

Ileorectal anastomosis in patients with Crohn's disease of the colon

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SUMMARY Thirty-seven patients were studied who had an ileorectal anastomosis performed for Crohn's disease of the colon. Twenty-nine were done as a primary procedure and in eight the anastomosis was made after previous total or segmental colectomy. Three patients developed anastomotic leaks and all three patients died. No patient who had a diverting loop ileostomy performed at the time of ileorectal anastomosis developed anastomotic leaks before or after the ileostomy was closed. Of the 37 patients, three died postoperatively and another five have had less than a one year follow-up. Of the remaining 29 patients, 12 (41%) had recurrences in either the rectum or ileum. Half of the recurrences took place five or more years after surgery. Seven of the 12 patients with recurrences have had their anastomoses taken down. When this recurrence rate of 41% is compared with the recurrence of ileitis in patients after total colectomy and ileostomy for Crohn's disease of the colon, the incidence of recurrence is, as shown in many reports, not markedly dissimilar. Of the patients who develop a recurrence after ileorectal anastomosis, only about half will have to have their anastomoses taken down. In our study, 59% of the patients had no recurrence and another 20.5% had a recurrence but did not require 'take down' of the anastomosis. Thus, almost 80% of our patients at the time of this report have been able to lead a life unencumbered by an ileostomy, making ileorectal anastomosis for this disease a desirable procedure to consider in selected patients.

There has been much discussion and controversy concerning the practicality of performing an ileorectal anastomosis after colectomy for Crohn's colitis. The surgeon may choose to leave the rectum *in situ* either because he considers the patient to be a poor surgical risk or because the rectum appears to be normal or near normal at the time of surgery. Total colectomy with ileostomy and mucous fistula is the most frequently performed operation for extensive Crohn's colitis, but it is our contention that either a primary ileorectal anastomosis or an ileorectal anastomosis after a total colectomy and ileostomy is a preferable procedure in selected cases.

The purpose of this study was to analyze our results in a group of 37 patients with Crohn's disease of the colon who were treated by colectomy and ileorectal anastomosis so as to have a basis for comparison with the results obtained with colectomy

and ileostomy for the same disease.

Methods

PATIENTS

During the period from 1955 to 1976, 103 patients had colon resections for Crohn's colitis at the Long Island Jewish-Hillside Medical Center (Table 1). The pathological diagnosis was made in conformity with criteria set forth by Lockhart-Mummery and Morson (1960, 1964).

Of the 37 patients considered in this study 29 had a colectomy and primary ileorectal anastomosis, five had secondary ileorectal anastomosis subsequent to subtotal colectomy and ileostomy, and three had ileorectal anastomosis secondary to segmental resection. None of the 37 patients had rectal involvement but 10 (27%) of the patients had ileal involvement at the time of surgery. Sixteen patients had a protecting loop ileostomy constructed at the time of their ileorectal anastomosis. In this group there were 25 females and 12 males. Their ages ranged from

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Table 1 One hundred and three colon resections for Crohn's disease

Operation	Number of patients
Proctocolectomy	15
Ileo-Rt. colon resection	22
Segmental resection	16*
Total colectomy and ileorectal anastomosis	29
Subtotal colectomy, ileostomy, and sigmoid fistula	21†
Total	103

*Three patients subsequently converted to ileorectal anastomosis.

†Five patients subsequently converted to ileorectal anastomosis.

10 to 72 years with an average of 31.3 years. Three patients died postoperatively and another five patients have had less than a one year follow-up. The other 29 patients have been followed from one to 21 years with a mean and median follow-up of 5.8 and six years respectively. No patient has been lost to follow-up.

Results

Of the 37 patients three developed anastomotic leaks, and all three patients died. Two of the patients who had leaks had a grossly normal ileum and rectum at the time of anastomosis. The third patient had ileal disease and a normal rectum. All patients who leaked had a primary ileorectal anastomosis without a protecting loop ileostomy. The sixteen patients who had a diverting loop ileostomy constructed at the time of anastomosis did not develop any anastomotic leakage either before or after the ileostomy was closed.

