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**Perineal Wound Healing after Proctectomy  
for Inflammatory Bowel Disease\***

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THE FAILURE of perineal wounds to heal readily after proctectomy for inflammatory bowel disease has stimulated considerable discussion<sup>3-5, 8, 10-12, 16-18</sup> and has served as an impetus for the development of a number of operative approaches to deal with the problem.<sup>1, 2, 6, 7, 9, 13-15</sup> Watts *et al.*<sup>17</sup> reported from Goligher's unit that 24.7 per cent of 93 patients who underwent proctectomy for ulcerative colitis had an unhealed perineal wound more than six months after operation. Others have reported similarly discouraging statistics. A retrospective study was undertaken of all patients who underwent proctectomy for nonspecific inflammatory bowel disease at the Lahey Clinic for the ten-year period from 1964 through 1973, inclusive, to determine the factors that predispose such a delay in wound healing.

**Clinical Material**

A total of 160 patients underwent proctectomy as part of or subsequent to colectomy and ileostomy for the treatment of inflammatory bowel disease. Seven patients were lost to follow-up study. In addition, one patient died during the postoperative period, and one

died seven months after proctectomy. Excluding these patients, 151 were available for study.

All patients were reexamined or questioned by telephone. The pathologic data were reevaluated by one of us (VHR) in light of present-day criteria for the diagnosis of ulcerative colitis and Crohn's disease. Very stringent criteria were employed to determine healing of the perineal wound. Any drainage, either intermittent or continuous, was believed to represent nonhealing.

Analysis of 27 variables was made to determine which factors predispose a patient to delay in perineal wound healing. Some of the specific criteria studied were pathologic diagnosis (ulcerative colitis or Crohn's colitis), age of the patient at the time of operation, sex, whether diversion (ileostomy or colostomy) was performed before proctectomy, and whether perianal disease was present. Follow-up periods for patients with ulcerative colitis ranged from 15 to 152 months, with a mean of 96 and a median of 105 months, and for patients with Crohn's colitis, from 11 to 148 months, with a mean of 75 and a median of 74 months.

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TABLE 1. Age

Diagnosis	Number of Patients	Per Cent of Series	Age (Years)	
			Mean	Range
Ulcerative colitis	90	59.6	36	14-70
Crohn's colitis	61	40.4	36	19-71
TOTAL	151	100.0	36	14-71

TABLE 2. Sex

Diagnosis	Men		Women	
	Number	Per Cent	Number	Per Cent
Ulcerative colitis	50	55.6	40	44.4
Crohn's colitis	26	42.6	35	57.4
Total	76	50.3	75	49.7

TABLE 3. Operative Procedure before Proctectomy

Operation	Ulcerative Colitis	Crohn's Colitis
Ileostomy only	1	1
Subtotal colectomy, ileostomy	48	34
Partial colectomy with stoma	0	5
Colostomy only	2	3
Total with stoma	51 (56.7%)	43 (70.5%)
Partial colectomy without stoma	6	10
None	33	8
Total without stoma	39 (43.3%)	18 (29.5%)

TABLE 4. Diagnosis vs Healing

Months	Ulcerative Colitis	Crohn's Colitis
≤ 1	2	0
2-3	16	6
4-6	21	11
7-9	6	3
10-12	8	3
13-18	9	3
>18	6	6
Healed with reoperation	12 (13.3%)	8 (13.1%)
Total healed	80 (88.9%)	40 (65.6%)
Unhealed	10 (11.1%)	21 (34.4%)

## Results

Of 151 patients studied, 90 had ulcerative colitis and 61 had Crohn's colitis. The mean ages of the patients were the same in both conditions (Table 1). The sex incidences for the combined diseases were also the same, but more men than women were diagnosed as having ulcerative colitis and more women than men as having Crohn's colitis (Table 2). Approximately 57 per cent of patients with ulcerative colitis and 70 per cent of patients with Crohn's colitis had creation of a stoma before removal of the rectum (Table 3).

