Anal and perianal disorders

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Abstract

Most anal diseases can be diagnosed by a careful history and examination.

Management of haemorrhoids involves exclusion of more serious pathology, adequate explanation of the disorder, and dietary and defecatory advice. Most haemorrhoids do not require additional treatment. Outpatient procedures or surgical intervention may be required for more symptomatic cases.

Anal fissures are initially managed with bulking laxatives and non-constipating analgesics. Glyceryl trinitrate ointment is standard first-line treatment. Lateral internal sphincterotomy is rarely indicated for fissures that do not heal after pharmacological management, although is associated with a small risk of impaired continence.

Anal fistulae and abscesses represent extremes of a single disease spectrum. Perianal abscesses should be treated by prompt adequate surgical drainage. Low fistulae are treated by fistulotomy. High fistulae require more complex sphincter-preserving techniques.

Patients with faecal incontinence should be investigated with anal physiological tests and endoanal ultrasound. Conservative treatment includes dietary modification, constipating drugs, physiotherapy and biofeedback. Sacral nerve stimulation represents a new, expensive but relatively non-invasive treatment option for patients with faecal incontinence after failure of first-line conservative therapy. Patients with functional constipation should be assessed to distinguish slow transit from obstructed defecation. Laparoscopic ventral rectopexy, may be appropriate for selected patients with rectal intussusception.

Keywords Constipation; fissure; fistula; haemorrhoids; incontinence; MRCP

Key points

- When treating haemorrhoids, exclusion of more serious pathology, adequate explanation of the disorder, dietary advice (high fibre intake) and defecatory advice (avoid excessive straining or prolonged sitting on the toilet) are required in all patients. Many patients require no additional treatment
- Most acute fissures heal spontaneously. Healing is assisted by bulk laxatives, non-constipating analgesics and topical local anaesthetic gel (e.g. Instillagel®). The standard initial treatment for chronic fissures is glyceryl trinitrate (GTN) 0.4% ointment (Rectogesic®), topically twice daily for 6–8 weeks. Diltiazem cream 2% is an alternative used for those who have persistent headaches with GTN use
- Perianal and ischio-rectal abscesses present with pain localized to the anal region and systemic upset, are usually obvious on clinical examination and should be treated by prompt surgical drainage. Submucosal and intersphincteric abscesses are less common and present with severe anal pain; little is seen on inspection, but localized exquisite tenderness is found on rectal examination
- Simple low anal fistulae are ideally treated by laying open the fistula. Complex high fistulae that traverse a substantial part of the sphincter complex are more difficult to treat. A loose seton can be used to assist drainage of any low-grade sepsis and can be used long term or followed by a sphincter-preserving procedure
- Most anal tumours are squamous cell carcinomas arising from the anal canal or anal margin. Primary treatment is combined radiotherapy and chemotherapy. Surgery is reserved for local excision of small tumours or an abdominoperineal procedure after combined radiotherapy and chemotherapy for residual or recurrent tumour
- Faecal incontinence is a distressing problem that is more common than generally appreciated. Overflow incontinence secondary to faecal impaction should be excluded, especially in elderly people
- Functional constipation can be divided into slow-transit constipation and obstructed defecation. It should be considered when secondary causes have been excluded in patients who have persistent constipation refractory to simple dietary changes and laxatives.

Anatomy

Lining of the anal canal

The upper anal canal is lined with columnar epithelium (Figure 1); it has an autonomic nerve supply and is largely insensitive except to mechanical distension. The lower anal canal is lined with stratified squamous epithelium similar to that of the adjacent skin, but without skin appendages; it has a somatic nerve supply and is exquisitely sensitive. The anal transition zone lies between these two areas, approximately at the level of the dentate line. The anal submucosa comprises largely blood vessels, some smooth muscle and connective tissue. About 4–8 mucus-secreting glands open into the anal canal just above the dentate line.