Of the 29 cases, followed up from one to 21 years, 12 patients had recurrences in the ileum or rectum and seven of these patients have had their anastomosis taken down. Table 2 illustrates an analysis

of these 12 recurrences. The presence or absence of granulomas or of ileal involvement constituted no particular pattern in relation to recurrence. There were eight rectal recurrences. No patient in our total series of 103 patients presented with or developed carcinoma during the follow-up period.

When recurrences required surgery because of severe pain, bleeding, obstruction, perforation, fistula or diarrhea, abdominoperineal resection, and ileostomy was performed if the rectum was diseased. However, in two patients the recurrence was severe but confined to the ileum and in these patients a Hartman procedure and ileostomy was performed. Four of the anastomoses were taken down within three years of surgery, one after seven years and two after 10 years.

Five patients with recurrent disease still have their anastomoses intact and have gone for three to six years since the recurrence was noted. All are functioning well with these recurrences and have no incapacitating diarrhoea or pain. The remaining 17 patients show no evidence of recurrence during a follow-up of up to 21 years.

Discussion

The surgical management of patients with Crohn's colitis is controversial. Proctocolectomy with ileostomy is the most frequently used surgical procedure but several reports have been published showing favourable results after ileorectal anastomosis in selected patients with a macroscopically normal or mildly diseased rectum. It was our purpose to evaluate the effectiveness and practicality of ileorectal anastomosis in such a group of patients. The major clinical problem in Crohn's colitis is the recurrence rate after operation. Studies reveal a wide

Table 2 Recurrences in cases of Crohn's disease with ileorectal anastomosis

Sex	Age (yr) at anast.	Duration of disease before anast. (yr)	Gran.	Ileum before anast.	Ileal recurrence and time since anast. (yr)	Rectal recurrence and time since anast. (yr)	State of anastomosis (yr)
F	23	3	*	†	*3 mo.	*3 mo.	A-P resect. 2
M	45	10	—	†	*1	—	Hartmann 1
F	45	11	*	—	*1	*1	A-P resect. 3
M	19	2	—	—	—	*2	A-P resect. 2
F	36	7	*	—	—	*3 mo.	A-P resect. 7
M	13	2	—	—	—	*10	A-P resect. 10
F	25	9	—	†	*5	—	Hartmann 10
M	30	15	—	—	—	*3	Good 3
F	27	10	—	—	—	*5	Fair 10
F	40	10	—	—	—	*6	Fair 8
F	26	3	*	—	*5	—	Good 9
F	21	11	*	—	*5	—	Fair 9
8 F	Aver: 29	Aver: 8	5*	3*	6*	8*	7 taken down
4 M					(Aver: 2.9)	(Aver: 3.4)	

*: granuloma present.

†: ileum diseased.

Table 3 *Recurrent ileocolitis after ileorectal anastomosis in patients with Crohn's disease*

Author	Patients (no.)	Recurrent ileocolitis (%)
Nugent <i>et al.</i> (1973)	18	66
Veidenheimer <i>et al.</i> (1970)	7	42
Burman <i>et al.</i> (1971)	25	60
Jones <i>et al.</i> (1966)	38	32
Turnbull <i>et al.</i> (1968)	22	32
De Dombal <i>et al.</i> (1971)	12	45
Glotzer <i>et al.</i> (1967)	7	58
Baker (1971)	26	50
Present study	37	32
Average		47

variance but in general there is about a 50% recurrence rate of patients who underwent a colon resection and ileorectal anastomosis (Table 3).

