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Wolters Kluwer

Hemorrhoids: Clinical manifestations and diagnosis

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INTRODUCTION

Hemorrhoids are normal vascular structures in the anal canal, arising from a channel of arteriovenous connective tissues that drains into the superior and inferior hemorrhoidal veins. The cardinal features of hemorrhoidal disease include bleeding, anal pruritus, prolapse, and pain due to thrombosis. This topic will review the anatomic classification, clinical manifestations, and diagnosis of hemorrhoids. The management of hemorrhoids are discussed in detail, separately. (See "[Home and office treatment of symptomatic hemorrhoids](#)" and "[Surgical treatment of hemorrhoidal disease](#)".)

ANATOMY AND CLASSIFICATION

Hemorrhoids arise from a plexus or cushion of dilated arteriovenous channels and connective tissue. Hemorrhoidal veins are normal anatomic structures located in the submucosal layer in the lower rectum and may be external or internal based upon whether they are below or above the dentate line. Both types of hemorrhoids often coexist. Internal and external hemorrhoids communicate with one another and drain into the internal pudendal veins, and ultimately, the inferior vena cava.

Internal hemorrhoids — Internal hemorrhoids are proximal to or above the dentate line. Internal hemorrhoids arise from the superior hemorrhoidal cushion. Their three primary locations (left lateral, right anterior, and right posterior) correspond to the end branches of the

middle and superior hemorrhoidal veins. The overlying columnar epithelium is viscerally innervated; therefore, these hemorrhoids are not sensitive to pain, touch, or temperature. Tissues above the dentate line receive visceral innervation, which is less sensitive to pain and irritation. Internal hemorrhoids are further subclassified into four grades based on the degree of prolapse from the anal canal.

Internal hemorrhoids are graded according to the degree to which they prolapse from the anal canal:

- Grade I hemorrhoids are visualized on anoscopy and may bulge into the lumen but do not prolapse below the dentate line.
- Grade II hemorrhoids prolapse out of the anal canal with defecation or with straining but reduce spontaneously.
- Grade III hemorrhoids prolapse out of the anal canal with defecation or straining and require manual reduction.
- Grade IV hemorrhoids are irreducible and may strangulate.

External hemorrhoids — External hemorrhoids are distal to or below the dentate line, where tissues are innervated by spinal nerves, and therefore, are more sensitive to pain and irritation. External hemorrhoids arise from the inferior hemorrhoidal plexus. They are covered by modified squamous epithelium (anoderm), which contains numerous somatic pain receptors, making external hemorrhoids extremely painful when thrombosed.

Mixed internal and external hemorrhoids — Mixed internal and external hemorrhoids straddle the dentate line.

EPIDEMIOLOGY

Prevalence — The true prevalence of hemorrhoids is uncertain as anorectal discomfort is often attributed to symptomatic hemorrhoids [1]. In a large, cross-sectional survey conducted in the United States, the self-reported prevalence of symptomatic hemorrhoids was 4.4 percent [2]. The prevalence was equal in males and females, peaked between the ages of 45 and 65, and declined thereafter. Development of symptoms prior to 20 years was unusual. Colonoscopy reports identify hemorrhoids in approximately 39 percent of colonoscopies [3]. In the United States hemorrhoids account for an estimated 2.5 million ambulatory visits annually [4].

Risk factors for symptomatic hemorrhoids — The development of symptomatic hemorrhoids has been associated with advancing age, diarrhea, pregnancy, pelvic tumors, prolonged sitting, straining, chronic constipation, and patients on anticoagulation and antiplatelet therapy, although it is unclear if the association is causal [2].

The pathogenesis of symptomatic internal hemorrhoids is not well understood, but may be due to the following factors:

- Deterioration of the connective tissue that anchors hemorrhoids [5]. It is hypothesized that with advancing age or aggravating conditions, the weakly anchored hemorrhoids then gradually begin to bulge and "slide" into the anal canal leading to progressive symptoms.
- Hypertrophy or increased tone of the internal anal sphincter [6,7]. During defecation, the fecal bolus forces the hemorrhoidal plexus against the internal sphincter, which causes the vessels to enlarge and become symptomatic.
- Abnormal distension of the arteriovenous anastomoses within the hemorrhoidal cushions [8]. In support of this hypothesis is the observation that hemorrhoids regress following ligation of the hemorrhoidal arteries [9].
- Abnormal dilatation of the veins of the internal hemorrhoidal venous plexus.

