



Effect of Fecal Diversion Alone on Perianal Crohn's Disease

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Abstract. The role of fecal diversion alone for perianal Crohn's disease remains unclear. This study was undertaken to assess its role in perianal Crohn's disease and to examine predictive factors for outcome. Thirty-one patients who underwent fecal diversion alone for perianal Crohn's disease between 1970 and 1997 were reviewed. The principal indications for fecal diversion were severe perianal sepsis in 13 patients, recurrent deep anal ulcer in 3, complex anorectal fistula in 9, and rectovaginal fistula in 6. Twenty-five patients (81%) went into early remission, and six (19%) failed to respond. Of the 25 early responders, 17 relapsed at a median duration of 23 months after fecal diversion. By contrast, 8 patients (26%) went into complete remission and required no further surgery at a median duration of 81 months after the diversion. Altogether, 22 patients required surgery at a median duration of 20 months after fecal diversion: proctectomy in 21 and repeated drainage of anal sepsis in 1. At present, intestinal continuity has been restored in only three patients (10%). The following parameters were compared in patients with and without complete remission after fecal diversion: age, gender, duration of disease, steroid use, smoking, coexisting Crohn's disease, preoperative blood indices, and Crohn's disease activity index. None of these parameters affected the outcome. In conclusion, fecal diversion alone is effective in selected patients with perianal disease, but the prospect of restoring intestinal continuity is low. There were no parameters to identify those in whom a successful outcome is likely.

Perianal lesions such as sepsis and fistula are common in patients with Crohn's disease [1–7]. The perianal lesions of Crohn's disease are often asymptomatic and require no treatment, but they can become both painful and disabling and may require surgical treatment [1–7]. Surgical treatment of perianal disease was controversially discussed for many years, and most authors now recommend a conservative surgical approach with simple drainage procedures, avoiding aggressive surgery [3–7]. Rectovaginal fistulas are a well recognized complication of Crohn's disease, occurring in 5% to 10% of women [8, 9]. The management of rectovaginal fistulas complicating Crohn's disease is often unsatisfactory [8–12]. The literature is replete with a variety of surgical repairs, all reporting poor outcomes for treatment of rectovaginal fistulas associated with Crohn's disease [8–12].

Fecal diversion alone has been used to achieve remission in colonic Crohn's disease, and several authors have reported their results [13–18]. However, there have been few reports on the

effect of fecal diversion alone for severe perianal Crohn's disease in large numbers of patients [19]. Furthermore, no studies have examined factors that might predict the outcome of fecal diversion for perianal Crohn's disease. The aims of this study were to assess the usefulness of fecal diversion alone for severe perianal Crohn's disease, including rectovaginal fistula, and to examine if it is possible to predict which patients are likely to respond.

Materials and Methods

Patients

Between 1970 and 1997 a total of 31 patients underwent fecal diversion alone for perianal Crohn's disease in this unit. There were 14 males and 17 females with a median age of 29 years (range 14–80 years). The median duration of Crohn's disease before fecal diversion was 12 months (range 0–144 months). The principal indications for fecal diversion were severe perianal sepsis in 13 patients, recurrent deep anal ulcer in 3, complex anorectal fistula in 9, and rectovaginal fistula in 6. A loop ileostomy was formed in 27 patients and a loop colostomy in 4. Twelve patients had undergone perianal sepsis drainage, and six patients had undergone seton fistulotomy before fecal diversion. All six patients with a rectovaginal fistula had severe rectal involvement, with ulceration, rigidity, loss of distensibility, or strictures. None of the six patients had had surgical treatment for the fistula before the fecal diversion. At the time of fecal diversion, 13 patients (42%) were being treated with corticosteroids, and 23 patients (74%) had coexisting Crohn's disease, as shown in Table 1.

One patient died postoperatively, and another was lost to follow-up. All other patients have been followed up in our inflammatory bowel disease (IBD) clinic. The patients were generally followed up at 3- to 6-month intervals for the first year and yearly thereafter. Patients whose perianal disease was not improved were followed up at 1- or 2-week intervals. Annual sigmoidoscopy was performed on the patients with symptomatic colonic disease. The median duration of follow-up was 103 months (range 13–332 months). Remission was defined as alleviation of the perianal disease with resolution of sepsis and active fistulas and objective improvement in the patient's condition. Relapse was defined as the recurrence of symptoms due to perianal sepsis or fistula.

