

Benign anorectal conditions: perianal abscess, fistula in ano, haemorrhoids, fissures and pilonidal sinus

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Abstract

Benign perianal conditions commonly present on the acute general surgical take and in the outpatient setting. Accurate diagnosis and appropriate management is not only important in prevention of patient morbidity but also important in differentiation of these conditions from cancers. This article summarizes the presentation and current management of perianal abscess, fistula in ano, haemorrhoids, fissure and pilonidal sinus.

Keywords Anorectal disorders; fissure; fistula; haemorrhoids; pilonidal sinus

Perianal abscess

Overview

An abscess is a localized collection of pus. Perianal abscesses present in multiple ways depending on their anatomical location and are categorized according to the site where they occur (Figure 1). The most common sites of anorectal abscesses are perianal, followed by ischiorectal, intersphincteric and supralevator. Approximately 90% of idiopathic perianal abscesses occur due to infection of the cryptoglandular glands. The anal crypt glands are located circumferentially at the level of the dentate line and when these become blocked an abscess occurs, particularly at the intersphincteric space.

Epidemiology

Over 12,000 perianal abscesses were drained in the NHS between 2021 and 2022,¹ with presentations in men twice as common as women. Other associated risk factors of perianal abscess include inflammatory bowel disease, smoking, diabetes and HIV infection.² Rarer causes include discharge of pelvic or intra-abdominal collection, low rectal or anal cancer, ulcer and tuberculosis.

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Presentation

A typical presentation of perianal abscess is pain and lump in the perianal region around the anal verge. The patient may present with associated fever and discharge, but not always. The history should include previous abscesses, their management and any underlying risk factors with consideration for the rarer causes. Examination may reveal fluctuation, induration and erythema of the abscess indicating its size and location. Often digital rectal exam (DRE) may not be tolerated and can be reserved for examination under anaesthetic (EUA). If no abscess is visible and DRE is tolerated this may identify a supralevator collection. On the other hand, if no abscess is visible and DRE is not possible due to pain and sphincter spasm, an intersphincteric abscess or anal fissure should be also suspected. If an abscess is clearly present, no further investigations are required before treatment.

Management and consent

The management of an abscess is surgical drainage. Guidelines from The Royal College of Surgeons on emergency surgery recommend drainage of abscesses within 24 hours of presentation.³ Urgent drainage is particularly important for patients with diabetes, systemic sepsis or those who are immunosuppressed due to the risk of deep and necrotizing soft tissue infections.

During the consent process patients must be warned that healing will take several weeks and regular dressing changes are required. The cavity will continue to discharge until all the infection is drained. Patients should be informed of sphincter damage, recurrence and fistula formation.

EUA is performed with the patient in modified Lloyd-Davies position. A rigid sigmoidoscopy is performed to look for undiagnosed inflammatory bowel disease. An Eisenhammer proctoscope is used to display the anorectal canal. Digital pressure over the abscess may drain pus via an internal opening. If an internal opening is visible this indicates a seton may be appropriate following incision and drainage; however, care must be taken not to create a false tract with a fistula probe. An incision is placed over the most fluctuant part of the abscess taking care not to incise through the sphincter complex. Deloculation, curettage and irrigation are the key steps for abscess management. Although packing is traditionally used to prevent the skin edges healing prematurely and trapping pus, a trial has recently demonstrated that perianal abscesses managed without packing resulted in less pain, with no increase in fistulae-in-ano or abscess recurrence.⁴ Microbiology samples should be taken for recurrent disease, immunocompromised patients or any other atypical presentation. If the tissue is found to be abnormal then curettings or tissue from the abscess cavity should also be sent for histological analysis.

Follow-up

Postoperative antibiotics are not required unless patients have systemic sepsis. A randomized controlled multicentre trial showed no significant decrease in healing time or recurrence rate with routine antibiotics.⁵

Primary presentations of uncomplicated perianal abscesses that have been adequately drained do not usually require follow-up. Patients can be discharged with the advice of returning if the cavity fails to heal and there is ongoing discharge, which suggests a fistula is present. Up to 37% of patients develop a fistula-in-ano following perianal abscess.