CLINICAL MANIFESTATIONS

Signs and symptoms — Approximately 40 percent of individuals with hemorrhoids are asymptomatic [10]. Symptomatic patients usually seek treatment for hematochezia, pain associated with a thrombosed hemorrhoid, perianal pruritus, or fecal soilage. Patients may also complain of irritation or itching of perianal skin. Patients with a prolapsed internal hemorrhoid may report mild fecal incontinence, mucus discharge, wetness, or a sensation of fullness in the perianal area.

These symptoms result from a combination of factors:

- Internal hemorrhoids are covered with columnar epithelium leading to mucous deposition on the perianal skin that can cause pruritus.
- Prolapse of internal hemorrhoids may permit leakage of rectal contents ([picture 1](#)).

- Skin tags associated with external hemorrhoids may be difficult to clean, resulting in prolonged contact of fecal material with the perianal skin and local irritation.
- Patients with leakage may wipe aggressively, irritating the perineum and also allowing contact of fecal material with denuded skin. (See "[Approach to the patient with anal pruritus](#)".)

Complications

Bleeding — Hemorrhoidal bleeding is almost always painless and is usually associated with a bowel movement, although can be spontaneous. The blood is typically bright red and coats the stool at the end of defecation or may drip into the toilet. Occasionally, bleeding can be copious and can be exacerbated by straining. In rare cases, chronic blood loss can cause iron deficiency anemia with associated symptoms of weakness, headache, irritability, and varying degrees of fatigue and exercise intolerance [11]. (See "[Causes and diagnosis of iron deficiency and iron deficiency anemia in adults](#)", section on 'Clinical manifestations'.)

Thrombosis — Patients may present with acute onset of perianal pain and a palpable perianal "lump" from thrombosis. Thrombosis is more common with external hemorrhoids as compared with internal hemorrhoids. Thromboses of external hemorrhoids may be associated with excruciating pain as the overlying perianal skin is highly innervated and becomes distended and inflamed ([picture 2](#)). Thrombosed internal hemorrhoids can also cause pain, but to a lesser degree than external hemorrhoids. An exception is when internal hemorrhoids become prolapsed, strangulated, and develop gangrenous changes due to diminished blood supply.

DIAGNOSIS

Initial evaluation — Symptomatic hemorrhoids should be suspected in patients with bright red blood per rectum, anal pruritus, and/or acute onset of perianal pain. The diagnosis is established by visualization of hemorrhoids and may require additional evaluation in selected patients to exclude other etiologies ([algorithm 1](#)).

History — Hemorrhoidal bleeding is characterized by the painless passage of bright red blood per rectum with a bowel movement. Acute onset of perianal pain with perianal swelling suggests the presence of a thrombosed hemorrhoid ([algorithm 1](#)). (See '[Thrombosis](#)' above.)

Clinical manifestations unusual for symptomatic hemorrhoids should prompt consideration of alternative diagnosis. Concerning presentations include:

- Melena, dark red blood per rectum, or postural vital sign abnormalities – Patients with these symptoms should be evaluated for upper gastrointestinal (GI) tract pathology first.
- Systemic symptoms such as night sweats, fever, weight loss, and abdominal pain are suggestive of underlying malignancy, chronic infection, or inflammation.
- Chronic diarrhea with hematochezia and tenesmus is suggestive of colitis.
- Change in the stool frequency, caliber, or consistency is suggestive of a colorectal malignancy.
- Painful defecation is not associated with a hemorrhoid unless it is thrombosed. Painful defecation is suggestive of an anorectal fissure, proctitis, perirectal fistula, abscess, solitary rectal ulcer syndrome, rectal cancer, or anal polyp.

