

Loop Ileostomy in the Management of Crohn's Colitis in the Debilitated Patient

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Loop ileostomy to establish fecal diversion has been used in 79 patients as the initial surgical procedure in severe, debilitating Crohn's colitis or ileocolitis. Clinical improvement, as measured by subjective and objective criteria and length of hospitalization, occurred in 72 of 79 patients (91%). Definitive surgery was then undertaken at a later stage under more ideal circumstances without mortality. The high relapse rate of 33% in this series would lead us to recommend definitive surgery electively at an early stage after initial clinical improvement. Four of the 79 patients in this series died; three deaths were related to Crohn's disease, for a total mortality of 5.1%. It is believed that loop ileostomy to establish fecal diversion has a definite role in the initial surgical management of the severely ill patient with Crohn's colitis.

SINCE THE FIRST REPORT by Brown² in 1913 on fecal diversion to obtain "physiological rest" for the bowel in certain cases of inflammatory bowel disease, this concept as a viable alternative in the surgical management of Crohn's disease has received only limited attention in the surgical literature.

This study presents a retrospective analysis of 79 consecutive patients in whom loop ileostomy alone was performed to establish fecal diversion. This was the initial surgical management in this group of debilitated patients with Crohn's colitis or ileocolitis operated on between 1972 and 1975.

The rationale for loop ileostomy was based on the premise that it was a minor surgical procedure with low postoperative morbidity, and that defunctioning the diseased bowel would restore the general health of the patient, allow the inflammatory process to settle, and thus allow a more definitive surgical procedure to be undertaken under more favorable circumstances.

The aim of the study was to evaluate the postoperative clinical course following fecal diversion, and at-

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tempt from this, to define a role for initial loop ileostomy in the management of debilitating Crohn's disease.

Materials and Methods

Seventy-nine patients were classified into three subgroups according to the predominant clinical features they manifested (Table 1). The indication for surgery in all patients was a failure of standard medical therapy, often associated with the development of complications (*e.g.*, severe perianal disease, enterocutaneous fistula, intra-abdominal inflammatory mass) which had resulted in severe debilitation and malnutrition. It was felt that radical surgery in this group of patients would have resulted in excessive morbidity and mortality. The criteria for assessing the surgical indications in this group of patients are listed in Table 2 and the preoperative assessment detailed in Table 3.

The diagnosis of Crohn's disease for all patients was confirmed on a clinical, radiological, or subsequent histological basis.

Loop ileostomy was constructed according to the technique described by Turnbull.¹⁴

Group 1

The failure of medical treatment in 65 patients with or without perianal disease was the main indication for surgical intervention. There were 27 men and 38 women, aged 14–73 years (average age, 33 years). Duration of disease was an average of six years (range four months to 20 years) prior to surgery. Forty-eight patients had evidence of grossly symptomatic perianal disease, and in 23 this was the main indication for fecal diversion. These 23 patients had lost an average of 25 pounds, amounting to 16% normal body weight.

All patients had varying degrees of abdominal pain, diarrhea, fever, and weight loss.

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TABLE 1. Loop Ileostomy—Clinical Subgroups

| Subgroup | No. of Patients |
|--|-----------------|
| 1 Failed medical treatment ± perianal disease | 65 |
| 2 Enterocutaneous fistula | 6 |
| 3 Intra-abdominal inflammatory mass | 8 |
| Total | 79 |

Group 2

Six patients had an enterocutaneous fistula. These originated following left hemicolectomy; following ileorectal anastomosis with subsequent preanastomotic recurrence; following appendectomy with removal of a normal appendix in the presence of Crohn's ileocolitis; spontaneous ileosigmoid cutaneous fistula; following laparotomy and lysis of adhesions; and following laparotomy for an inflammatory mass with postoperative ileosigmoid cutaneous fistula. In each case the fistula developed as a complication of Crohn's disease, either due to previous inadequate surgery or as a direct complication of the disease process itself. In each patient there was an associated inflammatory mass. There were four men and two women aged 23–52 years (average, 35 years).

