Jikeikai Med J 2022 ; 69 : 7-12

Case Report

Gastric-transverse Colon Fistulas are Difficult to Diagnose Owing to Proximal Gastric Ulcers : A Case Report

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ABSTRACT

A gastrocolic fistula arising from a benign gastric ulcer is rare and is extremely difficult to diagnose in the presence of other complications, such as a gastric ulcer and digestive tube bleeding. We present a case of gastrocolic fistula that was difficult to diagnose owing to a nearby giant ulcer. A 64-year-old man presented with 1-year history of preprandial and postprandial epigastric pain. Because laboratory studies revealed mild anemia, we suspected a hemorrhagic gastric ulcer and performed an emergent gastroscopic examination. It revealed a giant gastric ulcer on the upper and middle posterior walls of the stomach body. We started treatment with proton pump inhibitors. When we performed a follow-up gastroscopic examination, we suspected a gastrocolic fistula because of the patient's halitosis with a fecal odor and carefully observed the inside of the stomach. We found that the ulcer had improved but also found on the posterior wall of the middle gastric body near the ulcer a gastrocolic fistula leading to the transverse colon. Because gastrocolic fistulas near ulcers are difficult to diagnose with radiographic imaging and endoscopic examinations at initial presentation owing to inflammatory edema, we believe physical examination and follow-up imaging and endoscopic examinations are important.

(Jikeikai Med J 2022 ; 69 : 7-12)

Key words : gastrocolic fistula, giant ulcer, gastroendoscopy

INTRODUCTION

A gastrocolic fistula arising from a benign gastric ulcer is rare and can easily be undiagnosed in the presence of other complications, such as gastric ulcers and digestive tube bleeding[1]. We report a successfully treated case of gastrocolic fistula which had been difficult to diagnose owing to a nearby gastric ulcer.

CASE REPORT

A man in his 60s presented to our hospital with 1-year history of preprandial and postprandial epigastric pain. He had had multiple gastric ulcers but was not being treated with antiplatelet agents, anticoagulants, or nonsteroidal anti-inflammatory drugs. He smoked cigarettes and drank alcohol.

At the time of admission, his blood pressure was 117/85 mm Hg, and his pulse was 67 beats/minute. Body

Received : May 31, 2022 / Accepted : June 24, 2022
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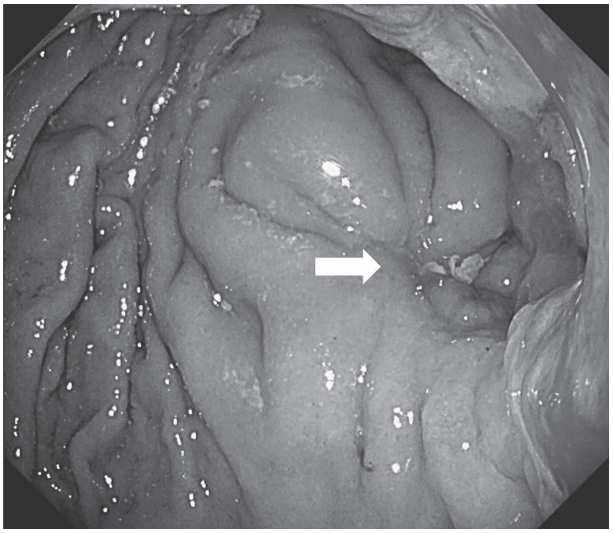

Fig. 1. Gastroscopy findings.
Gastroscopic view of the gastrocolic fistula. A giant gastric ulcer was indicated. Inflammatory edema made the location of the gastrocolic fistula (arrow) difficult to identify.

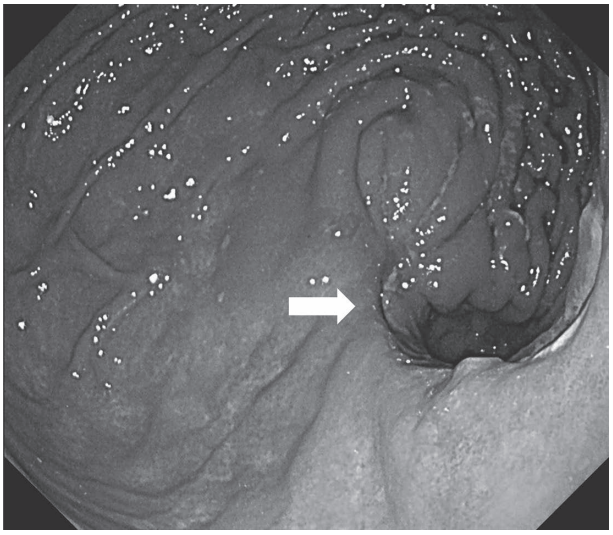

Fig. 2A. Gastroscopy findings after 5 days of treatment.
Gastroscopic view of the gastrocolic fistula after 5 days of treatment. Improved inflammation allowed the gastrocolic fistula's location (arrow) to be identified.

