



# Perianal and perirectal abscess

**AUTHOR:** Ronald Bleday, MD

**SECTION EDITORS:** Martin Weiser, MD, Lawrence S Friedman, MD

**DEPUTY EDITOR:** Wenliang Chen, MD, PhD

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## INTRODUCTION

Perianal and perirectal abscesses are common anorectal problems. The infection originates most often from an obstructed anal crypt gland, with the resultant pus collecting in the subcutaneous tissue, intersphincteric plane, or beyond (ischiorectal space or supralelevator space) where various types of anorectal abscesses form. Once diagnosed, anorectal abscesses should be promptly drained surgically. An undrained anorectal abscess can continue to expand into adjacent spaces as well as progress to generalized systemic infection.

Anorectal abscesses and fistulas can be thought of as two sequential phases of the same anorectal infectious process: an abscess represents the acute phase of infection, while a fistula represents the chronic phase of suppuration and fistulization [1]. Thus, it is not surprising that 30 to 70 percent of anorectal abscesses are associated with a concomitant anorectal fistula and that 30 to 40 percent of patients develop an anorectal fistula after undergoing treatment for an anorectal abscess [1,2].

The clinical manifestations, diagnosis, and management of anorectal abscess are discussed in this topic. Anorectal fistulas are reviewed in other topics. (See "[Anorectal fistula: Clinical manifestations and diagnosis](#)" and "[Operative management of anorectal fistulas](#)".)

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## EPIDEMIOLOGY

It is estimated that there are approximately 100,000 cases of anorectal infection per year in the United States [1]. The incidence is likely an underestimate as many patients with anorectal symptoms prefer attributing them to "hemorrhoids" to seeking medical attention for an accurate diagnosis.

The mean age of presentation is 40 years (range 20 to 60) [3-6]. Adult males are twice as likely to develop an anorectal abscess and/or fistula compared with females [1,6].

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## ANATOMY AND PATHOGENESIS

Anorectal abscess typically originates from an infected anal crypt gland [7]. There are 8 to 10 anal crypt glands arranged circumferentially within the anal canal at the level of the dentate line ( [figure 1](#)). The glands penetrate the internal sphincter and end in the intersphincteric plane. An abscess develops when an anal crypt gland becomes obstructed with inspissated debris, which permits bacterial growth and abscess formation. Some abscesses traverse distally in the intersphincteric groove into the perianal skin, where they present as a tender, fluctuant mass (perianal abscess). Others follow the path of least resistance to other spaces (intersphincteric, ischiorectal, supralelevator) to form perirectal abscesses.

Approximately one-half of anorectal abscesses will result in the development of a chronic fistula that connects the inciting anal gland with the skin overlying the drainage site. (See "[Anorectal fistula: Clinical manifestations and diagnosis](#)".)

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## CLASSIFICATION

A perianal abscess is a simple anorectal abscess. Perirectal abscesses are more complex and can involve different planes in the anorectum, have distinct clinical presentations, and require more nuanced management [7]. The classification of perirectal abscesses is based on their anatomic locations ( [figure 2](#)):

- **Ischiorectal abscess (ischioanal abscess)** – Ischiorectal abscesses, also referred to as ischioanal abscesses, penetrate through the external anal sphincter into the ischiorectal space ( [figure 3](#)) and present as a diffuse, tender, indurated, and fluctuant area within the buttocks.
- **Intersphincteric abscess** – Intersphincteric abscesses account for only 2 to 5 percent of all anorectal abscesses. They are located in the intersphincteric groove between the internal and external sphincters. As a result, they often do not cause perianal skin changes

but can be palpated during digital rectal examination as a fluctuant mass protruding into the lumen.

- **Supralelevator abscess** – Supralelevator abscesses can originate from two different sources: the typical cryptoglandular infection that travels superiorly within the intersphincteric plane to the supralelevator space, or an inflammatory pelvic process caused by Crohn disease or perforated colon from diverticular disease or cancer. The potential source of pelvic infection is best determined from patient history.

Patients with a supralelevator abscess present with severe perianal pain, fever, and sometimes urinary retention. Physical examination usually reveals no obvious external findings. On digital examination, an area of induration or fluctuation can often be felt above the level of the anorectal ring. Due to the paucity of physical findings, imaging studies such as computed tomography may be required to establish the diagnosis. (See ["The role of imaging tests in the evaluation of anal abscesses and fistulas"](#).)

- **Horseshoe abscess** — A horseshoe abscess is a complex perirectal abscess that most often forms posterior to the anal canal. The potential space where the abscess originates is bound by the pelvic floor superiorly, by the anococcygeal ligament inferiorly, and by the coccyx and anal canal. Because of these relatively rigid boundaries, abscesses in this space are forced to extend into the ischiorectal space, either unilaterally or bilaterally (horseshoe). (See ["Operative management of anorectal fistulas"](#), section on 'Modified Hanley procedure'.)

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## CLINICAL MANIFESTATIONS

Patients with an anorectal abscess often present with severe pain in the anal or rectal area. The pain is constant and not necessarily associated with a bowel movement. Constitutional symptoms such as fever and malaise are common. Purulent rectal drainage may be noted if the abscess has begun to drain spontaneously [1].

On physical examination, an area of fluctuance or a patch of erythematous, indurated skin overlying the perianal skin may be noted in patients with a superficial (eg, perianal) abscess ( [picture 1](#)). Patients with a deeper (eg, supralelevator) abscess, however, may not have any physical findings on external examination, and the abscess can only be felt via digital rectal examination or by imaging.

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## DIAGNOSIS

Anorectal abscess should be suspected in patients who present with severe pain in the anal or rectal area. A superficial anorectal abscess can be diagnosed on physical examination with findings of perianal erythema and a palpable, often fluctuant mass. A deeper abscess can be diagnosed by feeling a tender, often fluctuant mass internally on digital rectal examination or by imaging studies. (See ['Imaging studies'](#) below.)

