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Case Report

Diagnosis and Management of Gastrojejunocolic Fistula After Billroth II Gastrectomy

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Abstract

Gastrojejunocolic fistula is a late and rare complication of gastric surgery. The main clinical presentation includes chronic diarrhea, abdominal pain, fecaloid vomiting, and weight loss. We hereby present the case of a 55-year-old man with a history of Billroth II gastrectomy performed abroad 20 years ago for peptic ulcer disease, presenting with chronic diarrhea, alarming weight loss and severe hypoalbuminemia reaching 16 g/L. Following several unrevealing medical and radiological investigations, a diagnosis of a large gastrojejunocolic fistula at the level of the transverse colon was made during colonoscopy. The patient's nutritional status was improved before definitive surgical repair of the fistula by single stage en-bloc resection and conversion to Roux-en-Y anastomosis. The procedure was successful with an uneventful postoperative course. The patient returned to his baseline weight with normalization of the albumin level at follow-up.

Keywords: Gastrojejunocolic; Gastrocolic; Fistula; Billroth II; Malnutrition

Abbreviations

GJCF: Gastrojejunocolic Fistula; PUD: Peptic Ulcer Disease; TPN: Total Parenteral Nutrition; TEN: Total Enteral Nutrition; UES: Upper Esophageal Sphincter; LES: Lower Esophageal Sphincter

Introduction

Gastrojejunocolic fistula (GJCF) is a rare complication of gastrectomy and gastroenterostomy for peptic ulcer disease (PUD) [1]. Historically, this complication has often gone unnoticed, as fistulas can develop 10 to 20 years after the initial surgical procedure [2]. Patients with GJCF usually present various symptoms including abdominal pain, chronic diarrhea, weight loss, malnutrition, poor appetite, and fecaloid vomiting [3,4]. Gastrojejunocolic fistula is considered to be related to inadequate gastric resection or incomplete vagotomy during gastric surgeries. Other reported precipitating factors include chronic inflammation, smoking, inflammatory bowel diseases, malignancy, tuberculosis, cytomegalovirus, or even trauma [5-7]. Due to advancements in surgical techniques and better medical management of PUD, the incidence of GJCF has markedly declined [2]. Nevertheless, it remains a crucial condition worth looking for in patients presenting with chronic diarrhea and significant malnutrition, even decades after gastric surgery. With this case report, we aim to highlight the pitfalls in the diagnostic algorithm of gastrojejunocolic fistula along with the appropriate management of this condition.

Case Presentation

A 55-year-old male patient was admitted to our hospital for investigation of chronic non-bloody voluminous diarrhea directly after oral intake, reaching 10 episodes per day, associated with diffuse abdominal pain and significant weight loss. The patient is known to be a heavy active smoker with a history of excessive alcohol consumption, stopped ten years ago. Patient's surgical history includes partial gastrectomy with gastrojejunal anastomosis (Billroth II) for PUD performed abroad back in 2003. Colonoscopy done one year prior to presentation was normal, while gastroscopy done 10 months ago showed Helicobacter *Pylori* gastritis, untreated due to patient's non-compliance to treatment.

Upon presentation, the patient's vital signs were stable, with a weight of 45.9 kg, and a Body Mass Index of 15 kg/m^2. Clinical examination revealed cachexia, soft and moderately distended abdomen, and bilateral pretibial edema. Admission laboratory tests showed non-regenerative macrocytic anemia with hemoglobin of 8.5 g/dL and MCV of 108 FL, mild thrombocytopenia of 112.000/

uL, elevated CRP to 53 mg/L, severe hypoalbuminemia of 16 g/L and low vitamin B12 of 172 ng/L. Further workup of hypoalbuminemia revealed no proteinuria on urinary analysis, normal renal, liver and thyroid function and no abnormalities on cardiac ultrasound. Stool analysis and culture were negative. Contrast enhanced abdominal CT scan confirmed a status post Billroth II and showed abundant abdominal ascites along with diffuse parietal colonic enhancement. PET-CT performed in order to exclude underlying malignancy, showed a diffuse hyper-metabolic FDG-uptake in the ascending and transverse colon and at the splenic angle.

Following adequate bowel preparation, colonoscopy revealed a large GJCF located at 45 centimeters of the anal margin. The fistula allowed the colonoscope to access a short segment of the jejunum at the level of the splenic angle, then through the surgical gastro-jejunal anastomosis the gastric body, ultimately reaching the esophagus transanally (Figure 1). Random colonic and jejunal biopsies were normal.

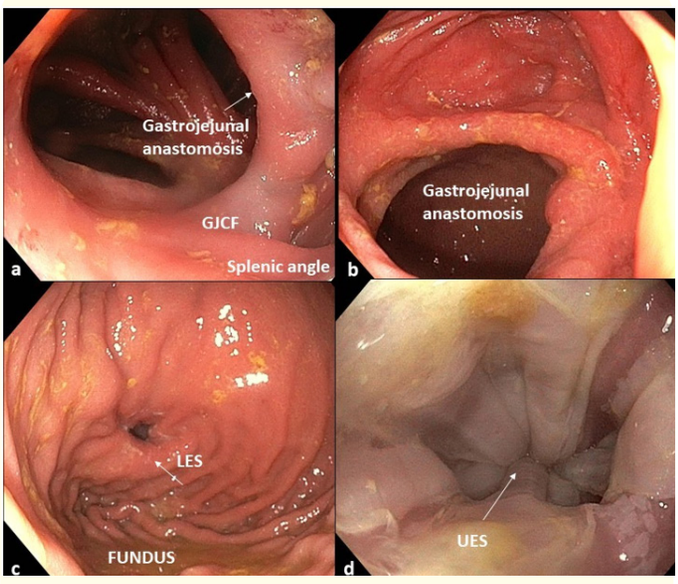

Figure 1: Gastrojejunocolic fistula (GJCF) in a patient with history of Billroth II gastrectomy.

