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Postoperative Course of Crohn's Disease −In regard to Recurrence and Residual Disease at Anastomosis −

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ABSTRACT : Twenty-seven patients with Crohn's disease who were operated on at the First Department of Surgery, Nagasaki University School of Medicine and followed-up after surgery were reviewed. Involved portion of intestinal tract were 10 in small bowel only, 14 in both small and large bowels, and 3 in large bowel. Major indication for surgery were obstruction, fistula, peritonitis and intractability of medical therapy. Twenty-two patients underwent radical resection and the other 5 patients had the disease left behind at anastomosis. The recurrence rate was 25.9% (7 out of 22), and early recurrence was found in small bowel diseases with longitudinal ulcerations or multiple aphthoid ulcers. Initial recurrence occured near the suture line, which showed no wide spreading in subsequent periods. Two cases with both small and large bowel disease required reoperation over 5 years after initial surgery because of stenosis. Three out of five cases with residual disease at the intestinal resection margin had a good condition, but the other three cases with skip sigmoid disease were intractable for medical therapy. Most suture line recurrence and residual disease at anastomosis were sufficiently managed by postoperative medication for long periods of time. Long-term follow-up study showed a good quality of life in about 75% of these cases. In conclusion, conservative resection rather than the sacrifice of normal bowel should be recommended for an extended disease of small bowel.

INTRODUCTION

Crohn's disease is relatively uncommon in Japan, although it is not a rare disease in Europe and the United States.[1~4] According to the Japan Crohn's Disease Research Commites, 2,178 patients were accumulated until March, 1985, which seemed to occur in 2.3 men and 1.5 women in every 1,000,000 humans.[3]

Although the majority of patients with Crohn's disease usually have been managed by medical therapy, a few patients requir operation because of obstruction, fistula and abscess, and intractability for medication.[5~8] Following ' radical ' abdominal surgery, it has been reported that most patients would have recurrence of the disease, and a large number of patients may require a second operation.[2,6~12] However, in Japan, there have been few reports concerning the long-term follow-up study of the patients operated on.[13~16]

We specifically reviewed the surgical experience with Crohn's disease at our hospitals in order to assess the postoperative course and prognostic implications correlated with recurrence and residual disease at the intestinal resection margin.

MATERIALS AND METHODS

During the period from 1973 to 1989, 27 patients who underwent resections at our hospitals for Crohn's disease were reviewed. The mean age at onset of symptoms was 27 years, with a range of 16 to 72 years. There were 17 men and 10 women. Diagnosis of Crohn's disease was histologically confirmed in all instances.

Patients were grouped according to the extent and location of initial intestinal involvement with Crohn's disease as determined from the original operative and histologic findings. Of the 27 patients, there were 10 (37%) with small bowel disease, 3 (11%) with disease confinded to the large bowel, and 14 (52%) with both small and large bowel disease (mixed disease) (Table 1).

Gross appearance of the resected specimen was classified into four groups on the basis of MORSON's criteria.[17] Type 1 : Ulceration of the mucous membrane was predominant, and the ulcers were serpiginous and discontinuous (Fig. 1) , type II : Longitudinal ulcerations was present, which often developed the ' horse pipe ' stricture of the terminal ileum (Fig. 2) , type III : Cobblestone appearance of the mucous membrane was predominant. Most of them were associated with multiple aphthoid ulcers (Fig. 3), type IV : Longitudinal ulceration was continuous with cobblestone (Fig. 4). This was most frequently found in ileocolic disease.