Physical examination

Digital rectal examination — We begin with carefully inspecting the anal verge and perianal area for external hemorrhoids ([picture 2](#)), prolapsed internal hemorrhoids ([picture 1](#)), skin tags, fissures ([picture 3](#)), fistulae ([picture 4](#)), abscesses ([picture 5](#)), neoplasms ([picture 6](#)), and condylomata ([picture 7](#)). Digital rectal examination should be performed in the prone or left lateral position at rest and with straining. (See "[Overview of benign lesions of the skin](#)", section on 'Acrochordon (skin tag)' and "[Anorectal fistula: Clinical manifestations, diagnosis, and management principles](#)", section on 'Physical examination' and "[Clinical features and staging of anal cancer](#)", section on 'Clinical features' and "[Condylomata acuminata \(anogenital warts\) in adults: Epidemiology, pathogenesis, clinical features, and diagnosis](#)", section on 'Diagnosis' and "[Perianal and perirectal abscess](#)", section on 'Clinical manifestations'.)

Digital rectal examination should include palpation for masses, fluctuance, tenderness, and characterization of anal sphincter tone. Internal hemorrhoids are generally not palpable on digital examination in the absence of thrombosis. A thrombosed hemorrhoid is extremely tender to palpation, and a thrombus may be palpable within the hemorrhoid. The presence of thickening or scar in the posterior midline or roughening of the otherwise smooth anoderm is suggestive of a partially healed anal fissure. Hypertrophic, edematous, and tender skin tags should raise suspicion for underlying Crohn disease ([picture 8](#)). (See "[Perianal Crohn disease](#)".)

Anoscopy — In patients with bright red blood per rectum or those suspected of having a thrombosed hemorrhoid, in whom hemorrhoids were not detected on digital rectal examination, we perform an anoscopy to evaluate the anal canal and the distal rectum. Internal hemorrhoidal bundles appear as bulging purplish-blue veins [12]. Prolapsed internal hemorrhoids appear as dark pink, glistening, and sometimes tender masses at the anal margin.

Thrombosed external hemorrhoids are acutely tender and have a purplish hue. Anoscopy has the advantage of being a quick, relatively painless, inexpensive procedure that can be performed in an unprepped patient to diagnose hemorrhoids and exclude distal anorectal disorders [13]. (See ['Differential diagnosis'](#) below.)

Laboratory evaluation — Laboratory testing contributes little and is not routinely recommended, but if it is performed and anemia or iron deficiency is identified, endoscopic evaluation should be performed ([algorithm 1](#)).

Additional evaluation in selected patients — Additional evaluation may be needed in selected patients with suspected hemorrhoidal bleeding in order to exclude other etiologies ([algorithm 1](#)).

- **Patients <40 years** – We perform endoscopic evaluation in patients with any of the following ([algorithm 1](#)):
 - Patients with concerning clinical manifestations. (See ['History'](#) above.)
 - Iron deficiency anemia. (See ['Laboratory evaluation'](#) above.)
 - Risk factors for colonic disease:
 - Previous gastrointestinal blood loss and previously resected colorectal cancer or polyps.
 - Inflammatory bowel disease.
 - Pelvic radiation therapy.
 - Family history of inflammatory bowel disease.
 - Family history suggestive of advanced colorectal polyps, cancer, or hereditary colorectal cancer syndrome. (See ["Screening for colorectal cancer in patients with a family history of colorectal cancer or advanced polyp"](#).)

Endoscopic evaluation should include a colonoscopy, but an upper endoscopy may also be indicated based on the clinical presentation (eg, upper endoscopy in patients with melena, dark red blood per rectum, or postural vital sign abnormalities).

In patients without concerning clinical manifestations, iron deficiency anemia, or risk factors for colonic disease, hemorrhoid treatment can be administered without further evaluation. However, persistent bleeding after successful local treatment of hemorrhoids should prompt evaluation with a colonoscopy. (See ["Home and office treatment of symptomatic hemorrhoids"](#), section on ['Treatment approaches by symptoms'](#).)

- **Patients \geq 40 years** – We perform endoscopic evaluation with a colonoscopy in patients \geq 40 years ([algorithm 1](#)). While performing a colonoscopy, the distal rectum and anal verge should be inspected in retroflexion with the rectum partially insufflated. Complete insufflation should be avoided as this causes the rectal vault to distend and stretch, thereby flattening internal hemorrhoids.

Further evaluation (eg, abdominal imaging) may be needed based on the symptoms and results of endoscopic evaluation.

