Anorectal sepsis

F Hughes, S Mehta

Anorectal sepsis is a common cause of hospital admission, presenting with abscess or fistula formation. This article discusses the aetiology of acute anorectal sepsis and its management.

Anorectal sepsis is a common condition accounting for a large proportion of acute surgical admissions. It occurs most frequently in the third and fourth decades and is commoner in males, in a ratio of 3:1. Many acute anorectal abscesses are simply treated, but a significant number of patients develop chronic sepsis and fistula formation. Rarely complications, such as necrotizing fasciitis, arise from an anorectal abscess.

AETIOLOGY

Primary anorectal abscess

Skin-related abscesses: These arise from an infection of apocrine glands or hair follicles surrounding the anal margin (Chrabot et al, 1983). Culture generates skin flora. They are not associated with fistula formation (Eykyn and Grace, 1986). Skin organisms are identified in approximately 15–25% of anorectal abscesses (Buchan and Grace, 1973; Page and Freeman, 1977).

Anal gland infections: Eisenhammer (1956) and Parks (1961) proposed the cryptoglandular theory of anorectal sepsis, and anal gland infection is now accepted as the commonest source of anorectal sepsis. The anal glands are situated between the internal and external sphincter at the level of the dentate line and communicate with the mucosa and submucosa via ducts arising from the anal valves. Ducts also ramify throughout the intersphincteric space. Infection of the anal gland results in chronic abscess formation in the intersphincteric space. This infection may spread in a variety of directions (*Figure 1*):

- Downwards in the intersphincteric space resulting in an perianal abscess (most common)
- Across the external sphincter resulting in an ischiorectal abscess which occasionally extends upwards to form a supralevator abscess
- Upwards in the intersphincteric space resulting in a high intersphincteric abscess or supralevator abscess
- Towards the anal canal resulting in a submucous abscess (rare).

Circumferential spread (*Figure 2*) in the ischiorectal, or more rarely perianal or supralevator, planes results in a horseshoe abscess (Held et al, 1986).

Secondary anorectal abscess

Approximately 10% of anorectal abscesses are associated with underlying disease (Winslet et al, 1988).

Figure 1. Direction of spread from infected anal gland: 1) perianal abscess, 2) ischiorectal abscess, 3) supralevator abscess, 4) submucous abscess.

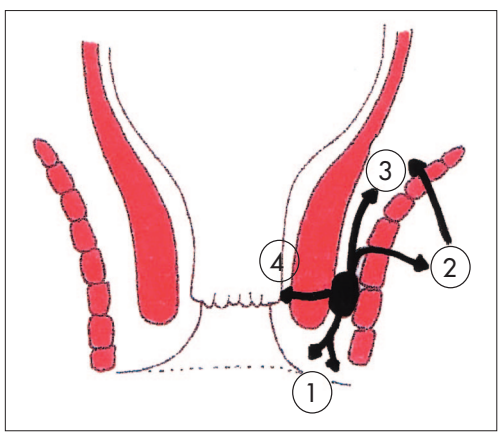
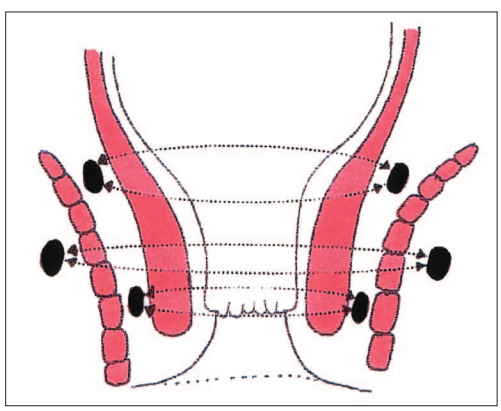


Figure 2. The three planes of circumferential spread of sepsis potentially leading to horseshoe abscess formation.



Miss F Hughes is Consultant Surgeon and **Dr S Mehta** is Senior House Officer in the Department of Surgery, Southend General Hospital, Westcliff on Sea, Essex SS0 0RY

Correspondence to: Miss F Hughes

Immunosuppression in patients with diabetes, leukaemias, acquired immunodeficiency syndrome or steroid treatment may result in anorectal sepsis.

Tuberculosis, actinomycosis, amoebiasis, schistosomiasis and fungal infections may cause acute or chronic perianal sepsis.

Perianal sepsis may complicate thrombosed haemorrhoids, perianal haematoma, anal fissure, Crohn's disease or malignancy. Banding or excision of haemorrhoids, or sclerotherapy may result in anorectal sepsis.

Supralevator abscess may result from pelvic infection, such as salpingitis, diverticular disease, perforated colonic carcinoma, appendicitis, trauma and urological disorders.