Table 1. Summary of Study Groups

	No. of Patients	Age (yrs)	Male	Female
Small bowel	10	35	7	3
Large bowel	3	31	2	1
Mixed	14	30	8	6
Total	27	32	17	10

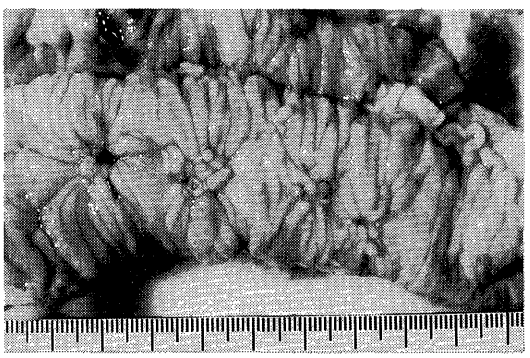

Fig. 1. Crohn's disease of small intestine, showing the discontinuous ulcers.

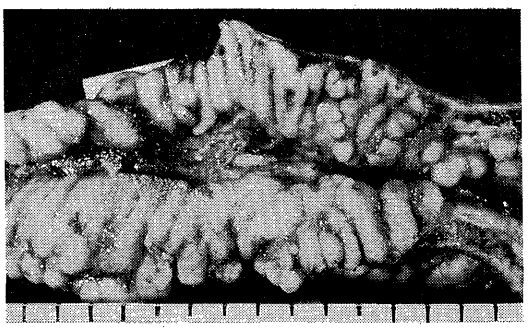

Fig. 2. Longitudinal ulceration of small intest-i ne with the thickning of the bowel wall.

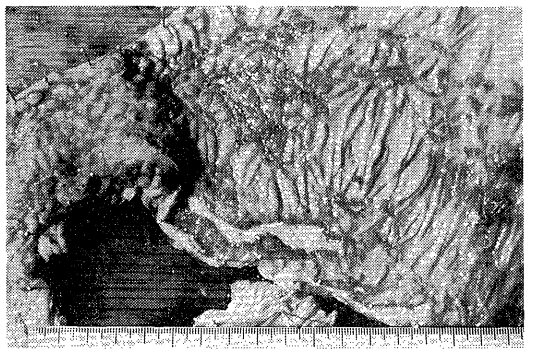

Fig. 3. Cobblestoning of the small intestinal mucosa with multiple apphthoid ulcers.

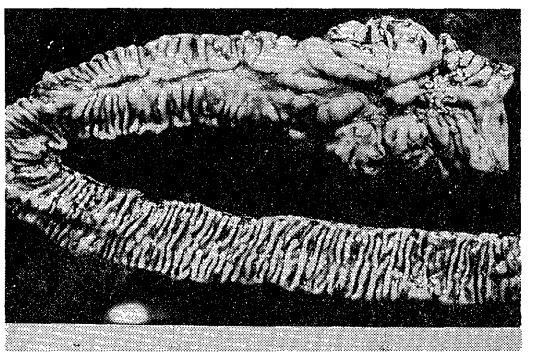

Fig. 4. Cobblestoning of cecum and longitudinal ulceration of terminal ileum.

At the follow-up investigation, ' quality of life ' of the patients were divided into three groups according to BERGMAN's classification.[18] The difinitions were as follow :

QL- I : The patients were in good general health, able to work full time, and have normal leisure time activities without being restrcted by, for instance, diarrhea, tiredness, or pain.

QL- II : The patients' ability to work was reduced during the period of observation, but not by more than 50%. Many patients were treated for complications of Crohn's disease during the observation period. The leisure time activities were restricted by, for example, diarrhea, tiredness or pain.

QL- III : The patients had not been able to work during most of the time because of Crohn's disease or its complications. The leisure time activities were severely restricted by, for example, ileostomy flow, frequent diarrhea with urgency general weakness, or pain.

RESULTS

Symptoms

The average duration of symptoms of Crohn's disease prior to operation was 2.5 years. The most common presenting symptoms were abdominal pain followed by diarrhea. Intestinal obstruction was observed in small bowel diseases, more often than in the others. Abdominal mass was palpable in 83% of mixed disease. Nine patients (33%) had anal disease either at the initial examination or during the course of the medical care of the patients.