**Imaging studies** — Imaging studies, such as computed tomography of the pelvis, magnetic resonance imaging of the pelvis, and endorectal ultrasound, can confirm the diagnosis when a deep anorectal abscess is suspected but cannot be palpated by external examination or digital rectal examination [8]. (See ["The role of imaging tests in the evaluation of anal abscesses and fistulas"](#).)

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## DIFFERENTIAL DIAGNOSIS

Anorectal abscesses should be distinguished from other conditions that can cause pain or drainage in the presacral, perianal, and perineal regions [9]. These conditions include:

- **Anal fissure** – An anal fissure is a tear in the anoderm distal to the dentate line. Most anal fissures occur at the posterior midline position ( [picture 2](#)). A tear in the anoderm is absent in perianal abscess. Patients with an acute anal fissure present with tearing pain accompanying the passage of bowel movements, while the pain associated with a perianal abscess is constant and unrelated to bowel movements. (See ["Anal fissure: Clinical manifestations, diagnosis, prevention"](#), section on ["Clinical manifestations"](#).)
- **Anal fistula** – An anal fistula is an epithelialized track that connects the abscess with skin or adjacent organs. Anorectal abscesses can present with a concomitant anal fistula. Chronic fistulas are characterized by chronic purulent drainage and a pustule-like lesion in the perianal or buttock area (external opening) that can be indurated ( [picture 3](#)). Patients with an anal fistula experience intermittent, rather than constant, rectal pain as well as intermittent and malodorous perianal drainage and pruritus [2]. (See ["Anorectal fistula: Clinical manifestations and diagnosis"](#), section on ["Clinical features"](#).)
- **Thrombosed external hemorrhoid** – Patients with a thrombosed external hemorrhoid present with acute onset of perianal pain and a palpable perianal "lump" from thrombosis of one or more external hemorrhoids. Although both present with anorectal pain, thrombosed external hemorrhoid can be distinguished from perianal abscess by the presence of a thrombosed perianal lump (external hemorrhoid) at the anal verge

( [picture 4](#)). (See "[Hemorrhoids: Clinical manifestations and diagnosis](#)", section on '[Clinical manifestations](#)'.)

- **Prolapsed internal hemorrhoid** – An internal hemorrhoid is a normal vascular structure in the anal canal that can become prolapsed, enlarged, engorged, and strangulated (leading to gangrene) ( [picture 5](#)). Internal hemorrhoids can be palpated on digital rectal examination as fluctuant masses. Although prolapsed internal hemorrhoids can also cause anorectal pain, they can usually be recognized as vascular structures (hemorrhoids), rather than abscesses. (See "[Hemorrhoids: Clinical manifestations and diagnosis](#)".)
- **Pilonidal disease** – Patients with pilonidal disease can present with an acute abscess. Pilonidal abscesses, however, generally occur in the intergluteal area superior/dorsal to the anus, rather than in the perianal area ( [figure 4](#)). (See "[Pilonidal disease](#)", section on '[Clinical manifestations](#)'.)
- **Buttock skin abscess** – Buttock skin abscess can develop as a furuncle, carbuncle ( [picture 6](#)), or infected epidermoid (sebaceous) cyst. Compared with a perianal abscess, a skin abscess is more discrete and superficial, less painful, and less likely to cause systemic symptoms (eg, fever). (See "[Overview of benign lesions of the skin](#)", section on '[Epidermoid cyst](#)'.)
- **Bartholin abscess** – A Bartholin duct can become obstructed and form an abscess. A Bartholin abscess can be distinguished from a perianal abscess by its vulvar location ( [picture 7](#)). (See "[Bartholin gland masses](#)", section on '[Types of masses](#)'.)
- **Hidradenitis suppurativa** – Hidradenitis suppurativa is a chronic follicular occlusive disease involving the intertriginous skin of the axillary, groin, perianal, perineal, and inframammary regions. Perianal hidradenitis can become infected with purulent drainage. However, hidradenitis usually presents with characteristic skin changes such as inflammatory nodules, sinus tracts, comedones, and scarring that are absent with perianal abscesses ( [picture 8](#)). (See "[Hidradenitis suppurativa: Pathogenesis, clinical features, and diagnosis](#)".)

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## MANAGEMENT

The primary treatment of anorectal abscess is surgical drainage. Once diagnosed, all perianal and perirectal abscesses should be drained promptly; lack of fluctuance should not be a reason to delay treatment. Any undrained anorectal abscess can continue to expand into adjacent spaces as well as progress to generalized systemic infection.

All incision and drainage procedures for anorectal abscesses follow the same general principles but may vary by surgical approaches (through a skin incision or into the rectum) depending on anatomical considerations [2].

## **Surgical principles**

**Incision** — All skin incisions should be made as close to the anal verge as possible to minimize the length of a potential fistula while still providing adequate drainage of the abscess.

**Role of wound packing** — Wound packing is commonly performed after incision and drainage of anorectal abscesses but has no proven benefit [10]. For most patients with a perianal or perirectal abscess, we suggest not packing the wound after drainage.

In a randomized trial (PPAC2) that involved 443 patients, non-packing, compared with packing, resulted in lower average pain scores (28 versus 38 on a 100 point visual analog scale) but no higher fistula (11 versus 15 percent; odds ratio [OR] 0.69, 95% CI 0.39-1.22) or abscess recurrence rates (6 versus 3 percent; OR 1.85, 95% CI 0.72-4.73) [11]. Two earlier small trials reported similar findings [12,13].

**Concomitant fistulotomy** — Thirty to 70 percent of patients with anorectal abscess present with a concomitant anal fistula. In those patients, whether or not to perform abscess drainage with a primary fistulotomy is controversial. We suggest that a fistulotomy may be performed with caution for simple anal fistulas or when the risk of a recurrence is high (eg, horseshoe abscess). For other patients, it is best to stage the fistulotomy as a secondary procedure after the inflammation and edema subside.

