



PRACTICE

CLINICAL UPDATES

Perianal abscess

Kapil Sahnan *specialist registrar in colorectal surgery*¹, Samuel O Adegbola *specialist registrar in colorectal surgery*¹, Phillip J Tozer *specialist registrar in colorectal surgery*¹, Josef Watfah *consultant emergency surgeon*², Robin KS Phillips *professor of colorectal surgery, consultant surgeon and clinical director of St Mark's Hospital*¹

¹Imperial College Faculty of Medicine, St Marks Hospital, London SW7 2AZ, UK; ²Northwick Park Hospital, London, UK

The annual incidence of perianal abscess is estimated between 14 000 and 20 000 people in the UK, resulting in about 12 500 operations in the NHS each year.¹ A recent Swedish cohort study estimated the incidence at 16.1 per 100 000.² The true incidence may be higher, since many patients are treated with antibiotics in the community and some abscesses spontaneously regress or discharge.^{2,3} Patients usually present with an erythematous swelling near the anus and may be embarrassed or reluctant to seek treatment. They may present to a non-specialist in the first instance. This article provides information on the causes and different types of perianal abscess and an update on how they are best managed.

What are perianal abscesses?

An abscess is a localised collection of infected fluid. Although there are strict anatomical definitions for the different anorectal abscesses, initial management is the same in most cases and the term “perianal abscess” is generally used as a result (fig 1⇓).

About 90% of idiopathic perianal abscesses occur because of infection of the cryptoglandular glands.^{4,5} Most occur posteriorly and in the intersphincteric space, where the anal glands are located.⁶ Abscesses are classified as superficial or deep in relation to the anal sphincter. If the infection bursts through the external sphincter, it will form an ischiorectal abscess. If it spreads laterally on both sides it can form a collection of sepsis, which forms a ‘horseshoe’ around the sphincters. Superior extension (supralelevator abscess) beyond the puborectalis or the levators is rare and may represent iatrogenic injury (such as inadvertent injury from a fistula probe).

Who gets perianal abscesses?

Perianal abscesses are twice as common in men as in women, with a mean age of 40 years in both sexes.^{7,8} Known risk factors associated with developing an abscess include inflammatory bowel disease, smoking, and HIV infection.⁹ The most common

presentations of abscesses are perianal (up to 60%) and ischiorectal.^{6,10}

Rarer causes include abdominal or pelvic infections (such as from diverticulitis), direct penetration of the anal wall (by chicken or fish bones or by anal digitation), perforation from low rectal or anal cancers, penetrating ulcers,¹¹ tuberculosis,¹² and actinomycosis.¹³ There is no evidence that abscesses are related to personal hygiene or sedentary lifestyles.¹⁴

How do they present?

Superficial abscesses present acutely as tender, localised, erythematous swellings, and some may present with discharge (fig 2⇓). Ischiorectal abscesses may take longer to become visible externally. They may present with vague pelvic or perianal pain and fever, and on examination the buttock may be red and indurated compared with the unaffected side. Digital rectal examination can be painful in the acute setting and can be postponed until examination under anaesthesia if appropriate.

Deep abscesses are often harder to diagnose. Patients may present with sepsis, even though there are no visible signs. Imaging may be required to confirm the diagnosis in these cases. A combination of systemic sepsis and a clinical history of recent pelvic infections, Crohn's disease, or previous anorectal sepsis may point to an underlying deep abscess.

When examining a patient with anal symptoms look for signs suggestive of alternative pathology, including fissures or thrombosed haemorrhoids. Sexually transmitted infection can also present with anal lesions and pain, as can malignancy.

Abscess or fistula?

In about a third of patients, a fistula is found either at the time or subsequent to abscess drainage.¹⁰⁻¹⁶ Most fistulas arise on the background of a pre-existing abscess.¹⁷ They may also occur spontaneously and (less commonly) in the context of

What you need to know

- Perianal abscesses almost always require surgical drainage, even if they have spontaneously discharged
- Patients with diabetes, immunosuppression, evidence of systemic sepsis, or substantial local cellulitis require urgent drainage
- In uncomplicated cases, offer incision and drainage within 24 hours
- Drainage leads to an open cavity that typically takes 3-4 weeks to heal
- Persistent failure to heal may indicate an underlying fistula

inflammatory bowel disease, tuberculosis, trauma, or as a complication of local surgical procedures (such as haemorrhoidectomy or episiotomy).