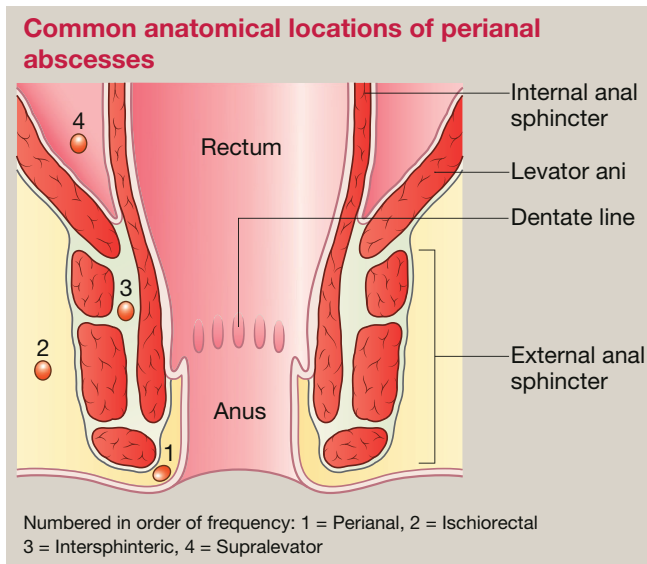


Figure 1

Fistula-in-ano

Overview

A fistula is an abnormal connection between two epithelialized surfaces. Fistula-in-ano is a granulation lined communicative tract between the anorectal canal and perianal skin. Fistula formation occurs through chronic infection of anal crypt glands, with subsequent abscess formation and spontaneous discharge of pus via the skin leaving a fistula tract.

Epidemiology

European studies report the prevalence of anal fistula as 1–2 per 10,000.⁶ The incidence in England is 18.4 per 100,000 per year.

Although most fistulae are idiopathic, several conditions are commonly associated with fistula formation:

- Crohn's disease
- tuberculosis
- pilonidal disease
- hidradenitis suppurativa
- HIV infection
- trauma
- foreign bodies
- previous surgery including pouch surgery
- radiotherapy
- skin bridging of anal fissure (fissure fistula)
- lymphogranuloma venereum.

Classification

Fistulae are classified based on their anatomy, which influences management options. The most widely accepted and useful classification system is that described by Parks.⁷ The Parks' classification system describes the route which the fistula tract takes in relation to the internal and external sphincter muscles of the anal canal. The tract route can be inter-sphincteric, trans-sphincteric, supra-sphincteric or extra-sphincteric (in order of frequency) (Figure 2).

Type 1: Inter-sphincteric (45%) – the fistula tract originates at the internal opening, crosses the internal anal sphincter (IAS)

and continues through the intersphincteric plane distally towards the perianal skin.

Type 2: Trans-sphincteric (30%) – the fistula tract originates at the internal opening, crosses the IAS and external anal sphincter (EAS) before exiting the skin at the buttock.

Type 3: Supra-sphincteric (20%) – the fistula tract originates at the internal opening, crosses the IAS and extends proximally at the intersphincteric plane and traverses above the EAS to cross the ischiorectal fat before discharging onto skin.

Type 4: Extra-sphincteric (5%) – this fistula travels above both the IAS and EAS and can involve the levators.

Goodsall's rule states that anterior fistula will follow a straight tract whereas a posterior fistula will curve round and open in the 6 o'clock position (Figure 3). Some fistula types may not follow this rule, including Crohn's fistulae and fistulae more than 3 cm from anal verge.

Presentation

Recurrent perianal abscess, poor healing and persistent discharge following incision and drainage of perianal abscess should raise suspicion for fistula-in-ano.

Inspection may reveal an external opening, and with palpation may reveal a cord-like tract or may express pus. A palpable nodular internal opening may be felt on PR examination.

Further delineation of a tract can be achieved under anaesthesia by gentle probing with a Lockhart-Mummery probe or injection of methylene blue using a small cannula at the external opening to identify the location of the internal opening. If there is any doubt regarding the anatomy, rather than forming a false tract, MRI or anal ultrasound could be employed to delineate anatomy.

Management and consent

The key steps to treating anal fistulae are: treat sepsis through adequate drainage, protect the sphincters and allow healing.