A concomitant fistulotomy performed with the drainage of an anorectal abscess has been studied in multiple trials with conflicting results [14-17]. A 2010 Cochrane review of six trials, which included 479 patients, concluded that sphincter division (fistulotomy or fistulectomy) performed with a drainage procedure decreased the rates of persistent fistula/abscess, abscess recurrence, and subsequent surgery (relative risk 0.13, 95% CI 0.07-0.24) but increased the rate of incontinence (relative risk 3.06, 95% CI 0.7-13.45) at one-year follow-up [18].

Thus, the decision to perform a concomitant fistulotomy versus a delayed one should be made after weighing the benefits (healing) against the risks (incontinence) for each patient. The local condition for performing a delayed fistulotomy is generally more favorable once the edema and inflammation have subsided. Operative management of anal fistulas is further discussed in another topic. (See "[Operative management of anorectal fistulas](#)" and "[Operative management of anorectal fistulas](#)", section on 'Cutting seton'.)

**Antibiotics** — We suggest giving a course of empiric antibiotics to **all** patients after incision and drainage of an anorectal abscess. There is evidence that such practice may reduce the rate of fistula formation.

We generally prescribe a four- to five-day course of [amoxicillin-clavulanate](#) or a combination of [ciprofloxacin](#) and [metronidazole](#); this duration of antibiotic coverage is extrapolated from studies of intra-abdominal infection after source control [19].

The best evidence in support of routine empiric antibiotics after drainage comes from a systematic review and meta-analysis of two randomized trials and one retrospective study, which showed that fistula rate in patients receiving antibiotics was lower than that in those who did not receive antibiotics (16 versus 24 percent; OR 0.64, 95% CI 0.43-0.96) [20]. The abscess recurrence rate was not different. Although this meta-analysis was based on only a few studies with high risk of bias and high degree of heterogeneity, it represents the current body of evidence. The two randomized trials included in the meta-analysis came to different conclusions; they differed in study design and choice of antibiotics [21,22].

Our practice varies from the American Society of Colorectal Surgery (ASCRS) guidelines, which suggest a course of empiric antibiotics after drainage of an anorectal abscess only in patients with [2]:

- Extensive perianal/perineal cellulitis
- Signs of systemic infection
- Diabetes
- Valvular heart disease
- Immunosuppression

**Wound culture** — For most patients who undergo drainage of an anorectal abscess, routine wound culture is **not** necessary. Instead, a wound culture may be obtained in the following settings:

- In patients who will receive antibiotics. (See '[Antibiotics](#)' above.)
- In patients who have been on multiple courses of antibiotics, who may develop antibiotic resistance.
- In patients with pain out of proportion to physical findings or who are known to be immunocompromised (eg, leukemia or lymphoma). These patients may harbor unusual or resistant bacteria.

- To distinguish a cryptoglandular abscess (typically due to colonic flora) from a skin abscess (typically due to staphylococcal species).
- In patients who are at risk of having methicillin-resistant *Staphylococcus aureus* (MRSA) infection. MRSA has been isolated in up to one-third of anorectal abscess cultures [23,24]. Because MRSA is not susceptible to antibiotics commonly used to treat perianal abscesses, early identification of MRSA helps with proper selection of antibiotics. (See "[Methicillin-resistant Staphylococcus aureus \(MRSA\) in adults: Treatment of skin and soft tissue infections](#)".)

**Surgical approaches by site** — Abscess location generally determines whether a patient should have internal versus external drainage. Choosing the correct approaches to abscess drainage may help prevent complex fistula formation.

**Perianal abscess** — A perianal abscess should be drained through a skin incision. The procedure can be carried out in an outpatient setting such as the office/clinic, emergency department, or procedure room.

After infiltrating the skin overlying the abscess with a local anesthetic (eg, [lidocaine](#) with bicarbonate), a cruciate incision is made as close to the anal verge as possible to evacuate pus from the abscess cavity. The abscess cavity is irrigated with sterile [saline](#) and the wound is dressed; no wound packing is necessary. After the procedure, the area is kept clean with frequent sitz baths or hand-held showers until it heals.

**Perirectal abscess** — Most perirectal abscesses are complex and should be drained in the operating room, preferably under regional or general anesthesia. Smaller perirectal abscesses may be amenable to drainage under local anesthesia with intravenous sedation. Surgical approaches vary by the site of the abscess:

**Ischiorectal** — An ischiorectal abscess should be drained through a skin incision.

After infiltrating the buttock skin overlying the abscess with a local anesthetic (eg, [lidocaine](#) with bicarbonate), a cruciate incision is made to evacuate pus from the abscess cavity. The incision for the drainage site should be placed as close to the sphincter complex as possible to minimize the length of a potential future fistula tract. The abscess cavity is irrigated with sterile [saline](#) and the wound is dressed; no wound packing is necessary. After the procedure, the area is kept clean with frequent sitz baths or hand-held showers until healing.

**Intersphincteric** — An intersphincteric abscess should be drained into the rectum via an internal sphincterotomy [25].



Under adequate anesthesia, a retractor is placed in the anal canal to expose the intersphincteric abscess. A mucosal incision is made below the dentate line, and the internal sphincter muscle is divided up to the dentate line. The abscess cavity is then deroofed. Following that, the cut edge of the mucosa and internal sphincter muscle may be sutured (marsupialized) for hemostasis. The abscess cavity is kept open to drain. No packing or catheter is required. Patients should perform regular warm sitz baths to keep the wound clean. Healing is expected in three to four weeks without any additional procedure.

**Supralevator** — Supralevator abscesses can be drained in one of two ways depending upon the origin of the abscess: abscesses that form as an upward extension of an ischiorectal abscess should be drained through a skin incision (see '[Ischiorectal](#)' above). Abscesses originating from a pelvic process or as an upward extension of an intersphincteric abscess should be drained into the rectum through an incision in the rectal wall or through a transanal drain to avoid creating an extrasphincteric fistula. (See '[Intersphincteric](#)' above.)

**Horseshoe** — Most horseshoe abscesses originate from the deep posterior anal space deep to the external sphincter and inferior to the levator ani muscle, before progressing into unilateral or bilateral ischiorectal spaces [26]. (See '[Classification](#)' above.)

