Volume 38

Diseases of the
COLON & RECTUM

Number 11

NOVEMBER 1995

ORIGINAL CONTRIBUTIONS

Anal Fissure in Crohn's Disease: A Plea For Aggressive Management

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PURPOSE: This study was undertaken to identify clinical characteristics, natural history, and results of medical and surgical treatment of anal fissures in Crohn's disease. METHODS: This is a retrospective review of patients with Crohn's disease and anal fissure. RESULTS: Of the 56 study patients, 49 (84 percent) had symptomatic fissures. Fissures were most commonly (66 percent) located in the posterior midline, and 18 patients (32 percent) had multiple fissures. Fissures healed in one-half of patients treated medically. Factors predictive of successful medical treatment included male gender, painless fissure, and acute fissure. Of 15 patients, 10 (67 percent) treated surgically healed. Fissures in seven of eight patients (88 percent) who underwent anorectal procedures healed compared with fissures in only three of seven patients (43 percent) who underwent proximal intestinal resection. In the group of 50 patients with complete follow-up studies, an anal abscess or fistula from the base of an unhealed fissure developed in 13 patients (26 percent). More fissures healed after anorectal surgery (88 percent) than after medical treatment alone (49 percent; $P = 0.05$) or after abdominal surgery (29 percent; $P = 0.03$). CONCLUSION: This series documents that unhealed fissures frequently progress to more ominous anal pathologic disease. Judicious use of internal sphincterotomy appears to be safe for fissures unresponsive to medical treatment. [Key words: Fissure-in-ano; Crohn's disease; Anal surgery]

Fleshner PR, Schoetz DJ Jr, Roberts PL, Murray JJ, Coller JA, Veidenheimer MC. Anal fissure in Crohn's disease: a plea for aggressive management. Dis Colon Rectum 1995;38:1137–1143.

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Although the initial description[1] of Crohn's disease in 1932 made no mention of perianal complications, anal abscess, fistula, and fissure are now widely recognized as the most typical problems that may occur in the course of the disease.[2] Many articles[3, 4] have been written regarding diagnostic and treatment approaches to anal abscess and fistula in Crohn's disease. However, only one report[5] has specifically examined anal fissures in Crohn's disease. In an effort to identify the clinical characteristics and natural history of anal fissures in Crohn's disease and to assess the proper roles of medical and surgical treatment, we undertook a retrospective review of all patients with Crohn's disease and anal fissure.

MATERIALS AND METHODS

Hospital records of patients with Crohn's disease treated at the Lahey Clinic from 1957 through 1990 were cross-referenced with patients diagnosed with an anal fissure. All patients had clinical, radiologic, and histologic features diagnostic of Crohn's disease. All patients were diagnosed and treated by members of the Department of Colon and Rectal Surgery.

A retrospective review of eligible charts was undertaken, and variables studied in all patients included age, sex, location of Crohn's disease, nature of prior medical and surgical treatment of Crohn's disease and anal fissures, presenting symptoms and physical signs, and outcome of medical or surgical treatment or both. Data were tabulated and stored in a personal computer for analysis.

Sites of disease included the small bowel, colon, and anorectum. Fissures were designated as chronic when a sentinel tag, hypertrophied anal papilla, evidence of scar tissue at the edge of the fissure, or a fistula originating from the base of the fissure was identified.

All anorectal procedures were performed with the patient in either the lithotomy or prone position and under general anesthesia. Lateral internal sphincterotomy was performed in a closed fashion within the right intersphincteric groove as previously described.[6]

Follow-up data were recorded from chart review, with additional information obtained by letter or telephone. The efficacy of medical or surgical intervention was assessed at four weeks (short-term outcome), whereas long-term outcome included data until last follow-up visit. Statistical analysis was performed using the chi-squared test.

