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Postoperative Course for Intestinal Lesions in Crohn's Disease
—A Study from Initial Surgery to Recurrence—

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Abstract：Background：Surgical treatment for intestinals lesion in patients with Crohn's disease (CD) is performed when medical therapy is not effective, but these lesions can frequently recur because such surgical procedures do not represent radical treatment. We herein discuss the postoperative recurrence of this disease by examining the patients who underwent their initial surgery at our department. Patients and methods：Among the past 20 years, 285 CD patients underwent surgery for the intestine. Among them, 217 underwent their initial surgery at our department, and we investigated the postoperative recurrence in these patients. Results：During the initial operation, the non－perforating type and perforating type were observed in 118 and 99 patients, respectively. We examined recurrence after the initial surgery by dividing the patients into 3 categories：recurrence confirmed with radiographically, recurrence of complications, such as stricture and fistula, and the need for reoperation. Regarding recurrence that was confirmed radiographically, recurrence was confirmed in 78.5% and 86.0% of the patients, 5 and 10 years after the initial surgery, respectively. The recurrence of complications was confirmed in 57.5% and 80.0% of the patients, 5 and 10 years after the initial surgery, respectively. A reoperation was performed for 33.0% and 57.6% of the patients, 5 and 10 years after the initial surgery, respectively. In addition, the number of patients who underwent an intestinal resection alone, a non－resection (strictureplasty and exclusion bypass surgery), and combined procedures with intestinal resection and strictureplasty was 139, 36, and 42, respectively. In an examination of the site of recurrence, it was revealed that recurrence at the site of anastomosis was observed most frequently, namely in 83.7%. Conclusion：Recurrence was confirmed at high rates in patients with CD who underwent surgery, and recurrence was observed at the site of anastomasis in most cases. We consider that further research on the anastomasis methods and postoperative medical therapy are therefore required to decrease the recurrence of this disease at the site of anastomasis in the future.

Key words：Crohn's disease, Postoperative course, Recurrence

Introduction

Crohn's disease is an inflammatory disease that develops throughout the digestive tract as a result of unclear causes. In the treatment of this disease, drug therapy, neutorition therapy and surgical treatment have all been performed, and as a rule surgical treatment is selected when medical therapy is not effective. Since surgical treatment is not a radical therapy, the recurrence of this disease can be observed at a high rate. We therefore

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examined the process from the initial surgery to postoperative recurrence in patients with CD who underwent their initial surgery at our department.

Patients and Methods

During the period from July 1985 to December 2005, a total of 285 patients underwent intestinal surgery to treat CD. Of these 285 patients, 217 patients underwent the initial operation and thereafter were regularly followed up. The clinical conditions and course of these 217 patients have all been studied.

Results

Clinical characteristics

The patients consisted of 153 men and 64 women. Regarding the disease type, small intestine type, small/large intestine type, and large intestine type were observed in 80, 123, and 14 patients, respectively. The average age at the time of the initial surgery was 29.6 years old, and the affected period, period of medical therapy performed prior to surgery, average number of admission were 7.3 years, 4.9 years, and 3.5 times, respectively (Table 1).

Reasons for the initial operation

A review of the surgical indications in these 217 cases indicated perforating type in 99 cases and non-perforating type in 118. Stricture accounted for 90.6% of the non-perforating indications (Table 2).

The initial operation

The 217 initial surgery cases were categorized into 3 groups. Group A included intestinal resections, in which 104 were resections of a single site and 35 resections of 2 or more sites. Group B included patients who underwent intestinal resections and strictureplasty, and comprised 42

Table 1. Initial surgical cases for intestinal Crohn's disease
—217 cases (1985–2005) —

Male/Female	:	153/64	
Disease type of CD	:	Small intestine	80 (36.9%)
	:	Small and large intestine	123 (56.7)
		Large intestine	14 (6.5)
Average age at surgery (years)	:	29.6	
Duration of disease (years)	:	7.3	
Duration of treatment before surgery (years)	:	4.9	
Average number of admission before surgery	:	3.5	

