Anal fissure: Clinical manifestations, diagnosis, prevention

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INTRODUCTION

Anal fissure is one of the most common benign anorectal diseases and one of the most common causes of anal pain and anal bleeding.

The pathogenesis, clinical manifestations, diagnosis, and prevention of primary sporadic anal fissure are discussed in this topic, while the medical and surgical treatment is presented in other topics. (See "Anal fissure: Medical management" and "Anal fissure: Surgical management".)

Secondary causes of anal fissures are discussed separately. (See "Perianal Crohn disease" and "Cutaneous manifestations of tuberculosis", section on 'Metastatic tuberculous abscesses'.)

EPIDEMIOLOGY

Anal fissures most often affect infants and middle-age individuals. It is estimated that approximately 235,000 new cases of anal fissure occur every year in the United States [1]. However, a more precise incidence cannot be established, because anal discomfort is often misattributed to symptomatic hemorrhoids [2].

PATHOGENESIS

Anal fissures typically start with a tear to the anoderm within the distal half of the anal canal. The tear then triggers cycles of recurring anal pain and bleeding, which lead to the development of a chronic anal fissure in as many as 40 percent of patients [1]. The exposed internal sphincter muscle within the bed of the fissure frequently spasms, which not only contributes to severe pain but also can restrict blood flow to the fissure, preventing its healing.

Ischemia may contribute to the development of an anal fissure. The anoderm at the posterior midline, the most common location of primary fissures, receives less than one-half of the blood flow compared with other quadrants of the anal canal [3,4]. Furthermore, patients with chronic anal fissure have higher anal pressure than healthy individuals and those with other colorectal disorders such as fecal incontinence or hemorrhoids [3], and the rate of perfusion is inversely related to the anal pressure. The demonstration of reduced blood flow to areas where anal fissures occur provides the rationale for the use of vasodilators, such as topical nitroglycerin, in the treatment of this disorder. (See "Anal fissure: Medical management", section on 'Topical nitroglycerin'.)

The vast majority (90 percent) of anal fissures are located in the posterior midline of the anal canal. Fissures are located in the anterior midline in as many as 25 percent of female patients and 8 percent of male patients. In 3 percent of patients, both anterior and posterior midline fissures ("kissing fissures") are present simultaneously [5,6]. Laterally located fissures are atypical and may indicate a secondary etiology (eg, Crohn disease, other granulomatous diseases). (See 'Etiology' below.)

Patients with an anterior fissure are more likely to have occult external sphincter injury and impaired external sphincter function compared with patients with a posterior fissure [7].

ETIOLOGY

The majority of anal fissures are primary and are caused by local trauma, such as constipation, diarrhea, vaginal delivery, or anal sex. Secondary anal fissures can be found in patients with Crohn disease, other granulomatous diseases (eg, extrapulmonary tuberculosis, sarcoidosis), malignancy (eg, squamous cell anal cancer, leukemia), or communicable diseases (eg, HIV infection, syphilis, chlamydia) [1,8]. Secondary causes of anal fissures are discussed separately. (See "Perianal Crohn disease" and "Cutaneous manifestations of tuberculosis", section on 'Metastatic tuberculous abscesses'.)

CLINICAL MANIFESTATIONS

Patient presentation — Patients with an acute anal fissure present with anal pain that is often present at rest but is exacerbated by defecation. Pain that intensifies with defecation often lasts for hours following the act, which is a debilitating symptom. Although anal pain is the cardinal symptom of a fissure, anal fissures can also be associated with anal bleeding (usually hematochezia).

Anal fissures are often misdiagnosed as hemorrhoidal disease due to both diagnoses being so common and due to shared signs and symptoms. A thorough physical examination helps to differentiate these two problems from one another. The hallmark symptom of anal fissures is pain, usually of a severe degree and almost always exacerbated by defecation. Hemorrhoids can be associated with discomfort, though unless a thrombosed external hemorrhoid is present, the discomfort is milder and less related to defecation. Internal hemorrhoids do not typically cause discomfort, though they can be associated with anal bleeding, as can anal fissures.

