

Case Report

Jejunogastric intussusception: a rare complication of gastric cancer surgery

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Abstract: Jejunogastric intussusception (JGI) is a rare condition and less than 200 cases have been published since its first description in 1914. In addition, JGI is potentially lethal complication of gastrectomy or gastrojejunostomy. We report the case of a 73-year-old man with a history of a Billroth II procedure who presented to the emergency department after 6 hours of epigastric pain and hematemesis. Endoscopy and computed tomography showed intussuscepted jejunum through a gastrojejunostomy that required emergency operation. At laparotomy a retrograde type II, JGI was confirmed and managed by resection of involved intestine. Postoperative recovery was uneventful. This case presents the rare complication of acute jejunogastric intussusception more than 25 years after a Billroth II procedure.

Keywords: Jejunogastric intussusception (JGI), intussusception, gastrojejunostomy

Introduction

Intussusception represents 90% of patients in children and adult intussusception occur only 5% of all intussusceptions [1]. In contrast to intussusceptions in children, a demonstrable etiology is found in 70% to 90% of cases in the adult population [1-3]. Among them, jejunogastric intussusception (JGI) is a rare complication of all types of gastric resection and occurs in less than 0.1% of gastric resection [4]. Additionally, JGI is potentially lethal complication of gastrectomy or gastrojejunostomy. The mortality rate of this condition is as high as 50% if surgery is delayed for more than 48 hours [5].

We present the case of a patient who presented with retrograde JGI occurring 25 years after partial gastrectomy with Billroth II gastroenterostomy for gastric cancer and reviews the associated studies. This is the first report of JGI occurred 25 years after partial gastrectomy with Billroth II gastroenterostomy in a patient with gastric cancer.

Case report

A 73-year-old man was referred to the emergency department of Keimyung University

Dongsan Medical center (Daegu, Republic of Korea) from a local hospital, complaining of epigastric pain, nausea and hematemesis. He had undergone a partial gastrectomy and Billroth II anastomosis for gastric cancer approximately 25 years ago. Upon arrival at the emergency department, the patient appeared mildly dehydrated but, he was hemodynamically stable. On physical examination, he was afebrile and his abdomen was soft, mild distended and diffusely tender (particularly in the epigastric area). Furthermore, the laboratory findings on arrival were normal. Especially, his white blood cell count was 9080 cell/ μ L and his hemoglobin was 12.4 g/dL. Emergency endoscopy was performed by endoscopist, internal medicine doctor and that revealed gastric ulcer (acute stage 2, Forrest type Ib) and a bulky, rounded congestive mass that occupied practically the posterior wall of the remnant stomach (**Figure 1**). Initially, internal medicine doctor interpreted a bulky mass in the stomach as a bezoar.

On the third day in the hospital, the patient complained more epigastric pain and his white blood cell count was elevated 14420 cell/ μ L and a computed tomography (CT) scan of the abdomen was performed: it showed a distend-

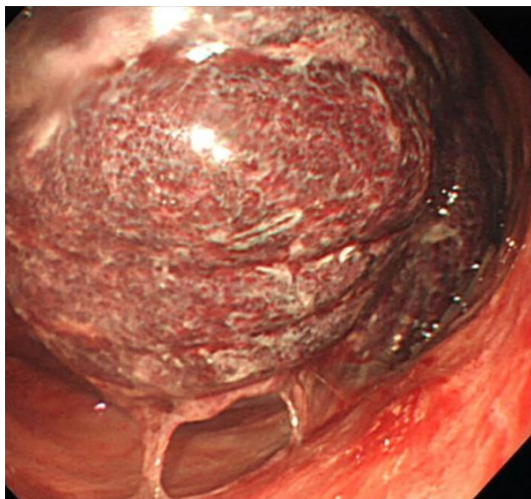


Figure 1. Endoscopic picture: A bulky, rounded congestive mass is seen in the stomach and the adjacent gastric mucosa is petechial changed.

ed stomach containing a long segment of the jejunum with a thickened, strangulated bowel wall and a large quantity of ascitic fluid (**Figure 2**). These findings were consistent with JGI and an exploratory laparotomy was performed after the CT scan.

The surgical findings showed a markedly dilated afferent loop distal to the previous gastrojejunostomy and approximately 60 cm of efferent loop retrograde invagination in the remnant stomach through the previous gastrojejunostomy (**Figure 3**). The intussusception could not be reduced because of severe inflammation and edema of the invaginated jejuna loop. In addition, the segment of involved bowel was found to be necrotic, and therefore resection of involved jejunum was performed. Intestinal continuity was restored with recreation of the gastrojejunostomy just proximal to previous anastomotic site. The pathologic finding of the resected bowel revealed intussusception of the jejunum with congestion and edema (**Figure 4**). No leading point was found. The patient recovered well after surgery without complications and he was discharged from hospital with a good health status.