The perineal wounds in 75 per cent of patients with ulcerative colitis were healed by the end of the follow-up period without reoperation, whereas only 52 per cent of wounds in the patients with Crohn's colitis were healed (Table 4). By the end of the follow-up study, 11.1 per cent of patients with ulcerative colitis and 34.4 per cent of patients with Crohn's colitis were not healed at all. Follow-up periods for patients with ulcerative colitis who did not heal ranged from 27 to 148 months, with a mean of 103 and a median of 106. With Crohn's colitis and non-healing, the range was 38 to 130 months, with a mean of 80 and a median of 74 months.

**Age:** Youth is shown as a contributing factor to the perineal sinus problem (Table 5). All patients with ulcerative colitis more than 50 years of age and all patients with Crohn's colitis more than 60 years of age had healed perineal wounds. However, the numbers of patients in these age groups were small.

**Sex:** In nearly all women with ulcerative colitis (97.5 per cent), the perineal wounds healed, whereas only 82 per cent of men achieved such healing (Table 5). However, no statistically significant difference in healing was seen when comparing sex distributions in patients with Crohn's disease.

**Stoma:** Examination of the presence or absence of a stoma before proctectomy revealed that in patients with ulcerative colitis, diversion implied an excellent chance for healing (Table 5). Interestingly, the opposite appears true for patients with Crohn's colitis.

**Perianal Disease:** Perianal disease, specifically fistula-in-ano (present at the time of proctectomy), was not a statistically significant factor in nonhealing, although the numbers were small (Table 5). It appears, however, that perianal disease *does* adversely affect healing. The rates of nonhealing were almost the same in patients with ulcerative colitis and in patients with Crohn's colitis when a fistula was present. However, in the absence of perianal fistula, a patient with Crohn's colitis did not heal as well as a patient with ulcerative colitis.

TABLE 5. Age, Sex, Stoma, and Fistula vs Healing

	Ulcerative Colitis			Crohn's Colitis		
	Healed	Not Healed	Per Cent Healed	Healed	Not Healed	Per Cent Healed
Age, years						
<20	10	4	71.4	0	2	0.0
20-29	17	2	89.5	14	7	66.7
30-39	21	2	91.3	9	5	64.3
40-49	15	2	88.2	8	5	61.6
50-59	9	0	100.0	6	2	75.0
60-69	7	0	100.0	2	0	100.0
>69	1	0	100.0	1	0	100.0
Sex						
Men	41	9	82.0	17	9	65.4
Women	39	1	97.5	23	12	65.7
Stoma						
Yes	50	1	98.0	25	18	58.1
No	30	9	76.9	15	3	83.3
Fistula						
Yes	4	2	66.7	25	16	61.0
No	76	8	90.5	15	5	75.0

The number of prior operations, extent of disease, emergent, urgent, or elective nature of the surgical procedure, contamination of the wound, presence or absence of and duration of steroid therapy, level of serum albumin, nutritional state of the patient, and treatment of the perineal wound were all analyzed as factors affecting wound healing. All appeared to have no significant role in the delay of perineal wound healing, except that patients whose wounds were packed did poorly. As only ten patients were so treated, meaningful conclusions are not possible. In most instances the packing was needed to control hemorrhage. It is difficult to evaluate, therefore, whether the cause of the subsequent problem was the packing itself or the hemorrhage and possible sepsis.

### Discussion

Healing of the perineal wound after proctectomy for nonspecific inflammatory bowel disease contributes considerably to late morbidity; it is the primary complaint of patients in the first year after operation. It is difficult to compare one's experience with those of others because of the different methods of perineal wound treatment, different follow-up periods, and the distinction between ulcerative colitis and Crohn's colitis. Table 6 testifies to the magnitude of the problem.

