



Anal fissure: Medical management

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INTRODUCTION

Anal fissure is one of the most common benign anorectal conditions. Trauma to the anoderm with the passage of a hard stool is thought to be a common initiating factor. Persistence of a fissure is typically associated with anal spasm or high anal pressure. The treatment of anal fissure breaks the cyclic anal sphincter spasm, prevents tearing of the anal mucosa, and promotes healing of the fissure.

The majority of anal fissures are treated medically, which is the topic of this discussion [1,2]. Surgical therapy, which is reserved for refractory anal fissures, is discussed in another topic. The clinical manifestations, diagnosis, and prevention of anal fissure are also discussed elsewhere. (See "[Anal fissure: Surgical management](#)" and "[Anal fissure: Clinical manifestations, diagnosis, prevention](#)".)

ATYPICAL FISSURES

Anal fissures can be primary or secondary. Most typical fissures are primary and are caused by local trauma in the context of anal spasm or high anal pressure. Primary anal fissures are most commonly located at the posterior midline and less commonly at the anterior midline. Secondary, or atypical, anal fissures are caused by another disease process such as Crohn disease and can occur at locations other than the midline. (See "[Anal fissure: Clinical manifestations, diagnosis, prevention](#)", section on 'Etiology'.)

Thus, finding of an anal fissure that is not at the midline should prompt an evaluation for Crohn disease, although Crohn-related fissures can also occur at the midline. Other manifestations of perianal Crohn disease include the presence of multiple, recurring, or nonhealing fissures; unusually deep or wide fissures; painless fissures; and perianal skin tags that are hypertrophic, edematous, and tender. Patients with suspected Crohn-related fissures should be referred to a gastroenterologist for further evaluation. (See "[Perianal Crohn disease](#)", section on '[Anal fissures](#)'.)

INITIAL MANAGEMENT OF TYPICAL FISSURES

For patients with a typical anal fissure (ie, a single posterior or anterior fissure with no evidence of Crohn disease), we recommend prescribing a combination of supportive measures (fiber, sitz bath, topical analgesic) and one of the topical vasodilators ([nifedipine](#) or [nitroglycerin](#)) for one month ([algorithm 1](#)). In addition, patients who are constipated should receive a stool softener or laxative. The treatment goal is to relax the internal anal sphincter, initiate and maintain atraumatic passage of stool, and relieve pain.

Although medical therapy is less effective than surgery, especially for chronic anal fissures, it should be offered first because of its wide availability, better tolerance, and lack of severe complications (ie, fecal incontinence) [3,4]. The best data come from a trial that randomly assigned 54 patients with anal fissures to receive either a lateral internal sphincterotomy (surgery) or 0.2% [nitroglycerin](#) ointment (medical therapy) for 10 weeks; all patients received warm sitz baths and a fiber-bulking agent [5]. Compared with the medicine group, the surgery group achieved higher rates of fissure healing (96 versus 67 percent at 5 weeks and 100 versus 89 percent at 10 weeks) at the expense of a significantly higher rate of minor fecal incontinence (44 versus 0 percent). Fifteen percent of patients who underwent surgery had residual fecal incontinence after two years.

The optimal duration of topical vasodilator treatment was studied in a randomized trial [6]. There were no added benefits in treating anal fissure with 0.4% topical [nitroglycerin](#) ointment for 80 days compared with 40 days. Fissure healing and pain improvement continue until six weeks of treatment but are unlikely thereafter.

Fiber — Fiber therapy prevents hard bowel movements, which could reinjure a healing fissure.

- Increasing dietary fiber and water intake is the best way to soften and bulk the stool. The recommended dietary fiber intake is between 20 and 35 grams per day ([table 1](#)).

- Patients who continue to have difficulty with hard bowel movements despite increasing dietary fiber intake may use fiber supplements, such as [psyllium seed](#) (Metamucil), [methylcellulose](#) (Citrucel), [wheat dextrin](#) (Benefiber), and calcium [polycarbophil](#) (Fibercon). These over-the-counter products work by absorbing water and increasing stool bulk, which increases the frequency of bowel movements and softens stool. Fiber supplements are safe for daily use, non-habit-forming, and can be used lifelong. Possible side effects may include gas and bloating, especially when they are first started. (See "[Patient education: Constipation in adults \(Beyond the Basics\)](#)".)