Anal sphincter musculature

The anal canal can be considered to be surrounded by a small inner 'doughnut' and a large outer doughnut (Figure 2). The

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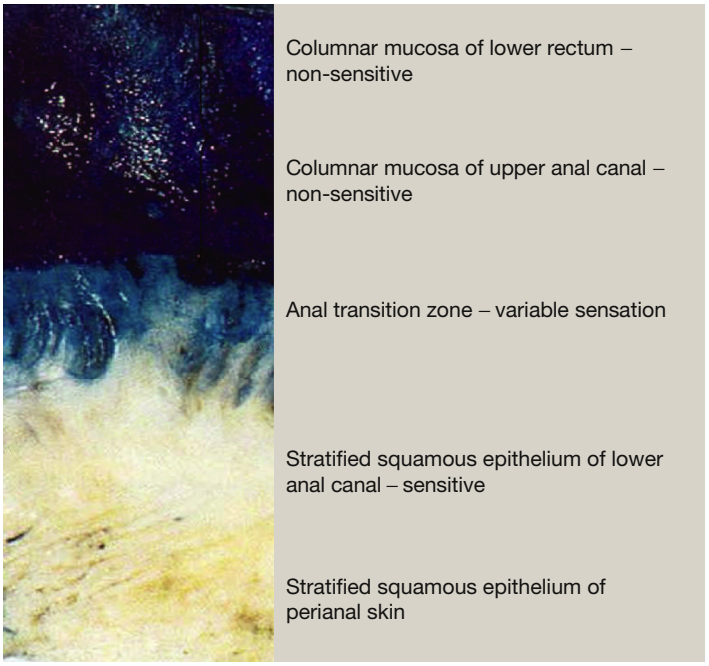

Figure 1 Opened strip of anal canal.

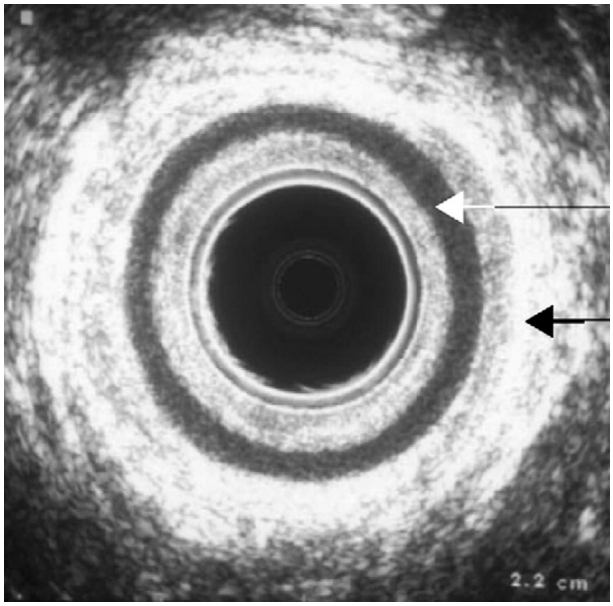

Figure 2 Endoluminal ultrasound scan of a normal anal canal (white arrow, internal anal sphincter; black arrow, external anal sphincter).

small doughnut is the internal anal sphincter and is the thickened continuation of the circular smooth muscle layer of the rectum. It is responsible for 70–80% of the resting tone in the anal canal, and is under autonomic and local nervous control. The outer, larger doughnut is the external anal sphincter, which is a striated muscle supplied by the pudendal nerve (S2–S4). It is under voluntary control and is responsible for reflex increases in anal canal pressure. At the upper border of the external sphincter is the sling-like puborectalis muscle, which angulates the anorectal junction forwards and is thought to be particularly important in maintaining continence.

Physiology

Continence is defined as the ability to perceive, retain and excrete the rectal contents at socially appropriate times. This depends on a combination of factors.

A mechanical barrier to defecation – this is provided by the anal muscles and anal cushions.

Normal anorectal sensation – the rectum is sensitive only to distension. Transient equalizations of pressure between the rectum and anal canal allow the rectal contents to come into contact with the sensitive lining of the anal canal. This process has been termed 'sampling' and is thought to be important in discriminating between gas, liquid and solids.

Rectal reservoir – the rectum, and probably the sigmoid colon, provide a reservoir to store faeces before defecation.

Stool consistency – excessively watery stools can produce leakage despite an otherwise normal sphincter mechanism.

Reflex responses – increases in intra-abdominal pressure (e.g. coughing, straining) threaten continence. When the intra-abdominal pressure increases, stretch receptors in the pelvic floor are stimulated, resulting in reflex contraction of the striated muscles of the anal sphincter, thereby preserving continence.

