

Haemorrhoids - Epidemiology, risk factors, clinical features and management

Anatomy and physiology

Haemorrhoids are one of the most common anal disorders encountered in primary care. Haemorrhoids are defined as the symptomatic enlargement and distal displacement of the normal anal cushions.¹ These cushions are usually found in three main locations: left lateral, right anterior, and right posterior (3, 7 and 11 o'clock positions).² These vascular cushions participate in the drainage of the anal canal. It has also been suggested that these cushions intensify the action of the anal sphincter mechanism, thereby contributing to continence.

There are two types of haemorrhoids: internal and external. Internal haemorrhoids arise above the dentate line, are viscerally innervated and therefore painless. External haemorrhoids can be painful because they originate below the dentate line and have a somatic innervation.³ Internal haemorrhoids are further subdivided according to the degree of prolapsed (table 1).

Epidemiology and risk factors

Studies on the prevalence of haemorrhoids are rare and have varying results. Johnson and Sonnenberg estimated a prevalence of 4.4% in US adults, peaking in those aged 45-65 years.⁵ Riss et al. in a study of 976 patients attending for colorectal cancer screening found that 38.93% suffered from haemorrhoids.⁶ Only half of these reported symptoms.

Factors that increase intra-abdominal pressure are thought to contribute to the development of haemorrhoids. These include prolonged straining¹, inadequate fibre intake², prolonged lavatory sitting², constipation¹, diarrhoea⁷, ascites² and pelvic space-occupying lesions.² Constipation and prolonged straining also increase the shearing force on the anal cushions, further predisposing to the formation of haemorrhoids.¹ In addition, pregnancy predisposes women to haemorrhoids, however these usually resolve after delivery.³

Clinical Features

Patients frequently present with painless rectal bleeding. Many treat the initial symptoms without recurring to medical advice and only present when symptoms worsen. Other symptoms may include a painful mass, anal swelling, discharge, discomfort, soiling, hygiene problems and pruritus ani. External haemorrhoids are more often associated with anal discomfort because of engorgement. If thrombosis of external haemorrhoids occurs, this causes acute pain. On the other hand, internal haemorrhoids become symptomatic when they prolapse, thrombose, bleed or become ulcerated.

Differential diagnosis includes other causes of these symptoms. It includes colorectal cancer, anal cancer inflammatory bowel disease, anal condylomata, anal fissure, perianal abscess, skin tags, perianal Crohn's

disease, rectal prolapse and fistulas.

Definite diagnosis relies on an accurate history and a careful clinical examination which should include a digital rectal examination and anoscopy in the left lateral position.¹ A complete evaluation of the colon is recommended in the following clinical scenarios:⁸

- Iron deficiency anaemia;
- Positive faecal occult blood test;
- Age \geq 50 years with no complete colon evaluation within 10 years;
- Age \geq 40 years, with positive family history for a single first-degree relative with adenoma or colorectal carcinoma diagnosed at age $<$ 60 years and no complete examination within 10 years;
- Age \geq 40 years, with positive family history for two or more first-degree relative with adenoma or colorectal carcinoma diagnosed at age $<$ 60 years and no complete examination within 3-5 years;
- Any history or physical finding indicating malignancy or inflammatory bowel disease.

Management

The management of haemorrhoids depends on the degree and severity of symptoms and it ranges from dietary and lifestyle modification to radical surgery.

(a) Dietary and lifestyle modification

An increase in dietary fibre and oral fluids may help eliminate straining during defecation thereby reducing the damage caused by the shearing action of passing hard stool on the anal mucosa. Alonso-Coello et al.⁹ in a meta-analysis of seven randomised clinical trials (RCTs) of symptomatic patients, confirmed the beneficial effect of fibre in the treatment of symptomatic haemorrhoids for relieving overall symptoms such as bleeding, pain, prolapsing and itching.

