could be diagnosed. Intussusception is one of the causes of mechanical intestinal obstruction. The symptoms of abdominal pain did not ease after active conservative treatment. In addition, abdominal CT showed increases in abdominopelvic cavity fluid over a short time frame (Figs. 2A, B), with a preserved mass. As a result of these signs, emergency surgery was performed.

Endoscopic reduction of jejunojejunal intussusception has been suggested in a few selected cases^[17]; however, this procedure is associated with a significant risk of recurrence.^[18] Surgery is the prominent treatment in jejunojejunal intussusceptions, though the specific operation depends on the intraoperative findings. Simplicity and effectiveness are emphasized in emergency operation, with priority in minimizing trauma, especially for early postoperative patients. In our opinion, it is necessary to remove the intussusception to avoid recurrence, especially in cases where there are defined organic lesions in the bowel.

This case report was written for 3 purposes: to increase awareness of this complication after radical total gastrectomy with Uncut-Roux-en-Y reconstruction; to emphasize early

diagnosis through clinical manifestation, physical examination, and auxiliary examination with abdominal CT; and lastly, to emphasize that a reasonable surgical procedure should be performed immediately after diagnosis.

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