Patients with an acute anal fissure have symptoms for fewer than eight weeks. Chronic fissure symptoms last longer than eight weeks.

Physical examination — Clinicians examining an awake patient with a suspected anal fissure for the first time should avoid invasive maneuvers that could exacerbate the patient's anal discomfort. The best approach is to place the patient in a prone jackknife position (figure 1), spread the gluteal (buttock) cheeks apart gently, and look in the posterior midline. In thinner patients, such maneuvers sometimes allow visualization of the fissure.

Most commonly, an anal fissure appears as a longitudinal tear in the anoderm that usually extends no more proximally than the dentate line (figure 2) [7]. An acute fissure appears as a fresh, superficial laceration, much like a paper cut; a chronic fissure has raised edges exposing the white, horizontally oriented fibers of the internal anal sphincter muscle fibers at the base of the fissure (picture 1).

Chronic anal fissures are often accompanied by external skin tags (sentinel pile) at the distal end of the fissure and hypertrophied anal papillae at the proximal end. These features of a chronic fissure are attributed to chronic inflammation and subsequent fibrosis [1].

Visualizing the fissure, however, is not required to establish the diagnosis during an initial examination. (See 'Diagnosis' below.)

Because of patient discomfort, a complete digital anal examination or an anoscopy examination is almost never performed at the initial visit for patients with an anal fissure. Such examinations

can be performed at subsequent visits after the patient's symptoms have improved with treatment. (See 'Postdiagnostic evaluation' below.)

DIAGNOSIS

Anal fissure should be suspected based on a history of anal pain that is provoked by defecation and lasts for hours afterwards, often with associated anal bleeding. The diagnosis can be confirmed on physical examination by either directly visualizing a fissure (usually in thinner patients) or reproducing the patient's presenting complaints (ie, anal pain) by gentle digital palpation of the posterior (or anterior) midline anal verge.

DIFFERENTIAL DIAGNOSIS

Hemorrhoids — Uncomplicated hemorrhoids typically do not cause pain. However, a thrombosed external hemorrhoid or the rare occurrence of an incarcerated/strangulated internal hemorrhoid can cause severe anorectal pain and/or bleeding. Those conditions can usually be distinguished from anal fissure by their appearance on examination. Thrombosed external hemorrhoids and prolapsing internal hemorrhoidal components have distinct appearances that establish these diagnoses. (See "Hemorrhoids: Clinical manifestations and diagnosis", section on 'Clinical manifestations'.)

Perianal ulcers or sores — Anal ulcers can be caused by inflammatory bowel disease, tuberculosis [9,10], or sexually transmitted diseases (eg, syphilis [11]). (See "Perianal Crohn disease" and "Cutaneous manifestations of tuberculosis", section on 'Metastatic tuberculous abscesses'.)

Anal fistula — Anal fistula typically presents as a draining skin punctum located anywhere in the circumference of the anal margin. Probing the skin punctum reveals a track that extends from the perianal skin toward the anorectum. The drainage from the fistula tract can be purulent, and inadequate drainage can result in an associated abscess, causing discomfort, erythema, and induration. An anal fissure does not have such a track. (See "Anorectal fistula: Clinical manifestations and diagnosis".)

Solitary rectal ulcer syndrome — Solitary rectal ulcer syndrome is an uncommon rectal disorder that can present with bleeding, passage of mucus, straining during defecation, and a sense of incomplete evacuation. The name of the syndrome is misleading since patients can often present with lesions that are neither solitary nor ulcerated. Findings vary and can include mucosal ulcerations, polypoid and mass lesions (mimicking rectal cancer), or simply erythema.

These lesions are located in the anterior rectal wall within 10 cm of the anal verge in the majority of patients. Symptoms are variable (eg, rectal bleeding, pelvic fullness, straining, tenesmus, pain) or may be absent. (See "Solitary rectal ulcer syndrome".)