A number of factors predispose a patient to delay in wound healing; many of them have been well described. Patients with Crohn's colitis unquestionably have a significantly higher incidence of delayed

wound healing or persistent sinus formation than patients with ulcerative colitis ( $P < 0.01$ ). However, perhaps it is not the disease itself but merely the perianal complications of fistula and abscess that are the controlling factors. de Dombal *et al.*,<sup>3</sup> Jalan *et al.*,<sup>8</sup> Roy *et al.*,<sup>12</sup> Van Prohaska and Siderius,<sup>16</sup> and Watts *et al.*<sup>17</sup> have shown that anal fistula and sepsis are associated with delays in perineal wound healing, and we have confirmed that observation in this study.

Broader and co-workers<sup>2</sup> reported that younger age was associated with poorer healing, but Jalan and associates<sup>8</sup> failed to demonstrate this relationship in patients with ulcerative colitis. de Dombal *et al.*<sup>3</sup> believed that age *greater than* 40 years in patients with Crohn's colitis was associated with an *increased* incidence of delayed healing, but this was not statistically significant. We have found a suggestive relationship between age and wound healing. Patients with ulcerative colitis who underwent proctectomy after 50 years of age always healed. The distinction is less obvious in patients with Crohn's colitis, but the younger patient definitely healed less often. These results are not statistically significant, however.

Watts *et al.*<sup>17</sup> and Jalan and associates<sup>8</sup> showed that women had a greater problem in perineal wound healing with ulcerative colitis, but we found the opposite to be true ( $P < 0.05$ ). A staged operation was found by de Dombal and colleagues<sup>3</sup> to benefit perineal wound healing in patients with Crohn's colitis, whereas Hughes,<sup>5</sup> studying patients with ulcerative colitis, found that those who underwent one-stage

TABLE 6. Perineal Wound Healing: Summary of Literature

Reference, Year	Diagnosis	Healed, Months	Number Healed	Number Not Healed	Per Cent Healed
Hughes, <sup>5</sup> 1965	Ulcerative colitis	Not stated	58	13	81.7
Watts <i>et al.</i> , <sup>17</sup> 1966	Ulcerative colitis	6	70	23	75.3
Jalan <i>et al.</i> , <sup>8</sup> 1969	Ulcerative colitis	6	48	58	45.3
	Ulcerative colitis	12	67	39	63.2
Roy <i>et al.</i> , <sup>12</sup> 1970	Ulcerative colitis	3	Not stated	Not stated	81.6
	Crohn's colitis	3	Not stated	Not stated	76.3
Oates and Williams, <sup>9</sup> 1970	Both	Not stated	41	12	77.4
de Dombal <i>et al.</i> , <sup>3</sup> 1971	Crohn's colitis	6	39	29	57.4
Ritchie, <sup>11</sup> 1971	Ulcerative colitis	6	121	101	54.5
	Crohn's colitis	6	4	15	21.1
Broader <i>et al.</i> , <sup>2</sup> 1974	Ulcerative colitis	6	33	8	80.5
	Crohn's colitis	12	11	2	84.6
Irvin and Goligher, <sup>7</sup> 1975	Ulcerative colitis	6	23	10	69.7
	Crohn's colitis	6	12	7	63.2
Corman <i>et al.</i> (present series)	Ulcerative colitis	6	40	50	44.4
	Crohn's colitis	6	17	44	27.9

proctocolectomy healed sooner. To add to the confusion on the subject, we came to diametrically opposite conclusions. Patients with ulcerative colitis fared better with a staged operation ( $P < 0.005$ ), and patients with Crohn's colitis healed sooner with one operation—but not significantly so. These results may be explained by suggesting that in patients with ulcerative colitis, without anal disease, who have had a diversionary procedure, the rectum becomes atrophic and the disease "cools down," thereby permitting sub-

sequent proctectomy in less inflamed tissue. Conversely, proctectomy as a staged operation for Crohn's colitis is usually performed because of exacerbation of anal problems, and these patients often have considerable sepsis. Of course, this may be merely a rationalization that might easily be turned around to explain opposite results.