Management options include:

- **Fistulotomy** – laying open the fistula tract, which is essentially dividing the tissue between the internal and external opening. Fistulotomy can only be performed if the tract crosses less than 30% of the anal sphincter due to the risk of incontinence. Fistulotomy is contraindicated in anterior tracts in women and relatively contraindicated in Crohn's disease.
- **Fistulectomy** – the fistula tract is dissected out leaving surrounding tissue, allowing for quicker healing than fistulotomy but risks damaging sphincter muscle fibres.
- **Seton insertion** involves placement of a silastic sling through the fistula tract. Loose setons are placed to drain pus and thereby controlling sepsis to allow for a future definitive procedure or biological treatment in the context of Crohn's disease.
- **Biomaterial tract occlusion** – obliterating the fistula tract by filling it up with fibrin glue, fistula plug, biological mesh, biological paste or stem cells after sepsis control.
- **Ligation of intersphincteric fistula tract (LIFT)** – the intersphincteric tract is dissected with closure of the internal opening.

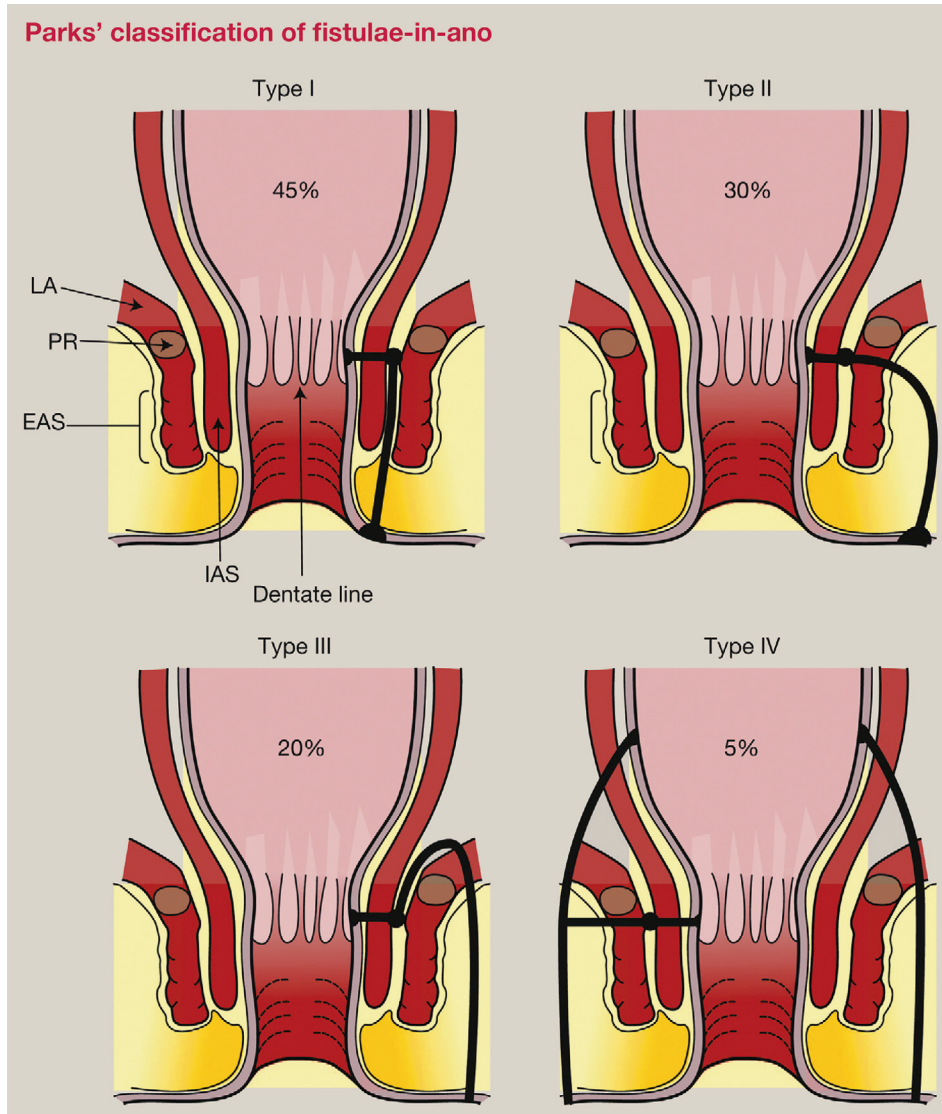


Figure 2

- Other novel therapies:
 - Over the scope clip (OTSC) involves application of a metal alloy clip to the internal opening.
 - Fistula tract laser closure (FiLAC): the lining of the tract is ablated by laser probe and causes shrinking of the tissue surrounding the tract.
 - Video-assisted anal fistula treatment (VAAFT): a fistuloscope which can deploy a unipolar electrode, endo brush and glue to fulgurate, curette and seal the tract.