The key to treating horseshoe abscesses is to adequately drain the deep posterior anal space [2]. For patients with an isolated deep postanal space abscess, one can make a posterior incision between the coccyx and the anus (Hanley procedure) [26,27], but posterior incisions are difficult to heal, and there are concerns about fecal incontinence if the external sphincter muscle is divided. A radial incision slightly off midline is the better alternative. A radial incision should be made midway between the anus and the coccyx. Dissection is carried through the subcutaneous tissue, and the anococcygeal ligament is divided at the posterior midline to drain the posterior anal infection (modified Hanley procedure) [28-30].

Most patients do not present with an isolated deep postanal space infection but with a unilateral (more common) or bilateral (rare) horseshoe abscess. Counter incisions can then be made on one or both sides to drain any extension of infection to the ischiorectal spaces from the postanal space [30]. A draining seton can be placed, but often the fistula tract is difficult to identify because most patients present with the ischiorectal space inflamed and/or infected.

If a fistula is present, a seton can be placed. Performing a concomitant fistulotomy may decrease the risk of disease recurrence but increase risk of incontinence and therefore may not be suitable for all patients. Concomitant fistulotomy should also be done with extreme caution since it may lead to incontinence. The tissue is often inflamed and the anatomy distorted. We typically place a draining seton and treat the fistula at a second surgery. (See '[Concomitant](#)

fistulotomy' above and ["Operative management of anorectal fistulas"](#), section on 'Modified Hanley procedure'.)

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## RECURRENCE

After drainage, abscesses may recur in up to 44 percent of patients, most often within one year of initial treatment [31,32]. Inadequate drainage, the presence of loculations or a horseshoe-type abscess, and not performing a primary fistulotomy are risk factors for recurrent abscess [26,28,32].

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## 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 abscess and anal fistula"](#).)

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## 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 5<sup>th</sup> to 6<sup>th</sup> 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 10<sup>th</sup> to 12<sup>th</sup> 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 abscess and fistula \(The Basics\)"](#))
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## SUMMARY AND RECOMMENDATIONS

- **Diagnosis** – Anorectal abscess should be suspected in patients who present with severe pain in the anal or rectal area, especially when accompanied by fever or malaise. A

superficial anorectal abscess can be diagnosed on physical examination with findings of perianal erythema and a palpable, often fluctuant mass ( [picture 1](#)). A deeper abscess can only be diagnosed by feeling a tender, often fluctuant mass internally on digital rectal examination, or by imaging studies, such as computed tomography, magnetic resonance imaging, or ultrasound of the pelvis. (See '[Clinical manifestations](#)' above and '[Diagnosis](#)' above.)

- **Management** – The primary treatment of anorectal abscess is surgical drainage. Once diagnosed, all perianal and perirectal abscesses should be drained promptly; lack of fluctuance should not be a reason to delay treatment. Any undrained anorectal abscess can continue to expand into adjacent spaces as well as progress to generalized systemic infection. (See '[Management](#)' above.)

- **Surgical principles**

- All skin incisions should be made as close to the anal verge as possible to minimize the length of a potential fistula while still providing adequate drainage of the abscess. For most patients with a perianal or perirectal abscess, we suggest not packing the wound after drainage (**Grade 2C**). Wound packing in this context has no proven benefit and may increase pain. (See '[Incision](#)' above and '[Role of wound packing](#)' above.)
- For patients with a concomitant fistula, a fistulotomy may be performed with caution if the fistula is simple or when the risk of recurrence is high (eg, horseshoe abscess). For other patients, it is best to stage the fistulotomy as a secondary procedure after the inflammation and edema subside. (See '[Concomitant fistulotomy](#)' above.)
- We suggest giving a course of empiric antibiotics to **all** patients after incision and drainage of an anorectal abscess (**Grade 2C**). There is limited evidence that such practice may reduce the rate of fistula formation. We generally prescribe a four- to five-day course of [amoxicillin-clavulanate](#) or a combination of [ciprofloxacin](#) and [metronidazole](#). (See '[Antibiotics](#)' above.)
- For most patients who undergo drainage of an anorectal abscess, routine wound culture is **not** necessary. Wound cultures may be obtained if the result will impact treatment (eg, choice of antibiotics) or when the patient (eg, immunosuppression) is at high risk of harboring resistant or unusual organisms (eg, methicillin-resistant *Staphylococcus aureus* [MRSA]). (See '[Wound culture](#)' above.)

- **Surgical approaches by anatomy**

- A perianal abscess should be drained through a skin incision. The procedure can be performed in an outpatient setting under local anesthesia. (See '[Perianal abscess](#)' above.)
- An ischiorectal abscess or a supralelevator abscess originating from an upward-tracking ischiorectal abscess should be drained through a buttock skin incision as close to the sphincter complex as possible. (See '[Ischiorectal](#)' above and '[Supralelevator](#)' above.)
- An intersphincteric abscess or a supralelevator abscess originating from an upward-tracking intersphincteric abscess or a downward-tracking pelvic abscess should be drained internally (transanally) through an incision in the rectal wall to avoid formation of an extrasphincteric fistula. (See '[Intersphincteric](#)' above and '[Supralelevator](#)' above.)
- Horseshoe abscesses most commonly originate from the deep posterior anal space and progress into unilateral or bilateral ischiorectal spaces. The posterior anal space is drained by making a radial incision between the anus and the coccyx and dividing the anococcygeal ligament at the posterior midline. Counter incisions are made laterally to drain any extension of the infection into the ischiorectal space. (See '[Horseshoe](#)' above.)