Ability to evacuate – faecal contents are delivered to the rectum by colonic mass movements. Normal evacuation involves raising the intra-abdominal pressure by a Valsalva manoeuvre, descent of the pelvic floor and relaxation of the internal and external sphincters. The precise coordination of this process is poorly understood. Loss of this ability results in troublesome constipation and sometimes overflow incontinence.

Haemorrhoids

Early Egyptian papyri (*c.*1500 BC) refer to a poultice of myrrh, frankincense, celery, coriander and salt for treatment of 'dislocation of the anus'. It is estimated that most people suffer from

haemorrhoids at some point in their life. The population prevalence is estimated to be around 4%.

Pathophysiology

The submucosa of the anal canal comprises numerous arteriovenous channels surrounded by connective tissue. Physiological swelling of this layer has been termed 'anal cushions'; it may have a role in the fine control of anal continence. Haemorrhoids can be defined as enlarged, prolapsed or symptomatic anal cushions. The cause of haemorrhoids is probably multifactorial. Relaxation of supportive connective tissue, as occurs in pregnancy, or excessive straining necessitated by constipation is likely to be involved. High pressure in the internal sphincter has been observed in haemorrhoids. This may contribute to increased shearing forces during defecation or may reduce venous return leading to submucosal vascular engorgement.

Classification

Haemorrhoids arising from the upper part of the anal canal lined by columnar mucosa are internal haemorrhoids. Those arising from the lower anal canal lined by squamous epithelium are external haemorrhoids.

They are classified as first degree (bleed but do not prolapse), second degree (prolapse with straining but reduce spontaneously) and third degree (prolapse with straining and require digital reduction).

Clinical features

The common symptoms are bleeding, prolapse and discomfort.

- Bleeding is characteristically bright red and drips into the toilet bowl or can be seen on the paper after wiping.
- Prolapse of haemorrhoids is usually noticed in association with defecation.
- Discomfort around the anus is common in second- and third-degree haemorrhoids. Severe pain suggests another pathology (e.g. fissure, abscess).
- Pruritus and minor soiling occur in patients with frequently prolapsing haemorrhoids.
- Mucus discharge and a feeling of incomplete emptying can occur.

Examination of haemorrhoids relies on inspection and proctoscopy, both at rest and during straining. The presence of external haemorrhoids (Figure 3) should be noted. True external haemorrhoids are similar to internal haemorrhoids in that they contain blood vessels and connective tissue, but they are lined with stratified squamous epithelium. They usually occur in association with internal haemorrhoids. External haemorrhoids should be distinguished from other lesions at the anal margin (e.g. skin-folds, tags), which generally require no treatment. The most common complication of haemorrhoids is thrombosis of prolapsed haemorrhoids. This acutely painful condition is easily diagnosed on inspection.

Management

Exclusion of more serious pathology, adequate explanation of the disorder, dietary advice (high fibre intake) and defecatory advice (avoid excessive straining or prolonged sitting on the toilet) are required in all patients. In many patients, no additional treatment is necessary.

Figure 3 Prolapsing haemorrhoids.

It is important to exclude upstream pathology before attributing bleeding to haemorrhoids. In young adults with typical anal bleeding, clinical examination, proctoscopy and rigid sigmoidoscopy are sufficient. Colonoscopy is advisable when the symptoms are atypical, when there are other symptoms of gastrointestinal pathology and in older patients.

Conservative treatment: dietary fibre has been demonstrated to have a beneficial effect on symptomatic haemorrhoids. Topical preparations are popular but have no proven value.

Outpatient (office) treatments: in those with troublesome internal haemorrhoids, an outpatient procedure such as injection sclerotherapy, rubber band ligation (RBL) or infrared coagulation can be considered.

Injection sclerotherapy involves injection of a sclerosant (e.g. phenol 5% in suitable fixed oil) above the dentate line into the haemorrhoid or its vascular pedicle. RBL involves application of a small rubber band to the haemorrhoid's base above the dentate line using a specifically designed grasping or suction technique; up to three haemorrhoids can be treated on one occasion. The aim of both treatments is to induce inflammation with subsequent healing by fibrosis, leading to a reduction in blood supply and fixity of the submucosa.

Minor bleeding and discomfort are common after both procedures. Delayed, secondary bleeding up to 3 weeks after the procedure is well recognized but rare. Warfarin (and similar drugs) increase the risk of bleeding and are relative contraindications. Serious complications of sclerotherapy or banding are extremely rare but include prostatitis, rectovaginal fistula and liver abscess.