temperature was 36.2°C. Abdominal examination revealed epigastric pain without rebound tenderness. Blood tests revealed mild anemia with 11.3 g/dl and an increased inflammatory response with 11,800/μl and a C-reactive protein level of 0.98 mg/dl.

Because of the mild anemia, we suspected a hemorrhagic gastric ulcer and performed an emergent gastroscopic examination. The examination revealed a giant gastric ulcer on the upper and middle posterior walls of the stomach body (Fig. 1). We started to administer a proton pump inhibitor. A follow-up gastroscopic examination was performed 5 days after the first examination. Because the patient had halitosis with a fecal odor, we suspected a gastrocolic fistula and carefully observed the inside of the stomach. A follow-up gastroscopic examination showed a smaller, improved ulcer and revealed a gastrocolic fistula leading to the transverse colon on the posterior wall of the middle gastric body adjacent to the ulcer (Fig. 2a). The fistula would have been difficult to find with the first gastroscopic examination owing to the inflammation of the adjacent ulcer. We were able to pass the gastroscope through the fistula into the colon (Fig. 2b). Biopsy at the margins of the fistula revealed no malignancy, and a rapid urease test was positive. An computed tomographic (CT) scan of the abdomen also showed a gastric–transverse colon fistula (Fig. 3).

Although the patient started to eat, watery diarrhea appeared, and the hypotrophic state progressed ; therefore, distal gastrectomy and partial transverse colon resection were performed. The patient recovered satisfactorily, was discharged on the 10th day after surgery with good progress, and remains well.

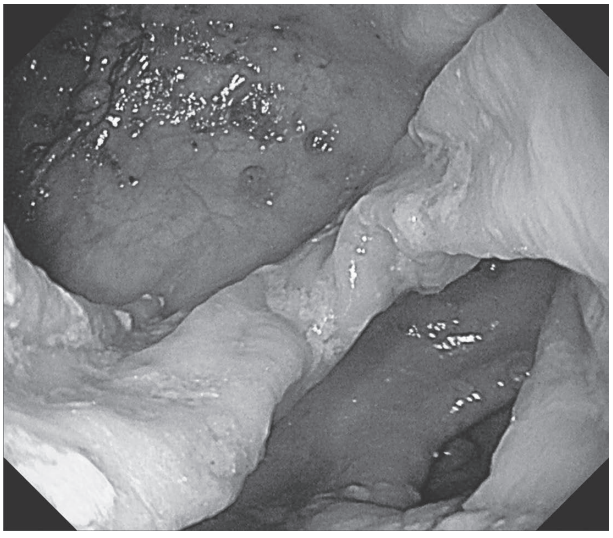

Fig. 2B. Gastroscopy findings.
Gastroscopic view of the transverse colon through the gastrocolic fistula.

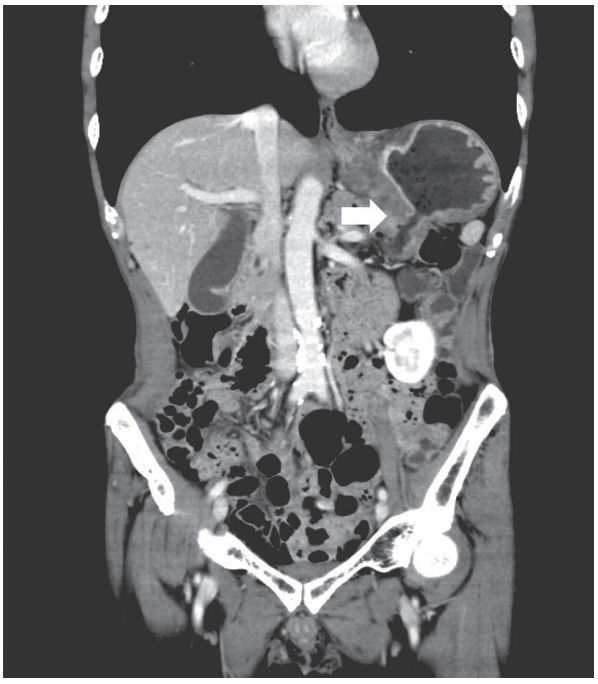

Fig. 3. Abdominal computed tomography findings
Computed tomographic scan revealed the fistula between the stomach and the transverse colon (arrow).