Group 3

Seven of eight patients had an inflammatory mass in the right lower quadrant complicating ileocolic Crohn's disease, and one patient had a mass in the right upper quadrant at the site of a preanastomotic recurrence following an ileocolic resection. There were seven men and one woman aged 14–42 years (average, 26.5 years).

Assessment of Response

Symptomatic improvement *e.g.*, relief of abdominal pain, diarrhea, fistula drainage with cessation of fever, and improvement in appetite were studied preoperatively and postoperatively. Hemoglobin and serum albumin levels together with the record of the patient's weight were assessed preoperatively and at

TABLE 2. Criteria for Establishing Ileostomy

- | |
|---------------------------------------|
| 1 Severe ileocolitis or total colitis |
| 2 Debilitated patient: |
| anemia (Hb < 10 g/dl) |
| low serum albumin (<3.5 g/dl) |
| weight loss |
| 3 ± associated complications: |
| perianal disease |
| enterocutaneous fistula |
| intra-abdominal inflammatory mass |

TABLE 3. Preoperative and Postoperative Assessment (At Three Months)

| | Group 1 65 Patients | Group 2 6 Patients | Group 3 8 Patients |
|---|------------------------|-----------------------|-----------------------|
| Preoperative | | | |
| Anemia | 47 | 3 | 3 |
| Low serum albumin | 40 | 5 | 7 |
| Weight loss | 60 | 4 | 7 |
| Amount (average) | 26 lbs | 25 lbs | 23 lbs |
| Per cent normal body weight | 19% | 15% | 18% |
| Postoperative | | | |
| Anemia | 3 | 1 | 0 |
| Low serum albumin | 5 | 1 | 1 |
| Weight gain | 55 | 3 | 7 |
| Amount (average) | 23 lbs | 22 lbs | 20 lbs |
| Postoperative hospitalization (days) | 13.1 | 10 | 10.2 |

Figures indicate number of patients in each group.

three month follow-up. Length of hospitalization after fecal diversion was used as an alternative index of postoperative recovery.

Results of Diversion at Three Months

Early clinical improvement was noted in 72 of 79 patients (Table 4) and the objective criteria assessed are listed in Table 3.

In Group 1 (failed medical treatment with or without perianal disease), 59 of 65 patients improved initially as evidenced by disappearance of abdominal cramps, diarrhea, fever, and improved appetite. Overall there was an improvement in the levels of hemoglobin and serum albumin in the majority of patients with a weight gain averaging 23 pounds. After operation the patients were hospitalized an average of 13.1 days, which included instruction for the care of the ileostomy. Twenty-two of 23 patients with perianal disease as the main indication for fecal diversion had relief of sepsis and discomfort.

In Group 2 (patients with an enterocutaneous fistula), five of six patients had good clinical response. Fistula drainage ceased in all patients.

All patients in Group 3 (with an inflammatory mass) improved when assessed at three months. Postopera-

TABLE 4. Results of Ileostomy Diversion (Three Months Postoperatively)

| | Clinically Improved | No Improvement |
|--|------------------------|-------------------|
| Failed medical treatment ± perianal disease | 59 | 6 |
| Enterocutaneous fistula | 5 | 1 |
| Intra-abdominal inflammatory mass | 8 | 0 |
| Total | 72 | 7 |

TABLE 5. Follow-up of 72 Patients Showing Response to Loop Ileostomy

| | Group 1 (59 patients) | Group 2 (5 patients) | Group 3 (8 patients) | Total |
|---|--------------------------------|-------------------------|-------------------------|-------|
| Elective resection | 22 Average 9 months (3–36) | 1 At 3 months | 5 At 4–6 months | 28 |
| Relapse of disease, subsequent resection | 22 Average 11 months (3–48) | 1 At 3 months | 1 At 7 months | 24 |
| Ileostomy alone, no further surgery | 10 At 3–6 years | 3 At 3½–5 years | 1 At 5 years | 14 |
| Closure ileostomy | 3 (8 months–3 years) | 0 | 0 | 3 |
| Deaths | 2 | 0 | 1 | 3 |

tively, the abdominal pain, diarrhea, and fever settled quickly together with a resolution of the inflammatory mass.

