Chirurgia (2012) 107: 52-54
Nr. 1, Ianuarie - Februarie
Copyright© Celsius

Gastrojejunocolic fistula: report of six cases and review of the literature

I.C. Puia, C. Iancu, O. Bălă, D. Munteanu, N. Al-Hajjar, P.G. Cristea

Surgical Clinic III, University of Medicine and Pharmacy "Iuliu Haţieganu", Cluj-Napoca, Romania

Rezumat

Fistula gastrojejunocolică: raportarea a şase cazuri şi trecerea în revistă a literaturii

În serviciul nostru au fost înregistrate şase fistule gastrojejunocolice între 1995-2005. Toate fistulele au survenit la bărbaţi ce au suferit rezecţii gastrice pentru ulcer duodenal.
Metoda: Diareea, scăderea în greutate, durerile postprandiale şi halena fetidă au fost semnele clinice, în ordine descendentă a frecvenţei. Diagnosticul preoperator a fost posibil în 5 cazuri prin endoscopie şi studiul tranzitului baritat. În cazul a cinci pacienţi opţiunea terapeutică a fost un timp operator cu rerezecţie gastrică şi rezecţia segmentară a colonului transvers. Într-un caz s-a realizat sutura după avivare a fistulei.
Rezultate: Deşi în cazul a 2 pacienţi au apărut dehiscenţe anastomotice nu a fost înregistrat vreun deces.

Cuvinte cheie: fistulă, gastrojejunocolică, rerezecţie gastrică

Abstract
Six gastrojejunocolic fistulae were recorded at our service between 1995-2005. All the fistulae occurred in men who had gastric resection performed for duodenal ulcer.
Method: Diarrhea, weight loss, postprandial pain and fecal breath were the clinical findings present in descending frequency. Preoperative diagnosis was possible in 5 patients by endoscopy and barium contrast studies. In five patients the option was a one-stage procedure with revision gastrectomy and segmental resection of the transverse colon. In one case simple dismantling of the fistula was performed.
Results: Although in two patients anastomotic leakage developed no mortality was recorded.

Key words: colon fistula, gastrojejunocolic, revision gastrectomy

Corresponding author: Ion Cosmin Puia MD
Surgical Clinic III
University of Medicine and Pharmacy
"Iuliu Haţieganu", Cluj-Napoca, Romania
Str. Croitorilor Nr. 19-21, 400162
Cluj-Napoca, Romania
E-mail: drpuia@yahoo.fr

Introduction

Prior to the advent of gastric surgery, direct communication between the stomach, jejunum and the colon was usually secondary to cancer, syphilis, tuberculosis, diverticulitis or trauma. Czerny reported in 1903 the first known case of gastrojejunocolic fistula (GJF) occurring as a complication of gastrojejunal ulcer (1).

With the advent of vagotomy with drainage and higher gastrectomy, the incidence of marginal ulceration and GJF have declined. GJF occurs in approximately one out of seven individuals with marginal or recurrent ulceration (1).

Material and Method

This report details our experience in the care of six patients with GJF as well as a review of the experience of others.

The records of six patients treated for gastrojejunocolic fistula from 1995 through 2005 were reviewed. The clinical

course, laboratory data, and management of these patients were evaluated.

Gastrojejunocolic fistulas have been reported as early in life as 14 years and also at the advanced age of 80 (1). In our series the youngest patient was 39 and the oldest 67. The average age was 57.1 years.

All six patients were males. This almost exclusive incidence among males is found in other authors' figures (1). All 6 patients in our series had originally been operated upon for duodenal ulcer.

Results

Although fistula formation into the colon has occurred after virtually every type of ulcer operation known, in all instances the previous surgical procedure was subtotal gastrectomy with a Billroth II anasthomosis *(Fig. 1)*.

Diarrhea and weight loss were the most common clinical findings. Diarrhea and weight loss were present in 83.33 and 66.66 per cent, respectively, of the patients with GJF. The steatorrhea is customarily severe and debilitating. The diarrhea may be postural, becoming worse when the patient is recumbent (2). It seems that the size of the fistula does not appreciably affect the severity of symptoms. When the fistula is minute, however, symptoms of marginal ulcer predominate and diarrhea is less severe (1).

