

The results of ileorectal anastomosis at St Mark's Hospital from 1953 to 1968

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SUMMARY The popular view of ileorectal anastomosis for ulcerative colitis as an operation of above average mortality and morbidity is supported by the results of this series. Great care must be taken to differentiate ulcerative colitis from Crohn's disease of the colon, as it is clear from consideration of their clinical course that they are different disease entities with a different prognosis.

It is suggested that the more general adoption of Aylett's operative technique would reduce the number of failures due to sepsis. There appears to be a group of patients, 15% in this series, who will be failures because of intractable diarrhoea despite a technically adequate and successful operation, but it might be possible to reduce these with modern medical therapy given postoperatively.

Patients with a preoperative history of more than 10 years' disease appear to do better than the others. An actively diseased rectum does not appear adversely to affect the result, and the fulminating disease is not a counter indication to a staged ileorectal anastomosis. The use of steroids preoperatively does not appear to affect the healing of the anastomosis or the long-term result of the operation.

No case of carcinoma of the rectum has occurred in this series but there has been histological evidence of premalignant change in two patients. The need for a strict follow-up programme, including regular sigmoidoscopy and rectal biopsy, is emphasized.

A great deal of controversy still exists over the place of conservative operations in the treatment of ulcerative colitis. Experience has shown that operations conserving apparently normal parts of the colon are almost always followed by a flare-up of disease in the retained segment, and the only conservative operation which has had any measure of success is retention of the rectum with ileorectal anastomosis.

Wangensteen and Toon (1948) reported thirteen cases of ileorectal anastomosis for ulcerative colitis. They performed the first operation in 1940 and seem to be the first surgeons to have attempted to combine a radical operation for the diseased colon with conservation of the rectum and anal sphincters. Devine and Devine (1948) reported a staged procedure of ileosigmoidostomy followed

by colectomy which they first started in 1943. Corbett (1952) reported further cases treated successfully by Devine's method and since that time reports, differing widely in their opinion as to the value of the procedure, have appeared in the literature. Cattell (1953) roundly condemned the operation. Goligher (Goligher, 1961; Watts, De Dombal, Watkinson, and Goligher, 1966; Goligher, De Dombal, Watts, and Watkinson, 1968) has modified his initial coolness to outright rejection. Hughes (1962) was rather tentative in his acceptance of the operation, but made the plea for more information on which to select cases. In contrast Aylett, in a series of publications (1953, 1960, 1963, and 1966) has consistently advocated the operation and amassed a large series, claiming excellent results.

'Successes'		'Failures'			Lost to Follow-up	Deaths			
'Good'	'Fair'	Due to Sepsis		Intractable Diarrhoea		Postoperative Pneumonia	Operative Deaths	Postoperative Deaths	Not Related to the Operation
		Anastomatic Leak	Operative Soiling						
13	8	6	3	8	1	2	2 ¹	1 ²	1 ³

Table I *The fate of the 39 patients undergoing ileorectal anastomosis for ulcerative colitis*

¹One due to subphrenic abscess, the second to Friedlander's pneumonia.

²Perforation of the ileum after taking down ileorectal anastomosis and establishment of permanent ileostomy.

³Due to carcinoma of the breast four years after ileorectal anastomosis.

The early experiences at St Mark's with ileorectal anastomosis were reported by Anderson (1960), and the present study has been undertaken to bring these results up to date and to record further operations performed up to December 1968.

The Present Study

All patients undergoing ileorectal anastomosis for ulcerative colitis at St Marks have been included. Operations involving ileocaecal or ileoanal anastomosis have been omitted. All cases known at the time of operation, or shown subsequently, to be suffering from Crohn's disease of the colon have also been excluded. It is essential in any series claiming to report the results of treatment in ulcerative colitis to exclude all cases of Crohn's disease by retrospective histological screening. Several cases in this series have been reclassified as Crohn's disease in the light of present knowledge.

An attempt was made to contact all patients with ulcerative colitis who had undergone ileorectal anastomosis in order to review their clinical status and to take a biopsy of the rectum. Those who were unable to attend were contacted by letter. The intention was to provide an answer to the following questions:

- (1) What has been the success and failure rate of the operation?
- (2) What were the reasons for failure?
- (3) What has been the fate of the retained rectum?
- (4) Are there any preoperative factors which would assist the future selection of patients for operation?

Results

Sixty-seven patients have undergone ileorectal anastomosis for inflammatory disease of the colon in the period under review. On histological evidence 41 of these were classified as having ulcerative colitis and 26 as having Crohn's disease of the colon. The only cases considered further in the

results are the 41 ulcerative colitis patients, of whom two have been lost to recent follow-up, leaving 39 patients to be studied. The age range of the series is from 9 to 66 years; there are 20 men and 19 women. The patients have been considered in two main categories, the 'successful' cases and the 'failures'. There were 21 'successes' in all, of these 13 ('good successes') have survived the operation and have lived with the ileorectal anastomosis for one year or more without the need for any specific therapy. Eight patients ('fair successes') have the ileorectal anastomosis intact but still require specific therapy for some complication of their ulcerative colitis or the operation. 'Failures' were 18 patients who have either persistent disabling diarrhoea uncontrolled by any specific therapy, or who have had the ileorectal anastomosis converted to a permanent ileostomy for any reason.