Indication for surgery

Chronic and /or acute obstructin was the most common indication for initial surgery (11 patients, 44.4%). Intractability of Crohn's disease despite continuing medical therapy was 11.1% of the patients (Table 2). However, 7 ptients (26%) with local peritonitis and/or panperitonitis were not diagnosed preoperatively, and emergency operation was carried out in 3 patients undergoing bowel resection, and appendectomy was done in 4 patients. In 2 of them, an entero-cutaneous fistula developed immediately after appendectomy.

Table 2. Indication for Surgery in Patients of Crohn's Disease

Indication for Surgery	Site			Total/ Percentage
	Small Bowel	Large Bowel	Mixed	
Obstruction	6	1	5	12/44.4
Refractory to Medical Therapy	2	0	1	3/11.1
Fistula	1	2	3	6/22.2
Abscess	0	0	2	2/ 7.4
Other	1	0	3	4/14.8
Total	10	3	14	27

Eight patients had intestinal fistulas as follow : 2 with cecocutaneous fistulas, one with ileo-ileo fistula, one with ileosigmoid fistula, and 3 with pericecal abscess due to penetrance into retroperitoneal cavity. These patients often had abdominal masses and partial small bowel obstruction when first

seen.

Free perforation as a result of Crohn's disease of the bowel occured only in one patient who had toxic megacolon with multiple perforation of the transverse and sigmoid colon.

Surgical procedures

The operative procedures performed for 27 patients were listed in Table 3. All patients underwent resection of involved segment of the bowel without a covering loop ileostomy or colostomy. Twenty-two patinets were ' radically ' operated upon. The operations were considered ' radical ' in the cases judged by intraoperative findings and in 15 cases by using perioperative endocsopy, and the affected parts of the segment were resected with a macroscopically free margin of at least 5cm on both sides of the involved area. However, the recent five patients with both small and large bowel disease had gross residual disease at the resection margin.

Table 3. Operative Procedures in 27 Patients with Crohn's Disease

Methods	No. of Patients
Segmental resection	
Ileal	6
Jejunal	1
Ileocecal	6
Colectomy	
Transverse	1
Subtotal	1
Total	1
Right hemicolectomy	11
Total	27

Morbidity and Mortality

The most common postoperative complication was wound infection (9 patients, 33.3%). There were no morbidity related to the suture line included leakage or disruption with the development of abscess or enterocutaneous fistula, and/or obstruction at the anastomosis. One of them, a 36-year-old man with toxic megacolon required reoperation 7 days after surgery because of massive bleeding from remained rectum, and died of following sepsis on the 49th postoperative day. The operative mortality rate was thus 3.7%.

Follow-up

All patients were followed-up between 2.5 years and 16 years, with a mean observation period of 9.2 years. One patient, 72-year-old woman died of cerebrovascular disease 3 years after surgery, which was not related to Crohn's disease.

Recurrence ; Among 21 patients with radical operation, there were 5 recurrences (50%) in small bowel disease, and 2 (22.2%) in mixed disease. The overall recurrence rate was thus 22.5%.

The preoperative status, gross appearance of specimen, time and site of recurrence, and quality of life of these patients were summarized in Table 4. Five patients had received medical therapy from 3 months to 2 years prior to surgery.

The mean time to documented recurrence was 17 months for the series as a whole. However, the time interval in small bowel disease was very short. As for gross appea-

Table 4. Patient Profiles of Crohn's Disease with Recurrence

No.	Age (yrs)	Sex	Duration of symptoms (yrs)	Medication prior to Surg.	Gross Appearance	Time to Recurrence	Survival	QL
1	16	M	4	yes	II	7M	16Y4M	II
2	23	M	0.6	yes	II	9M	15Y4M	I
3	36	F	10	yes	II	7M	6Y4M	II
4	30	M	8	yes	IV	9M	7Y3M	I
5	16	M	3	yes	III	6M	9Y8M (reop) 10Y2M	II
6	30	F	3	no	IV	4Y6M	5Y6M (reop) 9Y4M	I
7	33	M	3	no	II	2Y	6Y6M	II