To date, high quality evidence to prove the long-term efficacy of novel therapies is lacking.

During the consent process patients must weigh up the balance between a high cure rate of laying open a fistula at the expense of sphincter damage, or a greater risk of failure but with preservation of continence, which is offered by the sphincter-preserving procedures such as the anal fistula plug, LIFT procedure or advancement flap.

Multiple or complex fistulae should raise a suspicion of Crohn's disease, in which tissue biopsies should be taken for

histological confirmation and subsequent referral for biological treatment under the guidance of a gastroenterologist.

Haemorrhoids

Overview

Haemorrhoids are vascular connective tissue cushions lining the anal canal that contribute to normal anal sphincter function and regulate continence and defaecation mechanisms. Haemorrhoids become pathological when the connective tissue is traumatized causing breach of the connective tissue resulting in engorgement of the venous plexus. Pathological haemorrhoids present with a wide range of symptoms including bleeding, swelling, prolapse, seepage due to disruption of continence causing perianal skin itch and thrombosis. Treatments are therefore also wide ranging and dependent upon the symptom and grade of haemorrhoids (Table 1).

Epidemiology

According to UK community-based studies between 13% and 36% of the general population are affected by haemorrhoids.⁸

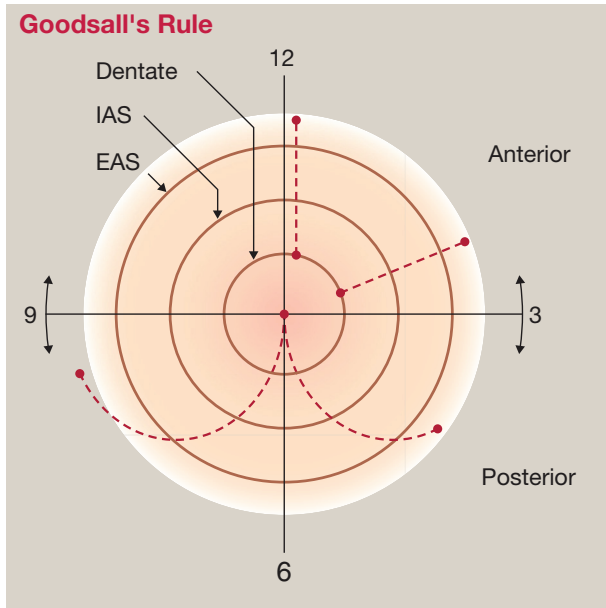


Figure 3

Grades of haemorrhoids according to Goligher's classification

Grade	Description
I	Can bleed on defecation but do not prolapse
II	Prolapse on defecation and reduce spontaneously
III	Prolapse on defecation but require manual reduction
IV	Permanently prolapsed/irreducible

Table 1

Symptomatic haemorrhoidal disease is a common referral to the colorectal general surgical clinic.

Presentation

Patients often describe the passage of fresh blood after defaecation or the sensation of a lump immediately post defaecation. Prolapsing haemorrhoids can cause anal pruritus, leakage and perianal skin irritation. On examination external haemorrhoids may be seen or signs of skin irritation and scratching. There may be anal skin tags suggesting resolution of old haemorrhoidal tissue.

Proctoscopy is supportive in making a diagnosis of haemorrhoids. Haemorrhoids appear as pink swellings of the mucosa. Even if haemorrhoids are seen care must be taken to ensure no other pathology is present. A flexible sigmoidoscopy may be required.

Management and consent

If haemorrhoidal disease is confirmed as the only cause of fresh rectal bleeding then the patient can be reassured. Often reassurance and explanation is sufficient and the patient does not seek further intervention. If the bleeding or other symptoms are troublesome then treatment can be offered.

Conservative management: lifestyle measures including high fibre diet, oral fluids and avoidance of straining. Evidence for benefit comes from a meta-analysis, which showed fibre supplement relieved symptoms and reduced risk of bleeding by approximately 50%.⁹

Outpatient options: rubber band ligation (RBL) involves application of a rubber band via proctoscopy. The band constricts blood supply to the haemorrhoids causing ischaemia and sloughing off the haemorrhoidal tissue. The remaining mucosal surface becomes fibrosed and reduces any element of prolapse. RBL is appropriate for grade 1–3 haemorrhoids above the dentate line. Bands applied below the dentate line cause extreme pain and often require removal via EUA. Recurrence rates of up to 50% are reported and can be treated by re-banding or progression to surgical treatment.¹⁰ Patients must be warned of vaso-vagal syncope, secondary haemorrhage (occasionally requiring blood transfusion) and a low but significant risk of severe pelvic sepsis.