The outcome of fecal diversion was classified as follows: (1)

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Table 1. Site of coexisting Crohn's disease.

Site	No. of patients
Ileum alone	3
Terminal ileum and right colon	2
Total colon and rectum	7
Segmental colon and rectum	10
Total colon and ileum	1

complete remission: improvement that lasted throughout the review without relapse; (2) temporary remission: improvement that lasted more than 1 month but the disease later relapsed; and (3) no response: the disease was not alleviated or became worse. Patients whose perianal disease was not alleviated or those who developed new symptoms due to recurrent disease were managed by medical treatment using 5-aminosalicylic acid, corticosteroids, or azathioprine (or a combination of these agents).

Statistical Analysis

To examine predictive factors for the outcome of fecal diversion, the complete responders were compared with those who were not improved or relapsed using the chi-square test with Yates' correction. Differences between mean values were analyzed using Student's *t*-test. A value of $p < 0.05$ was considered statistically significant.

Results

Morbidity and Mortality

One patient died owing to Fournier's gangrene 1 month after fecal diversion. Five patients (16%) developed stomal complications (retraction 2, parastomal abscess 2, parastomal hernia 1), of whom two required revision of the stoma. Two patients developed intraabdominal sepsis, and one patient had an abdominal wound infection.

Outcome of Fecal Diversion

There were no late deaths, and no patients developed malignancy in the defunctioned colon and rectum. The outcomes after fecal diversion are shown in Table 2. Twenty-five patients (81%) went into early remission, and six (19%) failed to respond, of whom one died from Fournier's gangrene. Of the 25 early responders, 17 relapsed (temporary remission) at a median duration of 23 months (range 10–124 months) after the fecal diversion. By contrast, eight patients (26%) went into complete remission and required no further surgery for perianal disease at a median duration of 81 months (range 13–272 months) after fecal diversion. Twenty-two patients required definitive surgery at a median duration of 20 months (range 0–124 months) after fecal diversion (two patients after stoma closure): proctectomy in 21 and repeated drainage of anal sepsis in 1. After proctectomy, 5 (24%) of the 21 patients developed persistent perineal sinus, defined as an unhealed perineal wound over the 6 months after proctectomy. In two of the five patients, the perineal sinus was cured by radical excision of the sinus. At present, intestinal continuity has been restored in only three patients (10%). The stoma closure was

performed at a median duration of 41 months (range 19–240 months) after fecal diversion, and the median follow-up after the stoma closure is 34 months (range 19–231 months).

The outcome of fecal diversion was separately examined according to the anorectal pathology (Table 2).

Perianal Sepsis

Of the 13 patients with severe perianal sepsis, 9 (69%) went into early remission, and the other 4 (31%) failed to respond. Five of the nine early responders relapsed (temporary remission) at a median duration of 13 months (range 10–90 months) after fecal diversion. By contrast, four patients (31%) went into complete remission and required no further surgery for perianal disease at a median duration of 59 months (range 13–97 months) after the diversion. Eight patients required surgery at a median duration of 10 months (range 0–90 months) after fecal diversion (one patient after stoma closure): proctectomy in seven and repeated drainage of sepsis in one. At present, intestinal continuity has been restored in two patients. The stoma closure was performed 19 and 240 months after fecal diversion, and the follow-up durations after the stoma closure are 34 and 19 months, respectively.

Anal Ulcer

All three patients with a deep anal ulcer went into early remission, but all relapsed at a median duration of 21 months (range 11–54 months) after fecal diversion. All three required proctectomy at a median duration of 22 months (range 12–57 months) after fecal diversion.

Anorectal Fistula

All nine patients with anorectal fistula went into early remission, but five (31%) relapsed (temporary remission) at a median duration of 22 months (range 16–55 months) after fecal diversion. By contrast, four patients (31%) went into long-term remission and required no further surgery for perianal disease at a median duration of 119 months (range 22–272 months) after the diversion. Five patients required proctectomy at a median duration of 23 months (range 18–57 months) after fecal diversion (one patient after stoma closure). At present, intestinal continuity has been restored in one patient. The stoma closure was performed 41 months after fecal diversion. The follow-up duration after the stoma closure is 231 months.