DIFFERENTIAL DIAGNOSIS

The differential diagnosis of bright red blood per rectum includes bleeding hemorrhoids, anal fissures, solitary rectal ulcer syndrome, polyps, rectal prolapse, colorectal and anal cancer, rectal varices in cirrhotic patients with portal hypertension, and proctitis. These are discussed in detail, separately. (See "[Approach to minimal bright red blood per rectum in adults](#)", section on 'Etiologies'.)

Anal condyloma have a characteristic verrucous, pink or skin-colored, papilliform appearance ([picture 7](#)).

Anal pruritus may be due to hemorrhoids or other anorectal diseases (eg, anal abscess, fissures, fistula, and anal squamous cell carcinoma ([picture 6](#))), dermatological diseases, or infections of the anoderm. (See "[Approach to the patient with anal pruritus](#)", section on 'Etiology'.)

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: Hemorrhoids](#)".)

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: Hemorrhoids \(The Basics\)](#)" and "[Patient education: Anal pruritus \(anal itching\) \(The Basics\)](#)")
- Beyond the Basics topics (see "[Patient education: Hemorrhoids \(Beyond the Basics\)](#)")

SUMMARY

- **Anatomy and classification** – Hemorrhoids are normal vascular structures in the anal canal, arising from a channel of arteriovenous connective tissues that drains into the superior and inferior hemorrhoidal veins. They are located in the submucosal layer in the lower rectum and may be external, internal, or mixed based upon their location with respect to the dentate line. Internal hemorrhoids are graded according to the degree to which they prolapse from the anal canal. (See '[Anatomy and Classification](#)' above.)
- **Risk factors for symptoms** – The development of symptomatic hemorrhoids has been associated with advancing age, diarrhea, pregnancy, pelvic tumors, prolonged sitting, straining, and chronic constipation. The cause of symptomatic internal hemorrhoids is not completely understood, but may be due to deterioration of the connective tissue that anchors the hemorrhoids to the underlying sphincter mechanism, hypertrophy or increased tone of the internal anal sphincter, abnormal dilatation of the arteriovenous anastomoses within the hemorrhoidal cushions, and/or abnormal dilatation of the veins of the internal hemorrhoidal venous plexus. (See '[Risk factors for symptomatic hemorrhoids](#)' above.)
- **Clinical manifestations** – Approximately 40 percent of individuals with hemorrhoids are asymptomatic. Symptomatic patients usually seek treatment for hematochezia, pain associated with a thrombosed hemorrhoid, perianal pruritus, or fecal soilage [11]. Patients may also complain of irritation or itching of perianal skin. Patients with a prolapsed internal hemorrhoid may report mild fecal incontinence, mucus discharge, wetness, or a sensation of fullness in the perianal area.

- **Complications** – Hemorrhoidal bleeding is almost always painless and is usually associated with a bowel movement, although can be spontaneous. The blood is typically bright red and coats the stool at the end of defecation or may drip into the toilet. Occasionally, bleeding can be copious and can be exacerbated by straining. Patients may present with acute onset of perianal pain and a palpable perianal "lump" from thrombosis. (See '[Clinical manifestations](#)' above and '[Differential diagnosis](#)' above.)
- **Diagnosis** – Symptomatic hemorrhoids should be suspected in patients with bright red blood per rectum, anal pruritus, and/or acute onset of perianal pain. The diagnosis is established by the exclusion of other causes of similar symptoms and by visualization of hemorrhoids ([algorithm 1](#)).
- **Additional evaluation in selected patients** – Additional evaluation in patients with suspected hemorrhoidal bleeding serves to exclude other etiologies. We perform a colonoscopy in all patients ≥ 40 years and in patients < 40 years with any of the following:
 - Patients with concerning clinical manifestations. (See '[History](#)' above.)
 - Iron deficiency anemia. (See '[Laboratory evaluation](#)' above.)
 - Risk factors for colonic disease:
 - Previous gastrointestinal blood loss and previously resected colorectal cancer or polyps
 - Inflammatory bowel disease
 - Pelvic radiation therapy
 - Family history of inflammatory bowel disease
 - Family history suggestive of advanced colorectal polyps, cancer, or hereditary colorectal cancer syndrome

In patients < 40 years without concerning clinical manifestations, iron deficiency anemia, or risk factors for colonic disease, hemorrhoid treatment can be administered without further evaluation. Further evaluation (eg, abdominal imaging) may be needed based on the symptoms and results of endoscopic evaluation. (See '[Initial evaluation](#)' above.)