Discussion

Gastrocolic fistulas can be caused by malignant diseases, such as gastric cancer and colorectal cancer, which cause a majority of cases, and malignant gastric lymphoma. Benign diseases causing these fistulas include gastrojejunostomy anastomotic ulcers after gastrectomy, which are the most common benign cause[2], Crohn's disease, and gastric ulcers, which are a rare cause[1,3-5]. Gastrocolic fistulas have also been reported as complications of percutaneous endoscopic gastrostomy and proton therapy for pancreatic cancer[6,7].

All reported gastrocolic fistulas have been between the stomach and the transverse colon. The fistulas are believed to form when a gastric ulcer extends to the serous surface, adheres to the transverse colon, perforates the serous surface of the colon, exposes it to gastric acid, causes necrosis, and forms a communication to the transverse colon[8]. This process of forming fistulas with other organs is similar.

In cases of gastrocolic fistula, a triad of weight loss, watery diarrhea, and halitosis with a fecal odor was proposed by Marshall and Kundhausen in 1957 and is well known[2]. In the present case, the patient's halitosis with a fecal odor was noted before the follow-up gastroscopic examination and led us to suspect a gastrocolic fistula. Therefore, we believe that it can help when the diagnosis is difficult, as in the present case.

For diagnosing gastrocolic fistulas, an upper gastrointestinal radiographic series and barium enemas are useful ; the diagnosis rate with a barium enema is reportedly greater than 90%[2,9-10]. However, performing an urgent barium contrast examination in patients with active ulcers is difficult. With the marked improvements of endoscopic devises and diagnostic techniques, we believe that diagnosing gastrocolic fistula by combining endoscopy, mainly upper gastrointestinal endoscopy, and CT will likely be possible.

In the present case, the inflammatory edema caused by the ulcer prevented us from diagnosing the gastrocolic fistula on the basis of the first endoscopic examination, but we were able to diagnosis it with a follow-up gastroscopic examination and the presence of halitosis with a fecal odor. In addition, we confirmed that the fistula was between the stomach and transverse colon by inserting the endoscope from the stomach, through the fistula and to the transverse colon. A follow-up abdominal CT scan also showed that the fistula was in the transverse colon. Therefore, we believe that performing numerous follow-up imaging studies is important, especially when inflammatory edema makes diagnosis difficult with initial imaging studies. Also important is determining, with a biopsy during gastroscopic and colonoscopic examinations, the presence or absence of a malignancy. In the present case, a biopsy showed no malignancy.

The main treatment for gastrocolic fistula is surgery, which involves distal gastrectomy and right hemicolectomy to resect the fistula en bloc. In Japan, extensive gastrectomy and partial colectomy have been performed to reduce stomach acid in many cases[3]. In the present case, we decided to perform distal gastrectomy because the gastric ulcer was extensive and the inflammatory adhesions at the site of transverse colon perforation were severe (Fig. 4A-D). Excellent antacids and eradication treatment of *Helicobacter pylori* are now deterrents to ulcer recurrence ; therefore, depending on the size of the ulcer and the degree of inflammation, reduction surgery via partial gastrectomy might be sufficient[11,12].

Before surgery, a patient's nutritional status should be improved as much as possible with total parenteral nutrition

Fig. 4A. Surgical specimen, gastric side of fistula
A 45 × 25-mm gastric ulcer with a fistula on the posterior wall of the midline of the gastric body. The gastric wall was edematous and thickened throughout. The fistula site is indicated by an arrow.

