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Antegrade jejunogastric intussusception and common bile duct stones at 14 months after gastrectomy and cholecystectomy: A case report



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ABSTRACT

INTRODUCTION: Intussusception after gastrectomy is a minor complication after gastrectomy, while common bile duct stone (CBD) is also a rare complication post cholecystectomy. We report a case that simultaneously caused both intussusception and CBD stone following gastrectomy with prophylactic cholecystectomy.

CASE PRESENTATION: A 74-year-old woman underwent distal gastrectomy with Roux-en-Y reconstruction and prophylactic cholecystectomy for gastric cancer. After 14 months, the patient reported nausea and vomiting. Abdominal computed tomography scanning showed antegrade intussusception of the Roux limb of the gastrojejunostomy and calculi in the common bile duct, with a diagnosis of jejunogastric intussusception and common bile duct stones. The patient was hospitalized and endoscopic examination was performed on day 3. Endoscopic treatment did not resolve the intussusception, which also obstructed the bile duct stones. Elective surgery was performed on day 10, in which the invaginated Roux limb of the gastrojejunostomy was resected after manual reinstatement to its original position. This was followed by open exploration of the common bile duct and T-tube drainage. The patient was discharged 25 days post-surgery.

DISCUSSION: Jejunogastric intussusception and CBD stone may require operative management, although the operation could be elective after sufficient examination and preparation.

CONCLUSION: Jejunogastric intussusception and bile duct stones are rare after distal gastrectomy, physicians should be alerted to the possibility of these complications.

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1. Introduction

Intussusception is a rare cause of postoperative small bowel obstruction in adults [1], with estimates suggesting that it occurs after gastrectomy with a frequency between 0.07% and 2.1% [2]. Common bile duct (CBD) stones are a minor postoperative complication that have been reported to occur in 10.4% of patients after cholecystectomy [3].

This report describes a patient who underwent distal gastrectomy and cholecystectomy, with late postoperative complications of antegrade gastrojejunal intussusception and CBD stones.

Abbreviations: CBD, common bile duct; ERCP, endoscopic retrograde cholangiopancreatography.

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The work has been reported in line with the SCARE criteria [4].

2. Case report

A 74-year-old woman visited Iwate Prefectural Iwai Hospital for periodic examination after distal gastrectomy and prophylactic cholecystectomy, followed by adjuvant chemotherapy, for gastric cancer. In the Roux-en-Y gastrojejunostomy, the jejunum was resected at 20 cm below the Treitz ligament using a PROXIMATE Linear Cutter (TCR10; Ethicon, Cincinnati, OH, USA) and the distal part of the resected jejunum was pulled up through the transverse mesocolon. The gastrojejunostomy was constructed by an end-to-side, hand-sewn anastomosis, and the Roux limb was fixed to remnant stomach tissue. The jejunojejunostomy was formed by an end-to-side, hand-sewn anastomosis located 40 cm below the gastrojejunostomy site. Cholecystectomy

was prophylactically performed to prevent postoperative cholecystitis. Adjuvant chemotherapy with S-1 was administered orally from 1 month after surgery for 12 months, and was completed as planned without complications.



Fig. 1. Abdominal computed tomography findings of antegrade gastrojejunal intussusception and choledocholithiasis. A: A non-homogeneous mass (arrow) in the left-upper quadrant is shown. The staple line of the Roux limb stump was recognizable as a high-intensity line in the center of the mass; B: Calculi in the common bile duct are shown (arrow).

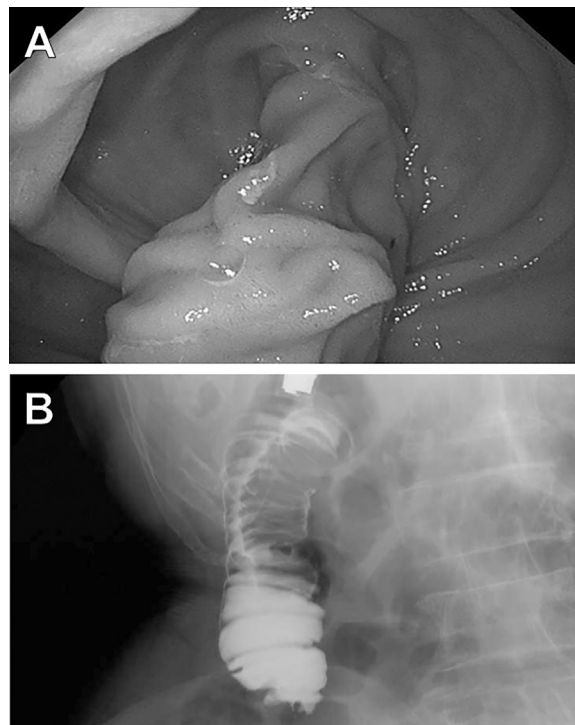


Fig. 2. Endoscopic and contrast radiographic findings of jejuno gastric intussusception. A: Direct view of gastrofibrosopic examination demonstrating an invaginated bowel; B: Contrast radiograph shows a Roux limb invaginated in the direction of the Roux-en-Y anastomosis.