Numerous trials have compared treatment options for haemorrhoids. A meta-analysis in 1997 showed that RBL was more effective than sclerotherapy.[1]

Surgical haemorrhoidectomy is usually indicated in patients with persistently prolapsing haemorrhoids, haemorrhoids with a significant external component and haemorrhoids that have been thrombosed. After recent advances in surgical and anaesthetic techniques (especially improved postoperative analgesia), most haemorrhoidectomies can now be performed successfully as day-case procedures.

An alternative to conventional haemorrhoidectomy is stapled haemorrhoidectomy. In this procedure, a cylinder of lower rectal mucosa is removed and the cut ends are stapled together such that the haemorrhoids are 'hitched up'. Improved short-term outcomes (particularly for postoperative pain) have been reported with this new technique, but long-term results are slightly disappointing, and reports of rare but serious complications such as retroperitoneal sepsis and rectovaginal fistulation have limited its use.

Another option is Doppler ultrasound-guided haemorrhoidal artery ligation (HAL). In a recent randomized controlled trial, HAL was shown to have a lower recurrence rate than a single session of RBL.[2] The same study, however, found a course of RBL to be similar to HAL and less expensive.

Anal fissure

An anal fissure is a linear anal ulcer below the dentate line, almost always in the midline, anteriorly or posteriorly (Figure 4). A few occur in association with other pathology (e.g. Crohn's disease). The aetiology of fissures is uncertain, although most are associated with increased pressure in the anal canal.

Clinical features

An acute anal fissure presents with severe anal pain and possibly bleeding. Chronic fissures present with pain during and after defecation, and bleeding causing spotting on the toilet paper or streaking of stool.

Examination of an acute fissure is difficult because rectal examination is prohibitively painful. Chronic fissures are easier to diagnose on examination. The fissure can be seen by gently exposing the lower anal canal. The circular fibres of the internal anal sphincter can be seen in the base, and a sentinel tag is often present.

Management

Most acute fissures heal spontaneously. Healing is assisted by bulk laxatives, non-constipating analgesics and topical local anaesthetic gel (e.g. Instillagel®). Chronic fissures are less likely to respond to simple medical therapy and usually require specific treatment to reduce the pressure in the anal canal.

Figure 4 Anal fissure demonstrated at examination under anaesthetic.

Glyceryl trinitrate 0.4% ointment (Rectogesic®), topically twice daily for 6–8 weeks, is now the standard initial treatment for anal fissures. It acts as a nitric oxide donor, reducing anal canal pressure, and achieves healing in >50% of patients. A few people develop headaches, which preclude its use if they continue to occur beyond 2–3 days of starting. Diltiazem 2% cream (Anoheal®) is an alternative topical therapy, which acts as a calcium channel blocker to reduce internal sphincter tone and does not cause headaches. Injection of botulinum toxin into the anal sphincter muscles, which acts by blocking the release of acetylcholine from nerve endings, can be used as second-line pharmacological therapy to reduce anal canal pressure. Its effect typically wears off after about 2–3 months.

Surgery is indicated for patients with fissures that do not heal after pharmacological management. The standard surgical treatment is lateral internal sphincterotomy, in which the lower part of the internal anal sphincter is divided. This procedure is highly successful in treating fissures but carries a small risk of incontinence. Anal dilatation has been abandoned because of the risk of incontinence.

Anal abscesses and fistulae

Abscess and fistula are the acute and chronic extremes of a single disease spectrum. Most arise from infection in a blocked anal gland. Sepsis usually begins in the plane between the internal and external sphincters and can spread upwards, downwards, around the anal canal or outwards. The clinical features depend on whether the sepsis becomes localized as an abscess or drains externally, creating an anal fistula. Sepsis around the anal canal can also occur in association with Crohn's disease or arise in a perianal skin appendage.

Clinical features

Perianal and ischio-rectal abscesses present with pain localized to the anal region and systemic upset, and are usually obvious on clinical examination. Submucosal and intersphincteric abscesses are relatively uncommon and present with severe anal pain; little is seen on inspection, but localized exquisite tenderness is found on rectal examination. Sepsis above the levator muscles can present with rectal pain, possibly disturbed micturition and greater constitutional upset. A primary intra-abdominal source (diverticulitis, appendicitis, pelvic inflammatory disease) should be considered.