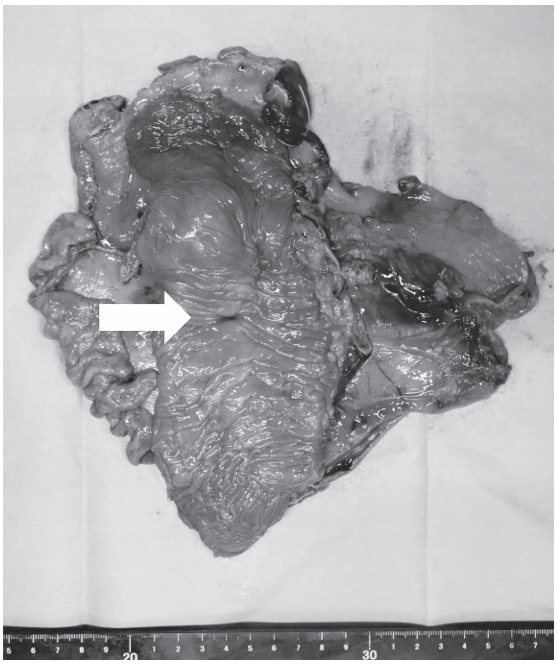

Fig. 4B. Surgical specimen, colonic side of fistula
Pinhole-sized fistula in the transverse colon (arrow).

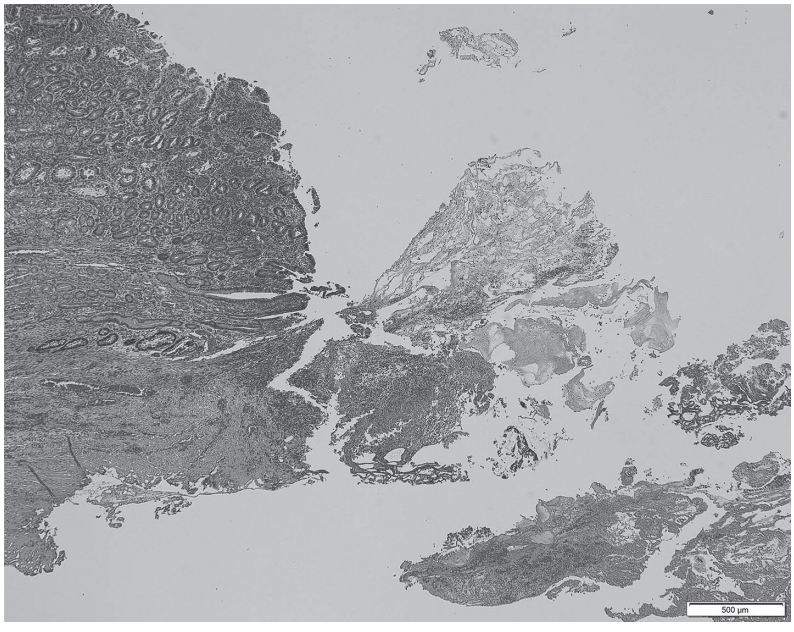

Fig. 4C. Pathology, gastric side of fistula
Inflammatory cell infiltration was observed. No cancer cells were observed.

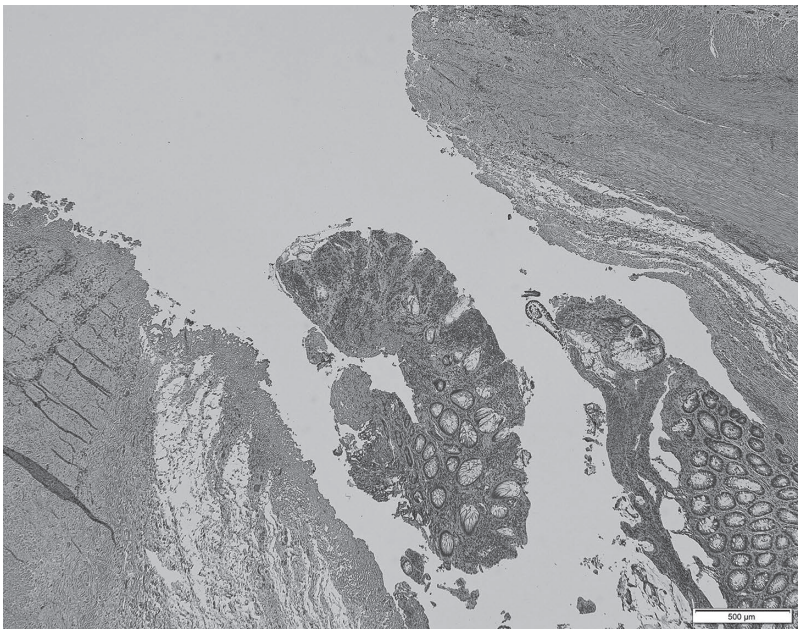

Fig. 4D. Pathology, colonic side of fistula
The glandular structure was preserved, and no cancer cells were observed.

because many patients have a long disease period and are often in a low nutritional state. The present patient had been in a low nutritional state since gastrocolic fistula had first been diagnosed, and hypoproteinemia developed during hospitalization ; therefore, total parenteral nutrition was provided.