Injection sclerotherapy: five per cent phenol in almond oil (a sclerosant) can be injected into the haemorrhoidal cushions to stimulate a fibrosis reaction like RBL. This method is suitable for patients in whom bleeding is the major symptom. Injection is simple and can be performed via proctoscope in the outpatient setting. Injection of sclerosant is not as effective as RBL but the risk of mucosal necrosis is slightly lower.

Surgical treatment:

Haemorrhoidectomy – many surgical techniques are described and are usually a variation of the ‘open’ Milligan-Morgan haemorrhoidectomy or ‘closed’ Ferguson haemorrhoidectomy. The Milligan-Morgan technique includes excision of the skin-covered external element of the haemorrhoid at the anoderm and the mucosal element with ligation of the haemorrhoidal pedicle, leaving skin bridges between the excised tissue. The Ferguson technique involves removal of the vascular mucosal component and leaving the anoderm intact. A variation of the Ferguson technique involves using the LigaSure (Medtronic, USA), a vessel-sealing energy device. A closed technique is thought to reduce postoperative pain. Postoperative metronidazole has been shown to reduce pain. Patients must be warned of pain, bleeding, infection, iatrogenic fissure, stenosis, incontinence and temporary urinary retention.

Haemorrhoidal artery ligation (HAL) – targeted devascularization procedures such as haemorrhoidal artery ligation (HAL) involve the use of a Doppler probe inserted into the anorectum to detect the haemorrhoidal arteries feeding the symptomatic anal cushions. The pedicle can then be ligated accurately with a view to reduce haemorrhoidal engorgement. A concomitant suture mucopexy reduces any prolapsing components. There is no surgical wound and all sutures should be placed above the dentate line and thus pain and recovery time should be reduced. Patients should be warned of bleeding, thrombosis, urgency and fissure formation during the consent process. The HubBLE investigators compared RBL with HAL for grade 2 and 3 haemorrhoids and found HAL to be more effective than RBL at 1 year. Symptom scores and complications were no different between the two but HAL was significantly more expensive.¹¹

Stapled haemorrhoidectomy – or procedure for prolapsed haemorrhoids (PPH) utilizes a circular stapling device to excise a ring of mucosa above the haemorrhoidal complex. The intention is to disrupt blood supply to the haemorrhoidal complex and to pull up redundant mucosa into the anal canal to reduce prolapse. The general complications of haemorrhoidectomy can arise as well as potentially serious complications unique to PPH such as rectal perforation, rectovaginal fistula, urgency, tenesmus and chronic pain. For these reasons enthusiasm for PPH has waned and is restricted to specialized units staffed by experienced practitioners.

The ETHOS trial compared PPH with conventional haemorrhoidectomy for grade 2–4 haemorrhoids and found similar short-term complication rates between the two. Quality of life, at 2-year follow-up, was found to be better in the conventional haemorrhoidectomy group.¹²

Other therapies – these therapies are not as widely available, but it is useful to have some knowledge of them in case of patient enquiry.

Infrared or ultrasound coagulation consists of a direct application of respective energy to the haemorrhoidal pedicle resulting in necrosis and sloughing of the pile. Several applications, each taking a few seconds, are required per haemorrhoid.

Radiofrequency ablation uses heat made by radio waves to cause coagulative necrosis of haemorrhoidal tissue. It is gaining popularity as a technique that is less painful and associated with faster recovery, and acceptable recurrence rates, although the evidence supporting its use is limited.¹³ Results from an ongoing large multicentre randomized trial (ORION) is expected to inform future practice.¹⁴

Fissures

Overview

An anal fissure is a longitudinal tear of the squamous epithelium of the anus distal to the dentate line.

Primary fissures are typically benign and related to local trauma such as hard stools, prolonged diarrhoea or vaginal delivery. Secondary fissures are associated with inflammatory bowel disease, anal surgery, infections or malignancy. Most primary fissures occur in the posterior midline and up to 25% occur anteriorly. When fissures are seen laterally or are multiple be wary of secondary causes indicating underlying pathology.

The aetiology of fissures is not clearly understood. It is possible that an acute event or trauma causing local pain leads to spasm of the internal sphincter and failure to relax during defaecation. Defaecation against a closed or tight sphincter causes further injury and tearing. The resulting high resting anal sphincter pressure also leads to reduced blood flow and ischaemia and thus poor healing creating a vicious cycle.