Table 2. Reasons of initial surgery for Crohn's disease

Non perforating type [118]		Perforating type [99]	
Stricture	107	Fistula・Abscess	87
Hemorrhage	5	Free perforation	12
Intractability	2		
Megacolon	1		
Growth retardation	1		
Cancer complicated	2		

Table 3. Initial surgical procedures for intestinal CD

A. Intestinal resection	one site	104 cases	(47.9%)
	more than 2 sites	35 cases	(16.1)
B. Resection+Strictureplasty・Bypass		42 cases	(19.4)
C. Non resected		36 cases	(16.6)
Strictureplasty and/or Bypass		28	
Ileostomy・Colostomy		7	
Closure (perforated site)		1	

cases. Group C included non-resected, cases and those undergoing strictureplasty, and consisted of 36 cases (Table 3).

Follow-up

Postoperative recurrence following the initial operation was analyzed. The patients were followed up on an outpatient basis every one or three months. A laboratory examination was performed every three months. A radiographical examination with barium or endoscopy was done once a year. Ultrasonography (US), computerized tomography (CT) and magnetic resonance imaging (MRI) were employed if necessary.

Criteria of postoperative recurrence

The recurrences were divided into 3 categories. Category Ⅰ: Recurrence was detected radiographically or endoscopially at the time new lesions were discovered or the remaining lesions began to worsen after the operation. Category Ⅱ: Recurrence with symptoms caused by intestinal complications such as stricture or fistula. Category Ⅲ: Recurrence found during surgery following conservative therapy.

This process indicated the rate of radiographic recurrence to be 78.5% at 5 years and 86.0% at 10 years. Similarly, the rate of a recurrence of complications was 57.5% at 5 years and 80.0% at 10

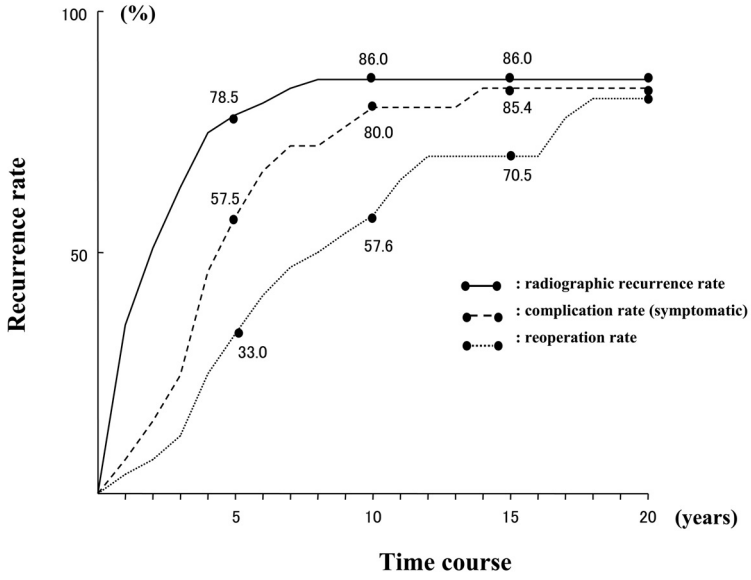
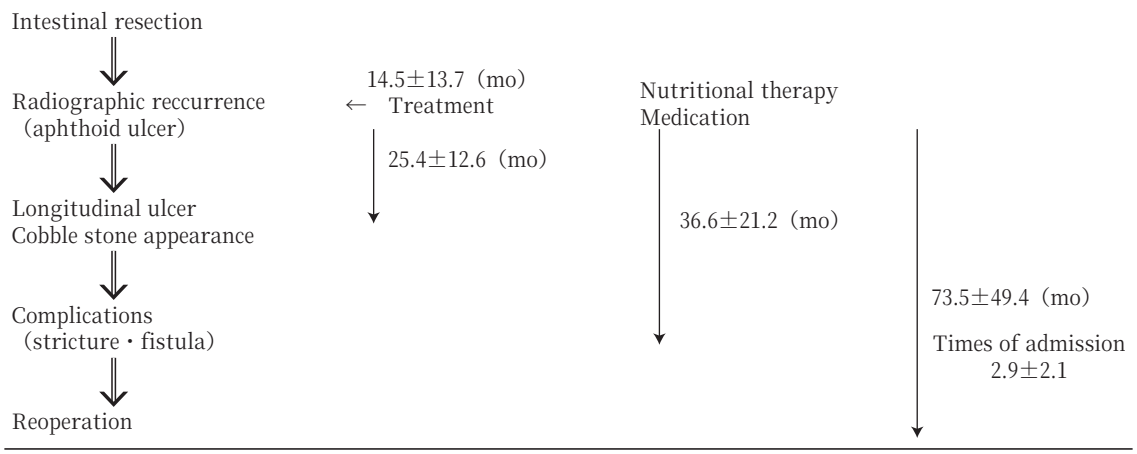