POSTDIAGNOSTIC EVALUATION

Following diagnosis and initial treatment of an anal fissure, further evaluation is required to exclude secondary causes of anal fissure and/or an alternative diagnosis:

- During follow-up examinations, when the patient has decreased discomfort, a digital anorectal examination and anoscopy should be performed to exclude secondary causes of anal fissure, such as an anorectal malignancy.
- Patients with rectal bleeding should undergo endoscopy. A sigmoidoscopy may be reasonable in patients younger than 50 who have no family history of colon cancer; in other patients, a full colonoscopy should be performed. (See "Approach to minimal bright red blood per rectum in adults", section on 'Approach to the patient'.)
- Patients who have atypical fissures (eg, lateral) or other clinical features raising suspicion for underlying Crohn disease should undergo colonoscopy and imaging of the small bowel or be referred to a gastroenterologist. (See "Clinical manifestations, diagnosis, and prognosis of Crohn disease in adults", section on 'Small bowel imaging'.)

PREVENTION

Anal fissures are best prevented by avoiding either diarrhea or constipation. A healthy bowel habit avoids straining during defecation and is most often achieved by consuming a high-fiber diet and adequate fluids. (See "Management of chronic constipation in adults" and "Recent-onset constipation in infants and children" and "Constipation in the older adult".)

TREATMENT

Most primary acute anal fissures, as well as some primary chronic fissures, respond to medical management, while chronic fissures more often require surgical intervention [1,7,12,13]. The medical and surgical management of anal fissure is discussed in detail separately. (See "Anal fissure: Medical management" and "Anal fissure: Surgical management".)

Secondary fissures require a detailed evaluation for and treatment of the underlying condition causing them (eg, Crohn disease). Those conditions are discussed separately. (See "Perianal Crohn disease" and "Cutaneous manifestations of tuberculosis", section on 'Metastatic tuberculous abscesses'.)

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 topic (see "Patient education: Anal fissure (The Basics)")
- Beyond the Basics topic (see "Patient education: Anal fissure (Beyond the Basics)")

SUMMARY AND RECOMMENDATIONS

- **Anal fissure** – An anal fissure is a tear in the lining of the anal canal distal to the dentate line. A fissure may be primary, resulting from local trauma, or secondary from an underlying medical condition (eg, Crohn disease, malignancy, infection). (See 'Introduction' above and 'Etiology' above.)
- **Locations** – Anal fissures are located in the posterior midline of the anal canal in 90 percent of patients, in the anterior midline in 25 percent of female patients and 8 percent

of male patients, and simultaneously in both anterior and posterior midline ("kissing fissures") in 3 percent of patients. Fissures in a lateral location are atypical and raise suspicion for a secondary etiology (eg, Crohn disease). (See 'Pathogenesis' above.)

- **Etiologies** – The most common etiology of a primary anal fissure is anal trauma, usually from constipation or diarrhea. Secondary anal fissures can be the manifestation of an underlying medical condition, such as Crohn disease, other granulomatous diseases (eg, extrapulmonary tuberculosis), malignancy (eg, squamous cell anal carcinoma), or infections (eg, HIV). (See 'Etiology' above.)

- **Clinical manifestations** – Anal fissure should be suspected based on a history of anal pain that is provoked by defecation and lasts for hours afterwards, often with associated anal bleeding. The diagnosis can be confirmed on physical examination by either directly visualizing a fissure (usually in thinner patients) or reproducing the patient's presenting complaints (ie, anal pain) by gentle digital palpation of the posterior (or anterior) midline anal verge. (See 'Clinical manifestations' above and 'Diagnosis' above.)

  The pathognomonic feature of an acute fissure (<8 weeks) is a superficial tear, while a chronic fissure (>8 weeks) appears hypertrophied with skin tags and/or papillae. (See 'Physical examination' above.)

- **Evaluation** – Following diagnosis and initial treatment of an anal fissure, further evaluation, including digital anal examination, anoscopy, colonoscopy or sigmoidoscopy (for the patient with rectal bleeding), and evaluation for Crohn disease (for patients with an atypical fissure), is required to exclude secondary causes of anal fissure and/or an alternative diagnosis.