Epidemiology

The lifetime incidence for anal fissure is 11% and is nearly ten times more common in women (due to vaginal delivery) than in men.¹⁵

Presentation

Patients often complain of severe pain lasting 1–2 hours after defaecation and bloody streaking on the toilet tissue. Chronic fissures may present with a sentinel skin tag and pruritus ani.

Examination should begin with the patient in the left lateral position and gentle parting of buttocks for external inspection. Digital examination in the outpatient setting is not advised due to infliction of unnecessary pain. Acute fissures have the appearance of a fresh laceration whereas chronic fissures often have raised edges and may expose internal sphincter fibres beneath. Examination under anaesthetic may be warranted in a patient presenting with severe pain where no fissure is seen and the diagnosis uncertain.

Management and consent

Management strategies are centered on fissure healing by reducing anal sphincter spasm and improving blood flow to the fissure.

Conservative management: up to 50% of patients experience healing with increased dietary fibre intake and Sitz baths alone; however, first-line management usually includes topical application of 0.2% GTN cream or 2% diltiazem paste. Topical treatments require 6–8 weeks of application twice a day, but GTN paste can be poorly tolerated due to a tendency to induce headache.

Botulinum toxin injection: EUA and injection of 25–50 units (maximum of 100 units in total) of botulinum toxin in the intersphincteric space either side of the fissure. The reported healing rates of anal fissure following botulinum toxin injection are 60%–80% (superior to placebo). Common adverse effects include temporary incontinence of flatus (in up to 18%) and stool (in up to 5%). There is no consensus on the number of units to inject or the preferred location for these injections and thus variable reported healing rates are reported and comparisons are imprecise.

Surgical management:

Lateral internal sphincterotomy – offers a healing rate of up to 95% but is associated with disruption to continence (up to 30%).¹⁶ The intersphincteric plane is opened and the fibres of the internal anal sphincter (IAS) are divided parallel to the fissure for a distance equivalent to the length of the fissure but not more than one third the length of the IAS.

Patients need to be warned of recurrence and possible permanent loss of continence, women with shorter anal canals compared with men and history of vaginal deliveries are at increased risk. Correct patient selection and preoperative counselling is imperative.

Advancement flap – Simple cutaneous advancement flaps provide an alternative to sphincterotomy. The risk of incontinence is reduced but the risk of infection and dehiscence is significant.

Pilonidal sinus

Overview

Pilonidal sinuses, first described in 1833, are cystic structures that develop along the tailbone (coccyx) near the cleft of the buttocks, approximately 4–5 cm from the anus. The sinuses contain hair and granulation tissue that communicate via a fibrous tract to one or more midline openings in the natal cleft.

The term *pilonidal* is derived from the Latin words ‘pilus’ (hair) and ‘nidus’ (nest).

The aetiology of pilonidal sinus disease (PSD) is poorly understood but postulated to be due to repeated stretching and damage to hair follicles via friction and shearing forces causing pits and then sinuses, which become infected.

Epidemiology

Pilonidal sinus disease is a common condition affecting 26/100,000 of the general population, occurring more frequently in men than in women and more commonly in Caucasians than in other racial groups. The peak of presentation is between the ages of 15 and 24, and their development is uncommon after the age of 40.

Presentation

Patients present with a range of complaints ranging from acute natal cleft abscess to chronic pain with discharge and some patients remain asymptomatic. Patients should be examined in the left lateral position and the natal cleft inspected for pits. A fibrous cord may be palpated in the midline.

Management and consent

Acute disease: Acute abscesses require incision and drainage. The incision should be placed at the area of maximum pointing and away of the midline. Incisions performed lateral of the midline are aimed to reduce the morbidity associated with poorly healing midline wounds and allow appropriate incision placement for any future elective procedures. Patients need to be warned of low cure rate, recurrence, prolonged packing, delayed healing and possible need for further procedures.

Chronic disease: In chronic or recurrent PSD several surgical approaches are available. The main aim is to remove all tracts, infected and granulation tissue and allow healing by primary or secondary intention.

Flap procedures (Figure 4):

Karydakis – a Karydakis procedure involves excision of the diseased tissue using a D-shaped incision, mobilization of a tension free flap and primary closure of the midline. Patients need to be warned of wound breakdown and need for prolonged dressings, plus the possibility of recurrence in 3%–5% of cases.