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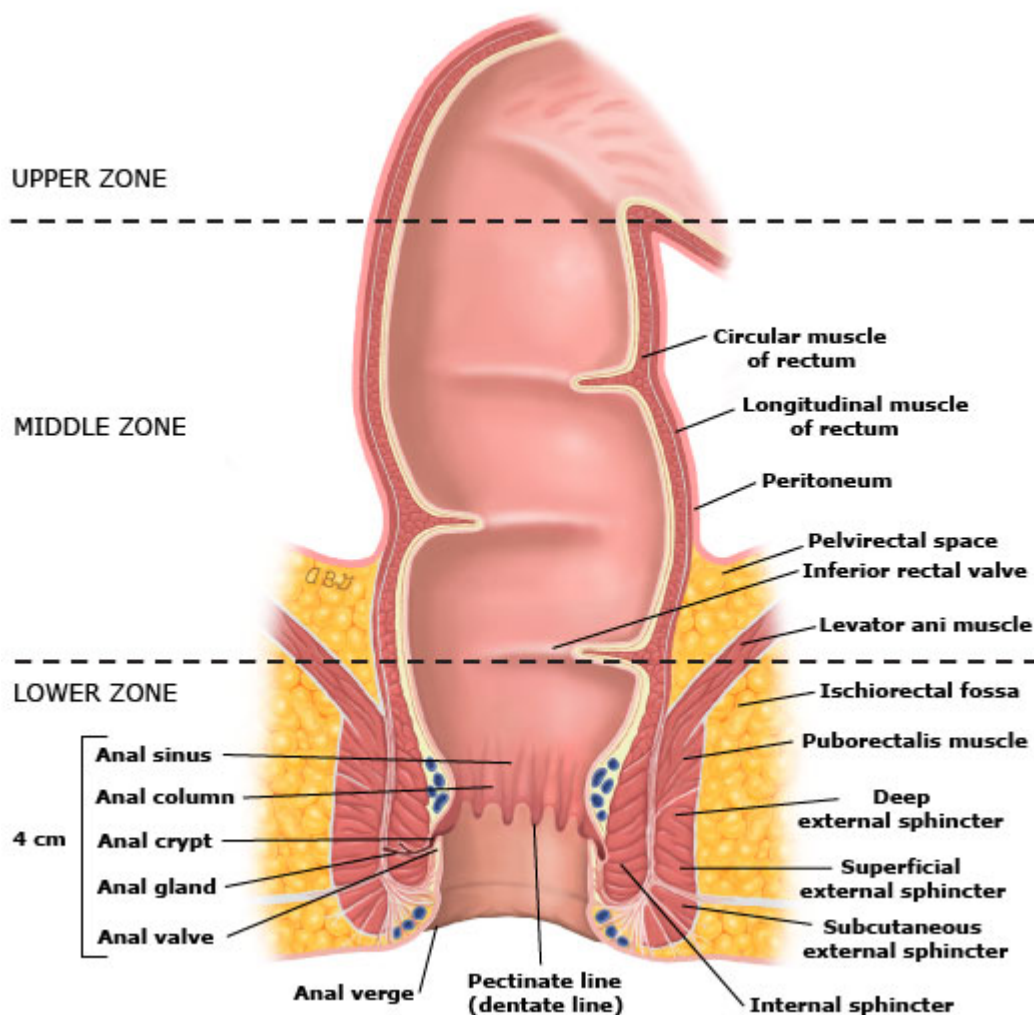
## REFERENCES

1. Abcarian H. Anorectal infection: abscess-fistula. Clin Colon Rectal Surg 2011; 24:14.
2. Gaertner WB, Burgess PL, Davids JS, et al. The American Society of Colon and Rectal Surgeons Clinical Practice Guidelines for the Management of Anorectal Abscess, Fistula-in-Ano, and Rectovaginal Fistula. Dis Colon Rectum 2022; 65:964.

3. Piazza DJ, Radhakrishnan J. Perianal abscess and fistula-in-ano in children. *Dis Colon Rectum* 1990; 33:1014.
4. Niyogi A, Agarwal T, Broadhurst J, Abel RM. Management of perianal abscess and fistula-in-ano in children. *Eur J Pediatr Surg* 2010; 20:35.
5. Nelson RL, Abcarian H, Davis FG, Persky V. Prevalence of benign anorectal disease in a randomly selected population. *Dis Colon Rectum* 1995; 38:341.
6. Sainio P. Fistula-in-ano in a defined population. Incidence and epidemiological aspects. *Ann Chir Gynaecol* 1984; 73:219.
7. Rizzo JA, Naig AL, Johnson EK. Anorectal abscess and fistula-in-ano: evidence-based management. *Surg Clin North Am* 2010; 90:45.
8. Expert Panel on Gastrointestinal Imaging, Levy AD, Liu PS, et al. ACR Appropriateness Criteria® Anorectal Disease. *J Am Coll Radiol* 2021; 18:S268.
9. Barnett JL, Raper SE. Anorectal diseases. In: Yamada Textbook of Gastroenterology, 2nd ed, Yamada T, Alpers D, Owyang et al (Eds), JB Lippincott, Philadelphia 1995. p.2027.
10. O'Malley GF, Dominici P, Giraldo P, et al. Routine packing of simple cutaneous abscesses is painful and probably unnecessary. *Acad Emerg Med* 2009; 16:470.
11. Newton K, Dumville J, Briggs M, et al. Postoperative Packing of Perianal Abscess Cavities (PPAC2): randomized clinical trial. *Br J Surg* 2022; 109:951.
12. Perera AP, Howell AM, Sodergren MH, et al. A pilot randomised controlled trial evaluating postoperative packing of the perianal abscess. *Langenbecks Arch Surg* 2015; 400:267.
13. Tonkin DM, Murphy E, Brooke-Smith M, et al. Perianal abscess: a pilot study comparing packing with nonpacking of the abscess cavity. *Dis Colon Rectum* 2004; 47:1510.
14. Schouten WR, van Vroonhoven TJ. Treatment of anorectal abscess with or without primary fistulectomy. Results of a prospective randomized trial. *Dis Colon Rectum* 1991; 34:60.
15. Tang CL, Chew SP, Seow-Choen F. Prospective randomized trial of drainage alone vs. drainage and fistulotomy for acute perianal abscesses with proven internal opening. *Dis Colon Rectum* 1996; 39:1415.
16. Ho YH, Tan M, Chui CH, et al. Randomized controlled trial of primary fistulotomy with drainage alone for perianal abscesses. *Dis Colon Rectum* 1997; 40:1435.
17. Oliver I, Lacueva FJ, Pérez Vicente F, et al. Randomized clinical trial comparing simple drainage of anorectal abscess with and without fistula track treatment. *Int J Colorectal Dis* 2003; 18:107.
18. Malik AI, Nelson RL, Tou S. Incision and drainage of perianal abscess with or without