Figure. 1. Postoperative Course of Crohn's disease

Table 4. Postoperative course of radiographic recurrence
—development of aphthoid ulcer recurrence—



years. In addition the rate of a reoperation was 33.0% at 5 years and 57.6% at 10 years (Figure 1).

Treatment for recurrence

Treatment for such recurrent lesions is initially medical treatment primarily consisting of nutritional therapy and the administration of mesalamine. Recently, prednisolone, infliximab, immunomodulators and leukocytapheresis therapy have also been used in combination with this treatment. An examination of the period from the initial surgery to the individual types of recurrence indicated that the period prior to a recurrence of aphthoid ulcers was an average of about 1 year, while the period prior to a recurrence of active lesions was about 2 years, the period prior to a recurrence of complications such as strictures and fistulas was about 4 years and the period prior to a reoperation was about 7 years (Table 4).

The rate of reoperations

The subsequent reoperation rate was evaluated in terms of the initial surgical indication (perforating type/non-perforating type), but no significant difference was noted between the 2 groups over a period of 20 years (Figure 2). Looking at recurrence by site indicated the anastomotic site to be the most frequently at 83.7% (Table 5). In addition, a study of the cases prior to December 2003 based on the surgical indications (Non-perforating type/perforating type) indicated that by the third surgery, the proportion of non-perforating/perforating indications had become reversed. This may be because the external fistulas (enterocutaneous fistula) had increased from 5.5% to 33.3% with the additional surgeries (Table 6).

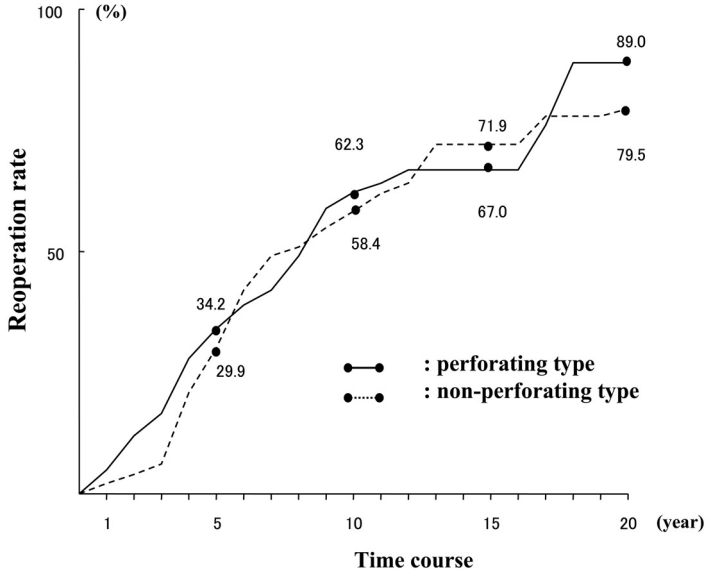


Figure. 2. Comparison of reoperation rate between reasons of initial surgery

Table 5. Site of recurrence lesion at reoperation

Surgical procedure at initial operation [reoperation]	Site of recurrence		
	Anastomosis	Strictureplasty・Bypass	Other
Resection [41/139]	36 (87.8%)		11 (26.8%)
Resection+ Strictureplasty・Bypass [20/42]	15 (75.0)	6 (30.6%)	6 (30.0)
Strictureplasty・Bypass [18/36]		12 (66.7)	9 (50.0)
Total	51/61 (83.7%)	18/38 (47.4)	26/79 (32.9)