rance of the specimen taken from initial surgery, all patients had extensive longitudinal ulceration and/or mutiple ulcers : type II in 4, type III in one and type IV in 2. The site of recurrences were recognized in the area near the anastomosis (suture line recurrence) without no other lesions. All patients received additional medical therapy with salicylazosulphapyridine (SASP) or steroid with or without total parenteral nutrition (TPN). Proximal and distal extension of the recurrent disease process, on repeated roentgen examinations over a period of 5 years, were noted in four patients. However, there was no wide extension of the disease over 10cm from anastomosis. The other 3 patients showed no remakable changes of the recurrent diseases.

As for quality of life, three patients had QL- I and two had QL- II. The patients of QL- II were moderately troubled by diarrhea and stool of gruel consistency with bowel motions 4-8 times per day. Two patients (Case 5 and 6) required reoperation 9.8 years and 5.6 years after surgery, because the anastomotic segment became constrict to a remakable degree (Fig. 5, 6). They had been, however, rather good conditions for more than 5 years after initial operation.

Patients with residual disease : Five patients with mixed disease underwent bowel resection with residual disease at margin (Table 5). Postoperatively, the residual diseases at anastomosis exhibited no significant roentgenologic alterations for long periods of time (Fig. 7), and multiple aphthoid ulcers and small ulcers disappeared by medical treatment. In 2 patients (Case 4 and 5), however, the residual disease of sigmoid colon, where were skip from the resection margin, were frequently relapsed despite continuing medical therapy, and a patient (case 5) required reoperation because of enterocutaneous fistula developed

Fig. 5. Barium radiography of small intestine on 2 years and 9 months after surgery in case 5 shows an about 10cm narrowing segment in jejunum of anastomotic site.

Fig. 6. Selective barium radiography on 8 years after surgery in the same case as figure 5 shows a marked dilatation of oral site of jejunum from anastomotic stenosis.

Table 5. Patient Profiles of Crohn's Disease with Residual Lesion at Resection Margin

No.	Age (yrs)	Sex	Duration of symptoms (yrs)	Medication prior to Surg.	Gross Appearance	Remained Lesions	Survival	QL
1	28	F	2	yes	Ⅲ	magin	8Y	Ⅰ
2	33	F	0.3	no	Ⅳ	magin	7Y3M	Ⅱ
3	19	M	0.1	no	Ⅳ	magin	6Y	Ⅰ
4	22	M	1.7	yes	Ⅳ	magin sigmoid	7Y4M	Ⅱ
5	18	F	2	yes	Ⅳ	magin sigmoid	6Y6M	Ⅲ

Margin : surgically resected margin of intestine

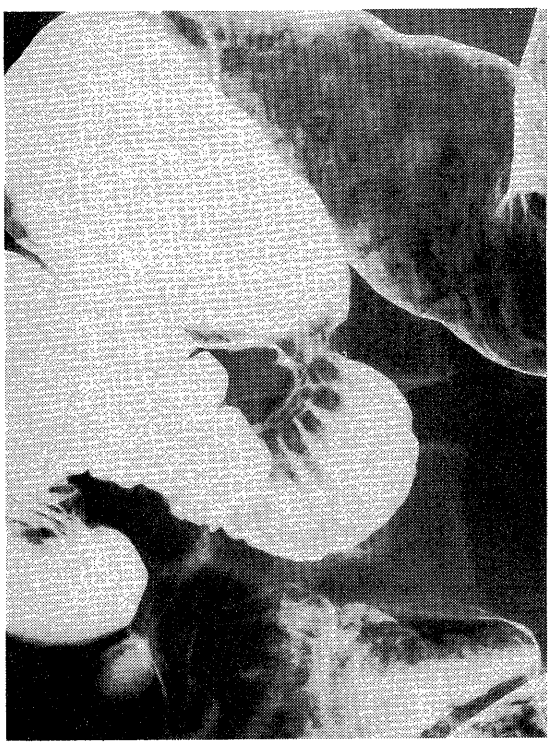

Fig. 7. Barium enema of case 17 with residual leasion on 6 years and 3 months after surgery shows a filling defect in jejunum of about 5cm in distance at anal site from anastomoses.