(a) and (b): Large GJCF at the splenic angle, view from the descending colon. (c): Stomach and Lower Esophageal Sphincter (LES), view through the GJCF. (d): Upper Esophageal Sphincter (UES) view from the upper part of the esophagus.

After the diagnosis of the GJCF, the patient was referred for nutritional status evaluation before surgical intervention. Parenteral nutrition was initiated and adjusted daily according to the patient's basic metabolic needs. Meanwhile, an exploratory laparoscopy was performed during which a surgical jejunostomy was placed for enteral feeding. Ascites cytology and culture were exempt of malignant cells and granulomatous disease. Patient was also started on eradication treatment for H. *Pylori*. Eight weeks later, surgical management of the fistula was attempted after the albumin level adequately increased to 32 g/L and his weight reached 49 kg (11% increase of Total Body Weight).

Intra-operatively, a radical one-stage en-bloc resection was performed, consisting of partial gastrectomy, truncal vagotomy, resection of the gastro-jejunal fistula and conversion into Roux-en-Y anastomosis, segmental resection of the transverse colon and colocolic anastomosis. Pathology results showed reactive lymphadenopathy, and no malignant cells in the resected segments.

Recovery post-operatively was uneventful, and the patient was discharged 2 weeks later. During follow-up visit, he reported regular bowel movements, progressively advancing diet, objectified weight gain, resolution of lower limb edema and improved general status. Repeat laboratory studies one-month post-surgery showed an improvement of anemia, a decrease in inflammatory markers, and normalization of the albumin level to 38 g/L.

Discussion

GJCF is a rare and under-recognized complication of gastric surgery. It is more frequently reported following Billroth II gastrectomy performed for PUD [8]. Being a late complication, with a latent period of up to 30 years after initial surgery, GJCF remains a crucial diagnosis to exclude nowadays [9]. This condition is thought to be caused by stromal ulcer related to incomplete vagotomy, inadequate gastrectomy, and long afferent loop [2].

The clinical presentation of this case is aligned with the literature, indicating a common presentation of patients with a classic triad of diarrhea, weight loss and fecaloid vomiting [3,10,11]. Pain is occasional and unspecific [12]. In addition, similarly to our patient's presentation, short bowel syndrome and subsequent malnutrition may occur leading to severe hypoalbuminemia, anemia and low vitamin B12 [13].

The diagnosis of GJCF can be challenging and a high index of suspicion is required for early diagnosis and management. Usually, a combination of radiologic and endoscopic investigations is needed to confirm the diagnosis. While upper GI series and barium enema remain valuable diagnostic tools for GJCF, CT scan, ideally with administration of oral contrast, may provide further information about the extent and complexity of the fistula and its relation

with surrounding structures. In addition, the role of CT scan is crucial in excluding extra-luminal disease that may reveal underlying etiology [12]. The role of endoscopy as an initial diagnostic tool remains controversial. In fact, small fistulous orifices can be easily missed between gastric folds or colonic haustra. Therefore, upper and lower GI endoscopies are recently used for confirming the diagnosis and excluding other gastrointestinal diseases [5]. In our case, contrast-enhanced CT scan, without oral contrast, in addition to the PET-CT revealed indirect signs of colonic inflammation, but failed to diagnose the fistula.

Given the fact that our patient had a history of Helicobacter *Pylori* infection, it remains pertinent to consider its potential role in the pathogenesis of the GJCF. H. *Pylori* related sustained inflammation, particularly at the site of gastro-enteric anastomosis in patients with a history of gastric surgery seems to be a contributing factor for fistula development [13].

The management plan nowadays starts with optimizing patients' nutritional status and correcting electrolytes disturbances, as the majority of patients usually present with some degree of malnutrition. For this purpose, both total parenteral nutrition (TPN) and total enteral nutrition (TEN) through a jejunostomy can be opted for. Surgical treatment consists of single stage resection with primary reconstruction. In our presented case, the patient received exclusive total enteral nutrition through a jejunostomy feeding tube for 8 weeks, followed by a one-stage en-bloc resection of the fistula, and conversion into Roux-en-Y anastomosis. This surgical approach, similar to several cases reviewed in the literature, seem to be successful in decreasing the mortality rate as well as the recurrence rate among patients with GJCF after Billroth II gastrectomy [2,3,10,11,13].

Conclusion

In conclusion, the present case report and literature review highlights the importance of considering GJCF as differential diagnosis during the workup of chronic diarrhea, weight loss and malnutrition in patients with history of gastric surgery. While endoscopy alone do not always succeed in identifying a GJCF, prompt diagnosis relies on the association of clinical presentation, laboratory findings, and imaging. Historically, surgical treatment consisted of two or three-stage procedure seeing patients' poor nutrition status pre-operatively. However nowadays, enteral and parenteral nutrition made single stage en-bloc resection possible, reducing mortality and recurrence rates in patients with GJCF.

Declaration of Patient Consent

We hereby confirm that informed consent was obtained from the patient involved in the case report for the publication of their information and accompanying imaging.

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