Rectovaginal Fistula

None of the six patients with rectovaginal fistula went into complete remission. In four patients the fistula became asymptomatic (not healed) but relapsed later (one patient after stoma closure) at a median duration of 31 months (range 24–124 months) after fecal diversion. The remaining two patients failed to respond. All six patients required proctectomy at a median duration of 27 months (range 3–124 months) after fecal diversion.

Factors Influencing Long-term Remission

Factors influencing long-term remission after fecal diversion were examined. Comparisons were made for the following parameters

Table 2. Outcome of fecal diversion.

Outcome	No.	Failure (no.)	Early remission (no.)	Late relapse		Complete remission		Restoration of intestinal continuity (no.)
				No.	Months ^a	No.	Months ^a	
Overall	31	6 ^b	25	17 ^c	23 (10–124)	8	81 (13–272)	3
Perianal sepsis	13	4 ^b	9	5 ^c	13 (10–90)	4	59 (13–97)	2
Anal ulcer	3	0	3	3 ^c	21 (11–54)	0		0
Anorectal fistula	9	0	9	5 ^c	22 (16–55)	4	119 (22–272)	1
Rectovaginal fistula	6	2 ^c	4	4 ^c	31 (24–124)	0		0

^aMedian and range.^bOne patient died owing to Fournier's gangrene; all others required more surgery.^cAll required more surgery.**Table 3.** Relation between clinical factors and outcome of fecal diversion.

Factor	Complete remission (n = 8)	No complete remission (n = 23)	p
Age at surgery (years), mean ± SD	33 ± 12	32 ± 18	0.91
Gender (male:female)	5:3	9:14	0.46
Duration of disease, mean ± SD (months)	27 ± 29	25 ± 33	0.88
Preoperative steroid therapy			
Yes	3	10	
No	5	13	0.99
Smoking habit at the time of operation			
Yes	3	14	
No	5	8	0.39
Unknown	0	1	
Coexisting Crohn's disease			
Yes	6	17	
No	2	6	0.68
Preoperative blood indices (mean ± SD)			
White blood cell count (10 ⁹ /L)	11.7 ± 2.8	12.4 ± 3.2	0.63
Hemoglobin (g/dl)	11.5 ± 2.0	11.6 ± 1.9	0.92
Platelets (10 ⁹ /L)	408 ± 45	410 ± 46	0.92
ESR (mm/hr)	36 ± 26	52 ± 31	0.26
C-reactive protein (mg/L)	28 ± 9	34 ± 11	0.17
Albumin (g/L)	31 ± 5	32 ± 6	0.89
CDAI (mean ± SD)	203 ± 23	206 ± 29	0.78

ESR: erythrocyte sedimentation rate; CDAI: Crohn's disease activity index.

between patients with and without complete remission: age, gender, duration of disease, preoperative steroid therapy, smoking habit, coexisting Crohn's disease, preoperative blood indices, and Crohn's disease activity index (CDAI) (Table 3). None of these parameters predicted which patients might achieve long-term remission.

Discussion

Perianal Crohn's disease is one of the most difficult areas of all of Crohn's disease to treat. Surgery has a variable role in the management of perianal disease [4]. Many perianal lesions, particularly ulcers and fistulas, heal completely without any specific therapy [5, 6]. Furthermore, ill-advised surgical treatment can cause more morbidity (due to incontinence) than the disease itself [7]. The potential morbidity caused by sphincter injury following local anal operations for perianal Crohn's disease should always

be borne in mind when contemplating a surgical option for treatment. In our unit, fecal diversion alone has been used for some patients with severe florid perianal disease that do not respond to surgical drainage of sepsis or seton fistulotomy. The advantage of fecal diversion is that it is a relatively minor procedure, and it may promote healing of an anal ulcer and some fistulas. After fecal diversion there is no risk of fecal incontinence or the complications of proctectomy, such as impotence or a persistent perineal sinus. Hence this strategy may be an attractive alternative to conventional ablative surgery in selected patients.

It has been argued that a loop ileostomy, unlike a split ileostomy, may not completely defunction the distal bowel. This hypothesis is usually based on the clinical observation of continued defecation in the presence of a loop ileostomy [20]. The passage of feces, however, does not necessarily imply overspill into the efferent limb of the stoma because feces may form in a completely defunctioned bowel as a result of bacterial overgrowth and cellular desquamation [21]. Winslet et al. [20] assessed the defunctioning efficacy of the loop ileostomy using a radioisotope and found that the median defunctioning efficiency of the ileostomy in the absence of stomal retraction was 99.99%. We therefore prefer loop ileostomy rather than split ileostomy, as patients do not have the inconvenience of a mucus fistula, and closure may be performed without laparotomy.