6.5 years after initial surgery The remaining 3 patients are almost in good condition as to the quality of life for more than 5 years after operation.

DISCUSSION

The usual indications for surgery in Crohn's disease include the complete or commonly partial intestinal obstruction or bleeding, refractoriness to medical therapy, and intestinal or perineal fistula and abscess.[5~8] Watanabe reported that the operation rate of Crohn's disease in Japan series decreased from 84% in 1979 to 36% in 1987, which showed the result with decrease of diagnostic operation.[3] However, the diagnosis of Crohn's disease in acute stage is still difficult, if the patient admits with signs and symptoms of acute abdomen such as abdominal distension and peritonitis with complaint of severe abdominal pain, fever and diarrhea.[19] In our series, laparotomy was done without accurate diagnosis as Crohn's disease on 7 patients (26%) who were found at laparotomy to have Crohn's disease.

Most data accumulated in recent years suggest that clinical recurrence and the need for reoperation are extremely high following resection for Crohn's disease.[2, 6~12] The recurrence rate of Crohn's diasease in Japan series reported by the Japan Crohn's Disease Reseach Commitee was 44% in ileocolic disease, and 26% in small bowel disease and in large bowel disease, respectively.[3] On the other hand, long-term follow-up studies of Crohn's disease in Europe or United States show a various recurrence rate of 38% to 61% over 10 years after the initial surgery.[5, 11, 12] In our series, recurrence rate of the patients with radical resection was 25.9%, and early recurrence occured

in 50% of patients with small bowel disease. The variation in these reported overall incidence of recurrence in Crohn's disease after resection relates to differences among the various studies such as definition of recurrence, method of calculation, follow-up period, stage of disease at operation, and operative procedures.

The majority of literatures in large series had described a significant correlation of the site of the initial disease with subsequent recurrence.[2,9,10] The NCCDS (National Cooperative Crohn's Disease Study) stated that the site of involvement of Crohn's disease is a major determinant of outcome after surgical intervention.[2] We agree with those reports that a lower rate of recurrence was found in patients with large bowel disease or mixed disease, as compared to those with small bowel only. We also found a high incidence of recurrence in patients with longitudinal ulceration or aphthoid ulcers which widely spreaded than those with discontinuous ulcers. This might be the reason for the difference in the extent of the disease.[20]

The question, however, of how much grossly normal bowel adjaccent to gross disease should be removed as adequate margin is unresolved. Most surgeons would not recommend leaving gross macroscopic disease behind at the anastomosis.[7,10,18,21,22] A ' radical ' resection with a macroscopically free margin of at least 10cm on either side have been also recommended.[7, 22] On the other hand, recent studies in large series reported that the amount of bowel resection were not important in predicting prognosis.[9, 12] Pennington[12] evaluated the influence of microscopic disease at the intestinal anastomosis following resection for Crohn's disease in 97 patients, and concluded that the presence of microscopic disease did not appear to influence immediate anastomotic wound healing or long-term recurrence rates.[12]

We performed radical resection on previous cases, especially small bowel disease, using perioperative endoscopy. However, the recurrence occured during the first one year in 50% of these patients. But, these early recurrent lesions were unchanged for long periods of time by medical therapy with satisfactory results. We also recognized that postoperative medication effectively responded for residual diseases at anastomosis of the recent 5 patients. Our data suggest that the residual disease at resection margin may be of no consequence for most patients with satisfactory results from continuing medical management.

Radical resections attempting to remove all diseased bowel with draining lymph nodes generally would require the removal of large amounts of normal small bowel. Therefore, a conservative resection rather than the sacrifice of normal bowel to achieve normal margins should be recommended for widely extending deasese in the small bowel.

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