The precise amount of weight lost was known in five patients who had a history of ulcer, and varied between 0 and 25 kg, with an average loss of 15kg.

The other component of the classic triad, fecal vomiting or fecal breath, or both, was found in 50 per cent of our cases. Postprandial pain was present in four patients.

Patients in whom marginal ulcer and subsequent GJF develop usually enjoy a period of good health following operation for peptic ulcer. This asymptomatic period is extremely variable in length, and in our series the interval ranged from six to over 15 years. The average interval was 11 years.

Laboratory findings are consistent with those of malnutrition and acute or chronic electrolyte loss. The total serum proteins and especially the albumin factor were diminished in four patients. Hemoconcentration is common and may obscure the secondary hypochromic anemia. Hemoglobin of less than 12 g/l was recorded in all our patients, with three under 9 g/l.

Radiologic diagnosis of the fistula was made in four of the six patients, 3 by barium enema, and two by upper gastrointestinal series. One patients' fistula was demonstrated by both barium enema and swallow. Gastroscopy was performed in five patients and the fistula was suspected in four. Colonoscopy was performed on one patient in this series.

In five patients the option was a one-stage procedure. Revision gastrectomy, segmental resection of the transverse colon *(Fig. 2)*, and Roux-en-Y (4 cases) or "omega"–loop (1 case) reconstruction was performed. In two cases anastomotic leakage developed. In one case a total gastrectomy was necessary due to a profuse bleeding of the gastric mucosa. In a second case a re-resection with anastomosis in healthy tissue was sufficient.



Figure 1. *The fistula dissected circumferentially*



Figure 2. *The en bloc resected specimen*

In regard to the distribution of gastrojejunocolic fistulas relative to the stomach, anastomosis or jejunum all six were located at the anastomosis. No antral remnant was found. The presence of colonic mucosa in the fistula was not proven on histological analysis of the biopsy specimens obtained by gastroscopy.

Recovery was uneventful. Total enteral nutrition was prefered, when possible, to total parenteral nutrition. The patients were discharged after 10 to 45 days. Although it has been well established that treatment directed only toward the fistula is inadequate unless the ulcer diathesis is also corrected, in one case simple dismantling was the chosen procedure. In this patient the long-term treatment with proton pump inhibitors prevented any recurrence at a 2 years follow-up. Two patients were lost to follow-up. The weight gain at 6 months was between 5-12 kg. No mortality was recorded.

Discussion

GJF is thought to be the late complication of inadequate surgery resulting from simple gastroenterostomy, inadequate gastric resection, or incomplete vagotomy.

The forerunner to the development of a gastrojejunocolic fistula is the marginal ulcer. Marshall reported that one out of seven individuals with marginal ulceration develops a GJF. In his own series of 257 jejunal ulcers, 49 developed fistulae, an incidence of 18% (1). In Codys' series (3), four of five GJF occurred due to marginal ulcer after gastroenterostomy, but an accurate appraisal of the number of marginal ulcers is not available.

Gastric surgery for peptic ulcer disease is now rarely performed due to the development of medical therapies including H2-blockers, proton pump inhibitors, and regimens for Helicobactor pylori eradication. If in the 1960s reports on 30 cases (4) were not uncommon, in the last 20 years reports of no more than 5 cases were published (5,6,7).

A significant question to be considered is whether or not the incidence of GJF has changed worldwide. In our country, due to the fact that H2-blockers were not widely available until ten years ago, gastric surgery was still the choice treatment for ulcer. Thus patients who underwent gastric surgery in the early 1990s are still likely to be seen with GJF in current clinical practice.

The diagnosis of GJF is not a difficult one and can often be suspected on the basis of history and physical examination alone. The majority of these patients will present with the classic symptoms of diarrhea, weight loss and feculent vomiting and will have some previous history of gastric surgery for peptic ulcer disease.

Laboratory findings usually reflect a severe state of malnutrition and dehydration with electrolyte imbalance, diminished serum proteins and vitamin deficiencies. A mild to moderate anemia may be present which may not be observed because of hemoconcentration. Gastric acidity has been shown to be of little value; however, the quality of nasogastric aspiration may be significant if fecal material is aspirated.