There have been several reports on the use of fecal diversion alone for colonic Crohn's disease [13–18]. Lee [15] reported the outcome of 69 patients who underwent split ileostomy for Crohn's colitis: 22 (32%) eventually required a proctocolectomy, 9 (13%) were able to have a more limited resection, and 25 (36%) remained defunctioned; only 18 (26%) were able to achieve restoration of intestinal continuity. In our previous report [18] on the use of fecal diversion alone for 32 patients with Crohn's proctocolitis, sustained disease remission was obtained in 71% of patients and no response in 16%. Altogether, 14 patients (44%) required resection, and 11 patients (34%) remained defunctioned at the time of report. In only four patients (13%) was intestinal continuity restored. Thus fecal diversion for Crohn's colitis produces a high incidence of sustained disease remission, but for most patients the prospect of future restoration of intestinal continuity is limited.

There have been few reports by which to judge the outcome of fecal diversion alone for perianal Crohn's disease. Harper et al. [19] reported that 11 of 19 patients with fistula-in-ano improved, 4 relapsed during diversion, 1 relapsed after ileostomy closure, and only 3 were able to achieve restoration of intestinal continuity. Zelas and Jagelman [17] used loop ileostomy for diversion in

79 patients with Crohn's colitis or ileocolitis who had failed to respond to medical therapy. In their study, 23 patients had severe perianal disease at the time of operation, and 22 of them improved following fecal diversion. Six have remained well but still have an ileostomy during a follow-up of 3 to 5 years; nine required definitive surgery at a mean of 9 months following ileostomy formation; and six had a relapse with symptoms that required definitive surgery 11 months after ileostomy formation; and six had a relapse with symptoms that required definitive surgery 11 months after ileostomy formation. In a previous report from our unit [18], most of the patients underwent fecal diversion for Crohn's proctocolitis, and only 10 patients had fecal diversion for perianal disease ($n = 8$) or enterovaginal fistula ($n = 2$). Seven of the eight patients with perianal disease showed improvement, and the other patient had no response. In only three patients was intestinal continuity restored after a mean period of 43 months. Two patients remained defunctioned at a mean follow-up of 42 months, and the other three patients underwent proctocolectomy. Both patients with enterovaginal fistula achieved remission; one underwent proctocolectomy at 113 months, and the other remained defunctioned at 52 months.

In this study, early remission was achieved in 81% (25/31) of the patients with perianal Crohn's disease. However, 68% (21/31) of the patients required proctectomy, and complete remission was achieved in only 26% (8/31). Intestinal continuity has been restored in only 10% (3/31) of the patients. These data indicate that fecal diversion alone for severe perianal Crohn's disease produces a high incidence of early remissions, but approximately half of the patients require proctectomy later. Restoration of intestinal continuity is rarely achieved. Fecal diversion, however, may be of value as a staged procedure prior to proctectomy for perianal disease and may convert an infected perineum to a more quiescent disease process, thereby minimizing the risk of perineal sinus. After proctectomy, 5 (24%) of the 21 patients developed persistent perineal sinus in this study. In another study we found that perineal sinus was more likely to occur if an extrasphincteric dissection was needed because of extensive anorectal disease or if fecal contamination occurred at proctocolectomy [22].

The management of rectovaginal fistulas complicating Crohn's disease is often unsatisfactory [8–12]. The literature is replete with a variety of surgical repairs, all reporting poor outcomes for treatment of rectovaginal fistulas associated with Crohn's disease [8–12]. Most patients with rectovaginal fistula secondary to rectal disease, even if it is quiescent, eventually require a proctectomy because of progressive rectal disease or unmanageable incontinence [9, 10]. Goligher [23] suggested that abdominal perineal resection is the gold standard for these patients. There have been only a few reports concerning the efficacy of fecal diversion alone on rectovaginal fistulas. Harper et al. [19] reported that in 5 of 12 women the rectovaginal fistula improved but remained unhealed; 5 were successfully repaired, but all relapsed when the stoma was closed, and only 2 healed in the long term. Harper et al. [19] reported that rectovaginal fistulas remained healed only if the rectum was not involved with disease. In our unit, we occasionally divert a rectovaginal fistula if it is badly infected. We only repair rectovaginal fistulas in the absence of infection and if there is minimal rectal disease. Straightforward cases may be repaired without a covering stoma. In complicated or recurrent cases we usually cover the repair with a proximal diverting stoma. However, we recognize that most (80%) of our patients with rectovaginal