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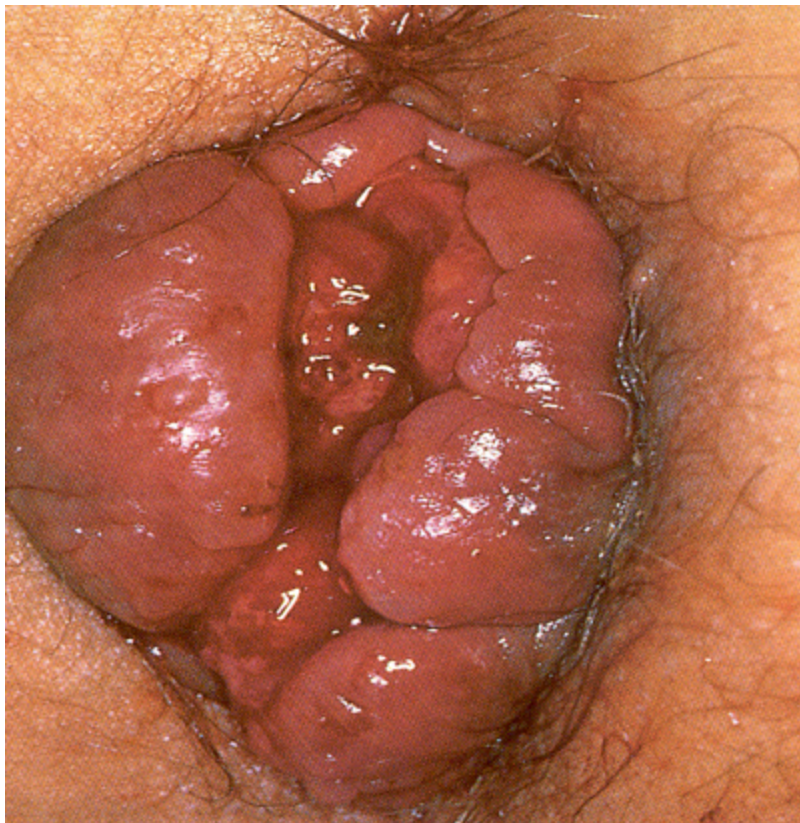
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Topic 2541 Version 26.0

GRAPHICS

Prolapsed internal hemorrhoids

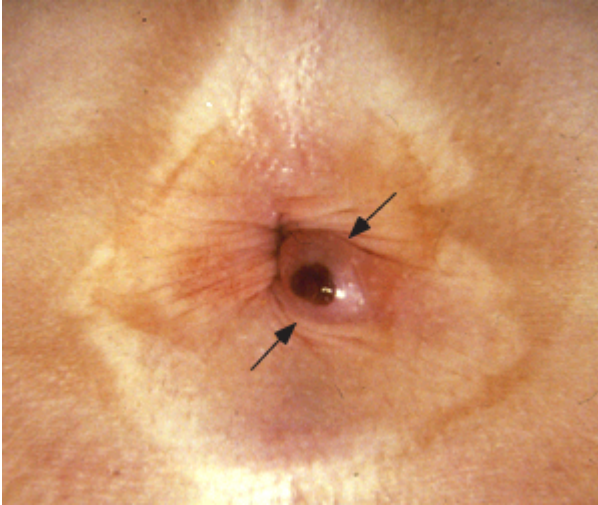


Internal hemorrhoids that have prolapsed outside of the anal canal and are visibly bleeding.

Courtesy of Scott R Steele, MD, MBA, FACS, FASCRS.

