

Jejunogastric intussusception after totally laparoscopic distal gastrectomy for gastric cancer: a rare case report and review of the literature

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Jejunogastric intussusception (JGI) is a rare complication of gastric surgery, with most cases occurring in the form of long-term complications following gastric surgeries. We present a case of JGI in a 74-year-old man who presented with progressive abdominal pain and distention, and was admitted to our hospital. The patient had undergone a totally laparoscopic distal gastrectomy with a Billroth II gastrojejunostomy 9 days previously. Computed tomography and endoscopic findings revealed the presence of a small bowel loop within the gastric lumen, which we failed to reduce in size. We performed an emergency laparoscopic exploration and immediate reduction of the JGI. The efferent and afferent loops were then fixed to the mesentery and the stomach. The postoperative course was uneventful and the patient remained asymptomatic during the 1-year follow-up period.

Keywords: Gastric cancer, Gastrectomy, Jejunogastric intussusception, Complication, Case reports

INTRODUCTION

Jejunogastric intussusception (JGI) is a rare but fatal postoperative complication of gastric surgery; most cases of JGI occur in the form of long-term complications [1,2]. It has been reported to appear in less than 0.1% of patients undergoing gastric surgery [2]. The symptoms of JGI vary widely and include acute abdominal pain, palpable masses, nausea, vomiting, and hematemesis [3]. The treatment of choice for acute JGI is emergency surgery. Early diagnosis is an important factor in early surgical interventions. For operations performed within 48 hours, the mortality rate was found

to be approximately 10%. In contrast, a surgery delayed beyond 48 hours may be associated with a mortality rate of up to 50% [2].

Herein, we present an operative case of JGI after a totally laparoscopic distal gastrectomy for gastric cancer. Written informed consent was obtained from the patient for the publication of this case report.

CASE REPORT

A 74-year-old man presenting with progressive abdominal pain and distention was admitted to our hospital. He had undergone a totally laparoscopic distal gastrectomy with a Billroth II gastrojejunostomy for early gastric cancer 9 days previously. Enhanced computed tomography (CT) scans revealed a dilated stomach with intragastric filling by bowel loops, suggestive of JGI (Fig. 1). Hematological tests revealed a white blood cell count of 6,650/ μ L (neutrophil count 63.5%) and a C-reactive protein level of 22.26 mg/L (reference range, 0–5 mg/L). The other hematological test results were normal.

We immediately performed an esophagogastroduodenoscopy (EGD), which revealed the presence of a small bowel loop within the gastric lumen. The patient was diagnosed with JGI, and an efferent loop at the gastrojejunostomy site was identified in the lumen of the remnant stomach (Fig. 2). The endoscopist attempted to reduce the jejunal intussusception with endoscopy, but was un-

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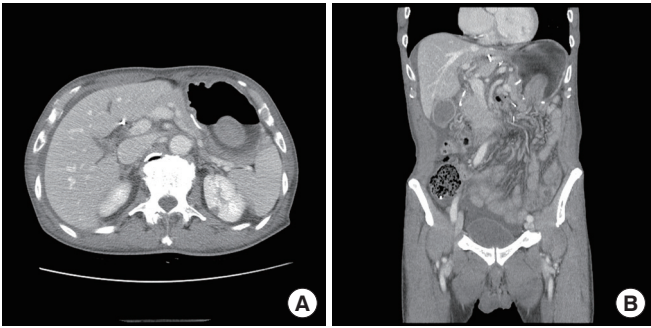


Fig. 1. Abdominal computed tomography scans showing an elevated lesion protruding to the remnant stomach. (A) Axial and (B) coronal views.

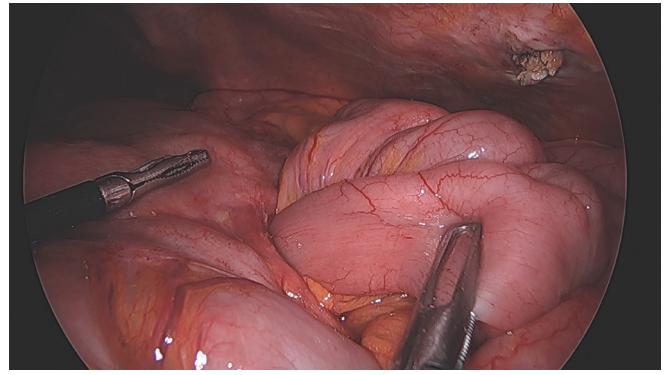


Fig. 3. The image shows the intussusception of an efferent jejunal limb through the anastomosis.

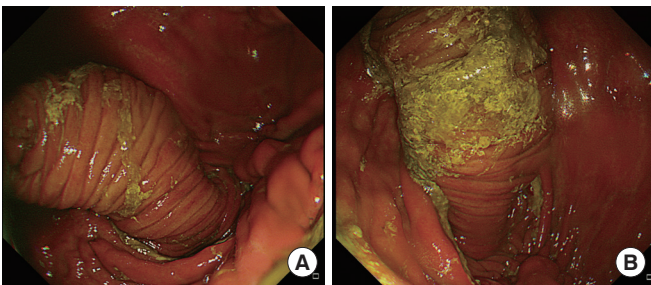


Fig. 2. (A, B) Endoscopic images showing an elevated lesion with ring-like folds protruding and with a green caterpillar-like appearance through the anastomosis site.

successful because the anastomosis site was stenosed, preventing the endoscope from passing through it.