Many fistulae begin as abscesses; others present less acutely with recurrent perianal discharge, recurring abscesses that resolve spontaneously or, occasionally, discharge of pus per anus. The diagnosis can usually be made by clinical examination. The external opening of the fistula may be visible on inspection. Any asymmetry or scarring from previous sepsis or surgery should be noted. On digital examination, an internal fistula opening may be felt, similar to a grain of rice. Induration can indicate the site of a fistula track or previous sepsis. Sphincter function should be assessed digitally. The diagnosis is usually confirmed by examination under anaesthesia (Figure 5a).

Management

Abscesses are treated acutely by adequate drainage of pus. In general, no attempt should be made to treat associated fistulae

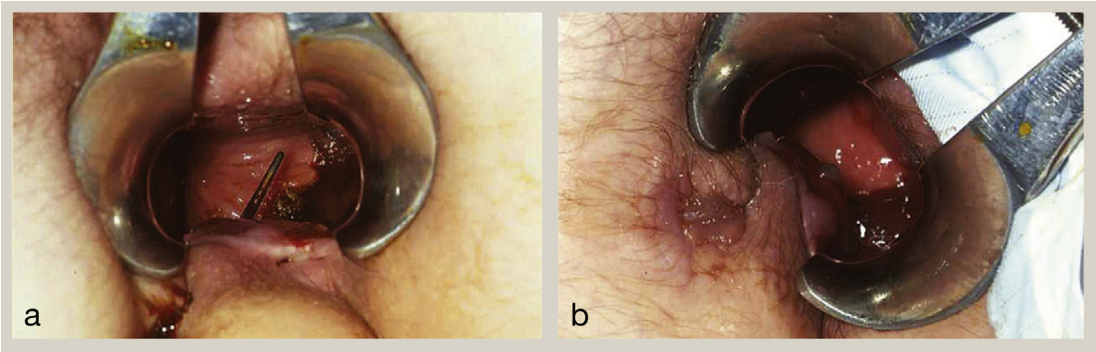

Figure 5 (**a**) An anal fistula shown by a probe inserted during examination under anaesthesia. (**b**) The same fistula immediately after treatment with fibrin glue.

simultaneously as this can damage the sphincter mechanism. Antibiotics are not required unless there is extensive surrounding cellulitis or the patient is immunocompromized. Patients should be followed up at 6–8 weeks, looking for an underlying fistula.

Anal fistulae are ideally treated by laying open the fistula, curetting the track and leaving it to heal by secondary intention. Most fistulae pass directly from the external opening to an internal opening at the level of the dentate line, and traverse either no sphincter muscle or a minimal amount. It is safe to lay open such fistulae.

Complex fistulae that traverse a substantial part of the sphincter complex are more difficult to treat. The extent of the problem should be clarified by examination under anaesthesia and endoluminal ultrasonography or magnetic resonance imaging. The treatment options are varied, highlighting the fact that no treatment is perfect.

Many surgeons use a seton suture, which is placed intraoperatively along the fistula, the ends being tied together to create a circle. The seton can be tied loosely to assist drainage of any low-grade sepsis. Later, when infection has subsided, the fistula is formally repaired surgically using an advancement flap technique. Alternatively, the seton can be tied tightly and tightened further at regular intervals so that it gradually cuts through the involved muscles. The muscle ends do not spring apart and the muscle heals by fibrosis. Injection of fibrin glue (Figure 5b) or a collagen plug along the fistula has recently been described, although long-term results are disappointing.

In recent years, a number of sphincter-preserving approaches to high fistulae have been described. The ligation of intersphincteric fistula tract procedure involves a small incision in the intersphincteric groove and dissection upwards between the sphincter muscles. The fistula tract is identified as it passes between the sphincters and is ligated at this level. The internal opening of the fistula is closed and the external opening widened and curetted.

Video-assisted anal fistula treatment (VAAFT) uses a fibreoptic scope that is passed into the external opening of the fistula to view the inside of the fistula tract and locate and identify the internal opening, secondary tracts and collections. Therapeutic VAAFT uses diathermy, fistula brushes and forceps to cauterize and clean debris in the fistula tract; in conjunction with closing the internal opening, it can be used to treat complex fistulae. Novel techniques for treating high fistulae include the Over-the-Scope Clip (OTSC®), which closes the internal opening with a clip, and Fistula-tract Laser Closure (FiLaC™), which ablates the fistula tract using laser.

