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The results of surgery for large bowel Crohn's disease

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Although Crohn's disease can involve any part of the alimentary tract, it seems probable that terminal ileal disease with or without involvement of the proximal colon remains the commonest initial site of involvement. At this hospital, however, Crohn's disease of the large bowel alone has been found in 142 (44%) of 322 new patients with an intact gut treated over the last 7 years, with 105 (33%) having small and large bowel disease and 75 (23%) small bowel disease only. Thus, although the proportion has fallen since 1979 *(1)*, the continued high figure probably reflects both the symptomatology, the likelihood of an associated anal lesion and the continuing influence of the basic work on colonic Crohn's disease from this hospital *(2–4)* all resulting in referral to a proctological centre.

The probability of surgical treatment for large bowel Crohn's disease has been estimated as 35%±7% at 5 years and 39%±7% at 10 years for recent onset disease *(5)*, rising to 72%±6% at 6 years from the first admission to hospital *(6)*. Thus, with operation likely to be required in about one-half of the patients within 10 years of diagnosis, the results of such treatment are of great importance in the long-term prognosis.

Type of operation

The initial type of operation undertaken for Crohn's disease of the large bowel can be very diverse, ranging from a defunctioning stoma alone through a very limited segmental resection to a one-stage total proctocolectomy *(7)*. To determine outcome, it is perhaps of more interest to consider all operations in the two groups of restorative (no stoma) and excisional (stoma) surgery. From 1950 to 1989 at this hospital, 381 patients underwent surgery for predominantly large bowel Crohn's disease (excluding patients with terminal ileal and proximal colonic disease treated by right hemicolectomy). The first operation was restorative in 137 patients (36%) and excisional in 244 (64%). There were eight postoperative deaths (2%). At the end of follow-up or at late death, 102 patients (27%) had not required a stoma while 271 (73%) had done so.

The commonest type of operation carried out was total proctocolectomy in one or more stages; about twice as many patients were treated in this way as by colectomy and anastomosis (usually ileorectal but possibly with an anastomosis to the sigmoid or descending colon).

Results of operation

Between 1952 and September 1988, 182 patients underwent a total proctocolectomy (one stage in 94 and staged in the remainder). There were three postoperative deaths and 10 patients were excluded from recurrence analysis (in seven there was known small bowel disease preoperatively) leaving 169 at risk. Of this number, 20 developed recurrent disease and the cumulative probability of recurrence was 7%±2% at 5 years, 11%±3% at 10 years and 22%±5% at 20 and 30 years. Of the 20 patients with recurrent disease, this was prestomal only in 14. Eleven have so far needed excision of the distal small bowel and nine have had no further trouble (FU<1–23 years): two needed a further excision after 6 and 7 years respectively. Only six patients have developed extensive small bowel disease and five have required operation for this. There have been 31 late deaths in the group, eight of which are considered to have been related to the disease or its treatment, including two patients who committed suicide.

From 1950 to 1988, 78 patients were treated by colectomy and ileorectal anastomosis with one postoperative death. Eighteen patients were excluded from recurrence analysis (11 as rectal disease was present preoperatively). Of the 59 at risk of recurrence, 31 had shown no

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evidence of this at the end of the follow-up: the crude recurrence rate was 47% and the cumulative rate 34%±7% at 5 years, 49%±7% at 10 years, 55%±8% at 20 years and 73%±11% at 30 years. The recurrence was in the rectum only in six patients (plus anastomosis in one), in the ileum only in 11 (plus anastomosis in two), at both sites in 10 and at the anastomosis only in one. In three of the 28 patients with recurrence, only medical treatment was necessary. In three patients an ileostomy was constructed and the rectum left, in 13 the rectum was excised and nine underwent a resection and re-anastomosis. Two of these nine patients needed further surgery: in one an ileostomy alone and rectal excision in the other. Thus, 18 of the 28 patients with recurrence and approximately one-third of those at risk (18 out of 59) have ended with a stoma.

Of the five late deaths in the group, three were related to further treatment of the complications of surgery.

The cumulative recurrence rates of these two operations are shown in Fig. 1. The differences are significant at 5 years and 10 years ($P > 0.001$) and at 20 and 30 years ($P > 0.01$).

Discussion

Postoperative death after the initial surgery should be very low in colonic Crohn's disease as almost all patients are operated on electively. The figure of 2% in this group of 381 patients over 40 years is particularly low. Similar overall figures have been reported from elsewhere, eg 3.4% in 204 patients *(8)*, but mortality can be higher after colectomy and ileorectal anastomosis *(9,10)*. Late related mortality may be due to complications of surgery, particularly small bowel obstruction (as in four patients treated here by total proctocolectomy or ileorectal anastomosis), or after further operations for complications of recurrent disease.