The results show that on the above definitions 46% of the patients who have undergone the operation must be considered 'failures', and a breakdown of the reasons for failure (Table I) shows that about half were due to sepsis, and half due to intractable diarrhoea.

The deaths have been included in the overall figures. The three deaths due to the operation or the ulcerative colitis are included in the 'failures', but the one late death due to carcinoma of the breast occurring four years after the operation, which was successful from the point of view of the ulcerative colitis, has been included in the 'successful' cases. Details of the deaths are also given in Table I.

OPERATIVE RESULTS

There have been two deaths attributable to the operation. One patient died from a subphrenic abscess and the other from a Friedlander's pneumonia. One other patient died as a result of the ulcerative colitis, from peritonitis secondary to ulceration of the ileostomy after the ileorectal anastomosis had been taken down for persistent diarrhoea.

The complications occurring in the 'successful' and 'failure' patients are shown in Table II. The 'failures' have a very high complication rate but the 'successful' operations appear to have been relatively trouble-free, apart from the late de-

Complications	'Successes'	'Failures'
<i>Early</i>		
Anastomotic leak	0	6
Intraperitoneal sepsis	0	9
Intestinal obstruction	0	2
Wound infection	1	4
Wound dehiscence	0	4
<i>Late</i>		
Intestinal obstruction	2	1
Intractable diarrhoea	0	8
Abdominal wall sepsis	0	1
Chronic bowel fistula	0	2
Anal stricture	2	1
Ileostomy dysfunction	Not applicable	7

Table II Complications attributable to the disease

	Inactive Rectal Disease		Active Rectal Disease	
	'Mild'		'Moderate'	'Severe'
'Successes'	14		6	1
'Failures'	11		3	4

Table III 'Successes' and 'failures' related to the preoperative appearance of rectal mucosa

velopment of intestinal obstruction. This agrees with the findings of Aylett (1960).

Reasons for the failure of ileorectal anastomosis

Apart from the one postoperative death from Friedlander's pneumonia, failure of the operation was due either to sepsis, in one form or another, or to persistent intractable diarrhoea. Of the nine cases which failed because of sepsis, six were directly due to leakage at the anastomosis, and three to operative soiling. The eight patients classified as failing from intractable diarrhoea were further examined to try and establish the cause of the diarrhoea.

In one patient review of the operation specimen showed a long rectal stump with part of the sigmoid colon present, and in another patient the superior haemorrhoidal artery had not been ligated. These two were classified as possibly due to an inadequate operation. One patient had quiescent rectal disease with no obvious cause for the diarrhoea.

In the remaining five patients, following an adequate and successful operation, active rectal disease was sufficiently bad to result in the ileorectal anastomosis being taken down and the establishment of a permanent ileostomy. There appeared to be no common factors of age, sex, length of disease, or preoperative state of the rectum linking the five patients.

Fate of the retained rectum

Rectal biopsy was performed on 12 of the 'successful' patients and on two other patients who had had the ileorectal anastomosis taken down, but still had the rectum *in situ*. These were examined for histological evidence of active colitis and

malignant change. The biopsy showed that five of the 12 'successful' patients still had histological evidence of active colitis. There was no evidence of an overt malignant change, but one biopsy showed evidence of a premalignant change.

PREOPERATIVE FACTORS

No significant difference was shown between the 'successes' and the 'failures' with regard to age and sex distribution, but four other factors were examined to see if any relationship existed between them and success or failure of the operation.

Length of preoperative history

The patients were arbitrarily divided into those with preoperative histories of less than two years, from two to 10 years, and over 10 years. The numbers in each group were small, but the failure rate appeared to be lowest (two out of nine) in the patients with a history of over 10 years, next lowest (four out of nine) in the under-two year group, and highest (12 out of 21) in the two to 10 year patients.

Preoperative steroid treatment

Thirteen out of 21 'successful' patients, and 10 out of 18 'failures' received steroids preoperatively. Anastomotic leakage occurred in three patients on steroids and in three not receiving them. On these figures there is no indication that preoperative steroid treatment affects either the healing of the anastomosis, or the outcome of the operation.

Clinical grading

The grading system chosen was that of Ewart and Lennard-Jones (1960), which is based on the clinical assessment of the patient immediately prior to operation, where 'A' denotes a good general condition with inactive colitis, 'B' a good general condition with mild active colitis, 'C' a poor general condition and severe active colitis or only severe active colitis, and 'D' a critical condition which requires an emergency operation.

Twenty-one of the patients submitted to ileorectal anastomosis were classified as A cases; of these nine failed. The number of cases classified as B (7), C (9), and D (2) were too small for conclusions to be drawn, but it is worth noting that the two D cases both did well. Certainly, fulminating disease cannot be regarded as a contra-indication to ileorectal anastomosis.