- treatment of anal fistula. Cochrane Database Syst Rev 2010; :CD006827.
19. Sawyer RG, Claridge JA, Nathens AB, et al. Trial of short-course antimicrobial therapy for intraabdominal infection. *N Engl J Med* 2015; 372:1996.
  20. Mocanu V, Dang JT, Ladak F, et al. Antibiotic use in prevention of anal fistulas following incision and drainage of anorectal abscesses: A systematic review and meta-analysis. *Am J Surg* 2019; 217:910.
  21. Sözüner U, Gedik E, Kessaf Aslar A, et al. Does adjuvant antibiotic treatment after drainage of anorectal abscess prevent development of anal fistulas? A randomized, placebo-controlled, double-blind, multicenter study. *Dis Colon Rectum* 2011; 54:923.
  22. Ghahramani L, Minaie MR, Arasteh P, et al. Antibiotic therapy for prevention of fistula in-ano after incision and drainage of simple perianal abscess: A randomized single blind clinical trial. *Surgery* 2017; 162:1017.
  23. Frerich B, Ehrenfeld M, Cornelius CP, et al. [Treatment of keratocysts in deciduous and mixed dentitions]. *Dtsch Zahnärztl Z* 1991; 46:80.
  24. Brown SR, Horton JD, Davis KG. Perirectal abscess infections related to MRSA: a prevalent and underrecognized pathogen. *J Surg Educ* 2009; 66:264.
  25. Millan M, García-Granero E, Esclápez P, et al. Management of intersphincteric abscesses. *Colorectal Dis* 2006; 8:777.
  26. Hanley PH. Conservative surgical correction of horseshoe abscess and fistula. *Dis Colon Rectum* 1965; 8:364.
  27. Inceoglu R, Gencosmanoglu R. Fistulotomy and drainage of deep postanal space abscess in the treatment of posterior horseshoe fistula. *BMC Surg* 2003; 3:10.
  28. Browder LK, Sweet S, Kaiser AM. Modified Hanley procedure for management of complex horseshoe fistulae. *Tech Coloproctol* 2009; 13:301.
  29. Held D, Khubchandani I, Sheets J, et al. Management of anorectal horseshoe abscess and fistula. *Dis Colon Rectum* 1986; 29:793.
  30. Leventoglu S, Balci B, Yildiz A, Montes BB. Treatment of horseshoe fistula with a two-stage modified Hanley procedure: A video vignette. *Colorectal Dis* 2022; 24:1628.
  31. Hanley PH, Ray JE, Pennington EE, Grablowsky OM. Fistula-in-ano: a ten-year follow-up study of horseshoe-abscess fistula-in-ano. *Dis Colon Rectum* 1976; 19:507.
  32. Hämmäläinen KP, Sainio AP. Incidence of fistulas after drainage of acute anorectal abscesses. *Dis Colon Rectum* 1998; 41:1357.

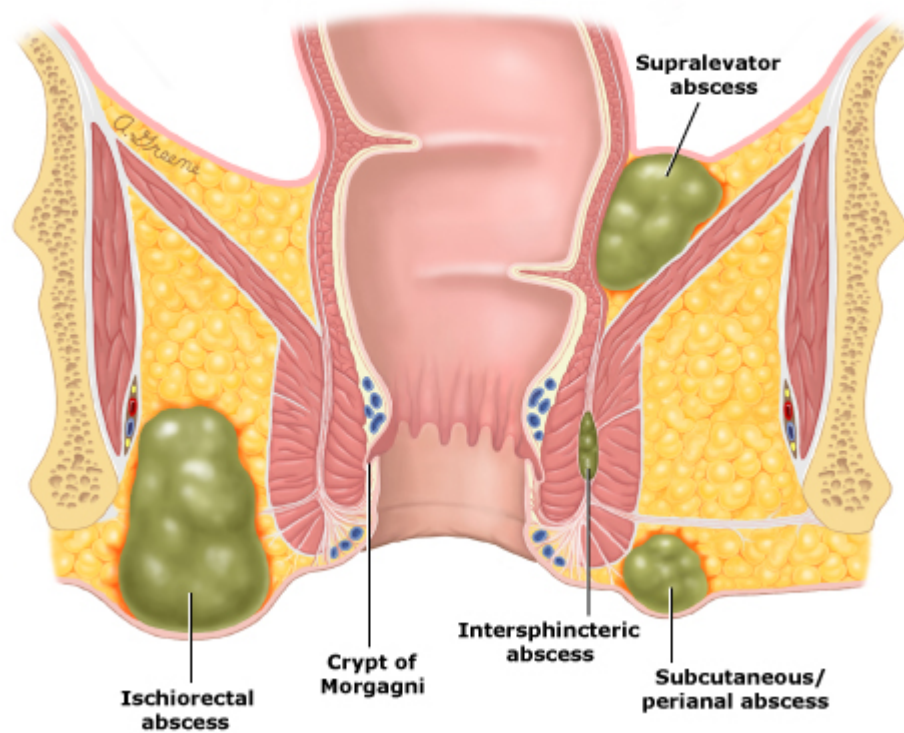
## Anatomy of the anal canal and rectum



This figure illustrates the anatomy of the rectum and anal canal. Note the anal crypts and glands; 90% of anorectal fistulas originate in a cryptoglandular abscess. Also note the relationship of the crypts and glands to the internal and external sphincters.