Table 1.
Patient Characteristics

Clinical Finding	Patients	
	Number	Percent
Symptoms		
Anal pain	39	70
Bleeding	31	55
Discharge	5	9
Pruritus	2	4
None	9	16
Fissure location		
Posterior midline	37	66
Anterior midline	28	50
Left lateral	6	11
Right lateral	5	9
Multiple	18	32
Associated anal lesions		
Sentinel tag	11	20
Fistula*	10	18
Papilla	2	4
Stenosis	10	18

* Arising in an area away from the fissure.

RESULTS

General Features

The 29 male and 27 female patients ranged in age from 11 to 73 (median, 28) years. Crohn's disease involved the colon in 35 patients (63 percent) and the small bowel in 29 patients (52 percent) and was isolated to the anorectum in 8 patients (14 percent). Although most patients (77 percent) were known to have Crohn's disease at the time the fissure was diagnosed, six patients (11 percent) were diagnosed with both processes at the same time, and seven patients (13 percent) had the diagnosis of Crohn's disease established after recognition of the fissure.

Clinical features of the study group are summarized in Table 1. Most patients had typical features of anal fissure disease on presentation. However, nine patients (16 percent) had fissures that were totally asymptomatic. Although most fissures were located in the midline, 11 patients (20 percent) had fissures in aberrant locations. Furthermore, almost one-third of patients had fissures located simultaneously in multiple locations around the anal canal. Twenty patients (36 percent) had an acute anal fissure, whereas the remaining 36 patients (64 percent) had a chronic anal fissure. Ten patients (18 percent) had stenosis of the anal outlet.

Short-Term Outcome

Forty-one patients (73 percent) were initially managed medically with topical ointments, metronidazole, prednisone, or sulfasalazine. The remaining 15 patients were not deemed appropriate for conservative measures and underwent immediate surgical intervention. Choosing between medical and surgical treatment was made solely at the discretion of the attending surgeon. Medical and surgical patient groups were well matched in most clinical characteristics, such as age, sex, duration, extent, and prior treatment of Crohn's disease and symptoms, location, number, and prior treatment of anal fissures. However, the medical group had a larger proportion of acute fissures (45 percent) than the surgical group (20 percent) ($P = 0.04$). All eight patients with active Crohn's disease were selected for medical therapy, a trend that was not statistically significant ($P = 0.07$).

Three medically treated patients never returned for evaluation, and of the remaining 38 evaluable patients, 19 (50 percent) had fissures that healed. Factors predictive of successful medical treatment included male gender, painless fissures, and acute fissures (Table 2).

Details of the group of patients treated with surgery are shown in Table 3. Of the 15 surgical patients, 10 (67 percent) had fissures that healed without complication. Success rate of surgical treatment was not significantly different from success rate of medical treatment. No patient characteristic was predictive of a good surgical result. Seven of the eight patients (88 percent) having anal procedures had fissures that

Table 2.
Factors Predictive of Successful Conservative Therapy

Factor	No. of Patients	Success		Failure		*P* Value
		No.	%	No.	%	
Sex						
Male	19	13	68	6	32	0.03
Female	19	6	32	13	68	
Anal pain						
Yes	28	11	39	17	61	0.04
No	10	8	80	2	20	
Anal discharge						
Yes	4	0	0	4	100	0.05
No	34	19	56	15	44	
Fissure type						
Acute	17	12	71	5	29	0.03
Chronic	21	7	33	14	67	

Table 3.
Short-term Outcome of Surgery for Crohn's Anal Fissure

Age and Sex	Crohn's Disease Location	Surgical Procedure	Outcome
Anal group (8)			
18 F	Small bowel, colon	Lateral internal sphincterotomy	Healed
25 F	Small bowel	Fissurectomy	Healed
28 F	Small bowel	Fissurectomy/lateral internal sphincterotomy	Healed
34 M	Small bowel	Fissurectomy/lateral internal sphincterotomy	Healed
31 M	Colon	Fissurectomy/lateral internal sphincterotomy	Healed
73 F	Colon	Lateral internal sphincterotomy	Not healed
18 F	Small bowel	Lateral internal sphincterotomy	Healed
25 F	Small bowel	Fissurectomy	Healed
Abdominal group (7)			
60 M	Small bowel, colon	Subtotal colectomy/ileorectal anastomosis	Healed
20 M	Small bowel	Ileocolic resection	Not healed
22 M	Small bowel, colon	Subtotal colectomy/ileorectal anastomosis	Not healed
22 M	Colon	Subtotal colectomy/Hartmann's	Not healed
27 M	Colon	Subtotal colectomy/Hartmann's	Healed
31 F	Small bowel, colon	Transverse colostomy	Healed
27 F	Small bowel	Ileocolic resection	Not healed