There is no definitive means of preventing or predicting fistula occurrence or formation after abscess drainage. It was initially thought that detection of enteric organisms in the perianal abscess was associated with an increased risk of subsequent fistula formation.¹⁸ However, a recent case series of 164 patients found no statistically significant association between the presence of gut-derived organisms and the development of a fistula (odds ratio 0.48 (95% confidence interval 0.17 to 1.37)) or recurrence of perianal abscess (odds ratio 1.66 (0.46 to 6.01)).¹⁹

Furthermore, a multicentre, double-blinded randomised trial showed that antibiotic treatment after abscess drainage offered no protection against subsequent fistula formation.²⁰

How are abscesses managed?**In the community**

Offer early referral to a surgical team for discussion of incision and drainage, and avoid prescribing trials of antibiotics in the community. The Royal College of Surgeons' guidelines on emergency surgery recommend that abscesses are ideally drained within 24 hours.²¹ A double-blind randomised controlled trial and a prospective clinical trial found that the addition of antibiotics to drainage does not improve healing rates or reduce recurrence.^{22,23} Because of the risk of deep infection, sepsis, and necrotising soft tissue infection, patients who are immunosuppressed, have diabetes, or have evidence of systemic sepsis or cellulitis require urgent drainage on the day of presentation.

Incision and drainage

Manage those with evidence of sepsis according to the "sepsis six" guidelines,²⁴ and treat the abscess with drainage of the trapped perianal sepsis. If the abscess is clinically evident, imaging is rarely required. Incision and drainage can be performed under general anaesthesia or local anaesthesia depending on the complexity of the case and patient preference.

Local anaesthesia is generally less effective in the presence of inflammation but is preferred in superficial abscesses or in pregnancy. Incision and drainage are performed after infiltration of the area with 1% lidocaine. Ethylene chloride spray can be used to numb the area immediately before infiltration.

If general anaesthesia is chosen, this allows for a detailed examination under anaesthesia, which includes an assessment of the anorectum with a rigid sigmoidoscope and exploration of the abscess cavity. Examination findings that may suggest an underlying cause for the abscess such as Crohn's disease include proctitis, strictures, ulcers, fissures or complex or recurrent abscess drainage, and fistulas. Measurement of faecal calprotectin may be useful, as elevated calprotectin suggests inflammation within the intestine and may aid with diagnosis of Crohn's disease. Thus, if the above examination features are

evident the patient should be offered a faecal calprotectin assay and referral to a gastroenterologist for endoscopic evaluation. Most abscesses are drained externally, but occasionally deep internal abscesses are drained into the anal canal.

In cases of severe pain without objective evidence of an abscess (and in the absence of another cause such as an anal fissure or a thrombosed haemorrhoid) at examination under anaesthesia, consider magnetic resonance imaging. Endoanal ultrasound is used in some centres to assess for perianal fistula, but its role is limited by pain in the acute setting.

A retrospective consecutive series of 500 patients with perianal abscesses found a re-operation rate of 7.6% (within 10 days of the operation) and concluded that the commonest reasons for these were incomplete drainage, premature skin closure, and missed loculations (rare in perianal abscesses).²⁵

In spite of evidence suggesting that treating an associated fistula in the acute setting reduces subsequent recurrence,²⁶ there is insufficient consensus to support surgeons undertaking immediate fistula treatment at incision and drainage of perianal abscesses, particularly if they are less experienced.

Postoperative management

After incision and drainage, the aim of treatment is to allow the cavity to heal by secondary intention. The options for managing the cavity are packing the wound (fig 3⇓) or leaving the cavity open (fig 4⇓), with or without digitation (where the patient rubs the base of the wound) (table 1⇓). A systematic review of two randomised control trials found no evidence to support packing or non-packing, with respect to healing or quality of life.²⁹ A recent multicentre observational study of 141 patients from the UK found that packing was costly and dressing changes were associated with a twofold to threefold increase in pain scores.³⁰ Whichever approach is used, monitor the wound for worsening symptoms, persistent or spreading cellulitis, malaise or pyrexia, and inflammatory markers and discuss with the surgical team in the presence of any of these symptoms.