A recently reported treatment for gastrocolic fistula is endoscopic closure[13]. This novel treatment might be performed for patients who are unable or unwilling to undergo other types of surgery. However, long-term follow-up after this treatment was not reported, and we believe that recurrence is always possible and that more data on results is needed. In the present case, the inflammation of a gastric ulcer had spread to the fistula, which was large and treated with surgery.

In conclusion, the present case highlights the difficulty of diagnosing a gastrocolic fistula adjacent to an ulcer.

Authors have no conflict of interest.

Authors contributions : MK and HS were responsible for the study concept, data collection, and writing the paper. The other authors collected data and reviewed and corrected the manuscript. The authors read and approved the manuscript.

References

1. Winata LS, Kong CH, Thiruchelvam D. A case of a bleeding benign gastrocolic fistula in 2014. Int J Surg Case Rep. 2014 ; 5 : 948-50.
2. Marshall SF, Kundhausen J. Gastrojejunocolic and gastrocolic fistulas. Ann Surg 1957 ; 145 : 770-82.
3. Murakata A, Maruyama S, Tanami H. A case of gastrocolic fistula due to gastric ulcer (in Japanese). Nippon Daicho Komonbyo Gakkai Zasshi (Journal of Japan Society of Coloproctology). 2012 ; 65 : 426-30.
4. Stamatakos M, Karaiskos I, Pateras I, Alexiou I, Stefanaki C, Kontzoglou K. Gastrocolic fistulae ; From Haller till nowadays. Int J Surg. 2012 ; 10 : 129-33.
5. Wu S, Zhuang H, Zhao J, Wang Y. Gastrocolic fistula in Crohn's disease detected by oral agent contrast-enhanced ultrasound : A case report of a novel ultrasound modality. World J Gastroenterol. 2020 ; 26 : 2119-25.
6. Tabuchi A, Hara F, Tameski S, Nakajima T. A case of gastrocolic fistula after percutaneous endoscopic gastrostomy (in Japanese). Nihon Rinsho Geka Gakkai Zasshi (Journal of Japan Surgical Association). 2003 ; 64 : 2745-8.
7. Ishido Y, Sato M, Watanabe H, Negami N, Saito T, Okada H, et al. Gastrocolic fistula in a patient undergoing proton therapy for local recurrence after distal pancreatic cancer surgery (in Japanese). Nihon Gekakei Rengo Gakkaishi (Journal of Japanese College of Surgeons). 2015 ; 40 : 807-11.
8. Katayama F, Ito K, Ito Y. A case of gastrocolic fistula due to gastric ulcer (in Japanese). Donan Igakkai Zasshi (Journal of the Medical Assoc. South Hokkaido). 1986 ; 21 : 275-7.

9. Yamaguchi A, Kawanaka M, Nakamura K, Saihara M, Fukunaga W, Yoshida Y, et al. A case of gastric cancer forming a fistula between the stomach and transverse colon (in Japanese). Hyogo Ika Daigaku Igakkai Zasshi (Acta Medica Hyogoensia). 2016 ; 40 : 51–6.
10. Imai H, Tanaka K, Yawata K, Kojima N, Matsui K, Adachi T, et al. Gastrocolic fistula secondary to adenocarcinoma of the colon. Am Surg. 2011 ; 77 : E13–4.
11. Kano M, Kurisu Y, Akagi M, Tagawa K, Wataya Y, Niiya N. A case of gastrocolic fistula detected by hemorrhagic gastric ulcer (in Japanese). Nihon Rinsho Geka Gakkai Zasshi (Journal of Japan Surgical Association). 2006 ; 67 : 1270–3.
12. Tsukuda G, Yokoyama T, Isozaki M, Matsuo K, Nogaki K, Homo T, et al. A case of benign gastric ulcer with gastrocolic fistula (in Japanese). Nihon Fukubu Kyukyu Igakkai Zasshi (Journal of Abdominal Emergency Medicine). 2013 ; 33 : 105–9.
13. Abdelqader A, Poushanchi B, Vallabh H, Abunnaja S, Nasr J. Endoscopic closure of gastrocolic fistula using clips and detachable ligatures. VideoGIE. 2018 ; 3 : 311–2.