Anal tumours

Malignancy of the anal canal is uncommon but appears to be increasing, particularly in patients with HIV. Most anal tumours are squamous cell carcinomas arising from the anal canal or anal margin (Figure 6). Anal squamous cell carcinoma is associated with human papillomavirus, particularly types 16, 18, 31 and 33. Adenocarcinomas can arise from the upper anal canal or from anal glands. Malignant melanoma of the anal canal is uncommon and aggressive.

Figure 6 A large fungating anal squamous carcinoma.

Clinical features

Patients present with bleeding, pain, a mass, pruritus or incontinence. Examination may reveal an ulcerated, tender lesion at the anal canal. Spread to inguinal nodes can be detected clinically. The diagnosis is usually confirmed by examination under anaesthesia and biopsy. Staging investigations include positron emission tomography computed tomography.

Management

Surgery was traditionally the mainstay of treatment for squamous cell carcinoma of the anal canal. However, primary treatment with combined radiotherapy and chemotherapy (mitomycin C and 5-fluorouracil) is preferable. Primary surgical treatment is reserved for small anal margin tumours amenable to local excision. Abdominoperineal excision is reserved for patients with residual tumour after chemo-radiation, radionecrosis, fistulae or incontinence after chemo-radiation, or subsequent tumour recurrence.

Faecal incontinence

This is a distressing problem that is more common than generally appreciated. There are several causes:

- surgery in childhood for anal atresia, spina bifida or Hirschsprung's disease
- obstetric damage, anal surgery and major pelvic fractures. Occult sphincter damage occurs during about one-third of vaginal deliveries, particularly when forceps are used. Anal dilatation, lateral sphincterotomy, laying open of an anal fistula and haemorrhoidectomy are the most common surgical causes
- haemorrhoids, fistulae, rectal prolapse and local tumours
- diarrhoea (e.g. caused by inflammatory bowel disease)
- multiple sclerosis or spinal injuries; pudendal neuropathy can occur in patients who chronically strain at stool or have diabetes mellitus.
- overflow incontinence secondary to faecal impaction, numerically the most common cause; this often results from immobilization and constipating analgesia, seen on orthopaedic and geriatric wards.

In some patients, no clear single cause of incontinence is apparent, and it could result from an accumulation of 'minor insults' to the sphincter mechanism. For example, a woman could suffer an occult, asymptomatic external sphincter injury during childbirth, with, in later life, the muscles of the pelvic floor becoming gradually weaker until overt incontinence develops, especially if there is any tendency to diarrhoea.

Clinical features

The history should determine the existence of the problem, its severity and the possible causes. Patients are reluctant to complain about faecal incontinence and can instead complain of symptoms such as diarrhoea or 'piles'. It is important to ask tactfully about passive soiling, seepage, leakage and 'accidents'. Urgency of defecation is a useful clue. The need for pads and disruption of social life are indicators of severity. Obstetric history, previous anal or pelvic surgery and details of neurological problems can give important clues to the aetiology. Inspection of the perianal region can reveal evidence of incontinence, a patulous anus, a descending perineum or scarring from previous trauma. Resting and squeeze anal pressures should be assessed and any obvious gap in the sphincter 'ring' noted. Patients with significant incontinence should be assessed using anorectal physiology and ultrasonography.

Management

The cause and severity of the incontinence determine the preferred approach. Local pathology (e.g. haemorrhoids) should be treated in the standard manner. Minor incontinence can be significantly improved by dietary and defecatory changes. A low-residue diet and a constipating agent (e.g. loperamide capsules or syrup 2 mg three times daily) can be helpful. Ensuring a completely empty rectum after defecation using a stimulant suppository (e.g. bisacodyl 10 mg) can reduce the consequences of a weak sphincter.

When conservative measures are inadequate, surgical treatment can be required. Ideally, the cause should be corrected. Any rectal prolapse should be repaired initially. If there is a gap in the sphincter ring, direct repair can be considered; however, short-term improvement in incontinence is not sustained in most patients after overlapping sphincter repair. Tightening procedures have been described for use when there is no mechanical disruption of the sphincter mechanism, but the long-term results are disappointing. Artificial plastic sphincters similar to those used for urinary incontinence and electrically stimulated gracilis muscle neosphincters have been developed. These offer some hope to those with severe, intractable faecal incontinence, although the problem of preventing infections in artificial plastic sphincters has not been solved.