The most reliable diagnostic aid in establishing this diagnosis used to be the barium enema. Diagnosis is now confirmed by upper gastrointestinal endoscopy (8,9). Other simple diagnostic aids may be of historical interest. One such test involves placement of a nasogastric tube, followed by a high enema of tap water with indigo carmin. The nasogastric aspirant is then observed for presence of the dye, and if positive indicates a communication between the stomach and colon. The intrarectal pumping of air produces fecal breath.

Because of the debilitating nature of gastrojejunocolic fistulae, careful clinical and laboratory evaluation must be carried out in the preoperative period. An important adjunct to the management of these patients is total parenteral nutrition or total enteral nutrition. Systemic antibiotics are usually not needed in the preparation of the patient but are useful in bowel preparation.

Over the years the surgical management of gastrocolic and gastrojejunocolic fistulae has varied a great deal, ranging from simple colostomy to three-stage procedures. It should be noted that all of these procedures have one thing in common - the diversion of the fecal stream away from the upper gastrointestinal tract, which allows the small intestine to function normally.

Prior to the 1930s treatment generally consisted of resection of the fistula without attempts at correction of the ulcer diathesis. Recurrence rates of ulcer and/or fistula were high.

In the late 1930s defunctionalizing colostomies and staged operative procedures became popular in the treatment of GJF, the simplest of these which was a three-stage procedure consisting of colostomy followed by resection of the fistula and closure of colostomy.

Lahey in 1938 proposed a two-stage approach. At the first stage an ileosigmoidostomy with division of the terminal ileum was performed and at a later date "en bloc" resection of the fistula, distal two thirds of the stomach and right and transverse colon was carried out.

Despite the advantages of Lahey's procedure and the significant reduction in the mortality and morbidity the steady advances in pre- and postoperative care during the 1940's made the one-stage procedure with correction of the fistula and ulcer diathesis seem more feasible.

Marshall et al. (1) pointed out the steady decline in operative mortality, from 25% in 1927-1936 to 4% in 1937-1946 when the two-stage procedure was commonly employed, to no deaths from 1947-1955 when the one stage procedure was performed in 18 cases. With a slight delay the same approach was adopted in Romania with comparable results (10).

References

1. Marshall SF, Knud-Hansen J. Gastrojejunocolic and gastrocolic fistulas. Ann Surg. 1957;145(5):770-82.
2. Juvara I, Prişcu A, Radu C, Rădulescu D. Gastro-jejuno-colic fistulas of ulcerous origin. Chirurgia (Bucur). 1973;22(2):97-110. [Article in Romanian]
3. Cody JH, DiVincenti FC, Cowick DR, Mahanes JR. Gastrocolic and gastrojejunocolic fistulae: report of twelve cases and review of the literature. Ann Surg. 1975;181(3):376-80.
4. Kourias B, Xeros A. Gastro-jejuno-colic fistulas caused by peptic ulcer. Apropos of 34 operated cases. J Chir (Paris). 1963;86:265-80. [Article in French]
5. Rahman M, Miah MA, Sarwar JM, Rahman M. Gastrojejunocolic fistula following surgery for peptic ulcer complications: two case reports. Mymensingh Med J. 2002;11(2):125-8.
6. Zhang SY. Gastrojejunocolic fistula. Report of 5 cases. Zhonghua Wai Ke Za Zhi. 1991;29(8):503-5, 526. [Article in Chinese]
7. Schein M. Free perforation of benign gastrojejunocolic and gastrocolic fistula. Report of two cases. Dis Colon Rectum. 1987; 30(9):705-6.
8. Chung DP, Li RS, Leong HT. Diagnosis and current management of gastrojejunocolic fistula. Hong Kong Med J. 2001; 7(4):439-41.
9. Al Hajjar N, Szasz A, Miftode S, Iancu C, Bălă O, Puia C. Gastrojejunocolic fistula - a rare complication of gastric surgery). Chirurgia (Bucur). 2007;102(6):735-7. [Article in Romanian]
10. Popovici A, Medianu D. Suferinţele tardive consecutive chirurgiei ulcerului gastroduodenal. Bucureşti: Ed. Medicală; 1990.