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Diagnosis and current management of gastrojejunocolic fistula

胃空腸結腸瘻的診斷及現行的處理方法

Gastrojejunocolic fistula is a late complication of gastroenterostomy and is associated with inadequate gastric resection and incomplete vagotomy. In the past, attempted primary repair had high mortality and staged operations were normally performed. We present two cases of gastrojejunocolic fistula and discuss the modern management of this condition. In both cases, improved nutritional support allowed successful one-stage surgical repair to be performed.

胃空腸結腸瘻是胃腸吻合術的晚期併發症，它與進行胃切除術時切除不當和迷走神經切斷術不完整有關。過去曾利用主要的修補手術來治療但死亡率很高，所以現在通常分階段進行手術。我們報告了兩宗胃空腸結腸瘻的病例，並討論這種病況的現行處理方法。在這兩宗病例中，改善病人的營養可以有助成功地進行一次性修補手術。

Key words:
Gastrectomy;
Gastric fistula;
Gastroscopy;
Intestinal fistula

關鍵詞：
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Introduction

Gastrojejunocolic fistula (GJF) is associated with previous gastroenterostomy. It is thought to be the late complication of a stomal ulcer, which develops as a result of inadequate gastric resection or incomplete vagotomy, for peptic ulcer disease. Most patients with GJF present with a symptom triad of faecal vomiting/breath, chronic diarrhoea, and weight loss.[1-3] The diagnostic investigation of choice to date has been barium enema, which has a sensitivity of 95% for this condition.[3,4] Given the improvement in endoscopic imaging and instruments, however, gastroscopy may now have a role in the diagnosis of GJF.

Due to the poor nutritional status of patients with GJF, operative mortality following surgical repair has been as high as 40%. Staged repair of GJF, with preliminary diversion colostomy, has been favoured to minimise mortality.[2,3,5,6] One-stage repair has also been possible with the assistance of intensive preoperative and postoperative support.

We report the management of two cases with GJF, seen at Alice Ho Miu Ling Nethersole Hospital, in April 1998. The application of endoscopy to the diagnosis of this uncommon condition and the surgical strategy implemented are described.

Case reports

Case 1

A Chinese man, aged 42 years, presented with a 1-month history of diarrhoea, intermittent vomiting of faecal material, and weight loss. He had undergone gastric surgery 24 years previously for peptic ulcer disease. A complete blood count revealed a haemoglobin level of 100 g/L (normal

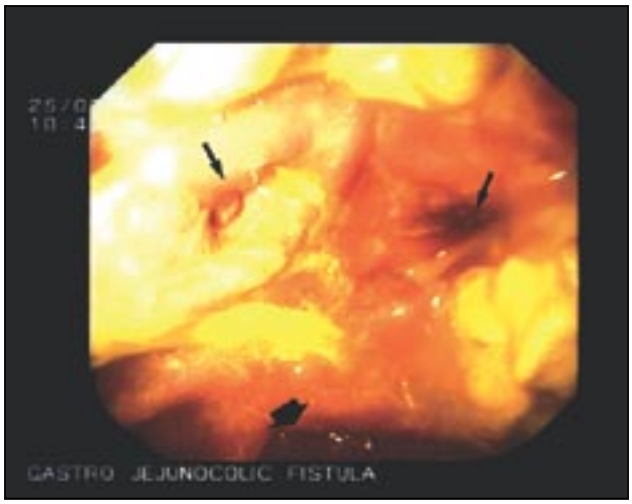

Fig 1. Endoscopic view of the gastrojejunocolic fistula. The colonic fistular openings (arrows) and gastroenterostomy (arrowhead) are shown

range, 140-180 g/L), a total protein level of 45 g/L (normal range, 60-80 g/L), and an albumin level of 21 g/L (normal range, 40-60 g/L). There were no other findings of note. Chest and abdominal X-rays were unremarkable. Gastroscopy showed a previous Polya gastrectomy, with evidence of an anastomotic ulcer and a GJF (Fig 1). The presence of colonic mucosa in the fistula was proven on histological analysis of the biopsy specimen. A barium meal and follow-through indicated a partial gastrectomy only. Barium enema assessment confirmed the presence of a jejunocolic fistula at the level of the distal transverse colon (Fig 2). Total parental nutrition (TPN) was given for 1 month until the patient's albumin level improved to 37 g/L. Intraoperatively, a Polya gastrectomy with a gastric remnant of more than 50%, and a GJF was seen. Revision gastrectomy, segmental resection of the transverse colon, and Roux-en-Y reconstruction was performed. Recovery was uneventful, with a full diet resumed on day 10, and TPN discontinued. The patient remained well at follow-up.