CLINICAL PRESENTATION

The presenting features of acute anorectal sepsis depend on the position of the abscess. Nearly all are associated with perianal or rectal pain. History and clinical examination should exclude other conditions presenting with perineal pain, such as anal fissure, thrombosed haemorrhoids, perianal haematoma, Bartolin's abscess or exacerbation of hidradenitis suppurativa.

Perianal abscess

Perianal abscess presents with a tense, tender erythematous swelling of short duration, with no constitutional upset. Digital examination may not be possible because of tenderness, but if performed, it shows no evidence of pararectal collection. Most abscesses are located posteriorly (Thomson and Parks, 1979). Spontaneous discharge of pus may occur, but this is associated with a high incidence of recurrent abscess and fistula formation (Chrabot et al, 1983).

Ischiorectal abscess

Ischiorectal abscess has a longer history of throbbing pain, often with constitutional upset and fever. On examination, there is diffuse swelling of the area, usually posteriorly and sometimes with horseshoe extension. Digital examination will reveal intrarectal induration.

Intersphincteric abscess

Intersphincteric abscesses present with severe rectal pain and often fever, but with little external evidence of anorectal sepsis. Digital rectal examination is extremely painful and may reveal a tender swelling at the upper end of the anal canal with circumferential extension. Spontaneous discharge of pus into the anal canal may occur.

Supralevator abscess

Supralevator abscess may represent a true pelvic abscess or an upward extension of an intersphincteric or ischiorectal abscess. Presentation is with pelvic pain, and a mass may be palpable on abdominal examination or per vagina. Digital rectal examination may reveal a tender swelling in the pelvis. There may be other evidence of pelvic pathology or extension from an ischiorectal collection.

FISTULA FORMATION AFTER DRAINAGE OF ANORECTAL SEPSIS

Reported incidence of fistula formation after drainage of an anorectal abscess ranges from 5–26% (Read and Abacarian, 1979; Vasilevsky and Gordon, 1984; Winslet et al, 1988), often more frequently in perianal than ischiorectal abscesses (Ramanujan et al, 1984; Winslet et al, 1988). Chrabot et al (1983) found a fistula in all patients with an intersphincteric abscess, and this has been confirmed by others (Lunniss and Phillips, 1994). Horseshoe abscess is particularly associated with recurrent fistula and sepsis, although this may be the result of inadequate initial drainage.

The management of a fistula in ano in the acute situation is controversial and depends on the experience of the surgeon. Immediate fistula treatment may impair continence, whereas failure to lay open the tract risks leaving residual sepsis and potential for recurrence. Some surgeons prefer to avoid intervention, as sphincter assessment under anaesthesia in the presence of pus and oedema may be inaccurate, but the experienced colorectal surgeon is likely to opt for definitive management where possible.

Schouten and van Vroonhoven (1991) randomized patients to drainage alone or primary fistulotomy and found that recurrent sepsis occurred in 41% of patients following drainage and in 3% following fistulotomy. However, a continence problems occurred in 39% after fistulotomy compared with 21% after drainage alone.

TREATMENT

Most patients require general anaesthesia for adequate examination and abscess drainage.

Local anaesthetic drainage is popular with some surgeons, but this does not allow speculum examination of the anal canal to seek a fistula. A full blood count to exclude blood dyscrasias and random glucose testing to exclude diabetes mellitus are necessary. The patient is placed in the lithotomy position, and prophylactic broad spectrum antibiotics are administered, including anaerobic cover.

Ischiorectal and perianal abscess

The perineum is inspected to identify the position of the abscess in order to differentiate a perianal from an ischiorectal abscess and to look for any evidence of horseshoe extension. The presence of scars from previous surgery, chronic conditions such as hidradenitis suppurativa, and any obvious fistula or excessive anal tags which may suggest Crohn's disease are noted. After digital rectal examination to relate the site of pus to the sphincters, the rectal mucosa is examined sigmoidoscopically.

An Eisenhammer retractor is inserted to inspect the area of the dentate line for an internal opening. Concomitant pressure on the abscess may reveal a bead of pus, identifying the fistula.

A radial incision is made over the abscess, pus is evacuated and sent for culture. Any loculi within the cavity are gently broken down with a finger. Introduction of instruments, including curettes and fistula probes, into the cavity is best avoided, as this may create a false passage. The edges of the incision are excised to allow adequate drainage of the cavity and are sent for histology. Further management depends on whether an internal opening is identified.