A restorative operation will be the first choice for all patients with large bowel Crohn's disease especially if they are young, but many patients will be unsuitable for this procedure. When such an operation is feasible, it will be successful in the long term in over one-half of the patients as recurrence may be amenable to medical therapy or resection and re-anastomosis. Other reports agree with the present results on the high recurrence rate after colectomy and ileorectal anastomosis *(11,12)* but in most series more than one-half of the patients had an intact anastomosis at the time of review *(10,13)* suggesting that this should be the operation of choice if feasible.

Total proctocolectomy remains considerably more common than colectomy and ileorectal anastomosis. Some 60–70% of patients with large bowel disease have an anal lesion at some stage of their disease and the severity of this, ± gross rectal involvement, means that rectal excision will be necessary. After this operation, the recurrence rate is low at this hospital although considerably higher rates have been reported *(11,14)*. Further operation, if required, has in this series usually been confined to excision of a localised prestomal recurrence

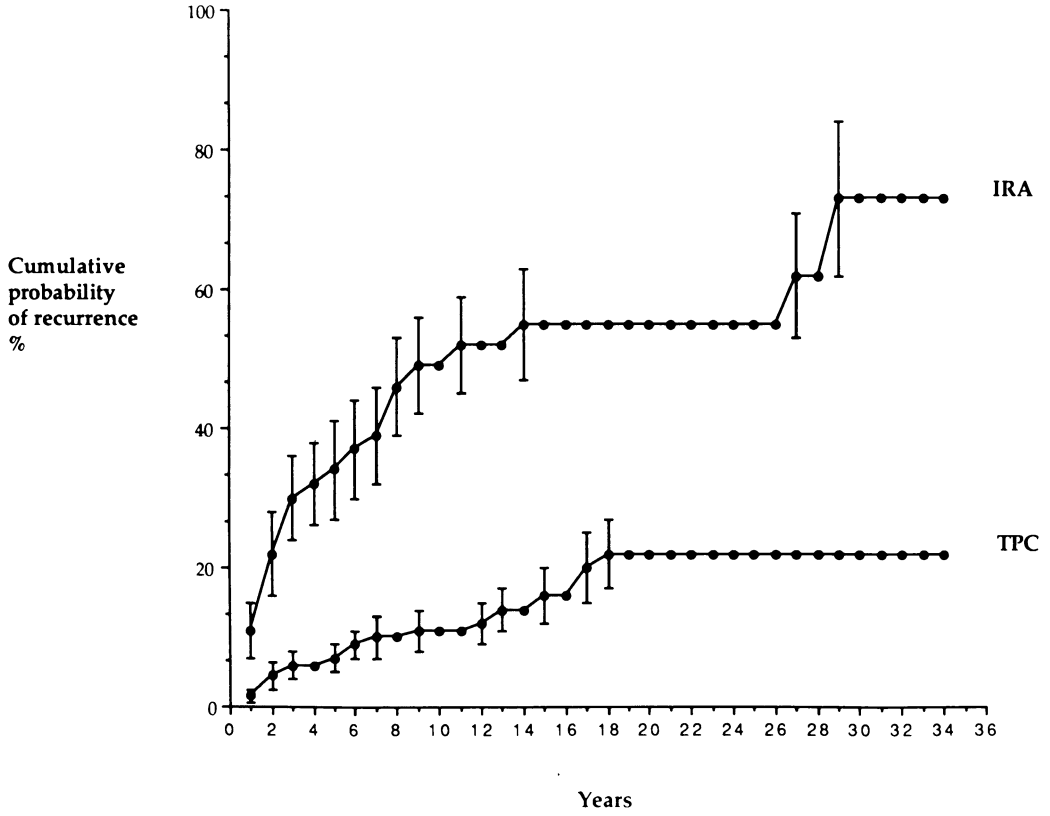

Figure 1. Cumulative probability of recurrence after total proctocolectomy (TPC) and colectomy and ileorectal anastomosis (IRA).

and the construction of a new ileostomy. This has been followed by long disease-free periods.

Many factors have been considered that may affect recurrence but there is no general agreement that age, sex, length of history or the length of bowel removed have any definite effect. Disease at the resection margins appears also not to be implicated *(15,16)* and perhaps this is not surprising if Crohn's disease is considered to be a disease affecting the whole alimentary tract. Some reports suggest that the presence of granulomas in the specimen tends to improve prognosis *(17,18)*. Two recent studies on small numbers of patients with small bowel disease followed for rather short periods, appear to show that perioperative blood transfusion improves prognosis *(19,20)*, but a study on a large number of patients from this hospital has found no such effect *(21)*.