fistula eventually require a proctocolectomy and ileostomy over a period of about 5 years. In this study, although four of six patients with rectovaginal fistula (all with severe rectal involvement) went into early remission after fecal diversion alone, all relapsed and required proctectomy later. The remaining two patients failed to respond at all and required proctectomy. Thus relapse of disease has been common, and fecal diversion did not prevent proctectomy. The outcome of fecal diversion alone for rectovaginal fistula is poor, and we do not recommend diversion alone. We reserve diversion for definitive fistula closure because in our experience many of these patients require a period of fecal diversion to achieve healing, and even then many fail in the longer term.

It would be helpful if we could predict which patients with perianal disease might respond to fecal diversion alone. There have been no studies that examined predictive factors for outcome of fecal diversion alone in Crohn's disease. In this study, the relations between various clinical factors and outcome were investigated, but we failed to find any significant predictive factors. Harper et al. [19] suggested that the best response to diversion occurred if the rectum was not involved or the intestinal Crohn's disease was quiescent. In this study, coexisting intestinal disease or Crohn's disease activity did not affect the outcome.

No patients developed malignancy in the defunctioned colon and rectum in this study. There is a small theoretic risk of malignancy in the defunctioned large bowel, but in practice this complication is rare. Endoscopic surveillance of the defunctioned bowel is generally unsatisfactory, and many patients with distal disease are eventually advised to undergo proctocolectomy.

We believe that fecal diversion may have a place in allowing severe perianal disease to settle, thereby avoiding immediate proctectomy. We warn patients that in only a few cases is the ileostomy closed, but that the severe sepsis or anal pain is usually alleviated. If eventually a rectal excision is needed, the complication rate may be reduced by prior fecal diversion.

Résumé

La place de la dérivation fécale seule dans la maladie de Crohn péri-anale n'est pas claire. Cette étude a eu pour but d'évaluer son rôle dans la maladie de Crohn péri-anale et de déterminer les facteurs prédictifs de l'évolution. On a analysé les dossiers de 31 patients ayant eu une dérivation fécale seule pour maladie de Crohn entre 1970 et 1997. Les indications principales de la dérivation fécale ont été un sepsis péri-anal sévère chez 13 patients, un ulcère anal récidivant chez 3, une fistule anorectale complexe chez 9 et une fistule rectovaginale chez 6. Une rémission précoce a été observée chez 25 patients (81%) alors que six (19%) n'ont pas répondu au traitement. Dix-sept des 25 répondants précoces ont récidivé après un délai médian de 23 mois post-dérivation. À l'inverse, 8 patients (26%) ont eu une rémission complète, et n'ont nécessité aucun geste chirurgical complémentaire après une durée médiane de 81 mois suivant la dérivation fécale. Vingt-deux patients ont nécessité une chirurgie 20 mois (médiane) après dérivation fécale : proctectomie ($n = 21$) et drainage répété d'un sepsis anal ($n = 1$). À l'heure actuelle, la continuité intestinale n'a été rétablie que chez trois patients (10%). Les paramètres suivants ont été comparés chez les patients ayant ou sans rémission complète après dérivation fécale : âge, sexe, durée de la maladie, l'utilisation des corticostéroïdes, consommation du tabac, maladie de Crohn coexistante, indices

sanguins préopératoires et indexe d'activité de maladie de Crohn. Aucun de ces paramètres n'a influencé l'évolution. En conclusion, la diversion fécale seule est efficace chez des patients sélectionnés avec maladie périanale, mais le prospect de rétablir la continuité intestinale reste peu élevée. Il n'existe aucun paramètre permettant d'identifier une évolution favorable.