There are multiple factors that have been analysed as to their effect on recurrence. Lindner *et al.* (1963), Janowitz *et al.* (1965) and Farmer *et al.* (1968) all stated that recurrence was related to concomitant ileal disease. In two small series of patients both Burman *et al.* (1971) and Veidenheimer *et al.* (1970) reported that the recurrence rate was highest if the edges used for anastomosis were macroscopically involved. Burman has stated that the recurrence rate was 78% in patients who had macroscopically diseased bowel at the level of the anastomosis and only a 50% recurrence if the bowel was macroscopically normal. The age of the patient at the time of ileorectal anastomosis has also been shown to influence the recurrence rate; the younger patients having the highest recurrence rate (Stahlgren and Ferguson, 1961; De Dombal *et al.*, 1971; Steinberg *et al.*, 1974). Glass and Baker (1976) have recently stated that the presence or absence of granuloma also has an effect on recurrence. Patients with granulomatous disease have half the number of recurrences as those with non-granulomatous Crohn's colitis. This finding suggests that sarcoid-like granulomata reflect the patient's immune response. Cornes *et al.* (1961), Jones *et al.* (1966), and De Dombal *et al.* (1971) have shown that the risk of recurrence is less in patients with involvement of only the large intestine.

The patient with extensive Crohn's colitis who needs surgical treatment can be treated by one of several surgical procedures. Total proctocolectomy, or colectomy with ileostomy and mucous fistula both necessitate the patient's wearing an appliance. There is only one procedure, ileorectal anastomosis, which allows the preservation of intestinal continuity for the patient with extensive Crohn's colitis. The results of this procedure must then be compared with the alternative procedures. It should be reiterated that

ileorectal anastomosis can be performed safely only in selected patients. Patients with deep anal fistulas, incontinence, obstruction, severe stricture, a badly diseased rectum, perforation, toxic megacolon, severe ileal disease, or overwhelming sepsis are, by our criteria, poor candidates for this technique.

In our series of patients, three of the 37 patients (8.1%) had anastomotic leaks and these three patients died. It is however, apparent that leakage can be eliminated as a complication by using a diverting loop ileostomy. Disease recurrence is apparently the most important factor to be considered before advising ileorectal anastomosis. In our series, pathological involvement of the anastomosed bowel or the presence or absence of granuloma did not affect recurrence, and, although pathological involvement of the anastomosed bowel leaves the patient liable to failure of the anastomosis, it does not mean that the anastomosis is doomed to failure.

When an analysis is made of several series of patients in whom an ileostomy was performed in conjunction with either a total proctocolectomy or total colectomy, the rate of recurrence in the ileostomy or just proximal to the stoma requiring stoma revision varied between 3% and 52% (Table 4). The average rate of ileal recurrence was 25%. When this is compared with the various series using ileorectal anastomosis, we see a 47% incidence of recurrent ileocolitis (Table 3). The ranges of the lengths of follow-up are similar, but, in order to make a valid comparison between Tables 3 and 4, the mean and median of the length of follow-up must be known. Unfortunately, these parameters are not given in most of the studies. The reported incidence of ileostomy revision ranges from 10% to 33%. This is not dissimilar from the rate of reoperation in patients with ileorectal anastomosis. Our incidence of recurrence was 32%, with a reoperative rate of 21%. Aside from occasional reports with recurrences of 3%, the incidence of ileitis after ileostomy is not markedly dissimilar from the recurrence rate after ileorectal anastomosis. Thus, if we must choose

Table 4 *Recurrent ileitis after colectomy and ileostomy for Crohn's disease*

Author	Patients (no.)	Ileal recurrence (%)
Nugent <i>et al.</i> (1973)	44	3
Steinberg <i>et al.</i> (1974)	73	33
Hawk and Turnbull (1966)	87	20
Cooke (1971)	31	52
Glotzer <i>et al.</i> (1970)	42	33
Korelitz <i>et al.</i> (1972)	31	46
De Dombal <i>et al.</i> (1971)	39	11
Jones <i>et al.</i> (1966)	28	3
Average		25

between ileorectal anastomosis and a colectomy with an ileostomy, it is felt that ileorectal anastomosis should be undertaken in selected patients with Crohn's disease of the colon.

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