Sitz bath — Warm sitz baths, which can relax the anal sphincter and improve blood flow to the anal mucosa, are recommended for patients with anal fissures [7,8]. During a sitz bath, the anus is immersed in warm water for approximately 10 to 15 minutes two to three times daily. Sitz bath kits are available in most drugstores, and portable bowls can be used at work or school. At home, it is also possible to use a bathtub for sitz bath by filling it with two to three inches of warm water. Additives such as soap and bubble bath are not recommended. After a sitz bath, it is important to towel or blow dry (with a hair dryer on low heat setting) the anal area well.

Topical analgesics — Although topical analgesic jelly or creams (eg, 2% [lidocaine](#) jelly) are often prescribed for patients with an anal fissure for pain control, their use **alone** has not been shown to be more effective than other supportive measures [9]. However, some prescribers add a topical analgesic to a topical vasodilator for patient comfort when the topical vasodilator is custom made by a compounding pharmacy. As an example, [nifedipine](#) ointment can be made with or without topical lidocaine.

Stool softener or laxative — A variety of drugs (eg, [docusate](#)) and natural products are available for treating constipation either over the counter or by prescription. Constipation may lead to straining, which can exacerbate the anal fissure.

Topical vasodilators — Aside from supportive measures, patients with anal fissures are also prescribed one of two topical vasodilators: topical [nifedipine](#) or topical [nitroglycerin](#). We recommend using 0.2 to 0.3% nifedipine ointment two to four times daily in patients who have access to a compounding pharmacy because nifedipine ointment has fewer side effects and potential drug interactions compared with nitroglycerin. For patients who do not have access to a compounding pharmacy, we recommend using 0.4% nitroglycerin rectal ointment (Rectiv) twice daily, as it is commercially available.

Topical nifedipine — [Nifedipine](#) can be compounded into a gel form and applied on or around the fissure in the anal canal to reduce the anal sphincter pressure. Topical nifedipine is typically used two to four times daily as a 0.2 to 0.3% ointment.

In a trial of 52 patients with chronic anal fissures, treatment with topical [nifedipine](#) resulted in more healing (89 versus 58 percent) and fewer side effects (5 versus 40 percent) compared with topical [nitroglycerin](#) [10]. Recurrence rates at 124 to 183 weeks were comparable between the two groups (42 versus 31 percent).

Topical nitroglycerin — Topical [nitroglycerin](#) promotes the healing of anal fissure by increasing local blood flow and reducing pressure in the internal anal sphincter. The observation that the posterior commissure of the internal sphincter is less perfused than the other sections led to the concept that ischemia could be contributing to the persistence of anal fissures [11,12].

Topical [nitroglycerin](#) is typically applied rectally as a 0.2 or 0.4% ointment twice daily for eight weeks. A 0.4% nitroglycerin ointment (Rectiv) is commercially available. Alternatively, a lower dose of 0.2% nitroglycerin ointment can be custom made by a pharmacist.

Topical [nitroglycerin](#) is an effective treatment for anal fissures [13-20]. A meta-analysis found topical nitroglycerin to be superior to placebo in healing anal fissures (49 versus 36 percent), but 50 percent of patients successfully treated with topical nitroglycerin developed recurrent fissures [4].

The major side effects of topical [nitroglycerin](#) are headaches and hypotension. Headaches generally occur 10 to 15 minutes after application and last no more than 30 minutes in most patients [21]. Headaches occur most commonly during the initial two weeks of therapy and decrease thereafter.

Hypotension can cause dizziness. Thus, patients should sit or lie down when applying the ointment and should stand up slowly afterwards. To avoid serious drug interactions, topical [nitroglycerin](#) should not be used within 24 hours of taking medications for erectile dysfunction, such as [sildenafil](#) (Viagra), [tadalafil](#) (Cialis), or [vardenafil](#) (Levitra). (See "[Treatment of male sexual dysfunction](#)" and "[Patient education: Anal fissure \(Beyond the Basics\)](#)".)

Tocopherol — In a randomized trial of 160 patients with chronic anal fissure, a greater proportion of patients were relieved of all anal pain at two weeks (74 versus 61 percent, $p = 0.09$) and eight weeks (88 versus 74 percent, $p = 0.007$) after treatment with tocopherol acetate (vitamin E) ointment than with glyceryl trinitrate ointment [22]. At 16 weeks after completion of treatment, patients treated with tocopherol acetate ointment had fewer recurrences than those treated with glyceryl trinitrate ointment (3 versus 13 percent). If these results can be replicated by other studies, tocopherol may become an alternative treatment for anal fissure to topical vasodilators that has fewer side effects.

