

Practice Parameters for the Management of Anal Fissures (Revised)

Prepared by
The Standards Practice Task Force
The American Society of Colon and Rectal Surgeons

Charles Orsay, M.D., Jan Rakinic, M.D., W. Brian Perry, M.D., Neil Hyman, M.D., Donald Buie, M.D., Peter Cataldo, M.D., Graham Newstead, M.D., Gary Dunn, M.D., Janice Rafferty, M.D., C. Neal Ellis, M.D., Paul Shellito, M.D., Sharon Gregorcyk, M.D., Charles Ternent, M.D., John Kilkenny III, M.D., Joe Tjandra, M.D., Clifford Ko, M.D., Mark Whiteford, M.D., Richard Nelson, M.D.

The American Society of Colon and Rectal Surgeons is dedicated to assuring high quality patient care by advancing the science, prevention, and management of disorders and diseases of the colon, rectum, and anus. The Standards Committee is composed of Society members who are chosen because they have demonstrated expertise in the specialty of colon and rectal surgery. This Committee was created to lead international efforts in defining quality care for conditions related to the colon, rectum, and anus. This is accompanied by developing Clinical Practice Guidelines based on the best available evidence. These guidelines are inclusive, and not prescriptive. Their purpose is to provide information on which decisions can be made, rather than dictate a specific form of treatment. These guidelines are intended for the use of all practitioners, health care workers, and patients who desire information about the management of the conditions addressed by the topics covered in these guidelines. It should be recognized that these guidelines should not be deemed inclusive of all proper methods of care or exclusive of methods of care reasonably directed to obtaining the same results. The ultimate judgment regarding the propriety of any specific procedure must be made by the physician in light of all of the circumstances presented by the individual patient.

STATEMENT OF THE PROBLEM

An anal fissure is a crack or tear in the vertical axis of the squamous lining of the anal canal between the anal verge and the dentate line. Fissures occur most often in the posterior midline. Acute fissures are superficial, but may deepen to expose the underlying internal sphincter. Chronic fissures are associated with secondary changes, which may include a senti-

nel tag, hypertrophied anal papilla, induration of the edge of the fissure, and/or relative anal stenosis secondary to spasm or fibrosis of the internal sphincter.

Effort should be made to identify the precipitating cause of the individual patient's fissure (e.g., constipation or diarrhea) and manage it appropriately, otherwise the likelihood of recurrence is high. In a minority of patients, a fissure may be associated with a systemic disease (e.g., Crohn's disease) or may be attributable to another diagnosis (e.g., anal carcinoma, sexually transmitted disease).

These guidelines address the management of the typical chronic anal fissure. Articles that did not specify chronicity of the fissure were not included in

Reprints are not available.

Dis Colon Rectum 2004; 47: 2003–2007
DOI: 10.1007/s10350-004-0785-7
© The American Society of Colon and Rectal Surgeons
Published online: 26 October 2004

Levels of Evidence and Grades of Recommendation^a

Level	Source of Evidence
I	Meta-analysis of multiple well-designed, controlled studies; randomized trials with low false-positive and low false-negative errors (high power)
II	At least one well-designed experimental study; randomized trials with high false-positive or high false-negative errors or both (low power)
III	Well-designed, quasi-experimental studies, such as nonrandomized, controlled, single-group, preoperative-postoperative comparison, cohort, time, or matched case-control series
IV	Well-designed, nonexperimental studies, such as comparative and correlational descriptive and case studies
V	Case reports and clinical examples
Grade	Grade of recommendation
A	Evidence of Type I or consistent findings from multiple studies of Type II, III, or IV
B	Evidence of Type II, III, or IV and generally consistent findings
C	Evidence of Type II, III, or IV but inconsistent findings
D	Little or no systematic empirical evidence

^aAdapted from: Cook DJ, Guyatt GH, Laupacis A, Sackett DL. Rules of evidence and clinical recommendations on the use of antithrombotic agents. *Chest* 1992;102(4 Suppl):305S–11S. Sacker DL, Rules of evidence and clinical recommendations on the use of antithrombotic agents. *Chest* 1989;92(2 Suppl):2S–4S.

this evaluation. The literature search was performed by searching Medline for "anal fissure" and "fissure" for 1980 to 2003.