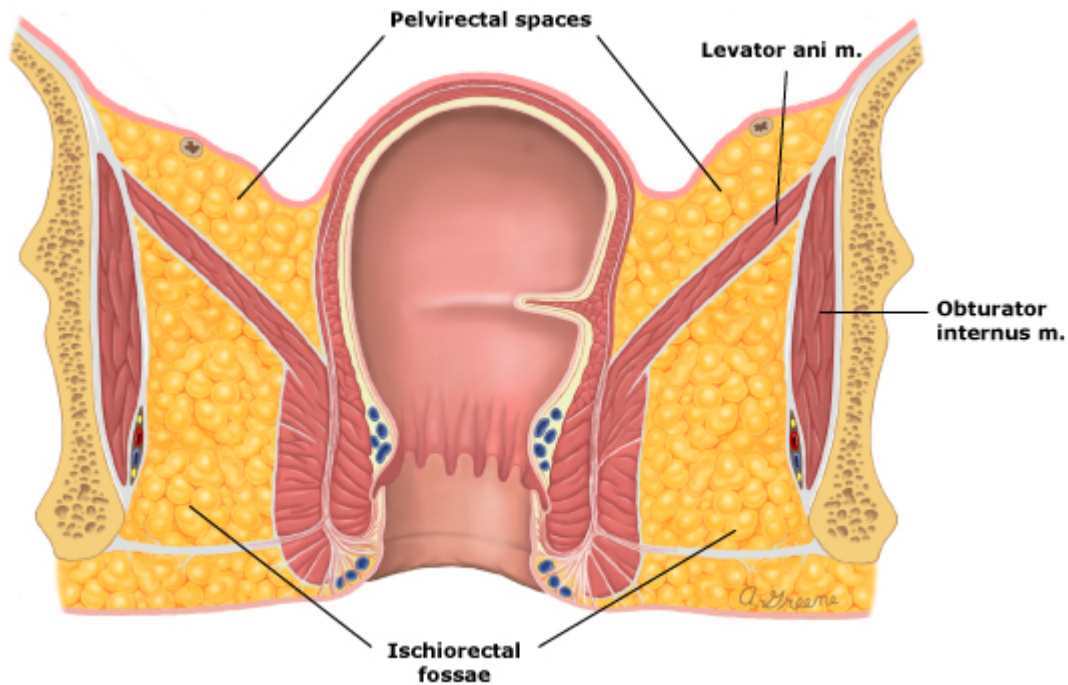
## Location of anorectal abscesses



Graphic 63704 Version 5.0

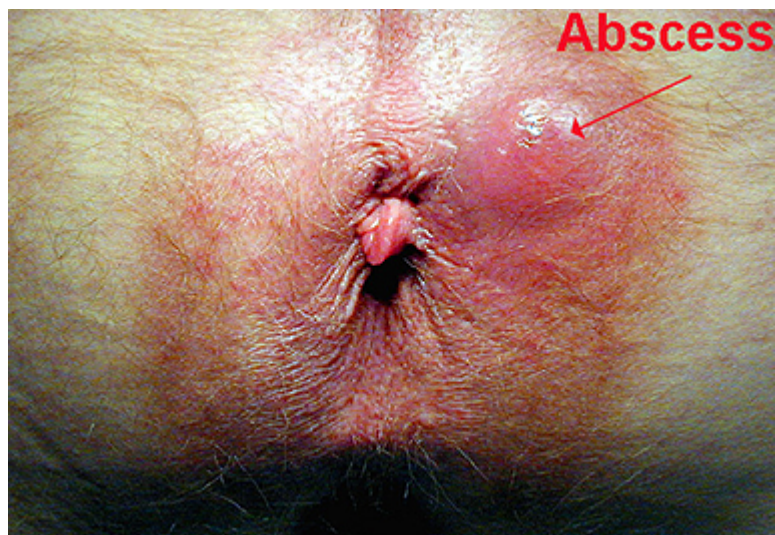


## Anatomy of the ischiorectal fossa



This is an illustration of the anatomy of the anus and rectum that includes the ischiorectal fossa. The left and right ischiorectal fossae communicate posteriorly.

## Perianal abscess



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

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

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Graphic 67524 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.

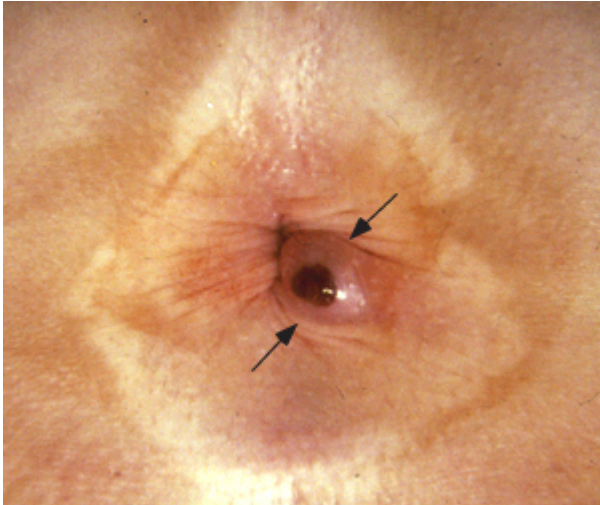
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*Courtesy of Bradley J Champagne, MD.*

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Graphic 56209 Version 5.0

## Thrombosed external hemorrhoids



Photograph shows a swollen external hemorrhoid (arrows).