Follow up

Patients with their first perianal abscess in the absence of underlying disease can be discharged after drainage with advice to present to clinic if their abscess fails to heal, which refers to ongoing discharge, suggesting the presence of a fistula. Routine incision and drainage of uncomplicated anorectal abscesses do not require postoperative antibiotics—a randomised, controlled, multicentre trial showed no significant shortening of the healing time or any reduction in recurrence rate with antibiotics.³¹ However, antibiotics may be of benefit in patients with systemic symptoms, extensive cellulitis, or underlying immunosuppression.³²

Offer patients with recurrent abscesses a review appointment with a surgeon for further investigation and treatment of any underlying fistula. If there is evidence of underlying conditions (such as Crohn's disease and hidradenitis suppurativa) refer to an appropriate specialist for treatment.

Special circumstances: Crohn's disease

Perianal abscesses are a potential complication in Crohn's disease. Chronic immunosuppression, loose stools, and poor wound healing in this population make perianal sepsis treatment challenging. A retrospective study of 7218 patients with a perianal abscess or fistula found the complication rate was 24% in patients with underlying Crohn's disease compared with 4.8% for idiopathic cases, and patients with Crohn's disease had longer operating times and hospital stays.³³

Evaluate and treat patients presenting with Crohn's abscesses promptly to minimise the risk of sepsis related complications, which can be exacerbated in patients receiving immunosuppressive treatment.³⁴ Crohn's abscesses are more often associated with fistulas. Antibiotic therapy is used in cases of systemic sepsis and has been used in combination with the patient's normal immunomodulators.^{35 36}

Patients with underlying Crohn's disease are best managed under the joint care of colorectal surgeons and gastroenterologists. As with idiopathic cases, patients with perianal abscess should have an examination under anaesthesia, and when possible this should be performed by a surgeon experienced in proctology, as the abscesses are often associated with fistulas.

Contributors: KS, SA, and PJT conducted the literature review. KS, SA, and JW wrote the article, and RKSP reviewed the article and made amendments. KS and RKSP are the guarantors.

Competing interests: We have read and understood BMJ policy on declaration of interests and have no relevant interests to declare.

Provenance and peer review: Not commissioned; externally peer reviewed.

Patient consent obtained.

- NHS Digital. Hospital Episode Statistics, admitted patient care—England, 2014-2015. www.hscic.gov.uk/hes.
- Adamo K, Sandblom G, Brännström F, Strigård K. Prevalence and recurrence rate of perianal abscess—a population-based study, Sweden 1997-2009. *Int J Colorectal Dis* 2016;356:669-73. doi:10.1007/s00384-015-2500-7 pmid:26768004.
- Abcarian H. Anorectal infection: abscess-fistula. *Clin Colon Rectal Surg* 2011;356:14-21. doi:10.1055/s-0031-1272819 pmid:22379401.
- Eisenhammer S. The internal anal sphincter and the anorectal abscess. *Surg Gynecol Obstet* 1956;356:501-6. pmid:13360660.
- Parks AG, Gordon PH, Hardcastle JD. A classification of fistula-in-ano. *Br J Surg* 1976;356:1-12. doi:10.1002/bjs.1800630102 pmid:1267867.
- Whiteford MH. Perianal abscess/fistula disease. *Clin Colon Rectal Surg* 2007;356:102-9. doi:10.1055/s-2007-977488 pmid:20011384.
- Sainio P. Fistula-in-ano in a defined population. Incidence and epidemiological aspects. *Ann Chir Gynaecol* 1984;356:219-24. pmid:6508203.
- Read DR, Abcarian H. A prospective survey of 474 patients with anorectal abscess. *Dis Colon Rectum* 1979;356:566-8. doi:10.1007/BF02587008 pmid:527452.
- Wei P-L, Keller JJ, Kuo L-J, Lin H-C. Increased risk of diabetes following perianal abscess: a population-based follow-up study. *Int J Colorectal Dis* 2013;356:235-40. doi:10.1007/s00384-012-1519-2 pmid:22729713.
- Ramanujam PS, Prasad ML, Abcarian H, Tan AB. Perianal abscesses and fistulas. A study of 1023 patients. *Dis Colon Rectum* 1984;356:593-7. doi:10.1007/BF02553848 pmid:6468199.
- Marzo M, Felice C, Pugliese D, et al. Management of perianal fistulas in Crohn's disease: an up-to-date review. *World J Gastroenterol* 2015;356:1394-403. doi:10.3748/wjg.v21.i5.1394 pmid:25663759.
- Gupta PJ. Ano-perianal tuberculosis—solving a clinical dilemma. *Afr Health Sci* 2005;356:345-7. pmid:16615850.