TREATMENT RECOMMENDATIONS

1. Conservative therapy is safe, has few side effects, and should usually be the first step in therapy. Level of evidence: Class II; Grade of recommendation: B.

Increased fluid and fiber ingestion, the use of Sitz baths, and if necessary, the use of stool softeners such as docusate sodium or docusate calcium are very safe,^{1,2} have virtually no side effects, often diminish bleeding and pain, and should be instituted as a first step in virtually all patients with a fissure. These measures result in healing of up to 50 percent of symptomatic fissures, more than in untreated patients.²

Adjunctive measures such as topical anesthetics cause no harm or decrease in healing rate, and may be used for patient comfort.³

2. Anal fissures may be appropriately treated with topical nitrates because they can relieve pain; however, nitrates are only marginally associated with a healing rate superior to placebo. Level of evidence: Class I; Grade of recommendation: A.

Topical nitric oxide donors have been associated with healing in at least 50 percent of chronic fissures treated^{4–10}; a rate better than placebo in some studies.^{6,10} However, the comprehensive Cochrane review of medical treatment of anal fissures concluded that nitroglycerin was only marginally better than placebo in healing chronic anal fissures.¹¹ Dose escalation¹² or use of a transdermal patch¹³ has not been shown to improve the healing rate. Use of topical nitroglycerin significantly decreases pain during the therapy period.^{4,6,14} The principal side effect is headache, which is dose-related. The reported incidence varies but is at least 20 to 30 percent^{15–17} and causes up to 20 percent of patients to discontinue therapy.^{13,16} The incidence of fissure recurrence after nitric oxide donor therapy is dramatically higher^{4,5} than after surgical therapy; however, the morbidity is lower.^{5,7,9} Many patients fail therapy because of inability to maintain the course of therapy with the need for repeated applications.⁵ Patients who do not respond to topical therapy should be referred for surgical treatment.^{4,5,7}

3. Anal fissures may be appropriately treated with topical calcium channel blockers, which seem to have a lower incidence of adverse effects than nitrates. There is insufficient data to conclude whether they are superior to placebo in healing fissures. Level of evidence: Class I; Grade of recommendation: A.

Topical calcium channel blockers have been associated with healing in 65 to 95 percent of chronic fissures.^{18–21} Topical calcium channel blockers seem to promote healing by reducing resting anal canal pressures.^{19,22} The principal side effects are headache, seen in up to 25 percent of patients,¹⁹ flushing, and less commonly symptomatic hypotension. Orally administered calcium channel blockers are associated with a lower rate of fissure healing than topical application and have a higher incidence of side effects.²¹ There are fewer randomized, controlled trials of topi-

cal calcium channel blockers than of topical nitric oxide donors. Few direct comparisons of topical agents are available.

4. Botulinum toxin injections may be used for anal fissures that fail to respond to conservative measures and have been associated with a healing rate superior to placebo. There is inadequate consensus on dosage, precise site of administration, number of injections or efficacy. Level of evidence: Class II; Grade of recommendation: B.

Injection of botulinum toxin into the internal sphincter produces a temporary "chemical sphincterotomy," allowing healing of 60 to 80 percent of fissures after a single injection,^{16,23,24} at a rate higher than placebo.²⁵ Botulinum toxin temporarily decreases mean anal canal resting pressures,^{26,27} an effect that persists for two to three months.²⁸ Some authors also report a transient decrease in mean squeeze pressure, usually at higher doses.²⁸ Healing takes longer than after surgical sphincterotomy, but return to full activity occurs sooner.²⁴ The most common side effects are transient incontinence of flatus in up to 10 percent of patients,^{25,29,30} and stool in approximately 5 percent of cases.²⁸ Recurrences are common but may be retreated with a good rate of healing.^{29,30} Topical nitrates seem to potentiate the effect of botulinum toxin in the treatment of patients with a refractory fissure.³¹ There is no consensus on dose, site, or number of injections.^{26,27,32} Higher doses are associated with improved rates of healing and seem to be as safe as lower doses.²⁹ Up to 20 percent of patients fail botulinum toxin therapy and go on to surgical sphincterotomy^{23,26,33}; this seems lower if higher doses of toxin are used.²⁸ There are few randomized, controlled studies, and most reports in the literature contain small numbers, making conclusions about efficacy difficult.