State of the rectal mucosa

This was based on the immediate preoperative appearance of the rectal mucosa on sigmoidoscopy and classified as 'mild', 'moderate', or 'severe'. Details of the results are shown in Table III. 'Mild' rectal disease was present in two thirds of the patients operated upon, and of these just under half (11 out of 25) were 'failures'. The number of patients with 'moderate' (9) and 'severe' (5) disease of the rectum was too small to

draw conclusions from separately, but when considered together showed equal numbers of 'successes', and 'failures'.

Discussion

One point must be emphasized: colectomy and ileorectal anastomosis does not cure ulcerative colitis. The facts that eight out of 21 'successful' patients still require specific therapy, five out of 12 rectal biopsies still show active disease, and that active proctitis subsequently caused five patients to lose the rectum and accept a permanent ileostomy should dispel any such illusion.

The overall results in this series are discouraging, with a failure rate of 46%, but those patients who have had a successful operation have done very well. The 12 patients classed as 'good' are good by any standards, leading normal healthy lives, and the eight patients classed as 'fair' have been so classified purely on clinical grounds according to the given definition. Most of the patients themselves are very happy with their condition.

The features which have given the operation such a bad name in the past are its very high failure rate and subsequent morbidity. These would be considerably improved if the operation was made safer and positive criteria could be established for selecting patients.

INCREASING THE SAFETY OF THE OPERATION

Operations on patients with ulcerative colitis have a justifiably bad reputation for the high incidence of postoperative sepsis. The acutely inflamed bowel is friable and liable to perforate and lead to peritoneal soiling. This complication is bound to occur occasionally, no matter how careful the surgeon, but if it does happen a staged procedure should be done. Two patients in this series had a one-stage operation following peritoneal soiling, and both subsequently failed because of chronic pelvic sepsis.

The other great source of postoperative sepsis in ileorectal anastomosis operations is anastomotic leakage. In this series six out of 39 patients (15%) suffered a leakage severe enough to cause failure of the operation. The inflamed oedematous bowel is difficult to handle and sutures tend to cut out. Technique has a major part to play here and Aylett, in his several communications, has clearly demonstrated his way of overcoming the problem. He recommends staging the operation for severe cases, and covering the anastomosis with a defunctioning ileostomy in all cases, final continuity only being restored when the anastomosis has been shown to be sound radiologically. There were nine staged operations in this series, only one of which failed because of postoperative sepsis, and this was because peritoneal soiling occurred at the time of the second operation. No

case in this series had a defunctioning ileostomy at the time of the primary anastomosis.

There is no doubt that the operation can be successfully performed in one stage without a covering ileostomy, but few would argue that these precautions do not make the operation safer.

SELECTION OF PATIENTS

According to Aylett (1963), the only contraindications to ileorectal anastomosis should be a patulous anus, gross perirectal suppuration, or a rectal stricture. Most surgeons would agree with these, but some would add a severely diseased rectum, and possibly fulminating disease.

There is little evidence in this series to support a severely diseased rectum as a contraindication to ileorectal anastomosis. If one accepts a degree of observer error in grading, it is probably more relevant to group the 'moderate' and 'severe' diseases of the rectum together, representing active rectal disease, as opposed to the 'mild' group which represents largely inactive disease. If this is done there is no difference between 'success' (7) and 'failure' (7) in the presence of active rectal disease (Table III).

There is some evidence to support the view that patients with a long history of disease preoperatively do well. The failure rate of patients with a history of over 10 years was lower than the others. Clinical grading has not proved much help in selection other than to point out that fulminating disease is not a contraindication.

Recurrent rectal disease of sufficient severity to cause failure of the operation occurred in five patients in this series. No common factor has been found to link these patients or enable them to be recognized preoperatively, and one is forced to assume that they represent part of the natural history spectrum of the disease. Only one of the five patients received a full course of medical treatment in the postoperative period before the decision was taken to excise the rectum and establish a permanent ileostomy. It is possible that with modern medical therapy some of these patients might have kept their ileorectal anastomosis. The one patient who developed intractable diarrhoea after an adequate operation, and with no evidence of recurrent ulcerative colitis in the rectum, remains an enigma.

MALIGNANT CHANGE

A frequently voiced criticism of the operation is the risk of malignant change in the retained rectum (MacDougall, 1964). No case of carcinoma of the rectum occurred in this series but two cases showed histological evidence of premalignant change. One of these was detected incidentally in a rectum removed for persistent diarrhoea, but the other was found in the routine follow-up rectal biopsy of a successful case. The biopsy was from a patient, aged 26, with a 16-year history of ulcerative colitis, which is now histologically

quiescent. This raises an important point in the long-term management and poses the problem of how long it is justified to watch this patient as an outpatient. The relationship between premalignant change and overt malignancy has not yet been established (Morson and Pang, 1967) and a meticulous programme, including regular sigmoidoscopy and biopsy, is obviously essential to avoid missing the first established signs of malignancy.

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