Resumen

La importancia de la derivación fecal como terapia única en la enfermedad de Crohn perianal no ha sido bien establecida. El presente estudio se propuso evaluar el resultado de la derivación fecal en pacientes con enfermedad de Crohn perianal y, al mismo tiempo, analizar los factores de predicción de resultados. En total 31 pacientes fueron sometidos a derivación fecal en el periodo 1970–1997. La indicación principal de la derivación fue sepsis perianal en 13 casos, úlcera anal profunda en 3, fístula ano-rectal compleja en 9 y fístula rectovaginal en 6; 25 (81%) pacientes exhibieron remisión temprana y en 6 (19%) hubo falla en la respuesta. De los 25 restantes, 17 desarrollaron recurrencia a los 23 meses, en promedio, luego de la derivación fecal. En contraste, 8 (26%) tuvieron remisión compleja y no requirieron cirugía adicional en un lapso promedio de 81 meses luego de la derivación. Veintiún pacientes requirieron cirugía adicional en un lapso promedio de 20 meses luego de la derivación fecal: proctectomía (n=21) y drenajes repetidos de la sepsis anal (n=1). En el momento actual sólo se ha podido restablecer la continuidad gastrointestinal en 3 pacientes (10%). Se efectuó la comparación de los siguientes parámetros en los pacientes con y sin remisión total luego de la derivación fecal: edad, sexo, duración de la enfermedad, uso de esteroides, hábito de fumar, enfermedad de Crohn coexistente, índices sanguíneos preoperatorios e índice de actividad de la enfermedad de Crohn. Ninguno de estos parámetros influyó en el resultado final. En conclusión, la derivación fecal resulta efectiva en casos seleccionados de enfermedad perianal. La perspectiva de restablecer continuidad gastrointestinal es baja. No hubo parámetros que permitan identificar los pacientes en quienes la derivación fecal pueda tener un resultado final favorable.

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Invited Commentary

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Anal Crohn's disease and its complications are a source of considerable morbidity for patients and consternation on the part of

surgeons. This series from Birmingham, England represents a 27-year experience with 31 patients undergoing fecal diversion without resection of the underlying Crohn's disease in an attempt to control the symptoms of severe anal complications, primarily of a septic nature. The authors have retrospectively analyzed the natural history of the patients with diversions with regard to healing of the anal disease and restoration of intestinal continuity. The relatively small number of patients in a referral unit with expertise in treating inflammatory bowel disease indicates the relative rarity of this clinical circumstance.

Proximal diversion by ileostomy or colostomy resulted in symptomatic improvement in 81% of patients; "remission," as defined by the authors, is resolution of sepsis and active fistulas. It is not clear whether the fistulous tracts were still present but inactive in those patients classified as "in remission." More importantly, 68% of those with early relief had recurrence and progression of symptoms within less than 2 years of stoma creation. Only three patients (10%) have undergone successful stoma closure with a follow-up of less than 3 years, and 95% of those with failure to respond or early recurrence have undergone proctectomy. Those with rectovaginal fistulas never achieved healing, and all underwent proctectomy. Of those undergoing rectal excision after prior ostomy creation the nonhealing perineal wound rate was 24%, an admirable achievement in a group with perineal sepsis; presumably, it is due to reduction in local infection by proximal fecal diversion, but this conclusion cannot be stated definitively in the present study.

Factors potentially discriminating between complete remission and no complete remission were analyzed by chi-square and Student's *t*-test, with no factors being identified that were predictive of complete remission. Notably absent from the list were descriptions of the site of active intestinal Crohn's disease, although the presence or absence of Crohn's disease and the Crohn's Disease Activity Index were similar in the two groups. In a series of 47 patients undergoing creation of an excluded rectal segment at the Lahey Clinic, usually by resection with Hartmann

pouch or mucous fistula, 73% of patients with a diseased rectum underwent completion proctectomy within 3 years [1]. In the face of active anal disease, even with resection of the proximally diseased bowel, the proctectomy rate was even higher. It is of interest that none of those with a normal rectal segment desired reestablishment of the gastrointestinal tract continuity because of the substantial overall improvement after resection with ileostomy.

Once anal Crohn's disease becomes symptomatic, aggressive local procedures that maintain sphincter function can often preserve a functional anus [2]. When the symptoms are beyond this point, creation of a proximal stoma should be considered; addition of resection is determined on an individual basis. Most patients in this circumstance never undergo reanastomosis and should be counseled in this direction, indicating that it is unusual to achieve an intact gastrointestinal tract once anal disease has become severe. Overall, the value of the present series is to reinforce the reality of caring for this difficult subset of patients.

References

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