Bascom – a less invasive technique of treating PSD is the simple Bascom procedure, which involves removal and sutured closure of midline hair pits along with drainage and curettage of the underlying abscess cavity via a lateral incision. This procedure offers a shorter healing time and less pain but recurrence rates are higher at 15%.

Limberg (rhomboid) – the Limberg procedure advocates excision of the affected sinus and surrounding tissue. A rhomboid-shaped incision allows a flap of skin lateral to the incision to be raised and transposed medially to flatten out the natal cleft, producing a Z-shaped scar. Lower rates of postoperative pain, infection and seroma formation occur when compared with the original Karydakis method, but incisions are larger and the procedure takes longer in the prone position than other flap procedures.¹⁷

Novel procedures – although not widely adopted, some knowledge of the endoscopic pilonidal sinus treatment (EPSiT) technique may be useful. EPSiT uses a fistuloscope which is passed through the sinus tract to allow direct visualization in a minimally invasive manner. Debridement of the granulation tissue can then be done under visualization, allowing a targeted removal of the chronically inflamed area. This targeted approach reduces the risk of unnecessary damage to surrounding tissue structures and thereby reduces the associated postoperative inflammation. Long-term data is lacking in comparison to the established traditional techniques. The reported success rate of 92% from a recent small population study is still lower in comparison to the success rates of open flap procedures.¹⁸

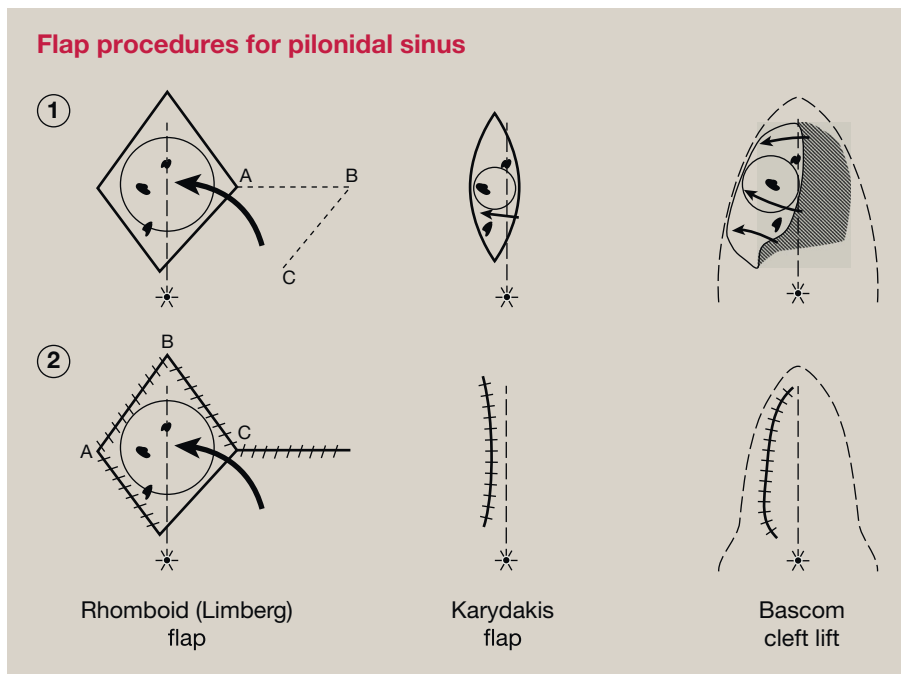


Figure 4

Following all treatments, patients should also be educated in ways to prevent recurrence by depilation, smoking cessation or weight loss, if obese. ♦

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Practice points

- Benign anorectal conditions cause significant morbidity and can significantly impact quality of life. Appropriate counselling about risks and success rates is key to patient satisfaction
- Perianal abscesses are treated with surgical drainage. Recurrent abscesses should prompt the search for an underlying condition or a fistula
- Management of fistulae-in-ano involves treating sepsis, protecting the sphincters and allowing healing with least possible disruption to sphincters. Sphincter-preserving procedures have variable success rates and limited data is available on long-term efficacy
- Even if hemorrhoids are seen at proctoscopy, a flexible sigmoidoscopy may be required to rule out other causes of anorectal bleeding before treatment is offered
- Fissures located in atypical positions may suggest an underlying secondary cause
- An incision to drain an acute pilonidal abscess should be placed away from the midline for optimum healing