(Including patients with multiple factors)

Table 6. Surgical indication for further surgery in 182cases

	Initial operation [182]	Reoperation [75]	Re-reoperation [27]
Non-perforating/ Perforating	106/76 (1.39)	39/36 (1.08)	13/14 (0.93)
Perforating type			
internal fistula	64 (35.2%)	19 (25.3%)	5 (18.5%)
external fistula	10 (5.5)	16 (21.3)	9 (33.3)
abscess	42 (13.2)	6 (8.0)	3 (11.1)

(Including patients with multiple factors)

Discussion

In the past, controversy has arisen between, surgeons who suggested that the surgical resection of intestinal lesions in patients with CD should be a total resection,[1] and those who suggested that palliative surgery should be performed.[2] At present, however, the general consensus is that an intestinal resection should be avoided as much as possible.[3)4] Therefore, as a rule, surgical treatment is performed only when medical therapy is not effective. The surgical method should be selected after examining whether the surgery should be regular surgery or emergency surgery, and whether the lesion type is a perforating or non-perforating type. In addition, Farmer and Davidson reported that the rates of incidence of surgery for patients with and without anal lesion were 41.6% and 36.5%, respectively. Therefore, the complication of anal lesion should be taken into consideration.[5)6] Since surgery for intestinal CD is not a radical treatment, its recurrence rate is high. Arima et al. reported that the recurrence rate during a period from 6 months to 1 year after the surgery was 79% based on the results of radiographic examination performed from the site of anastomasis to the oral side.[7] Rutgeerts et al. reported that a recurrence of the disease was confirmed in 72% of the patients within 1 year after the surgery.[8] Greenstein reported the incidence rates of a reoperation performed 5 and 10 years after the initial surgery to be 38% and 52%, respectively. In our study, the incidence rates of reoperation performed 5 and 10 years after the initial surgery were confirmed to be 32.6% and 59.3%, respectively. Based on these data, the recurrence rate is high and several operations are thus required during the treatment period. Therefore, strictureplasty is generally performed for stricture, instead of an intestinal resection. The first report of strictureplasty in patients with CD was published in 1982 as a surgical method to avoid short bowel syndrome. Lee and Papaioannou et al. suggested that strictureplasty is a useful method to avoid an intestinal resection in many patients.[9] The incidence of sepsis in strictureplasty has been reported to be 3.9%,[10)-12)] and some other reports have also suggested strictureplasty has be a safe and effective method for the surgical treatment of CD.[10) 11) 13) 14)] Fazio et al. concluded that strictureplasty would be more adequate than a resection in patients with CD[13) 14)]. However, although one author published a report on strictureplasty with an observation period of more than 5 years, the observation period in many other reports was short.[10)-12) 15)-17)] Futami et al. suggested strictureplasty to be a safe and effective method for the treatment of CD based on a study with a 9.5-year observation period.[18] Strictureplasty has been performed at the site of a comparatively short stricture. As a new method for long stricture sites, side-to-side isoperistaltic strictureplasty was reported by Michelassi in 1996, and additional studies also showed good results using this method.[19)-21)] In addition to these studies on new surgical methods, the clinical use of infliximab for the treatment of active lesions was initiated in 2002, and this method was therefore considered to represent a significant advance in medical treatment.[22] It is important to protect the postoperative recurrence to maintain the quality of life during the clinical course of CD. We consider that further investigations of such postoperative medical treatment are called for in the future.

Conclusion

A reoperation is frequently required for intestinal CD in spite of a careful follow-up under the cooperation of physicians and surgeons.

The perforating type of intestinal CD, particularly case with external fistulas, were thus observed to increase with additional surgeries. During the surgical treatment of intestinal CD, it is important to maintain the length of the intestine as long as possible and to select the appropriate surgical procedure.

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