- Fry GA, Martin WJ, Dearing WH, Culp CE. Primary actinomycosis of the rectum with multiple perianal and perineal fistulae. *Mayo Clin Proc* 1965;356:296-9. pmid:14280550.
- Read DR, Abcarian H. A prospective survey of 474 patients with anorectal abscess. *Dis Colon Rectum* 1979;356:566-8. doi:10.1007/BF02587008 pmid:527452.
- Vasilevsky CA, Gordon PH. The incidence of recurrent abscesses or fistula-in-ano following anorectal suppuration. *Dis Colon Rectum* 1984;356:126-30. doi:10.1007/BF02553995 pmid:6697831.
- Henrichsen S, Christiansen J. Incidence of fistula-in-ano complicating anorectal sepsis: a prospective study. *Br J Surg* 1986;356:371-2. doi:10.1002/bjs.1800730515 pmid:3708285.
- Nelson R. Anorectal abscess fistula: what do we know? *Surg Clin North Am* 2002;356:1139-51. v-vi. doi:10.1016/S0039-6109(02)00063-4 pmid:12516844.
- Grace RH, Harper IA, Thompson RG. Anorectal sepsis: microbiology in relation to fistula-in-ano. *Br J Surg* 1982;356:401-3. doi:10.1002/bjs.1800690715 pmid:7104611.
- Xu RW, Tan K-K, Chong C-S. Bacteriological study in perianal abscess is not useful and not cost-effective. *ANZ J Surg* 2016;356:782-4. pmid:27226422.
- Sözener 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;356:923-9. doi:10.1097/DCR.0b013e31821cc1f9 pmid:21730779.
- Royal College of Surgeons. Emergency surgery: standards for unscheduled surgical care. 2011. www.rcseng.ac.uk/library-and-publications/college-publications/docs/emergency-surgery-standards-for-unscheduled-care/.
- Llera JL, Levy RC. Treatment of cutaneous abscess: a double-blind clinical study. *Ann Emerg Med* 1985;356:15-9. doi:10.1016/S0196-0644(85)80727-7 pmid:3880635.
- Macfie J, Harvey J. The treatment of acute superficial abscesses: a prospective clinical trial. *Br J Surg* 1977;356:264-6. doi:10.1002/bjs.1800640410 pmid:322789.
- Dellinger RP, Levy MM, Rhodes A, et al. Surviving Sepsis Campaign Guidelines Committee including the Pediatric Subgroup. Surviving Sepsis Campaign: international guidelines for management of severe sepsis and septic shock: 2012. *Crit Care Med* 2013;356:580-637. doi:10.1097/CCM.0b013e31827e83af pmid:23353941.
- Onaca N, Hirshberg A, Adar R. Early reoperation for perirectal abscess: a preventable complication. *Dis Colon Rectum* 2001;356:1469-73. doi:10.1007/BF02234599 pmid:11598476.
- Malik AI, Nelson RL, Tou S. Incision and drainage of perianal abscess with or without treatment of anal fistula. *Cochrane Database Syst Rev* 2010;(7):CD006827. pmid:20614450.
- 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;356:1510-4. doi:10.1007/s10350-004-0620-1 pmid:15486749.
- Perera AP, Howell AM, Sodergren MH, et al. A pilot randomised controlled trial evaluating postoperative packing of the perianal abscess. *Langenbecks Arch Surg* 2015;356:267-71. doi:10.1007/s00423-014-1231-5 pmid:25053508.
- Smith SR, Newton K, Smith JA, et al. Internal dressings for healing perianal abscess cavities. *Cochrane Database Syst Rev* 2016;(8):CD011193. pmid:27562822.
- Pearce L, Newton K, Smith SR, et al. North West Research Collaborative. Multicentre observational study of outcomes after drainage of acute perianal abscess. *Br J Surg* 2016;356:1063-8. doi:10.1002/bjs.10154 pmid:27061287.
- Sözener 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;356:923-9. doi:10.1097/DCR.0b013e31821cc1f9 pmid:21730779.
- Cohen JS, Paz IB, O'Donnell MR, Ellenhorn JDI. Treatment of perianal infection following bone marrow transplantation. *Dis Colon Rectum* 1996;356:981-5. doi:10.1007/BF02054685 pmid:8797645.
- Casey MW, Nelson D, Johnson EK, et al. An NSQIP evaluation of practice patterns and outcomes following surgery for anorectal abscess and fistula in patients with and without Crohn's disease. *Gastroenterol Rep (Oxf)* 2013;356:58-63. doi:10.1093/gastro/got001 pmid:24759668.
- Hyder SA, Travis SPL, Jewell DP, McC Mortensen NJ, George BD. Fistulating anal Crohn's disease: results of combined surgical and infliximab treatment. *Dis Colon Rectum* 2006;356:1837-41. doi:10.1007/s10350-006-0656-5 pmid:17041753.
- Thia KT, Mahadevan U, Feagan BG, et al. Ciprofloxacin or metronidazole for the treatment of perianal fistulas in patients with Crohn's disease: a randomized, double-blind, placebo-controlled pilot study. *Inflamm Bowel Dis* 2009;356:17-24. doi:10.1002/ibd.20608 pmid:18668682.
- West RL, van der Woude CJ, Hansen BE, et al. Clinical and endosonographic effect of ciprofloxacin on the treatment of perianal fistulae in Crohn's disease with infliximab: a double-blind placebo-controlled study. *Aliment Pharmacol Ther* 2004;356:1329-36. doi:10.1111/j.1365-2036.2004.02247.x pmid:15606395.