healed without complication. Of the seven patients with fissures and significant small bowel or colonic disease who had intra-abdominal procedures, only three (43 percent) had fissures that healed. The more favorable outcome of healing of fissures after anorectal procedures than after intra-abdominal surgery did not reach statistical significance ($P = 0.1$). In three of the eight patients (38 percent) with active rectal involvement, medical therapy failed, and ultimately anorectal surgery was required. Two of these patients (67 percent) had healed fissures after surgery, comparable with the rate of fissure healing seen in the subgroup of patients without rectal disease undergoing anorectal surgery ($P = 0.49$).

Long-Term Outcome

Although all surgically treated patients had complete follow-up studies (median, 92 (range, 15–230) months), three medically treated patients were lost to observation during the follow-up period (median, 33 (range, 1–297) months). At last contact, 17 of 35 patients (49 percent) treated with medical measures only had fissures that healed compared with 9 of 15 (60 percent) surgically treated patients. Seven of eight patients (88 percent) who had anorectal surgery had fissures that healed *vs.* only two of seven patients (29 percent) who had abdominal surgery ($P = 0.03$). In addition, patients who underwent anorectal surgery

had a significantly higher rate of fissure healing than patients who received medical treatment alone ($P = 0.05$).

Long-term complications are shown in Table 4. An anal abscess or fistula, all arising from the base of an unhealed fissure, developed in 13 patients (26 percent). This complication was observed after a median time of eight (range, 1–136) months. No significant difference existed between medically and surgically treated patients in this regard. Additionally, although patients having abdominal procedures had a higher incidence of abscess or fistula formation than patients having anorectal procedures, this difference was not statistically significant ($P = 0.23$). Proctectomy was ultimately required in 12 patients (24 percent) after a median period of 12 (range, 5–41) months. Six of these patients underwent proctectomy primarily because of persistent anorectal sepsis originating from site of the fissure, three in the medical group and three in the surgical group.

DISCUSSION

Anal fissures are common in Crohn's disease, with a reported incidence of 5 to 43 percent.[2, 5, 7–10] When only patients with Crohn's disease who have perianal involvement were considered, the incidence ranges from 30 to 50 percent.[2, 5, 7–10] In fact, fissures are the most common anal pathologic process in many reports of Crohn's disease.[2, 7] Anal fissure should cause as much concern as anal abscess and fistula in the patient with Crohn's disease. However, although the literature is extensive with regard to anal abscess and fistula in Crohn's disease,[3, 4] little is known about clinical characteristics, natural history, and optimal management of anal fissure in these patients.

In older publications, authors[7, 11] maintained that fissures in Crohn's disease were almost always asymptomatic. However, Sweeney and associates[5] revealed that 44 percent of their patients were symptomatic. Almost 85 percent of our patient group also had symptoms. Although most fissures in our series were symptomatic, we acknowledge that the incidence of asymptomatic fissures in Crohn's disease is much higher than in the general population.[12] Any asymptomatic anal fissure should arouse suspicion for the presence of Crohn's disease.

Of our patients, 32 percent had multiple fissures. Our data compare favorably with other reports; a British study[5] reported a 33 percent incidence of multiplicity, and a Canadian study[10] reported a 14 percent incidence. These figures are considerably higher than in the general population in which the incidence of multiple fissures is less than 10 percent.[12] Until the etiologic factors responsible for the observed multiplicity of anal fissures in Crohn's disease are identified, patients with more than one anal fissure should be suspected of having Crohn's disease. The liberal use of radiologic and endoscopic studies of the gastrointestinal tract is strongly encouraged in these circumstances.