No identifiable internal opening: If no internal opening is identified, the wound is lightly packed with saline-soaked gauze to be changed in 24 hours. The cavity will close in 2–3 weeks depending on its size. Failure of the cavity to heal suggests a fistula. Some surgeons recommend examination under anaesthesia by an experienced surgeon 7–10 days after drainage to exclude a fistula. Others will adopt an expectant policy and perform examination under anaesthesia only if the cavity fails to heal. Grace et al (1982) suggested examination under anaesthesia should be carried out if faecal organisms were cultured.

Internal opening identified: Pus emerging at the level of the dentate line confirms a fistula. A fistula probe may be gently inserted from the anal canal outwards to identify the direction of the tract. Insertion of the fistula probe via the abscess cavity should be avoided as this may result in the creation of a false tract. The

Figure 4. a. Ischiorectal abscess with low transphincteric fistula. The arrow shows the direction of primary fistulotomy, traversing the external sphincter well below the level of the dentate line. b. Ischiorectal abscess in association with high transphincteric fistula. Treatment with partial internal sphincterectomy and a loose seton to allow drainage is shown on the left.

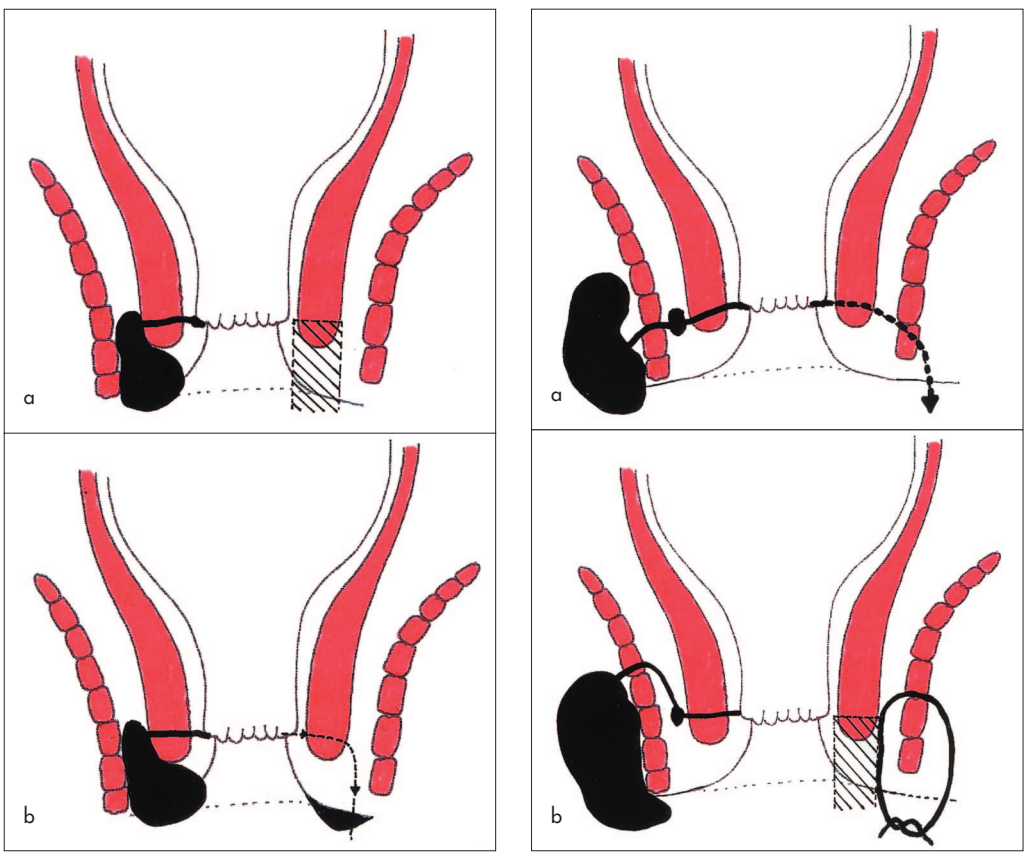


Figure 3. a. Perianal abscess associated with internal opening into the anal canal at the dentate line (right). Treatment with partial internal sphincterectomy (left). b. Perianal abscess associated with internal opening at the level of the dentate line (right). The direction of passage of fistula probe is shown on the left.

inexperienced surgeon should avoid further intervention and arrange examination under anaesthesia by an experienced surgeon in 7–10 days.

In the case of a perianal abscess, definitive treatment involves partial internal sphincterectomy up to the dentate line at the position of the internal opening (*Figure 3a*) or primary fistulotomy (*Figure 3b*).

If the fistula tract in an ischiorectal abscess is clearly low across the external sphincter, primary fistulotomy may be performed (*Figure 4a*). If doubt exists, internal sphincterectomy is performed, with a loose seton passed across the tract in the external sphincter (*Figure 4b*).