Published by the BMJ Publishing Group Limited. For permission to use (where not already granted under a licence) please go to <http://group.bmj.com/group/rights-licensing/permissions>

Sources and selection criteria

We searched PubMed from 1970 to 2015 and Embase and the Cochrane Library from inception using the terms "abscess" and "perianal sepsis" (using the Boolean operator AND) and "fistula" (using the Boolean operator OR). The reference lists were also used to identify studies of interest. Two authors (KS, SA) independently identified publications for inclusion, and differences were resolved by discussion. We gave priority to research published in the past five years and highly regarded older publications.

Questions for future research

- What is the true incidence of perianal abscesses and how many abscesses recur?
- What are the risk factors for fistula formation after an abscess, and how can we predict risk?
- Should we look for and treat fistulous tracts at the time of incision and drainage of abscesses?
- Does packing after drainage improve healing rates and quality of life, and is it cost effective?
- How many abscesses are a primary presentation of Crohn's disease?

Additional educational resources

Resources for clinicians

- American Society of Colon and Rectal Surgeons. Abscess and fistula information. <https://www.fascrs.org/patients/disease-condition/abscess-and-fistula-expanded-information>
- Medscape. Anorectal abscess. <http://emedicine.medscape.com/article/191975-overview>

Resources for patients

- Patient. Anorectal abscess. <http://patient.info/doctor/anorectal-abscess>

How patients were involved in this article

A patient commented on both the planning of the article and the subsequent drafts, and the article was edited in line with these comments. Of particular concern was wound packing and the evidence for the benefits (or lack thereof) of packing the wound and dressing changes in the community.

Education into practice

How quickly can you access specialist referral for patients with a perianal abscess?

Table

Table 1 | Pros and cons of the different approaches to postoperative management after drainage of a perianal abscess

Approach	Pros	Cons	Evidence
Packing (fig 3 [ⓧ])	Prevents premature closure	Costs, inconvenience, pain	Observational study
Digitation	No cost	Painful initially, patient preference	Abstract only
Open wound (fig 4 [ⓧ])	No cost	Potential risk of premature closure	Pilot RCTs ^{27 28}

RCT = randomised controlled trial.

Figures

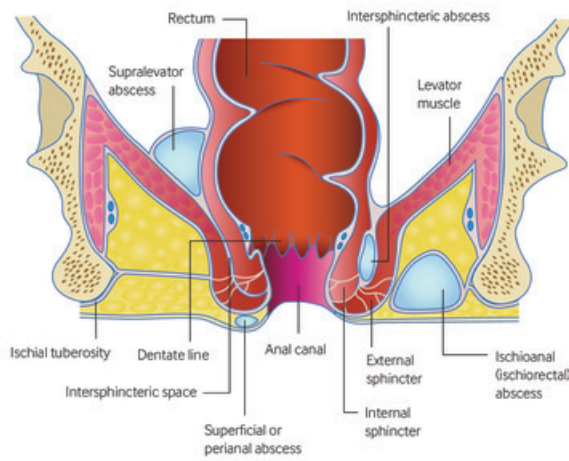


Fig 1 Possible sites of anorectal (“perianal”) abscesses



Fig 2 Typical clinical appearance of a superficial perianal abscess



Fig 3 Packing of wound after incision and drainage of a perianal abscess



Fig 4 Open wound after incision and drainage of a perianal abscess