Written informed consent was obtained from the patient. The study was approved by the ethics committee of Dong San Medical Center, Keimyung University School of Medicine, Daegu, Republic of Korea.

Discussion

Jejunogastric intussusception (JGI) was first reported in 1914 by Bozzi in a patient with gastrojejunostomy [6]. And then, it was also reported in patients after Billroth I reconstruction, Billroth II reconstruction and total gastrectomy with Roux-en-Y anastomosis [4, 7-9]. But these literatures have been reported less than 200 cases. Recently, retrograde intussusceptions have been also reported after Roux-en-Y gastric bypass, pancreaticojejunostomy and rarely in association with previously placed gastrostomy tubes [10-12]. These JGI after gastrectomy is a rare disorder and occurs in only 0.07-2.1% of individuals who underwent gastrectomy [13, 14].

There is a wide variation in the duration between the gastric operation and the occurrence of JGI: 6 days to 20 years in patients with gastric surgery respectively [15]. In this case, the interval between partial gastrectomy with Billroth II reconstruction and JGI was 25 years. This is the longest period of the JGI occurrence after gastric operation due to gastric cancer that have ever reported.

Up to now, the pathogenesis of JGI is unclear. There are two major theories such as functional and mechanical. The functional theory that is the most widely accepted is the disordered motility with functional hyperperistalsis triggered by spasm or hyperacidity [16]. The mechanical factors have been incriminated such as adhesions, a long mesentery, gastric derangements and a sudden increase of the intraabdominal pressure [17].

Classically, JGI can be classified into four types. Type I is an antegrade intussusception of the afferent limb (5.5%). Type II is a retrograde intussusception of the efferent limb and is most commonly observed (75.5%). Type III is a combination of types I and II with intussusception of the afferent and efferent limbs (6.5%). Type IV consists of an intussusception through a Braun side-to-side jejunojejunal anastomosis (8%) [18]. Our case was classified as type II.

Clinically, JGI can present acutely or chronically ill. Acute presentation is characterized by the sudden epigastric pain, emesis with or without hematemesis, and a palpable and tender

A case of jejunogastric intussusception

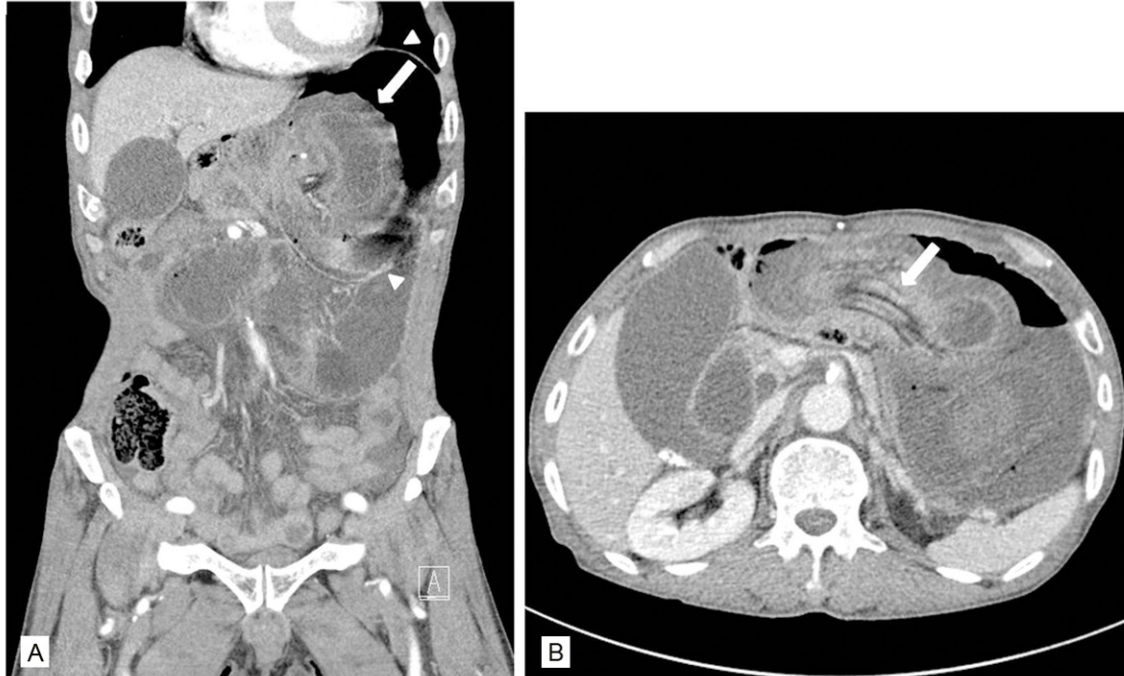


Figure 2. Computed tomography (CT) scan of the abdomen. A. An abdominal CT scan (coronal view) shows markedly dilated stomach (arrowhead) with mass-like, thick-walled bowel loops (arrow). B. An abdominal CT scan (axial view) shows that mesenteric vessels and fat also entrapped in the dilated lumen (arrow).