During the follow-up examination at 14 months after surgery, the patient reported slight nausea and vomiting, and was hospitalized. Abdominal computed tomography scanning revealed an invaginated Roux limb of the gastrojejunostomy and calculi in the CBD, which prompted a diagnosis of antegrade jejuno gastric intussusception and CBD stones (Fig. 1). Endoscopic examination and contrast radiography were performed for verification of the diagnosis and treatment. The invaginated Roux limb of the gastrojejunostomy constricted the jejunum lumen, confirming the diagnosis of intussusception (Fig. 2). However, the intussusception could not be resolved, and the CBD stones could not be treated because the invaginated jejunum obstructed the endoscopic approach via the jejunojunctionostomy (Fig. 3). Elective surgery was performed on day 10 after hospitalization. In the preoperative examination, the patient's general condition was stable with no signs of inflammation or jaundice. There was only a slight elevation in transaminase levels, despite the underlying condition of intussusception and CBD stones.

During open laparotomy, antegrade jejuno gastric intussusception was found at the Roux limb of the gastrojejunostomy. The intussusception was approximately 5 cm in length, extending from the limb, and was manually reverted (Fig. 4). Reduction of the jejunal end of the gastrojejunostomy was achieved with a PROXIMATE Linear Cutter (TCR55; Ethicon, Cincinnati, OH, USA), and the proximal limb of the jejunum was firmly fixed to the residual stomach tissue and transverse mesocolon to prevent recurrence of intussusception. Subsequently, open exploration of the CBD was performed, in which eight stones (each 5 mm in diameter) were resected using a cholangioscope. This was followed by insertion of a T-tube to the CBD for drainage. At 16 days after surgery, contrast radiography showed no leakage from the T-tube, and it was removed on day 24. The patient was discharged with no complications on day 25 after surgery.

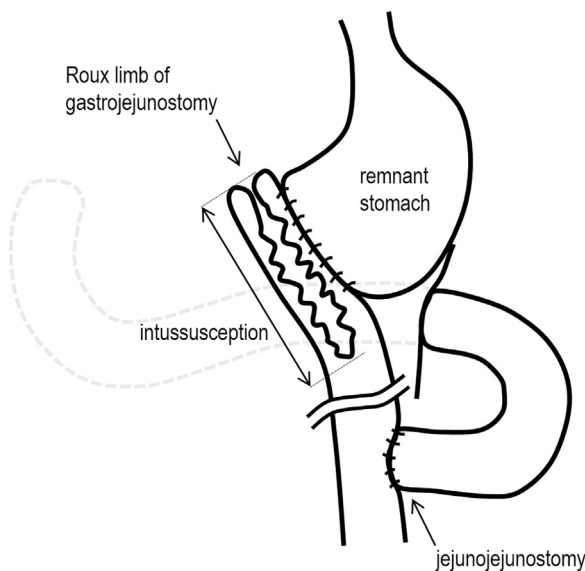


Fig. 3. Schematic diagram of the intussusception. The efferent limb of the gastrojejunostomy had an invagination toward the jejunojunctionostomy.

3. Discussion

As a complication of abdominal surgery, the majority of intussusceptions occur after gastrectomy [5]. These can occur at any postoperative stage from 6 days to 18 years, and the most common type of intussusception is associated with jejuno gastric anastomosis [6,7]. In the present case, intussusception was associated with the efferent limb of a jejuno gastric anastomosis, which is implicated in approximately 80% of cases of jejuno gastric intus-