Case 2

A Chinese man, aged 74 years, presented with a deteriorating general condition, weight loss, and diarrhoea. He was found to have an electrolyte disturbance and anaemia. The patient's initial complete blood count revealed a haemoglobin level of 94 g/L, a sodium level of 127 mmol/L (normal range, 136-142 mmol/L), an albumin level of 23 g/L, and a total protein level of 50 g/L. The patient had a medical history of chronic obstructive airways disease, and had previously undergone a Polya gastrectomy in mainland China. Gastroscopy showed gastroenterostomy and the presence of faecal matter in the stomach. On repeat endoscopy, a GJF was identified, and the presence of

Fig 2. Barium enema showing the site of the gastrojejunocolic fistula (arrow), with barium contrast reflux into the jejunum and stomach evident

colonic mucosa was confirmed by histology. No other contrast radiological study was scheduled. Total parental nutrition was given for 1 month before surgery. Intraoperative findings were a previous Polya gastrectomy with a gastric remnant of 50%, and a GJF. A revision gastrectomy, truncal vagotomy, and segmental resection of the jejunum and transverse colon with Roux-en-Y reconstruction was performed. Postoperatively, the patient received intensive care for 4 days and was able to resume a full diet on day 10. Recovery was uneventful and the patient remained well at follow-up.

Discussion

Gastric surgery for peptic ulcer disease is now rarely performed due to the development of medical therapies including H_2-receptor antagonists, proton pump inhibitors, and regimens for *Helicobactor pylori* eradication. Gastrojejunocolic fistula is thought to be the late complication of inadequate surgery resulting from simple gastroenterostomy, inadequate gastric resection, or incomplete vagotomy.[7] This results in stomal ulcer, which if untreated leads to the development of a fistula into surrounding organs. There have been case reports of this condition since the turn of the century.[8] A major increase in the number of patients undergoing gastric surgery, however, was seen in the

1960s and 1970s, with the development of anaesthetic techniques. Previous case reports of GJF have documented a latent period of up to 30 years before presentation.[6] Thus, patients who underwent gastric surgery in the 1970s are still likely to be seen with GJF in current clinical practice.[7]

Although the usual diagnostic test for GJF is barium enema, in the current cases, the diagnosis was made on endoscopy.[7,9] The clinical history, combined with a low albumin level, and gastroscopy findings of faecal matter associated with gastroenterostomy suggest the possibility of GJF. The diagnosis can be made on histological identification of colonic mucosa in the fistula. There is no need for further confirmatory investigations.

In an effort to reduce the mortality associated with surgical intervention for GJF, a 3-stage operation involving a preliminary diversion colostomy has been used.[2,5] This approach aims to improve nutritional status, and to reduce diarrhoea and vomiting due to jejunitis, resulting from the reflux of colonic content into the small bowel and stomach.[3,5] With this traditional 3-stage repair, mortality is reduced to 5%.[3] Advances in TPN over the last 20 years, however, allow the patient's condition to be optimised before definitive surgery.[6] This has been the trend in the last few years, and both operative morbidity and mortality have been subsequently minimised with one-stage surgical repair.[1,7,10] With regard to definitive surgery, simple repair is associated with a high recurrence rate, since the predisposing factors for stomal ulcer are not addressed.[3] If a large gastric remnant remains, a revision gastrectomy to remove excessive antrum should be performed.[10] If vagotomy has not previously been completed, truncal vagotomy should be performed. Recurrence is rare, with the above definitive surgery.

Conclusion

Gastrojejunocolic fistula, although rare, is seen occasionally in current practice as a result of past gastric surgery. A diagnosis of GJF should be considered in a patient with a history of gastric surgery, who presents with symptoms of faecal vomiting, chronic diarrhoea, and weight loss. Diagnosis is possible using upper gastrointestinal endoscopy. Modern management of GJF involves improving metabolic status with TPN, before undertaking one-stage, definitive surgery, with revision gastrectomy and/or truncal vagotomy as indicated.

References

1. Alhan E, Calik A. Gastrojejunocolic fistula. Coloproctology 1990;12:187-9.
2. Mathewson C Jr. Preliminary colostomy in the management of gastrocolic and gastrojejunocolic fistulae. Ann Surg 1941; 114:1004-10.
3. Lowdon AG. Gastrojejunocolic fistulae. Br J Surg 1953;41: 113-28.
4. Thoeny RH, Hodgson JR, Scudamore HH. The roentgenologic diagnosis of gastrocolic and gastrojejunocolic fistulas. Am J Roentgenol 1960;83:876-81.
5. Pfeiffer DB. The surgical treatment of gastrojejunocolic fistula. Surg Gynecol Obstet 1941;72:282-9.
6. Sorensen BM. Non malignant gastrointestinal shortcircuit. (Gastrojejunocolic fistula and gastroileostomy). Acta Chir Scand Suppl 1969;396:67-70.
7. Subramaniasivam N, Ananthakrishnan N, Kate V, Smile SR, Jagdish S, Srinivasan K. Gastrojejunocolic fistula following surgery for peptic ulcer. Trop Gastroenterol 1997;18:183-7.
8. Czerny V. The treatment of fissure and prolapse of sigmoid colon [in German]. Bruns Beitr Klin Chir 1903;37:765-9.
9. Tavenor T, Smith S, Sullivan S. Gastrocolic fistula. A review of 15 cases and an update of the literature. J Clin Gastroenterol 1993;16:189-91.
10. Alhan E, Calik A, Cinel A, Kucuktulu U. Complicated marginal ulcers after surgery for duodenal ulcer. Acta Chir Hung 1995-96;35:77-85.