INTERVAL EVALUATION

After one month of initial treatment with supportive measures and a topical vasodilator, patients are reevaluated, and those with persistent symptoms are prescribed another month of the same medical therapy ([algorithm 1](#)).

At the end of two months, patients who still have persistent symptoms attributable to their anal fissures are referred for endoscopy to rule out occult Crohn disease. (See "[Overview of the medical management of mild \(low risk\) Crohn disease in adults](#)", section on 'Perianal disease'.)

If patients are diagnosed with Crohn disease by endoscopy, they are referred to a gastroenterologist for further care. If patients are not diagnosed with Crohn disease, they are referred to a colorectal surgeon for further treatment of the refractory anal fissure. (See '[Subsequent management of typical fissures](#)' below.)

SUBSEQUENT MANAGEMENT OF TYPICAL FISSURES

For anal fissure patients who fail medical treatment, we suggest performing either a botulinum toxin A injection or a lateral sphincterotomy. (See "[Anal fissure: Surgical management](#)".)

For patients who are not willing or not a candidate to undergo invasive procedures, we suggest continued medical treatment of their fissure disease with the alternate topical vasodilator ([nitroglycerin](#) ointment if they were treated with [nifedipine](#) ointment, or nifedipine ointment if they were treated with nitroglycerin ointment) or one of the second-line agents ([algorithm 1](#)). (See '[Topical vasodilators](#)' above.)

Second-line medical therapy — Although surgical treatment of anal fissures is generally more effective, some patients may choose not to undergo invasive procedures because of their fear of fecal incontinence, or they may not be a suitable candidate for surgery because of comorbid conditions.

Second-line medications are typically prescribed for six to eight weeks, although most patients stop taking the medication when they feel better. We generally recommend that the patient finish at least a four-week course of any treatment.

Healing rates with second-line medications for anal fissures range from 38 to 75 percent (typically around 60 percent) [[23-27](#)]. Side effects vary depending upon the medication. The usual dose, interval, and duration of these medications are listed below.

Topical diltiazem — [Diltiazem](#) 2% rectal gel is applied three times daily for eight weeks. No significant side effects have been reported [23-25].

Topical bethanechol — [Bethanechol](#) 0.1% rectal gel is applied three times daily for eight weeks. No significant side effects have been reported [23].

Oral nifedipine — Oral [nifedipine](#), 20 mg twice daily, is typically given in an extended-release form for eight weeks in most studies [26,28,29]. Side effects include flushing, headaches, and ankle edema. However, a 20 mg extended-release preparation of nifedipine is not available in the United States. An immediate-release form of 20 mg nifedipine is available but may cause unpredictable hypotension in some patients. The alternative is to use topical nifedipine or oral [diltiazem](#).

Oral diltiazem — Oral [diltiazem](#), 60 mg twice daily, is given for eight weeks. Side effects include headaches, nausea, rash, and reduced smell and taste [27].

Invasive procedures — The treatment of anal fissures with invasive procedures is discussed in another topic. (See "[Anal fissure: Surgical management](#)".)

SOCIETY GUIDELINE LINKS

Links to society and government-sponsored guidelines from selected countries and regions around the world are provided separately. (See "[Society guideline links: Anal fissure](#)".)

INFORMATION FOR PATIENTS

UpToDate offers two types of patient education materials, "The Basics" and "Beyond the Basics." The Basics patient education pieces are written in plain language, at the 5th to 6th grade reading level, and they answer the four or five key questions a patient might have about a given condition. These articles are best for patients who want a general overview and who prefer short, easy-to-read materials. Beyond the Basics patient education pieces are longer, more sophisticated, and more detailed. These articles are written at the 10th to 12th grade reading level and are best for patients who want in-depth information and are comfortable with some medical jargon.

Here are the patient education articles that are relevant to this topic. We encourage you to print or e-mail these topics to your patients. (You can also locate patient education articles on a variety of subjects by searching on "patient info" and the keyword(s) of interest.)