- **Prevention** – Anal fissures are best prevented by avoiding either diarrhea or constipation. A healthy bowel habit avoids straining during defecation and is most often achieved by consuming a high-fiber diet and adequate fluids. (See 'Prevention' above.)

- **Treatment** – The medical and surgical management of anal fissures is discussed in detail separately. (See "Anal fissure: Medical management" and "Anal fissure: Surgical management".)

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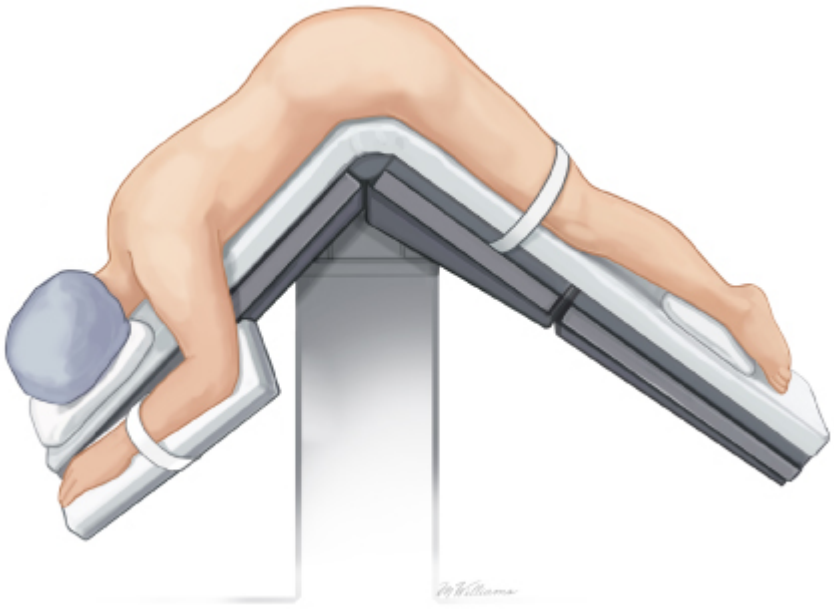
GRAPHICS

Kraske prone jackknife position



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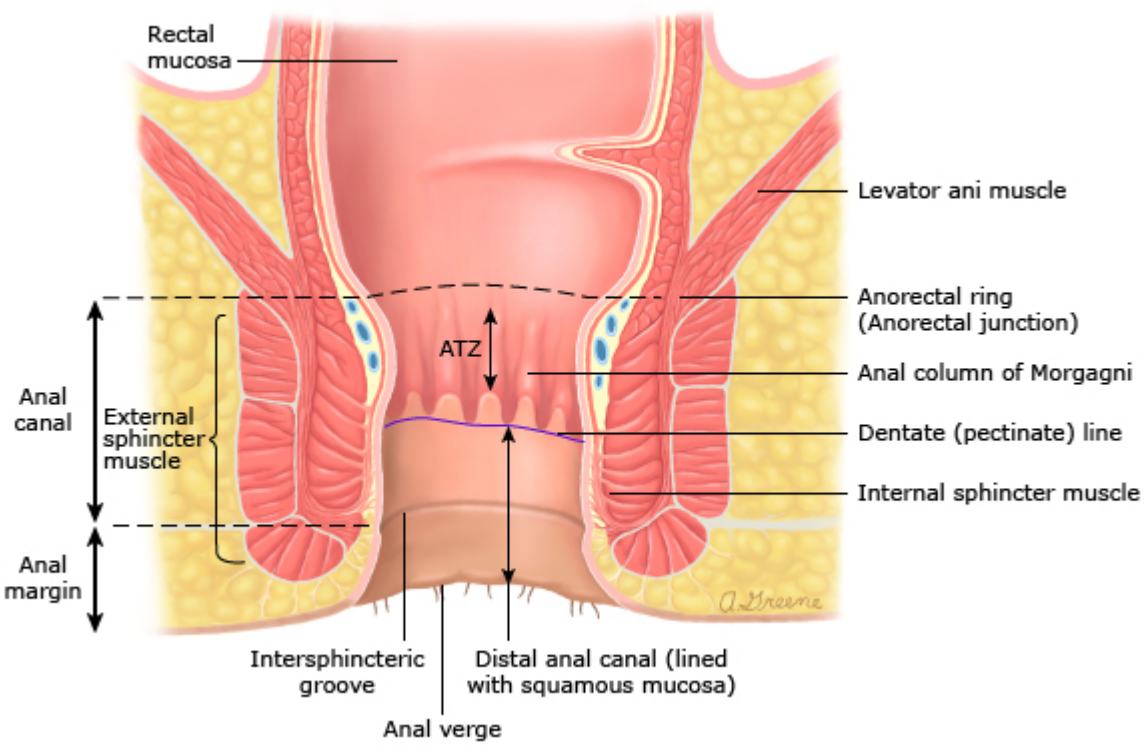
Anatomy of the anus and rectum