Graphic 75759 Version 3.0

Thrombosed external hemorrhoids

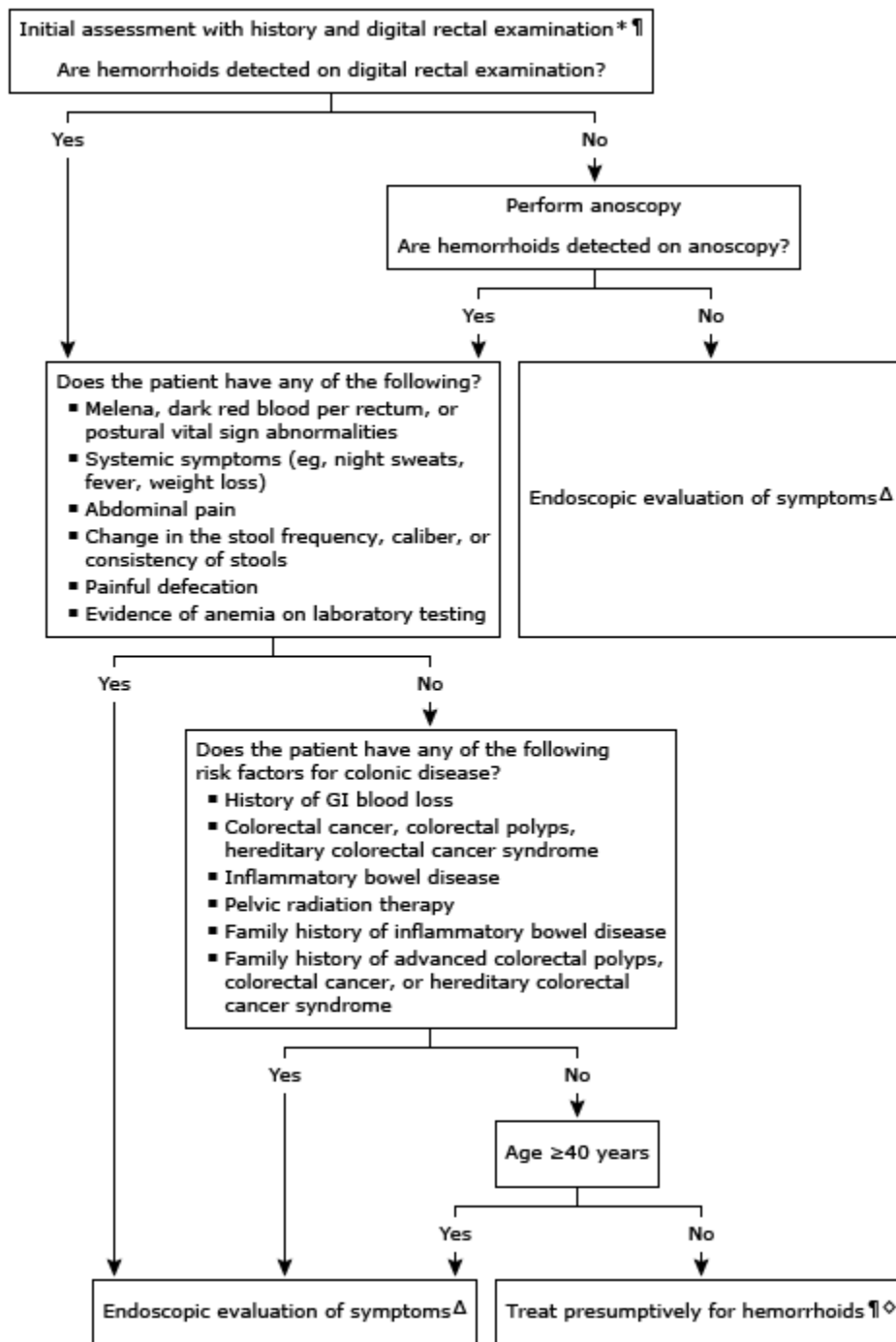


Photograph shows a swollen external hemorrhoid (arrows).

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Graphic 72916 Version 2.0

Approach to evaluation of an adult patient with suspected hemorrhoidal bleeding



GI: gastrointestinal.

* Hemorrhoidal bleeding is almost always painless and is usually associated with a bowel movement, although it can be spontaneous. The blood is typically bright red and coats the stool at the end of defecation or may drip into the toilet. Occasionally, bleeding can be copious and can be exacerbated by straining.