No Improvement Following Ileostomy

Seven patients did not show any clinical improvement after fecal diversion.

In Group 1 (failed medical treatment with or without perianal disease) there were six patients who failed to respond.

Five of these patients underwent colectomy within one to three months; one because of continuing perianal sepsis and five because of progression of the colitis; one of these patients had severe diabetes mellitus and another had Wegener's granulomatosis. Another patient in this group had been admitted with septicemia, severe malnutrition (serum albumin of 0.8 g/dl), and toxic colitis. Postoperatively, acute tubular necrosis and adult respiratory distress syndrome developed; he died of continuing sepsis three days after ileostomy.

One patient in Group 2 had a complicated enterocutaneous fistula (including small and large bowel, bladder, and fallopian tubes); a small bowel obstruction developed six weeks after ileostomy. She underwent definitive colectomy at the time of laparotomy for the small bowel obstruction.

Long-term Results of Diversion

The long-term follow-up of the 72 patients who showed clinical improvement after fecal diversion is shown in Table 5.

In Group 1 (failed medical treatment with or without perianal disease), of 59 patients, 22 underwent elective resection at an average of nine months, and 22 had a relapse of the disease and then underwent definitive resection an average of 11 months after ileostomy. Ten patients remain well with the ileostomy alone when followed for three to six years and are reluctant to undergo further surgery. Three patients

had intestinal continuity restored; one at eight months and two at three years. All three have had a relapse of the disease; one has had a proctocolectomy and two are being treated successfully with standard medical therapy. There have been two deaths following ileostomy alone and these will be discussed later.

Of the 22 patients with predominantly perianal disease, nine underwent elective surgery an average of nine months after ileostomy, and six had relapse of symptoms at an average of 11 months and then underwent definitive surgery. Six remained well with an ileostomy alone when followed for three to five years. One patient died.

Of the five patients in Group 2 (with an enterocutaneous fistula), one (postappendectomy) underwent elective resection at three months. One had relapse of the disease (following laparotomy for an inflammatory mass with postoperative ileosigmoid fistula), one underwent definitive surgery at three months, and three remain well with no further surgery when followed from three to five years.

Of the eight patients in Group 3, five underwent elective resection for the disease between four and six months; one had relapse of symptoms at seven months and then underwent resection. One patient remains well at five years and refuses further surgery. One patient has died of complications developing from an hepatic abscess.

In the total series, of those patients who showed initial improvement, 28 of 72 (39%) have undergone elective resection of their disease. Twenty-four had relapse of the disease (33%), necessitating definitive surgery within 3–48 months. Fourteen (19%) remained well between three and five years with the ileostomy alone. Of the three patients who had the ileostomy closed, all have had recurrence of the disease.

Mortality

Four of the 79 patients (5.1%) died; one died in the early postoperative phase, as has been mentioned above.

Three patients died during the long-term follow-up. All of these patients had an ileostomy alone and had shown good initial clinical response following fecal diversion.

Two patients in Group 1 died. A 35-year-old man with extensive ileocolitis and perianal disease died at another hospital of short bowel syndrome 22 months after ileostomy. It is not clear whether active disease was present as an autopsy was not performed. A 65-year-old woman with predominantly perianal disease died of pneumonia 31 months after ileostomy. The Crohn's disease was quiescent at the time of death.

In Group 2, one patient, a 44-year-old man, died 21 months after ileostomy of an inflammatory mass in the right lower quadrant. Death was due to complications from an hepatic abscess. Autopsy revealed quiescent Crohn's disease.