5. Lateral internal sphincterotomy is the surgical treatment of choice for refractory anal fissures. Level of evidence: Class I; Grade of recommendation: A.

Lateral internal sphincterotomy (LIS) should be considered the treatment of choice for the surgical management of refractory anal fissures.^{17,34-36} The

use of anal dilation with conservative treatment does not decrease the likelihood of surgery.³⁷ Forceful anal dilation is inferior to LIS^{38,39} owing to a higher recurrence rate³⁵ with higher rates of incontinence.³⁴⁻³⁶

LIS is superior to fissurectomy and posterior midline sphincterotomy owing to faster healing rates, less pain, and less postoperative incontinence.^{36,40} The Cochrane review of surgical treatment of anal fissures concluded that LIS was superior to anal dilation and posterior midline sphincterotomy.⁴¹

6. Open and closed techniques for LIS seem to yield similar results. Level of evidence: Class I; Grade of recommendation: A.

There does not seem to be any significant difference in outcomes between the open and closed techniques.^{34,41-43}

7. Anal advancement flap is an alternative to LIS; further study is required. Level of evidence: Class II; Grade of recommendation: D.

It seems that advancement flap surgery is an acceptable alternative to LIS,⁴⁴ but there is a lack of prospective, randomized studies in the literature. This technique may be particularly attractive in patients without sphincter hypertonia. Further study with long-term follow-up is needed.

8. Surgery may be appropriately offered without a trial of pharmacologic treatment after failure of conservative therapy; patient should be informed about the potential complications of surgery. Level of evidence: Class I; Grade of recommendation: A.

Topical treatments have problems with compliance,⁵ a lower rate of healing,^{5,7,9,24} and a higher recurrence rate^{7,9,24} than surgical treatment. As such, a strong case can be made for surgery without a preliminary trial of pharmacologic manipulation, although surgery clearly carries a risk of minor fecal incontinence. Surgery also is indicated for failed topical therapy.^{5,7} Incontinence rates in the literature for LIS vary, but prospective studies have shown an acceptable level of complications and LIS is appropriately used in place of topical therapy if stool softeners and bulking agents fail.^{17,34,39,44-49} Incontinence sufficient to cause any measurable impairment in quality of life seems to be uncommon.⁵⁰

The practice parameters set forth in this document have been developed from sources believed to be reliable. The American Society of Colon and Rectal Surgeons makes no warranty, guaranty, or representation whatsoever as to the absolute validity or sufficiency of any parameter included in this document, and the Society assumes no responsibility for the use or misuse of the material contained.