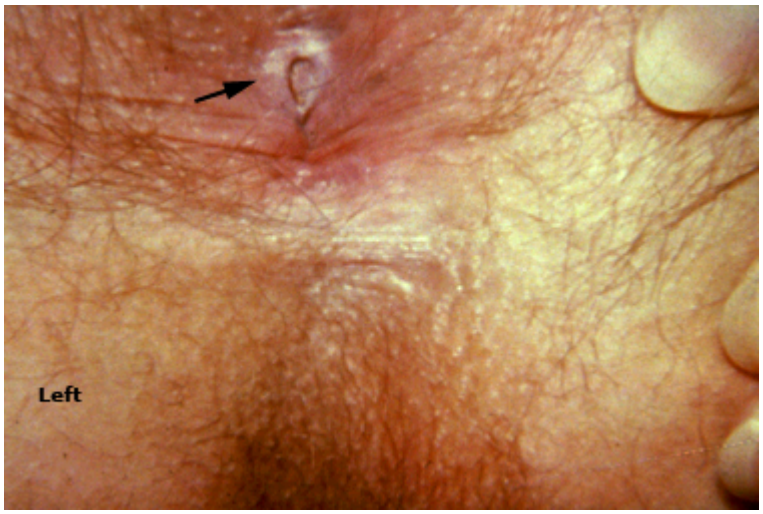
The anal canal is 2.5 to 4.0 cm long and begins superiorly where the rectal ampulla is narrowed by the anorectal ring. This palpable muscular ring is formed by fusion of the puborectalis muscle (part of the levator ani muscle complex) with the more inferior internal and external anal canal sphincters.

The external anal canal sphincter ends just distally to the internal anal canal sphincter; the intersphincteric groove is the palpable plane that can be palpated between the termination of the two sphincters. The presence of the intersphincteric groove coincides roughly with the anal verge, which marks the distal portion of the anal canal. The perianus or anal margin extends 5 cm laterally from the anal verge and is characterized by the presence of hair follicles and glands.

The interior of the anal canal can be divided into proximal and distal portions by an irregular line formed by the anal valves called the dentate (or pectinate) line (colored purple in the diagram). The portions of the anal canal proximal and distal to the dentate line have different origins of arterial supply, nerve innervation, and venous lymphatic drainage. The squamo-columnar junction (SCJ) lies within the proximal portion of the anal canal and marks the transition between rectal columnar epithelium to anal squamous epithelium. The exact position of the SCJ changes with time due to replacement of columnar epithelium with squamous epithelium in a process known as squamous metaplasia. The anal transformation zone (ATZ) is the zone where all aspects of squamous metaplasia are currently found and/or have occurred. The ATZ is marked by the SCJ proximally and extends distally to approximately the level of the dentate line.

Graphic 62539 Version 16.0

Chronic anal fissure



Photograph of a chronic anal fissure in the posterior midline (arrow), which is the most common site of fissure formation. The raised edges and fibrotic appearance at the base of this fissure distinguish it from an acute anal fissure, which appears like a fresh laceration.

Graphic 51583 Version 3.0

Contributor Disclosures

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