Sacral nerve stimulation (SNS) has been successfully used for patients with faecal incontinence after failure of conventional medical therapy, including biofeedback. SNS involves a preliminary test procedure in which an electrode is placed percutaneously alongside the S3 nerve root. The nerve is stimulated continuously for 2–3 weeks. If objective evidence of improved continence is achieved, a permanent stimulator is implanted. Systematic review suggests improved continence in most patients given permanent implants, with complete continence rates of 41–75%.[3] An alternative to SNS that does not involve a permanent implant is posterior tibial nerve stimulation. This involves electrically stimulating the posterior tibial nerve with a needle inserted just above the ankle. It has, however, been shown to be no better than sham stimulation in a randomized controlled trial.[4]

Constipation

Constipation is a common symptom that can be considered in three categories:

1. **Simple constipation.** This is common, usually transient or responds easily to simple dietary changes or laxatives.
2. **Secondary constipation.** This has a cause such as mechanical obstruction, drugs, hypothyroidism, hypercalcaemia or neurological disorders. Management is directed principally towards the underlying cause.
3. **Functional constipation** (chronic idiopathic constipation). This is traditionally divided into 'slow-transit constipation' or 'obstructed defecation'.

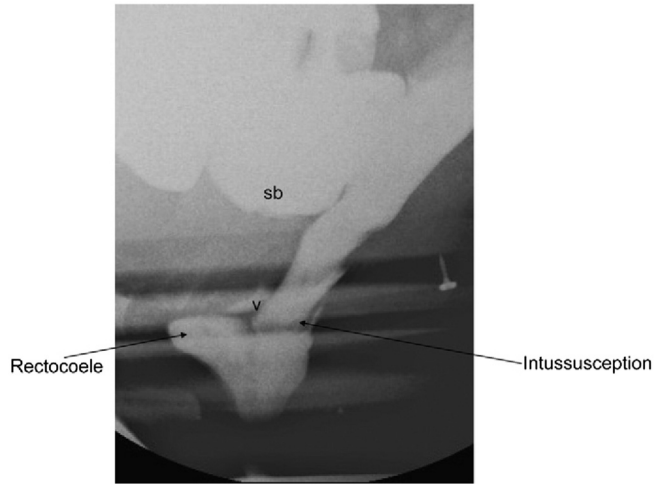

Figure 7 Proctogram showing intussusception and an anterior rectocele. sb, small bowel.

Patients with *slow-transit constipation* tend to be female and have had symptoms of severe constipation commonly since early adulthood, in some cases having a bowel action only every 7–14 days. Associated loss of urge, bloating and abdominal discomfort are common. There has recently been an increased awareness of patients with obstructed defecation. This is particularly important because of the advent of effective surgical procedures for some of these patients.

Obstructed defecation is characterized by a feeling of incomplete emptying, lower abdominal or pelvic and low back pain, a sensation of 'something prolapsing' and the need to digitate to assist evacuation. Associated urogynaecological symptoms of incontinence or prolapse are common. Clinical examination characteristically demonstrates marked pelvic floor descent during straining, possibly a rectocele and possible evidence of mucosal prolapse.

Management

Management of constipation depends on careful clinical evaluation, thorough investigation (colonic transit studies, proctography, anorectal physiology) and discussion in a dedicated multidisciplinary environment. With thorough assessment, a number of specific causes of can be identified:

- rectocoele (Figure 7)
- rectal intussusceptions (Figure 7)
- paradoxical puborectalis contraction (anismus or dyssynergic defecation).

Novel prokinetics have been developed for patients with slow-transit constipation refractory to conventional osmotic, bulk and stimulant laxatives. Prucalopride, a novel 5-HT4 agonist, acts as a prokinetic. It has been approved by the National Institute for Health and Care Excellence for women in whom at least two laxatives from different classes have been unsuccessful.

For individuals with intussusception, encouraging results are being reported with laparoscopic ventral mesh rectopexy.[5] Per-anal repair of large rectocoeles can be helpful. Botulinum toxin injection into the puborectalis can be beneficial for anismus.