References

- Jiang JK, Chiu JH, Lin JK. Local thermal stimulation relaxes hypertonic anal sphincter: evidence of somato-anal reflex. *Dis Colon Rectum* 1999;42:1152-9.
- Gough MJ, Lewis A. The conservative treatment of fissure-in-ano. *Br J Surg* 1983;70:175-6.
- Jensen SL. Treatment of first episodes of acute anal fissure: prospective randomised study of lignocaine ointment versus hydrocortisone ointment or warm sitz baths plus bran. *BMJ* 1986;292:1167-9.
- Carapeti EA, Kamm MA, McDonald PJ, *et al.* Randomised controlled trial shows that glyceryl trinitrate heals anal fissures, higher doses are not more effective, and there is a high recurrence rate. *Gut* 1989;44:727-30.
- Evans J, Luck A, Hewett P. Glyceryl trinitrate vs. lateral sphincterotomy for chronic anal fissure: prospective, randomized trial. *Dis Colon Rectum* 2001;44:93-7.
- Kennedy MI, Sowter S, Lubowski DZ. Glyceryl trinitrate ointment for the treatment of chronic anal fissure: results of a placebo-controlled trial and long-term follow-up. *Dis Colon Rectum* 1999;42:1000-6.
- Libertiny G, Knight JS, Farouk R. Randomised trial of topical 0.2 percent glyceryl trinitrate and lateral internal sphincterotomy for the treatment of patients with chronic anal fissure: long-term follow-up. *Eur J Surg* 2002;168:418-21.
- Lund JN, Scholefield JH. Glyceryl trinitrate is an effective treatment for anal fissure. *Dis Colon Rectum* 1997;40:468-70.
- Oettle GJ. Glyceryl trinitrate vs. sphincterotomy for treatment of chronic fissure-in-ano: a randomized, controlled trial. *Dis Colon Rectum* 1997;40:1318-20.
- Were AJ, Palamba HW, Bilgen EJ, *et al.* Isosorbide dinitrate in the treatment of anal fissure: a randomised, prospective, double blind, placebo-controlled trial. *Eur J Surg* 2001;167:382-5.
- Nelson R. Nonsurgical therapy for anal fissure. The Cochrane Library, Issue 1. Chichester, UK: John Wiley and Sons, 2004.
- Scholefield JH, Bock JU, Marla B, *et al.* A dose finding study with 0.1 percent, 0.2 percent, and 0.4 percent glyceryl trinitrate ointment in patients with chronic anal fissures. *Gut* 2003;52:264-9.
- Zuberi BF, Rajput MR, Abro H, *et al.* A randomized trial of glyceryl trinitrate ointment and nitroglycerin patch in healing of anal fissures. *Int J Colorectal Dis* 2000;15:243-5.
- Bailey HR, Beck DE, Billingham RP, *et al.* A study to determine the nitroglycerin ointment dose and dosing interval that best promote the healing of chronic anal fissures. *Dis Colon Rectum* 2002;45:1192-9.
- Altomare DF, Rinaldi M, Milito G, *et al.* Glyceryl trinitrate for chronic anal fissure—healing or headache? Results of a multicenter, randomized, placebo-controlled, double-blind trial. *Dis Colon Rectum* 2000;43:174-9.
- Brisinda G, Maria G, Bentivoglio AR, *et al.* A comparison of injections of botulinum toxin and topical nitroglycerin ointment for the treatment of chronic anal fissure. *N Engl J Med* 1999;341:65-9.
- Richard CS, Gregoire R, Plewes EA, *et al.* Internal sphincterotomy is superior to topical nitroglycerin in the treatment of chronic anal fissure: results of a randomized, controlled trial by the Canadian Colorectal Surgical Trials Group. *Dis Colon Rectum* 2000;43:1048-57.
- Antropoli C, Perrotti P, Rubino M, *et al.* Nifedipine for local use in conservative treatment of anal fissures: preliminary results of a multicenter study. *Dis Colon Rectum* 1999;42:1011-5.
- Kocher HM, Steward M, Leather AJ, *et al.* Randomized clinical trial assessing the side-effects of glyceryl trinitrate and diltiazem hydrochloride in the treatment of chronic anal fissure. *Br J Surg* 2002;89:413-7.
- Perrotti P, Bove A, Antropoli C, *et al.* Topical nifedipine with lidocaine ointment vs. active control for treatment of chronic anal fissure: results of a prospective, randomized, double-blind study. *Dis Colon Rectum* 2002;45:1468-75.
- Jonas M, Neal KR, Abercrombie JF, *et al.* A randomized trial of oral vs. topical diltiazem for chronic anal fissures. *Dis Colon Rectum* 2001;44:1074-8.
- Cook TA, Humphreys MM, Mortensen NJ. Oral nifedipine reduces resting anal pressure and heals chronic anal fissure. *Br J Surg* 1999;86:1269-73.
- Gonzalez Carro P, Perez Roldan F, Legaz Huidodbro ML, *et al.* The treatment of anal fissure with botulinum toxin. *Gastroenterol Hepatol* 1999;22:163-6.
- Mentes BB, Irkorucu O, Akin M, *et al.* Comparison of botulinum toxin injection and lateral internal sphincterotomy for the treatment of chronic anal fissure. *Dis Colon Rectum* 2003;46:232-7.
- Maria G, Cassetta E, Gui D, *et al.* A comparison of botulinum toxin and saline for the treatment of chronic anal fissure. *N Engl J Med* 1998;338:217-20.