Another interesting anatomic observation was the location of the fissure. Our data, like one other study,[5] revealed that the posterior midline was the most common position of the fissure. However, unlike the general population in which approximately 1 percent of fissures are not in the midline,[12] 20 percent of fissures in our patients were found in lateral positions. Sweeney *et al.*[5] also found a relatively high incidence (8 percent) of fissures in aberrant locations in their series of patients with Crohn's disease. Any patient with an anal fissure away from the midline should be suspected of having Crohn's disease, and an appropriate diagnostic work-up is indicated.

Akin to anal fissures in the general population, many authorities[5, 7, 13] believe that most anal fissures in Crohn's disease will improve using medical measures only. In one series,[7] 44 of 54 fissures (81 percent) healed completely or with minimal anal stenosis. In another British study, Sweeney and associates[5] demonstrated that fissures in 42 of their 61 patients (69 percent) healed with medical treatment only. A controlled trial from the National Cooperative Crohn's Disease Study group[13] revealed that fissures healed in

Table 4.
Long-Term Complications of Anal Fissure in Crohn's Disease

	Medical Group	Surgical Group		
		Anorectal	Abdominal	Total
No. of patients	35	8	7	15
Abscess/fistula (%)	9 (26)	1 (13)	3 (43)	4 (27)
Proctectomy (%)	8 (23)	2 (25)	2 (29)	4 (27)

18 of 41 patients (44 percent). Our 50 percent rate of healing compares favorably with these studies.

Our study also begins to shed light on factors predictive of successful medical healing. Although one previous report[5] revealed no difference in healing between painful and painless fissures, we found that painful fissures were three times more likely to remain unhealed than painless fissures. We also found that the acute fissures in patients with Crohn's disease healed more frequently than the chronic fissures. In agreement with another study,[5] we determined that the number of fissures or the site of bowel involvement had no bearing on the healing of anal fissures in patients with Crohn's disease. Furthermore, we could find no evidence for the superiority of one drug or combination of drugs in healing of anal fissures. Prednisone or azathioprine was effective in promoting healing in one prospective study.[13] The reasons for these discrepant data are unclear. It is also unclear why fissures in female patients were more resistant to medical treatment than fissures in male patients. Female patients with chronic painful anal fissures are at a particularly high risk for failure of medical treatment.

Paralleling the experience of perianal abscess and fistula, patients with Crohn's disease, in whom an anal fissure develops, are also predisposed to other anal complications in the future. Sweeney and associates[5] found that other anal pathologic conditions developed in 11 of 61 patients (18 percent) with Crohn's disease and anal fissure. In their series of 25 patients with fissure and Crohn's disease, Wolkomir and Luchtefeld[14] determined that other perianal disease developed in 44 percent of patients. Although both of these studies suggest that the appearance of an anal fissure is a particularly morbid event, no data are provided to document the anatomic relationship between the fissure and future anal complications. Our study confirms the high incidence of progression to other anal complications but also reveals that these anal complications arise directly from the base of an unhealed fissure. Our data implicating the fissure as a primary etiologic factor in the development of anal fistula or abscess might be explained by deep undermining of the fissure with spread of infection into surrounding tissue.

When medical measures fail, surgical approaches to anal fissures in the presence of Crohn's disease include abdominal or local anorectal procedures. Some physicians[5, 8, 11] contend that control of associated proximal abdominal disease promotes healing of the fissure. Similar to the surgical experience with perianal fistula in Crohn's disease,[15] we do not believe that fecal diversion or resection of diseased proximal bowel appreciably influences healing of anal fissures. In our study, only 43 percent of anal fissures healed after an abdominal procedure, which is less than the success rate associated with medical treatment only and considerably less effective than anorectal operations. These data suggest a minimal role for proximal intestinal resection in patients with Crohn's anal fissure disease, except perhaps in the patient whose fissure remains symptomatic after a deliberate trial of medical treatment and fails to respond to anorectal surgery.