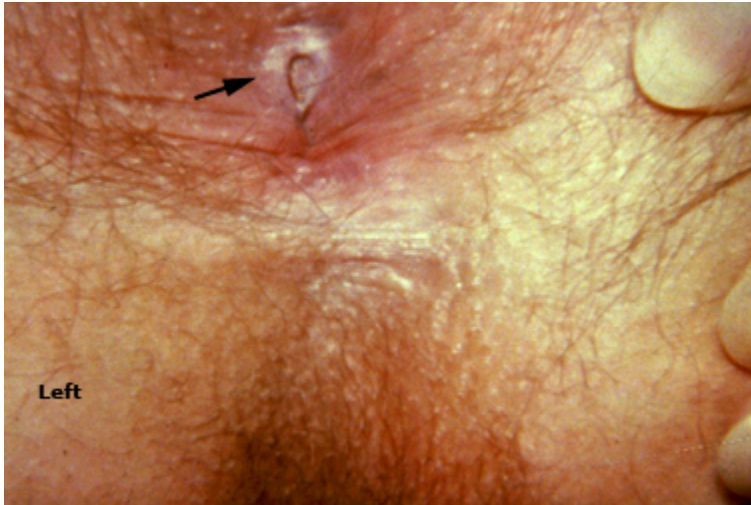
¶ Refer to related UpToDate topics on hemorrhoids.

Δ Patients with melena, dark red blood per rectum, or postural vital sign abnormalities should undergo an upper endoscopy in addition to a colonoscopy.

◇ Patients with persistent symptoms despite local treatment should undergo endoscopic evaluation.

Graphic 139881 Version 1.0

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.

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Graphic 51583 Version 3.0

Simple anal fistula

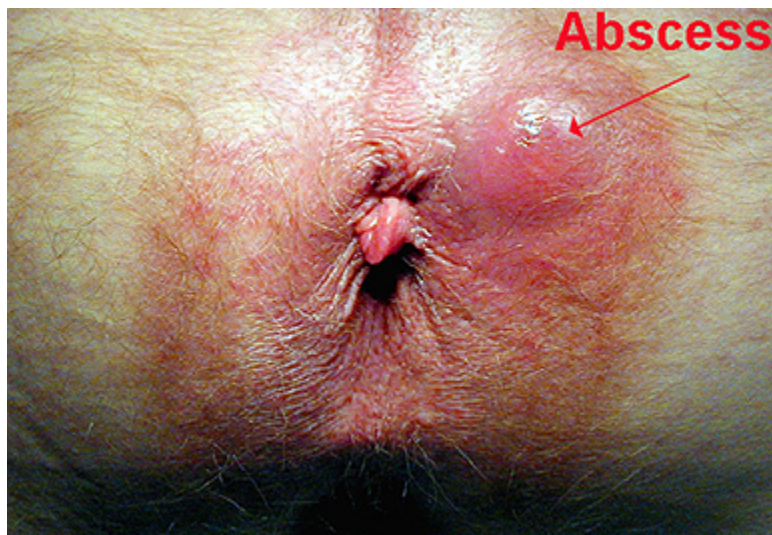


This intraoperative photograph shows the primary internal opening and the secondary external opening of the simple anal fistula.

Courtesy of Bradley J Champagne, MD.