Following the diagnosis of JGI, an emergency laparoscopic exploration was performed on the same day. The laparoscopic examination identified a jejunogastric anastomosis site with intussusception of an efferent jejunal loop through the anastomosis (Fig. 3). A reduction of the JGI was immediately performed without resection of the intussuscepted intestine because there was no ischemia at the anastomosis site. Following this, the color and peristalsis of the jejunum were confirmed to be normal. To prevent the recurrence of intussusception, the efferent and afferent loops were fixed to the mesentery and the remnant stomach. An upper gastrointestinal series performed on the 4th day after surgery showed that the contrast medium passed through the small bowel satisfactorily (Fig. 4). The postoperative course was uneventful and the patient remained asymptomatic during the 1-year follow-up period.

DISCUSSION

JGI is an extremely rare complication that may present either in an acute form or as a chronic recurrent process, occurring in less than



Fig. 4. An upper gastrointestinal series showing that the contrast was well passeded.

0.1% of patients undergoing gastric surgery [4]. The first case of JGI was described by Bozzi in 1914 [5]. Less than 200 cases have been reported since this initial description [1].

The symptoms of JGI are nonspecific; since it appears following gastric surgery, in the early stages it may be mistaken for other symptoms caused by the prior gastric surgery, delaying diagnosis. It has been clinically reported in two forms: acute and chronic. In the acute type, incarceration and strangulation of the intussuscepted bowel are common, whereas spontaneous reduction is common in the chronic form [6]. The acute form is characterized by severe colicky epigastric pain, vomiting, and hematemesis. Epigastric tenderness and a palpable abdominal mass are typically ob-

served in about 50% of cases, and signs of high intestinal obstruction may also be found [6,7]. It should be noted that a sudden onset of epigastric pain, vomiting and subsequent hematemesis, and a palpable epigastric mass in a patient with prior gastric surgery are considered the classic triad of a JGI diagnosis [3].

However, the underlying pathogenesis of JGI remains unknown. The most widely accepted explanation is that antegrade or retrograde peristalsis leads to intussusception of either the afferent or the efferent loop in the stomach. Other potential contributing factors include gastric hypotonicity, increasing antiperistalsis, and the caliber of the anastomotic orifice, although none of these have been confirmed [8]. On the other hand, some studies have reported that Roux-en-Y anastomosis is more likely to occur in JGI than in BI and BII anastomoses, and that young, female, and obese patients are prone to JGI. This may be due to weakened fixation of the mesentery, caused by relaxation of the mesentery in patients experiencing a large reduction in body mass within a short period of time after undergoing gastric surgery [6,8]. In the current case, our patient also showed a reduction in weight by approximately 10% after undergoing gastric cancer surgery and antiperistaltic anastomosis. These factors are thought to have influenced the occurrence of JGI.

In adult patients, intussusception can be categorized into four groups: tumor-related, postoperative, miscellaneous, and idiopathic. Postoperative intussusception in adults is a distinct clinical entity [8]. Since gastric cancer is the most common reason for gastrectomy in Korea, gastric cancer surgery is considered to account for the largest proportion of postoperative JGI cases.

In patients with a history of gastric surgery, typical symptoms may alert physicians to the possibility of postoperative JGI. Early diagnosis is important for acute JGI because mortality rate increases from 10% when the intervention occurs within 48 hours to 50% if treatment is delayed for 96 hours [9]. A diagnosis of JGI can be determined with various imaging studies such as endoscopy, ultrasonography, barium stadium, and CT scans [9]. Among them, EGD and enhanced abdominal CT scans are extremely helpful and essential for the diagnosis of JGI [8].

The treatment of JGI is mainly surgical and uses several approaches depending on the intraoperative findings: manual reduction of the intussusception, revision of the anastomosis, anchoring of the efferent limb to the parietal peritoneum, suturing together of the afferent and efferent limbs after reduction of the intussusception, and new gastrojejunostomy using Roux-en-Y reconstruction. If the intussusception is gangrenous, resection and revision of the anastomosis provide the correct treatment [9,10]. In our case, we performed a laparoscopic manual reduction of the intussusception, and the afferent and efferent limbs were anchored to the mes-

entery and the remnant stomach to prevent the recurrence of intussusception.

In conclusion, JGI is a rare but challenging condition for surgeons. Successful management of postoperative JGI relies on early diagnosis, adequate resuscitation, and prompt surgical correction. Although JGI after gastric surgery is very rare, the possibility of its occurrence should be considered when patients have persistent abdominal pain after gastrectomy. Appropriate surgical treatment should be performed as early as possible to prevent necrosis of the intussuscepted bowel segments.

CONFLICT OF INTEREST

Hae Il Jung is an editorial board member of the journal but was not involved in the peer reviewer selection, evaluation, or decision process of this article. No other potential conflicts of interest relevant to this article were reported.

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