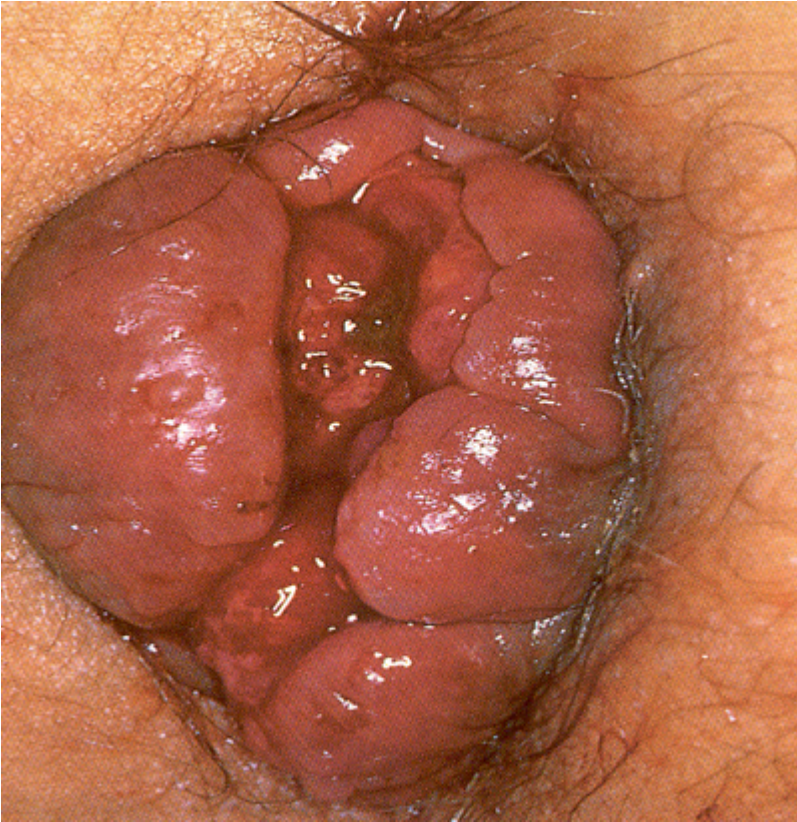
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Graphic 72916 Version 2.0

## Prolapsed internal hemorrhoids



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

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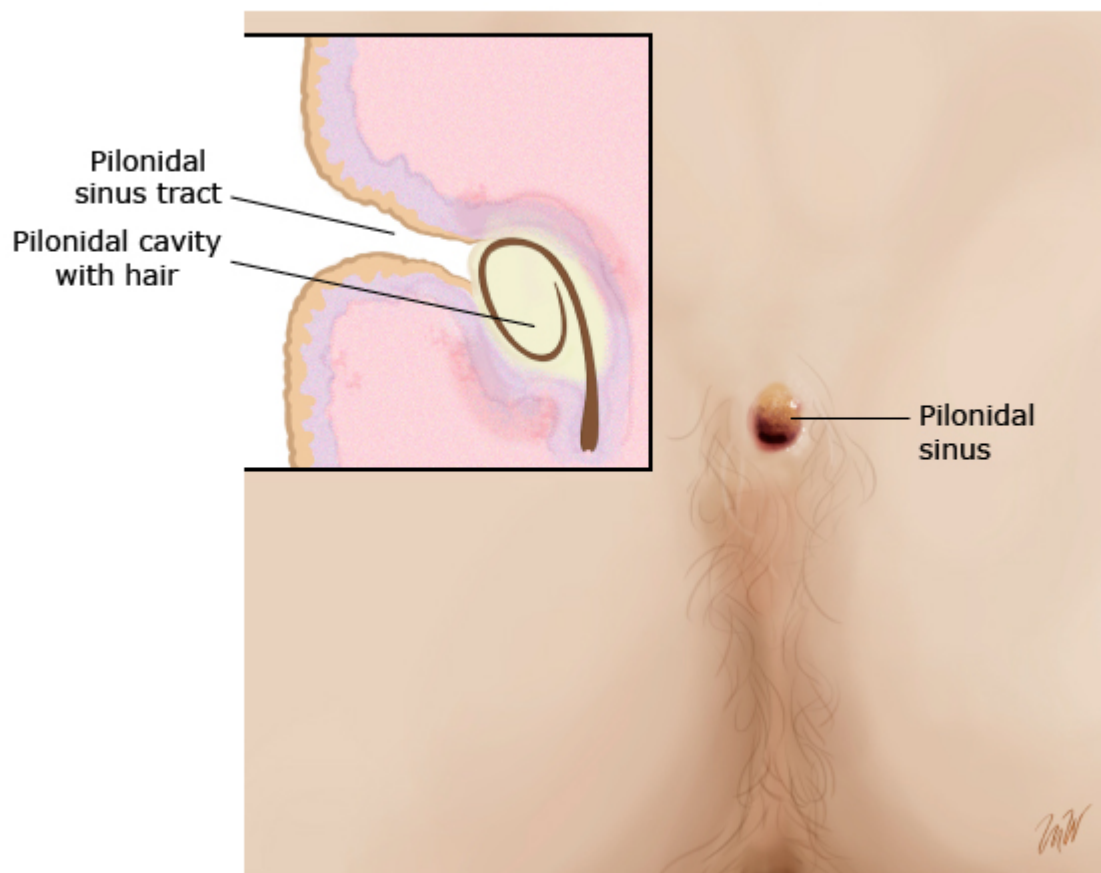
*Courtesy of Scott R Steele, MD, MBA, FACS, FASCRS.*

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Graphic 75759 Version 3.0



## Pilonidal sinus and tract



Graphic 87075 Version 2.0

## Carbuncle



Carbuncle, which is a series of abscesses in the subcutaneous tissue that drain via hair follicles.

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Graphic 70089 Version 3.0



## Bartholin abscess



The patient's left labial area is swollen and erythematous.

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Graphic 79478 Version 3.0

## Severe hidradenitis suppurativa



Severe hidradenitis suppurativa on the vulva and surrounding skin.

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## Contributor Disclosures

**Ronald Bleday, MD** No relevant financial relationship(s) with ineligible companies to disclose. **Martin Weiser, MD** Consultant/Advisory Boards: PrecisCa [Gastrointestinal surgical oncology]. All of the relevant financial relationships listed have been mitigated. **Lawrence S Friedman, MD** Other Financial Interest: Elsevier [Gastroenterology]; McGraw-Hill [Gastroenterology]; Wiley [Gastroenterology]. All of the relevant financial relationships listed have been mitigated. **Wenliang Chen, MD, PhD** No relevant financial relationship(s) with ineligible companies to disclose.

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