Graphic 56209 Version 5.0

Perianal abscess

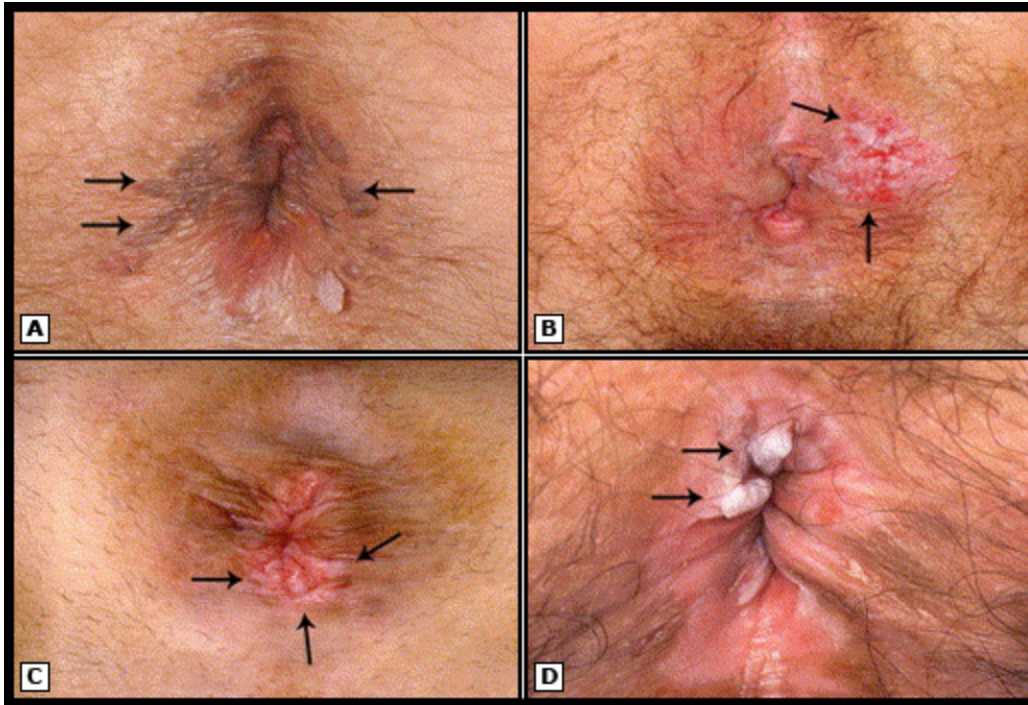


A perianal abscess is apparent as an erythematous, fluctuant bulge with surrounding edema.

Courtesy of David A Schwartz, MD and Maurits J Wiersema, MD.

Graphic 67524 Version 1.0

Perianal squamous intraepithelial lesions



- (A) Bowenoid anal squamous intraepithelial lesion.
 (B) Erythroplakic anal squamous intraepithelial lesion.
 (C) Leukoplakic anal squamous intraepithelial lesion.
 (D) Verrucous anal squamous intraepithelial lesion.

Reproduced with permission from: Kreuter A, Brockmeyer NH, Hochdorfer B, et al. Clinical spectrum and virologic characteristics of anal intraepithelial neoplasia in HIV. J Am Acad Dermatol 2005; 52:603. Copyright © 2005 The American Academy of Dermatology.

Graphic 65025 Version 6.0

Anal condyloma

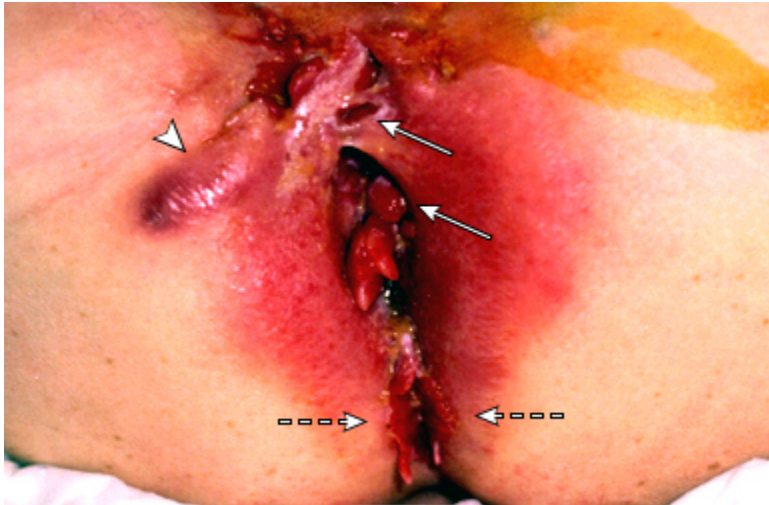


Photograph shows the characteristic verrucous, pink or skin-colored, papilliform appearance of anal condyloma acuminata. By contrast, anal squamous cell carcinoma has a smooth and pearly appearance and may contain areas of hemorrhage and necrosis.

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Graphic 55494 Version 3.0

Anal fistulas and abscess in Crohn disease



This picture shows anterior perianal fistulas involving the vulva and anterior perineum (arrows) in a woman with Crohn disease being prepared for surgery. The surrounding skin is erythematous and indurated. An abscess (arrowhead) appears as a localized swelling. Hypertrophic skin tags (dashed arrows) in the anal canal are commonly observed in perianal Crohn disease and may be confused with external hemorrhoids.

Courtesy of Alain Bitton, MD, FRCPC.

Graphic 75104 Version 4.0

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