Discussion

Although the role of surgery in Crohn's disease is now firmly established, when standard medical therapy fails to control the disease and/or complications develop, the timing of surgery and the procedure of choice remain issues of debate. Overall postoperative mortality figures average 5%, ranging from 1.7%⁴ to 7.4%.¹⁶ DeDombal et al.⁵ reported a postoperative mortality of 10.5% in patients who had severe exacerbations of Crohn's disease, which was described as one with six or more bowel actions per day, continuous or severe abdominal pain, macroscopic blood in the stools, pulse rate higher than 120 per minute, temperature above 38 C, hemoglobin less than 70%, and weight loss over 14 pounds.

In the group of patients studied, all of whom would fit the above description of a severe episode of Crohn's disease, there appeared to be a general pattern of response following fecal diversion. Seventy-two of 79 patients improved initially as evidenced by subjective and objective criteria. In those that did not undergo elective resection, disease activity recurred in 33% at an average of 11 months after diverting loop ileostomy. These patients then underwent definitive surgery. No patient died in the postoperative period following definitive surgery, either on an elective basis or following a relapse. A few patients remained well without further surgery.

Early clinical improvement after diversion has also been reported in other series,^{1,3,8,9,11-13,16} although other authors have reported only occasional temporary remission⁷ or completely ineffective results.⁶ Burman et al.³ comment that it did not appear to make any difference in the immediate postoperative course whether fecal diversion alone or excisional surgery had been undertaken. However, all of their patients responded initially to fecal diversion.

There is a significant relapse rate after fecal diversion. In 42% of the cases reported by Oberhelman,¹¹ the patients relapsed between six months and three years; 15 of 29 patients described by Burman et al.³ relapsed an average of 36 months after ileostomy (range: 2-105 months); and 33% of the patients in this report relapsed at an average of 11 months (range: 3-48 months).

In this study, fecal diversion restored the general health of the patient and allowed definitive surgery to be undertaken under more favorable circumstances. There was no postoperative mortality after definitive surgery.

On the basis of our results showing a high relapse rate, we would now recommend elective surgery after the initial improvement has taken place following loop ileostomy.

Twenty-two of 23 patients in our series with predominantly perianal disease as the indication for diversion improved postoperatively. This is in contrast to previously reported response rates in which the perianal disease often became more severe.^{3,7,9,10} Recently, Weterman and Pena¹⁵ have reported improvement in three of four patients with severe perianal disease in whom ileostomy alone was undertaken. With the control of perianal sepsis, eventual intersphincteric proctectomy will become technically easier to perform, and the chances for obtaining primary healing of the perineal wound will be increased.

The advent of parenteral nutrition has allowed for improvement in the nutritional status prior to surgery. Some patients in whom loop ileostomy has been performed in the past would now be treated initially with parenteral nutrition. However, the presence of intra-abdominal and perianal sepsis interfering with the clinical response, and the prolonged, expensive treatment necessary, would make fecal diversion with its demonstrated quick clinical response, short hospitalization, and low morbidity a viable alternative.

The concept of fecal diversion often seems to have been that allowing gastrointestinal rest would allow the inflammatory process to settle to such an extent that intestinal continuity could be established at a later date. Lee⁸ and Oberhelman¹¹ have reported promising results with the restoration of intestinal continuity; however, this has not been a successful option in our group of patients.

A small group of patients remain well with the ileostomy alone. Nineteen percent of the patients in this series have remained well when followed for three to six years. Oberhelman¹¹ reported a similar experience of 10 of 31 patients remaining asymptomatic between one and ten years. However, with long-term follow-up it is suggested that the relapse rate will increase as evidenced by the six of 16 patients followed

by Burman et al.³ whose disease recurred between three and nine years after ileostomy alone.

In summary, we believe that there is a definite place for loop ileostomy in the initial surgical management of selected patients with debilitating Crohn's disease. With improvement in the general health of the severely ill, malnourished patient, loop ileostomy provides a very viable alternative to parenteral nutrition. Definitive surgery can then be undertaken under more favorable conditions. We would stress that ileostomy alone is only the first stage of management and that definitive surgery should take place before the expected relapse occurs.

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