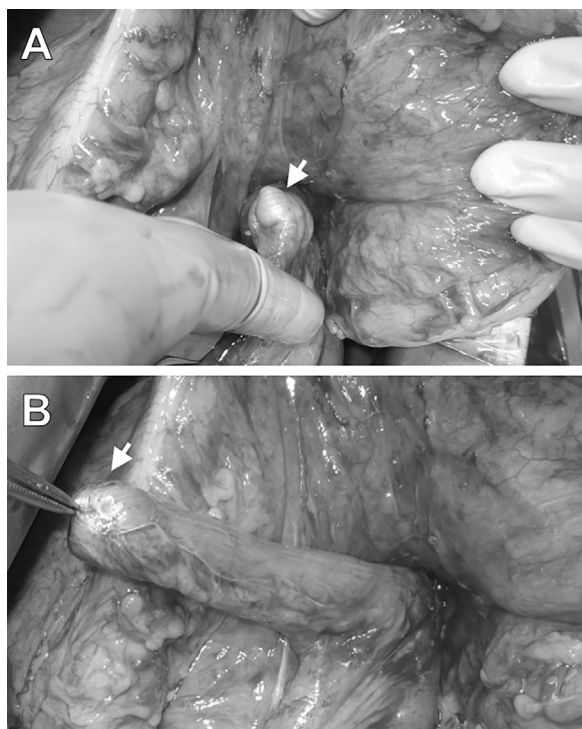


Fig. 4. Intraoperative image.

A: Antegrade gastrojejunal intussusception of the afferent loop of the gastrojejunostomy (arrow); B: The replaced jejunojejunostomy site (arrow) showed no ischemic changes or necrosis.

susception [8]. Although the efferent limb was fixed to remnant stomach tissue by an absorbable suture after distal gastrectomy, the cause may have been mechanical, with increased mobility of the efferent limb at 14 months after surgery [9]. This is supported by evidence during the second operation that postoperative adhesions were not observed in the region of the jejuno gastric anastomosis. While the exact cause is unknown, jejuno gastric intussusception of the efferent limb may also result from functional disorders such as antegrade peristalsis (8). Altered peristalsis has been linked to prolonged and excessive manipulation, with drying and bruising of the bowel, as well as extensive preperitoneal dissection, abnormal serum electrolyte levels, local hypoxia, anesthetic agents, and postoperatively administered drugs [10].

Therefore, it is possible that altered peristalsis in the present case was induced by the first operation and the postoperative administration of S-1 [11].

CBD stones most commonly result from the passage of gallstones through the cystic duct into the CBD. Less frequently, they directly originate from the CBD. The long-term presence of CBD stones may lead to biliary obstruction, cholangitis, pancreatitis, or secondary biliary cirrhosis [12]. Treatment of stones usually involves endoscopic retrograde cholangiopancreatography (ERCP) and open exploration of the CBD [13]. The development of CBD stones after Roux-en-Y anastomosis is infrequent. While access to the papilla is necessary to extract CBD stones endoscopically, it is a challenging technique in patients who have undergone gastrectomy with Roux-en-Y reconstruction [14]. Using single-balloon enteroscopy, the diagnostic and therapeutic success rate of ERCP is reported to be 70% and 64%, respectively [15]. For cases that are inaccessible by endoscopy alone, ERCP assisted by laparoscopy may be a suitable strategy [16]. However, in the present case, these procedures could not be applied because of the complicated intussusception. Instead, open exploration of the CBD was performed. Considering that open CBD exploration was demonstrated to be

superior to ERCP in achieving stone clearance, open laparotomy may be the optimal technique for such patients [17].

Jejunogastric intussusception may require operative management. However, unless there is vascular insufficiency in the invaginated bowel, the operation could be elective after sufficient examination and preparation. Careful and prompt evaluation is required for surgical indications, and delayed diagnosis may lead to deterioration of patients' general conditions. Because there are no definitive symptoms of intussusception, the importance of early detection should be emphasized.

This case report described a patient with antegrade jejuno gastric intussusception and CBD stones after distal gastrectomy and prophylactic cholecystectomy for gastric cancer. Jejunogastric intussusception complicated with CBD stones is an extremely rare clinical entity, which requires a high degree of attention for early diagnosis and prompt treatment. Intussusception and CBD stones should be considered as a possible diagnosis related to abdominal pain and nausea after gastrectomy combined with prophylactic cholecystectomy. 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.

Conflicts of interest

All authors have no conflicts of interest

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Ethical approval

This research was approved by the ethics committee of Iwate Prefectural Iwai Hospital, Japan.

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

Author contribution

Yuichi Miura wrote the paper. Takuji Uemura contributed in writing the paper. Koichiro Sato, Takayuki Abe, Tetsuya Akada, Soichi Ito, Hiroki Yamana and Hirotaka Kato contributed in data collection

Guarantor

The Guarantor for this study is Yuichi Miura.

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