Packing of the wound has been shown by Jalan *et al.*<sup>8</sup> and by Roy *et al.*<sup>12</sup> to delay wound healing. Because of the limited number of patients so treated in our series, it is difficult to draw any meaningful conclusions. The reason for packing the wound most commonly was hemorrhage with subsequent pelvic sepsis, which may be the primary factor for nonhealing, although some studies would seem to show that the packing itself was responsible.

Broader *et al.*<sup>2</sup> believed that prolonged treatment with steroids after operation delayed wound healing, but very few of the patients in our series continued taking this medication for more than three months, so no useful data are available.

Likewise, Broader *et al.*<sup>2</sup> and Irvin and Goligher<sup>7</sup> reported that fecal contamination was found to affect healing adversely, but sufficient information concerning this factor was not available in this retrospective study.

It is apparent that comparisons of the Lahey Clinic experience, those of other institutions, and those of individuals are difficult and in many cases meaningless. The treatments vary, the diagnoses vary, the periods of follow-up study vary, and the possible factors contributing to the delay in healing vary. Although

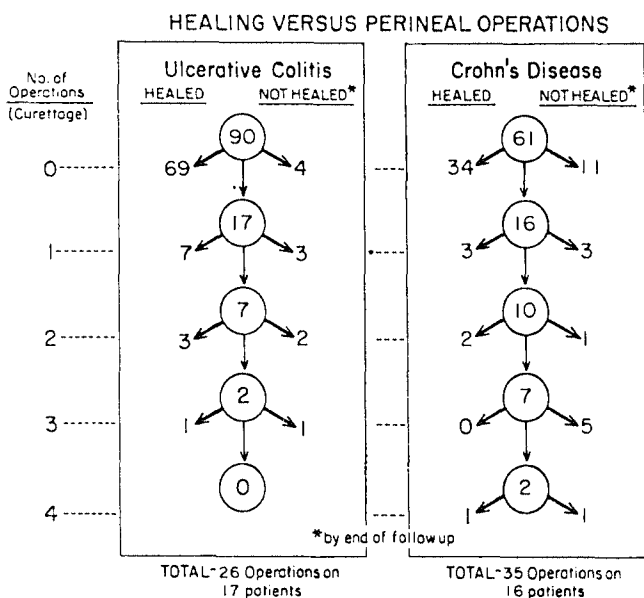


FIG. 1. Numbers of operations performed on perineal wounds.

we have had minimal experience with primary closure and suprapubic suction, others<sup>7,9</sup> believe that this treatment in nonseptic, noncontaminated proctectomy offers the best possible hope for early healing. Indeed, our results of 23.3 per cent of patients with ulcerative colitis and 44.3 per cent of patients with Crohn's colitis having either readmission for curettage or failure to heal at all suggest that we at least explore an alternative method of treatment.

Finally, Figure 1 demonstrates the numbers of operations performed to effect healing of the perineal wound in patients with ulcerative colitis and Crohn's colitis. It may be concluded that persistence rewards the surgeon and the patient. With subsequent readmission one may hope to achieve complete healing. With this in mind, patients should be readmitted for curettage at six-month intervals until healing is achieved. With respect to prophylaxis, primary closure and suprapubic suction drainage may offer the best hope for reducing the incidence of this vexing and disabling problem.

### Summary

One hundred fifty-one cases of patients who underwent proctectomy for inflammatory bowel disease at the Lahey Clinic were analyzed with respect to the factors that predispose to delay in perineal wound healing. Significantly poorer healing took place in patients with Crohn's colitis, in men with ulcerative colitis, and in patients with ulcerative colitis who underwent one-stage operations. Factors that were not statistically significant but that appeared to contribute to delay in healing were younger age of patients and presence of anal fistulas. A comparison is made with the results of other series, and recommendations for treatment and prevention are presented.

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