Anorectal surgery is thought to be hazardous in Crohn's disease. Even simple procedures may lead to fecal incontinence, nonhealing anal or perianal wounds, and social isolation of the patient.[16] It should be of no surprise, therefore, that local anorectal procedures used in the management of anal fissures in the general population, such as dilation of the sphincter[17] or sphincterotomy,[12] have been reported infrequently in Crohn's disease. Sweeney and associates[5] reported good results with dilation of the sphincter in two patients with Crohn's disease and anal fissures. Hobbiss and Schofield[8] reported improvement in two of three patients after anal stretch. Allan and Keighley[18] described seven patients with anal fissure who were treated with gentle anal dilation, four of whom improved; fecal incontinence developed in one additional patient. We believe that dilation of the sphincter should be avoided in Crohn's disease, not only because of suboptimal healing of the fissure but also to avoid uncontrolled trauma to diseased anal mucosa with the potential for development of secondary infection or fistula.

Anal sphincterotomy, with or without fissurectomy, has also been infrequently used in Crohn's disease, no doubt because of concerns about poor wound healing and the potential morbidity of sphincter injury in these diarrhea-prone patients. Although Wolff *et al.*[9] described fissurectomy in six patients with Crohn's disease, no results of this treatment were provided. A Canadian study[19] revealed poor wound healing in one of two patients with Crohn's disease who underwent lateral internal sphincterotomy for anal fissure. Sweeney *et al.*[5] performed only one sphincterotomy in a series of 61 patients. An abscess developed in this one patient who ultimately required proctectomy. In a more optimistic report, Wolkomir and Luchtefeld[14] revealed that anal fissures in 22 of 25 patients with

Crohn's disease healed after operation. Sohn and Korelitz[20] suggested good results associated with sphincterotomy in these patients. Almost 90 percent of our patients who underwent sphincterotomy or fissurectomy had fissures that healed without complication. Furthermore, fissures remained healed in considerably more patients during long-term follow-up review after sphincterotomy or fissurectomy than after either medical treatment only or intra-abdominal surgery. Additionally, progression to more ominous anal pathologic findings in the group of patients who had local procedures was no higher than in the group treated either medically or intra-abdominally. These data suggest that local anorectal operations are safe in carefully selected patients with Crohn's disease and refractory anal fissure disease. The surgical procedure should create small wounds and minimize damage to the diseased mucosa and external sphincter. Closed subcutaneous lateral internal sphincterotomy is ideally suited for this purpose. Fissurectomy may be considered only when the edges of the fissure are densely fibrotic and are unlikely to heal after sphincterotomy alone. The postoperative use of metronidazole to promote healing of these wounds might also be considered.

Some,[21, 22] but not all,[23] reports suggest that healing of anorectal wounds after fistula surgery is adversely influenced by active rectal Crohn's disease. These observations no doubt explain why all study patients with rectal involvement were initially selected for medical therapy. Although Sweeney *et al.*[5] commented that "healing was unrelated to the site of bowel involvement," little else is known regarding the effect of rectal Crohn's disease on the outcome of fissure surgery. Our data revealed that active rectal disease had no adverse effect on the rate of fissure healing after surgery. Local anorectal procedures for fissure disease appear to be safe when the rectum is actively involved with Crohn's disease.

CONCLUSION

Our data suggest that although many anal fissures in patients with Crohn's disease will heal using medical measures only, fissures that remain unhealed have a propensity to the future development of perianal abscess or fistula or both, and proctectomy will ultimately be required. Furthermore, local anorectal procedures, such as internal sphincterotomy and fissurectomy, are safe when used in selected patients. These observations suggest that all patients with fissures in association with Crohn's disease should be treated initially with medical measures only. However, local anorectal procedures, particularly lateral internal sphincterotomy, should be used judiciously in patients not responding to conservative treatment.