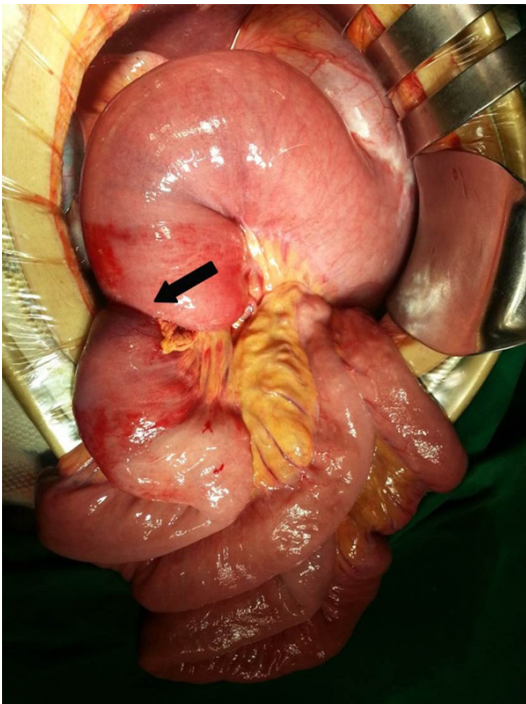


Figure 3. Operative photograph shows that efferent limb intussuscepted into the previous gastrojejunostomy (arrow).

abdominal mass. These symptoms are the classic triad of JGI in a patient with a previous

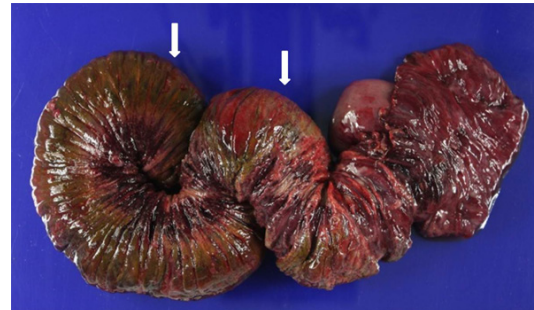


Figure 4. A gross surgical specimen shows the necrotic changed intussusception (arrow).

gastric surgery. Among them, hematemesis can occur because of compromised jejunal vascular supply [19]. In the chronic form, the symptoms may be similar to the acute form but transient, milder and subside spontaneously. In addition, in the chronic form, the symptoms may be vague and physicians can make a wrong diagnosis or delayed diagnosis without any attention of JGI [20].

Because JGI is rare, this condition is not often considered as a diagnosis when patients are first visiting. The diagnosis of JGI can be determined with many imaging studies, such as endoscopy, ultrasonography (US), barium stud-

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ies and CT scan of the abdomen and pelvis. Endoscopy is the diagnostic procedure for the patient with hematemesis. But, the intussusception could be mistaken as an immobile clot or a bezoar on endoscopy like in our case [18, 21]. US findings of intussusception classically reveals an mass with echogenic center surrounded by concentric echogenic rings with a peripheral rim of hypoechogenicity, described as “pseudokidney” or “doughnut” sign [22]. US is the method of first choice because it can be performed at bedside without ionizing radiation. CT allows the differentiation of the distinct types of the JGI and the views given by CT are often more easily accepted by the surgeons. The typical CT finding of intussusception is a soft tissue mass with a “sausage” or “target” appearance [22].

The definitive treatment of JGI is the surgical intervention as soon as possible. Surgical option include reduction with correction, resection of involved bowel, revision of the anastomosis.

Mortality rates increase suddenly with surgical delay and reported mortality ranges from 10% for treatment within the first 48 hours to over 50% with a 96 hours delay [23]. So, early diagnosis is very important because of mortality and morbidity. To reduce delays in diagnosis and to minimizing morbidity and mortality, we should keep in mind that JGI is a possible complication in a patient with gastrectomy, presenting abdominal pain, hematemesis, even though many years have passed after gastric surgery.

Conclusion

JGI is a rare complication after all types of gastric resection but, this condition is lethal if diagnosis and surgery is delayed. Therefore, we should be aware of this disease and it is important to consider JGI in all patients with previous gastric surgery presenting with abdominal pain, vomiting or hematemesis.

Disclosure of conflict of interest

None.

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