There is no doubt whatsoever that total proctocolectomy is associated with a lower probability of recurrence than colectomy and ileorectal anastomosis. Excision of the rectum alone also has a low recurrence rate *(22)*, whereas the rate after right hemicolectomy is very similar to that after colectomy and ileorectal anastomosis *(1)*. Thus, it would appear that the presence of an anastomosis is the key feature. Whether or not this may be related to relative ischaemia at an anastomosis inducing local intestinal infarction and macroscopic disease, as suggested recently *(23)*, awaits confirmation.

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References

1 Ritchie JK. In: Lee ECG, ed. *Crohn's Workshop. A Global Assessment of Crohn's Disease.* London: Heyden HM + M Publishers, 1981:59–69.

2 Lockhart–Mummery HE, Morson BC. Crohn's Disease (regional enteritis) of the large intestine and its distinction from ulcerative colitis. *Gut* 1960;**1**:87–105.

3 Lockhart-Mummery HE, Morson BC. Crohn's disease of the large intestine. *Gut* 1964;**5**:493–509.

4 Lennard-Jones JE, Lockhart–Mummery HE, Morson BC. Clinical and pathological differentiation of Crohn's disease and proctocolitis. *Gastroenterology* 1968;**3**:1162–70.

5 Elliott PR, Ritchie JK, Lennard-Jones JE. Prognosis of colonic Crohn's disease. *Br Med J* 1985;**291**:178.

6 Lennard-Jones JE, Ritchie JK, Zohrab WJ. Proctocolitis and Crohn's disease of the colon: a comparison of the clinical course. *Gut* 1976;**17**:477–82.

7 Andrews HA, Lewis P, Allan RN. Prognosis after surgery for colonic Crohn's Disease. *Br J Surg* 1989;**76**:1184–90.

8 Allan R, Steinberg DM, Alexander-Williams J, Cooke WT. Crohn's disease involving the colon: an audit of clinical management. *Gastroenterology* 1977;**73**:723–32.

9 Flint G, Strauss R, Platt N, Wise L. Ileorectal anastomosis in patients with Crohn's disease of the colon. *Gut* 1977;**18**:236–9.

10 Cooper JC, Jones D, Williams NS. Outcome of colectomy and ileorectal anastomosis in Crohn's disease. *Ann R Coll Surg Engl* 1986;**68**:279–82.

11 Hellers G. Crohn's disease in Stockholm County 1955–1974. *Acta Chir Scand Suppl 490* 1979.

12 Goligher JC. The long-term results of excisional surgery for primary and recurrent Crohn's disease of the large intestine. *Dis Colon Rectum* 1985;**28**:51–5.

13 Ambrose NS, Keighley MRB, Alexander-Williams J, Allan RN. Clinical impact of colectomy and ileorectal anastomosis in the management of Crohn's disease. *Gut* 1984;**25**:223–7.

14 Scammell BE, Andrews H, Allan RN, Alexander-Williams J, Keighley MRB. Results of proctocolectomy for Crohn's disease. *Br J Surg* 1987;**74**:671–4.

15 Heuman R, Boeryd B, Bolin T, Sjodahl R. The influence of disease at the margin of resection on the outcome of Crohn's disease. *Br J Surg* 1983;**70**:519–21.

16 Cooper JC, Williams NS. The influence of microscopic disease at the margin of resection on recurrence rates in Crohn's disease. *Ann R Coll Surg Engl* 1986;**68**:23–6.

17 Glass RE, Baker WNW. Role of the granuloma in recurrent Crohn's disease. *Gut* 1976;**17**:75–7.

18 Chambers TJ, Morson BC. The granuloma in Crohn's disease. *Gut* 1979;**20**:269–74.

19 Peters WR, Fry RD, Fleshman JW, Kodner IJ. Multiple blood transfusions reduce the recurrence rate of Crohn's disease. *Dis Colon Rectum* 1989;**32**:749–53.

20 Williams JG, Hughes LE. Effect of perioperative blood transfusion on recurrence of Crohn's disease. *Lancet* 1989; **2**:131–3.

21 Scott AD, Ritchie JK, Phillips RKS. The influence of blood transfusion and extent of disease on the recurrence of Crohn's disease. (Abstract) *Br J Surg* (in press).

22 Ritchie JK, Lockhart-Mummery HE. Non-restorative surgery in the treatment of Crohn's disease of the large bowel. *Gut* 1973;**14**:263–9.

23 Wakefield AJ, Sawyerr AM, Dhillon AP *et al.* Pathogenesis of Crohn's disease: multifocal gastrointestinal infarction. *Lancet* 1989;**2**:1057–62.