REFERENCES

1. Crohn BB, Ginzburg L, Oppenheimer GD. Regional ileitis: pathologic and clinical entity. JAMA 1932;99: 1323–9.
2. Williams DR, Coller JA, Corman ML, Nugent FW, Veidenheimer MC. Anal complications in Crohn's disease. Dis Colon Rectum 1981;24:22–4.
3. Fry RD, Shemesh EI, Kodner IJ, Timmcke A. Techniques and results in the management of anal and perianal Crohn's disease. Surg Gynecol Obstet 1989;168:42–8.
4. Pritchard TJ, Schoetz DJ Jr, Roberts PL, Murray JJ, Coller JA, Veidenheimer MC. Perirectal abscess in Crohn's disease: drainage and outcome. Dis Colon Rectum 1990; 33:933–7.
5. Sweeney JL, Ritchie JK, Nicholls RJ. Anal fissure in Crohn's disease. Br J Surg 1988;75:56–7.
6. Corman ML. Colon and rectal surgery. Philadelphia: JB Lippincott, 1989.
7. Fielding JF. Perianal lesions in Crohn's disease. J R Coll Surg Edinb 1972;17:32–7.
8. Hobbiss JH, Schofield PF. Management of perianal Crohn's disease. J R Soc Med 1982;75:414–7.
9. Wolff BG, Culp CE, Beart RW Jr, Ilstrup DM, Ready RL. Anorectal Crohn's disease: a long term perspective. Dis Colon Rectum 1985;28:709–11.
10. Bernard D, Morgan S, Tassé D. Selective surgical management of Crohn's disease of the anus. Can J Surg 1986;29:318–21.
11. Lockhart-Mummery HE. Crohn's disease: anal lesions. Dis Colon Rectum 1975;18:200–2.
12. Khubchandani IT, Reed JF. Sequelae of internal sphincterotomy for chronic fissure in ano. Br J Surg 1989;76: 431–4.
13. Rankin GB, Watts HD, Melnyk CS, Kelley ML Jr. National Cooperative Crohn's Disease Study: extraintestinal manifestations and perianal complications. Gastroenterology 1979;77(4 Pt 2):914–20.
14. Wolkomir AF, Luchtefeld MA. Surgery for symptomatic hemorrhoids and anal fissures in Crohn's disease. Dis Colon Rectum 1993;36:545–7.
15. Marks CG, Ritchie JK, Lockhart-Mummery HE. Anal fistulas in Crohn's disease. Br J Surg 1981;68:525–7.
16. Baker WN, Milton-Thompson GJ. Management of anal fistulae in Crohn's disease. J R Soc Med 1974;67:58.
17. Watts JM, Bennett RC, Goligher JC. Stretching of anal sphincters in treatment of fissure-in-ano. BMJ 1964;2: 342–3.

18. Allan A, Keighley MR. Management of perianal Crohn's disease. World J Surg 1988;12:198–202.
19. Gordon PH, Vasilevsky CA. Symposium on outpatient anorectal procedures: lateral internal sphincterotomy: rationale, technique and anesthesia. Can J Surg 1985; 28:228–30.
20. Sohn N, Korelitz BI. Local operative treatment of anorectal Crohn's disease. J Clin Gastroenterol 1982;4:395–9.
21. Morrison JG, Gathright JB Jr, Ray JE, Ferrari BT, Hicks TC, Timmcke AE. Surgical management of anorectal fistulas in Crohn's disease. Dis Colon Rectum 1989;32: 492–6.
22. Williams JG, Rothenberger DA, Nemer FD, Goldberg SM. Fistula-in-ano in Crohn's disease: results of aggressive surgical treatment. Dis Colon Rectum 1991;34: 378–84.
23. Bergstrand O, Ewerth S, Hellers G, Holmström B, Ullman J, Wallberg P. Outcome following treatment of anal fistulae in Crohn's disease. Acta Chir Scand 1980; 500(Suppl):43–4.