Intersphincteric abscess

Pus collection in the intersphincteric space will always result in fistula formation (Lunniss and Phillips, 1994) and requires formal exploration of the intersphincteric space to ensure eradication. Partial internal sphincterectomy ensures adequate drainage.

Supralevator abscess

These arise from an extension of an intersphincteric or ischiorectal abscess, or from pelvic pathology. Where pelvic pathology is involved this is treated on its own merits via an abdominal approach. Extension from an intersphincteric collection should be drained into the rectum and from an ischiorectal collection into the perineum to avoid the creation of an extrasphincteric fistula. These are often difficult to differentiate and require an experienced clinician.

RECURRENT ABSCESS FORMATION

Recurrent anorectal sepsis is common, with a history of previous drainage in up to 41% of cases (Grace et al, 1982) and frequently several previous surgical procedures (Chrabot et al, 1983). It has been suggested that failure to lay open the fistula at the time of drainage of the acute abscess is associated with a higher incidence of recurrent sepsis than where acute drainage was accompanied by fistulotomy (Ramanujam et al, 1984). In some patients, spontaneous rupture of the abscess may result in the resolution of symptoms, but this is followed by recurrent sepsis in the same site in over 50% of cases.

CONCLUSION

Anorectal sepsis is a common condition, the treatment of which is often inappropriately left to the most junior members of the surgical team. Inadequate drainage results in recurrent sepsis, while overzealous surgery may impair continence, so it is important that safe and adequate drainage of pus is achieved in the first instance and that the possibility of a fistula is explored by an experienced surgeon. HM

Conflict of interest: none.

Buchan R, Grace RH (1973) Anorectal suppuration: the results of treatment and the factors influencing recurrence rate. *Br J Surg* **60:** 537–40
Chrabot CM, Prasad ML, Abacarian H (1983) Recurrent anorectal abscesses. *Dis Colon Rect* **26:** 105–8
Eisenhammer S (1956) The internal anal sphincter and anorectal abscess. *Surg Gynaecol Obstet* **103:** 501–6
Eykyn SN, Grace RH (1986) The relevance of microbiology in the management of anorectal sepsis. *Ann R Coll Surg Engl* **68:** 237–9
Grace RH, Harper IA, Thompson RG (1982) Anorectal sepsis: microbiology in relation to fistula formation. *Br J Surg* **69:** 401–3
Held D, Khubchandani J, Sheets J, Stasik J, Rosen L, Wether R (1986) Management of anorectal horseshoe abscess and fistula. *Dis Colon Rectum* **29:** 793–7
Lunniss PJ, Phillips RKS (1994) Surgical assessment of acute anorectal sepsis is a better predictor of fistula than microbiological analysis. *Br J Surg* **81:** 368–9
Page RE, Freeman R (1977) Superficial sepsis: the antibiotic of choice for blind treatment. *Br J Surg* **64:** 281–4
Parks AG (1961) Pathogenesis and treatment of fistula in ano. *Br Med J* **i:** 463–9
Ramanujam PS, Prasad ML, Abacarian MH, Tan AB (1984) Perianal abscesses and fistulas. A study of 1023 patients. *Dis Colon Rectum* **27:** 593–7
Read DR, Abacarian H (1979) A prospective survey of 474 patients with anorectal abscess. *Dis Colon Rectum* **22:** 566–8
Schouten WR, van Vroonhoven TJMV (1991) Treatment of anorectal abscess with or without primary fistulectomy. *Dis Colon Rectum* **34:** 60–3
Thomson JPS, Parks AG (1979) Anal abscess and fistulas. *Br J Hosp Med* **21:** 413–25
Vasilevsky C-A, Gordon PH (1984) The incidence of recurrent abscess or fistula in ano following anorectal suppuration. *Dis Colon Rectum* **27:** 126–30
Winslet MC, Allan A, Ambrose NS (1988) Anorectal sepsis as a presentation of occult rectal and systemic disease. *Dis Colon Rectum* **31:** 597–600

KEY POINTS

- Anorectal sepsis is common.
- Primary anorectal abscess may be cutaneous or cryptoglandular in origin.
- Ten per cent of anorectal abscesses are associated with underlying disease.
- Treatment involves drainage of pus and consideration of the presence of a fistula.
- The presence of a fistula is suggested by the presence of faecal organisms in pus, which may be used to direct further management.
- Fistula surgery should be undertaken by an experienced surgeon with detailed knowledge of the anatomy of the anorectum.
- Recurrent anorectal sepsis is common.
- Primary fistulotomy is associated with a lower recurrence of the abscess than incision and drainage but with a higher rate of incontinence.