26. Maria G, Brisinda G, Bentivoglio AR, *et al.* Influence of botulinum toxin site of injections on healing rate in patients with chronic anal fissure. *Am J Surg* 2000;179:46–50.
27. Minguez M, Melo F, Espi A, *et al.* Therapeutic effects of different doses of botulinum toxin in chronic anal fissure. *Dis Colon Rectum* 1999;42:1016–21.
28. Jost WH. One hundred cases of anal fissure treated with botulinum toxin: early and long-term results. *Dis Colon Rectum* 1997;40:1029–32.
29. Brisinda G, Maria G, Sganga G, *et al.* Effectiveness of higher doses of botulinum toxin to induce healing in patients with chronic anal fissures. *Surgery* 2002;131:179–84.
30. Jost WH, Schrank B. Repeat botulinum toxin injections in anal fissure: in patients with relapse and after insufficient effect of first treatment. *Dig Dis Sci* 1999;44:1588–9.
31. Lysy J, Israelit-Yatzkan Y, Sestiery-Ittah M, *et al.* Topical nitrates potentiate the effect of botulinum toxin in the treatment of patients with refractory anal fissure. *Gut* 2001;48:221–4.
32. Maria G, Brisinda G, Bentivoglio AR, *et al.* Botulinum toxin injections in the internal anal sphincter for the treatment of chronic anal fissure: long-term results after two different dosage regimens. *Ann Surg* 1998;228:664–9.
33. Jost WH, Schimrigk L. Therapy of anal fissure using botulinum toxin. *Dis Colon Rectum* 1994;37:1321–4.
34. Nelson RL. Meta-analysis of operative techniques for fissure-in-ano. *Dis Colon Rectum* 1999;42:1424–31.
35. Jensen SL, Lund F, *et al.* Lateral subcutaneous sphincterotomy versus anal dilatation in the treatment of fissure in ano in outpatients: a prospective randomized study. *BMJ* 1984;289:528–30.
36. Saad AM, Omer A. Surgical treatment of chronic fissure-in ano: a prospective randomized study. *East Afr Med J* 1992;69:613–5.
37. McDonald P, Driscoll AM, *et al.* The anal dilator in the conservative management of acute anal fissures. *Br J Surg* 1983;70:25–6.
38. Olsen J, Mortensen PE, Krogh Petersen I, Christiansen J. Anal sphincter function after treatment of fissure-in-ano by lateral subcutaneous sphincterotomy versus anal dilatation. *Int J Colorectal Dis* 1987;2:155–7.
39. Weaver RM, Ambrose NS, Alexander-Williams J, Keighley MR. Manual dilation of the anus vs. lateral subcutaneous sphincterotomy in the treatment of chronic fissure-in-ano: results of a prospective, randomized, clinical trial. *Dis Colon Rectum* 1987;30:420–3.
40. Abcarian H. Surgical correction of chronic anal fissure: Results of lateral internal sphincterotomy vs. fissurectomy–Midline sphincterotomy. *Dis Colon Rectum* 1980;23:31–6.
41. Nelson R. Operative procedures for fissure *in ano*. Cochrane Colorectal Cancer Group. Cochrane Database of Systematic Reviews, January 2004.
42. Boulous PB, Araujo JG. Adequate internal sphincterotomy for chronic anal fissure: subcutaneous or open technique? *Br J Surg* 1984;71:360–2.
43. Kortbeek JB, Langevin JM, Khoo RE, Heine JA. Chronic fissure-in-ano: a randomized study comparing open and subcutaneous lateral internal sphincterotomy. *Dis Colon Rectum* 1992;35:835–7.
44. Leong AF, Seow-Choen F. Lateral sphincterotomy compared with anal advancement flap for chronic anal fissure. *Dis Colon Rectum* 1995;38:69–71.
45. Garcia-Aguilar J, Belmonte Montes C, Perez JJ, Jensen L, Madoff RD, Wong WD. Incontinence after lateral internal sphincterotomy: anatomic and functional evaluation. *Dis Colon Rectum* 1998;41:423–37.
46. Hananel N, Gordon P. Lateral internal sphincterotomy for fissure-in-ano—revisited. *Dis Colon Rectum* 1997;40:597–602.
47. Littlejohn DR, Newstead GL. Tailored lateral sphincterotomy for anal fissure. *Dis Colon Rectum* 1997;40:1439–42.
48. Nyam DC, Pemberton JH. Long-term results of lateral internal sphincterotomy for chronic anal fissure with particular reference to incidence of fecal incontinence. *Dis Colon Rectum* 1999;42:1306–10.
49. Zbar AP, Beer-Gabel M, Chiappa AC, Aslam M. Fecal incontinence after minor anorectal surgery. *Dis Colon Rectum* 2001;44:1610–23.
50. Hyman N. Incontinence after lateral internal sphincterotomy: a prospective study and quality of life assessment. *Dis Colon Rectum* 2004;47:35–8.