Pruritus ani

Anal itching and irritation is a common problem that is difficult to treat. A thorough history and general and local anorectal examination are essential. It is important to distinguish idiopathic cases from those secondary to demonstrable pathology. Anorectal conditions such as haemorrhoids, fistulae and minor incontinence should be treated in the standard manner. Dermatological conditions such as psoriasis, lichen sclerosus and microbial intertrigo should be treated with the help of a dermatologist. *Enterobius* infestations and *Candida* infection can cause pruritus ani and respond to specific treatment.

Enterobius infestation is common in young children and in adults who come into contact with threadworms. These can easily be seen on perianal inspection or sigmoidoscopy. If in doubt, clear adhesive tape can be applied to the anal region (the 'Sellotape test'); ova deposited on the perianal skin are picked up by the tape and can be transferred to a microscope slide for visualization.

In most patients with pruritus ani, the cause is idiopathic. Standard advice includes measures to avoid scratching (e.g. wearing cotton gloves at night), avoiding all creams and ointments, washing the area with water only (soaps can be irritant) and drying the area gently but thoroughly (a hairdryer is useful). Reducing caffeine and alcohol intake can also help. If there are features of chronic skin inflammation, a short course of corticosteroids can be used. Common preparations such as Trimovate® (clobetasone butyrate, oxytetracycline and nystatin) cream are useful as empirical treatment once specific causes have been excluded. In intractable cases, ablation of the nerves in the perianal skin using methylene blue can be considered, although patients should be warned about permanent tattooing. ◆

KEY REFERENCES

1 MacRae HM, McLeod RS. Comparison of hemorrhoidal treatments: a meta-analysis. *Can J Surg* 1997; **40:** 14–7.

2 Brown SR, Tiernan JP, Watson AJM, et al. Haemorrhoidal artery ligation versus rubber band ligation for the management of symptomatic second-degree and third-degree haemorrhoids (HubBLe): a multicentre, open-label, randomised controlled trial. *Lancet* 2016; **388:** 356–64.

3 Mowatt G, Glazener C, Jarrett M. Sacral nerve stimulation for faecal incontinence and constipation in adults. *Cochrane Database Syst Rev* 2007; **3:** CD004464.

4 Knowles CH, Horrocks EJ, Bremner SA, et al. Percutaneous tibial nerve stimulation versus sham electrical stimulation for the treatment of faecal incontinence in adults (CONFIDeNT): a double-blind, multicentre, pragmatic, parallel-group, randomised controlled trial. *Lancet* 2015; **386:** 1640–8.

5 Collinson R, Wijffels N, Cunningham C, Lindsey I. Laparoscopic ventral rectopexy for internal rectal prolapse: short-term functional results. *Colorectal Dis* 2010; **12:** 97–104.

TEST YOURSELF

To test your knowledge based on the article you have just read, please complete the questions below. The answers can be found at the end of the issue or online here.

Question 1

A 34-year-old man attended the Emergency Department with a 3-day history of severe constant perianal pain associated with generalized malaise and lethargy. Perianal inspection was unremarkable but digital rectal examination was not possible due to patient discomfort.

What is the most likely diagnosis?

A Anal fissure
B Third-degree haemorrhoids
C Ischioanal abscess
D Fistula in ano
E Intersphinteric abscess

Question 2

A 25-year-old man presented with a 10 week history of fresh rectal bleeding associated with severe post defecatory pain. On examination there was a posterior midline anal fissure with exposure of the internal sphincter and an associated sentinel skin tag.

What treatment is most likely to heal his chronic anal fissure?

A 0.4% glyceryl trinitrate (GTN) ointment
B Laxatives, non-constipating analgesia and topical anesthetic gel
C 2% diltiazem cream
D Lateral internal sphincterotomy
E Injection of botulinum toxin into the anal sphincters

Question 3

A 35-year-old woman presented with worsening constipation over many years. She had a reduced urge to defecate and could go up to a week in between bowel movements passing hard stools. There was no history of rectal bleeding, mucus or other gastrointestinal symptoms. She had had problems with constipation since her teenage years. She has tried several laxatives without significant improvement.

Which is the most appropriate investigation into the cause of her constipation?

A Anorectal manometry
B Colonic transit studies
C Colonoscopy
D Biofeedback
E Defecating proctogram