- Basics topics (see "[Patient education: Anal fissure \(The Basics\)](#)")
 - Beyond the Basics topics (see "[Patient education: Anal fissure \(Beyond the Basics\)](#)")
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SUMMARY AND RECOMMENDATIONS

- **Definition** – Anal fissure that results from a high anal pressure is one of the most common benign anorectal conditions. The treatment of anal fissure breaks the cyclic anal sphincter spasm, prevents tearing of the anal mucosa, and promotes healing of the fissure. (See '[Introduction](#)' above.)
- **Atypical anal fissures** – Patients with atypical anal fissures (fissures that are multiple, recurring, nonhealing, unusually deep or wide, painless, or at off-midline locations) or perianal findings suspicious for Crohn disease should be referred to a gastroenterologist. Crohn-related fissures are treated differently from typical anal fissures. (See '[Atypical fissures](#)' above.)
- **Typical anal fissures**
 - **Initial treatment** – For patients with a typical anal fissure (ie, a single posterior or anterior fissure without evidence of Crohn disease), we recommend initial therapy with a combination of supportive measures (fiber, stool softener, sitz bath, topical analgesic) and one of the topical vasodilators ([nifedipine](#) or [nitroglycerin](#)) for one month, rather than surgery ([algorithm 1](#)) (**Grade 1B**). (See '[Initial management of typical fissures](#)' above.)

For patients who have access to a compounding pharmacy, we suggest [nifedipine](#) ointment rather than [nitroglycerin](#) ointment as the topical vasodilator (**Grade 2B**). Nifedipine ointment has fewer side effects and potential drug interactions compared with nitroglycerin and may be more effective. For patients who do not have access to a compounding pharmacy, we use 0.4% nitroglycerin rectal ointment (Rectiv), which is commercially available. (See '[Topical vasodilators](#)' above.)

- **Interval evaluation** – After the initial treatment with supportive measures and one of the topical vasodilators for one month, patients are reevaluated, and those with persistent symptoms are prescribed another month of the same medical therapy. At the end of two months, patients who still have persistent symptoms attributable to their anal fissures are referred for endoscopy to rule out occult Crohn disease. Patients diagnosed with Crohn disease by endoscopy are referred to a gastroenterologist for

further care. If not diagnosed with Crohn disease, the patient is referred to a colorectal surgeon for further treatment of the refractory anal fissure. (See '[Interval evaluation](#)' above.)

- **Subsequent management**

- For typical anal fissure patients who fail eight weeks of initial medical treatment, we suggest botulinum toxin type A injection or a lateral internal sphincterotomy, rather than continued medical therapy (**Grade 2C**). (See "[Anal fissure: Surgical management](#)".)
- Patients who are not willing or not a candidate to undergo invasive procedures are treated with the alternate topical vasodilator ([nitroglycerin](#) ointment if they were treated with [nifedipine](#) ointment, or nifedipine ointment if they were treated with nitroglycerin ointment) or one of the second-line agents (topical [diltiazem](#), topical [bethanechol](#), oral nifedipine, or oral diltiazem). (See '[Second-line medical therapy](#)' above.)

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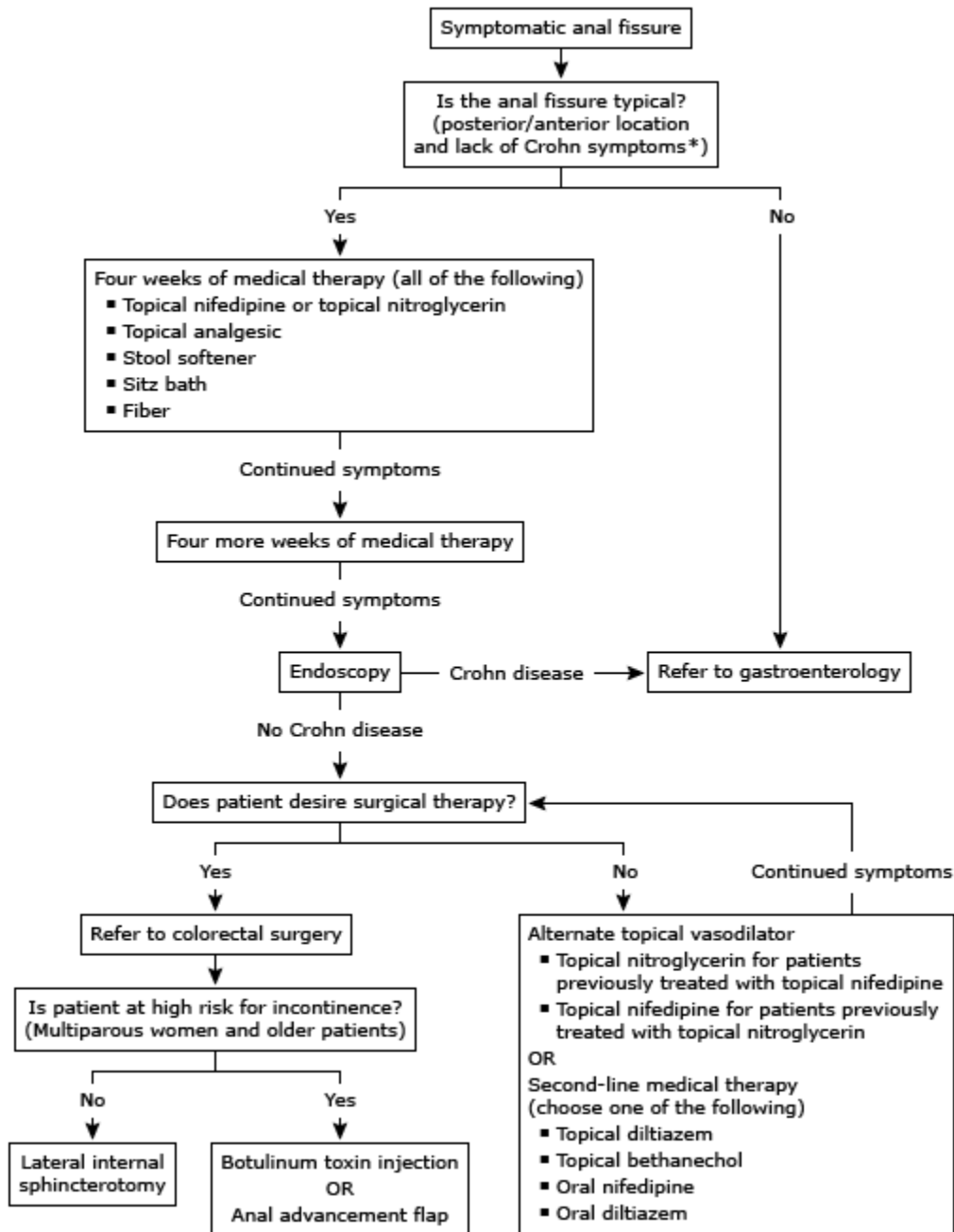
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GRAPHICS

Management of symptomatic anal fissure



* Symptoms suggestive of Crohn-related fissures include multiple, nonhealing, recurring, painless, or unusually deep or wide fissures, and perianal skin tags that are hypertrophic, edematous, and tender.

Graphic 82392 Version 5.0

Amount of fiber in different foods

Food	Serving	Grams of fiber
Fruits		
Apple (with skin)	1 medium apple	4.4
Banana	1 medium banana	3.1
Oranges	1 orange	3.1
Prunes	1 cup, pitted	12.4
Juices		
Apple, unsweetened, with added ascorbic acid	1 cup	0.5
Grapefruit, white, canned, sweetened	1 cup	0.2
Grape, unsweetened, with added ascorbic acid	1 cup	0.5
Orange	1 cup	0.7
Vegetables		
Cooked		
▪ Green beans	1 cup	4.0
▪ Carrots	1/2 cup sliced	2.3
▪ Peas	1 cup	8.8
▪ Potato (baked, with skin)	1 medium potato	3.8
Raw		
▪ Cucumber (with peel)	1 cucumber	1.5
▪ Lettuce	1 cup shredded	0.5
▪ Tomato	1 medium tomato	1.5
▪ Spinach	1 cup	0.7
Legumes		
▪ Baked beans, canned, no salt added	1 cup	13.9
▪ Kidney beans, canned	1 cup	13.6
▪ Lima beans, canned	1 cup	11.6
▪ Lentils, boiled	1 cup	15.6

Breads, pastas, flours		
Bran muffins	1 medium muffin	5.2
Oatmeal, cooked	1 cup	4.0
White bread	1 slice	0.6
Whole-wheat bread	1 slice	1.9
Pasta and rice, cooked		
▪ Macaroni	1 cup	2.5
▪ Rice, brown	1 cup	3.5
▪ Rice, white	1 cup	0.6
▪ Spaghetti (regular)	1 cup	2.5
Nuts		
Almonds	1/2 cup	8.7
Peanuts	1/2 cup	7.9

To learn how much fiber and other nutrients are in different foods, visit the United States Department of Agriculture (USDA) FoodData Central website.

Data from: USDA FoodData Central. Available at: <https://fdc.nal.usda.gov/> (Accessed on October 11, 2019).

Graphic 52349 Version 6.0

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