Table 1: Classification of internal haemorrhoids⁴

Grade	Definition
Grade 1	May bleed but do not protrude
Grade 2	Protrude with defecation but reduce spontaneously
Grade 3	Protrude but can be manually reduced
Grade 4	Permanently prolapsed

Besides increasing dietary fibre, other lifestyle modifications may play a role in the treatment or prevention of haemorrhoids. These include reducing fat consumption, regular exercise, improving anal hygiene, avoiding straining and reading on the toilet, and avoiding medication that causes constipation or diarrhoea.¹

(b) Medical Treatment

Oral flavonoids

Oral flavonoids are thought to work by increasing venous tone, reducing venous capacity, decreasing capillary permeability, facilitating lymphatic drainage and by exerting an anti-inflammatory effect. Flavonoids have been used in a number of conditions including chronic venous insufficiency, lymphoedema and haemorrhoids.

A Cochrane systematic review by Perera et al.¹⁰ analysed twenty four RCTs, enrolling a total of 2344 patients, evaluating the use of phlebotonics (including flavanoids and synthetic compounds i.e. calcium dobesilate) in treating haemorrhoidal disease. Phlebotonics demonstrated a statistically significant beneficial effect for the outcomes of pruritus (OR 0.23; 95% CI 0.07 to 0.79) ($P=0.02$), bleeding (OR 0.12; 95% CI 0.04 to 0.37) ($P=0.0002$), bleeding post-haemorrhoidectomy (OR 0.18; 95% CI 0.06 to 0.58) ($P=0.004$), discharge and

leakage (OR 0.12; 95% CI 0.04 to 0.42) ($P=0.0008$) and overall symptom improvement (OR 15.99 95% CI 5.97 to 42.84) ($P<0.00001$), in comparison with a control intervention. Although beneficial they did not show a statistically significant effect compared with a control intervention for pain (OR 0.11; 95% CI 0.01 to 1.11) ($P=0.06$), pain scores post-haemorrhoidectomy (SMD -1.04; 95% CI -3.21 to 1.12) ($P=0.35$) or post-operative analgesic consumption (OR 0.54; 95% CI 0.30 to 0.99) ($P=0.05$) [OR – Odds ratio; SMD – Standardized mean difference; CI – Confidence interval].

Alonso-Coello et al.¹¹ conducted a meta-analysis aimed at evaluating the impact of flavonoids on those symptoms considered to be important to patients with symptomatic haemorrhoids. The authors included fourteen published or unpublished RCTs comparing any type of flavonoids to placebo or no therapy, in patients with symptomatic haemorrhoids. These fourteen trials randomized 1514 patients. Meta-analyses using random-effects models suggested that flavonoids decrease the risk of not improving or of persisting symptoms by 58% (RR 0.42; 95% CI 0.28 to 0.61) and showed an apparent reduction in the risk of bleeding (RR 0.33; 95% CI 0.19 to 0.57), persistent pain (RR 0.35 95% CI 0.18 to 0.69), itching (RR 0.65

95% CI 0.44 to 0.97) and recurrence (RR 0.53 (95% CI 0.41 to 0.69)). This meta-analysis is, however, limited by the important heterogeneity present for all the outcomes, and by the potential of publication bias as there was a failure to identify additional unpublished studies with small or absent treatment effects, thereby possibly overestimating the true effect of treatment.

Topical treatment

Topical treatment aimed at controlling the symptoms of haemorrhoids can contain local anaesthetics, corticosteroids, and anti-inflammatory drugs in the form of creams and suppositories. Many of these preparations help to alleviate symptoms of pruritus and discomfort. However, there are no randomized trials suggesting a reduction in bleeding or prolapsing. Caution should be used when prescribing corticosteroid-containing local preparations, since although they improve local perianal inflammation, their prolonged use can cause thinning of the perianal skin.¹²

(c) Non-operative treatment

Sclerotherapy

Sclerotherapy is recommended as a treatment for Grade 1 and 2 haemorrhoids.¹³ Sclerotherapy involves the injection of chemical agents to create a fixation to the underlying mucosa by fibrosis.¹³ Possible complications of this procedure include transient precordial and upper abdominal pain,¹⁴ mucosal ulceration or necrosis and, rarely, prostatic abscess or retroperitoneal sepsis.¹⁵ Antibiotic coverage is indicated in patients with predisposing valvular disease or immunodeficiency.¹⁶

Rubber band ligation

Ligation of the haemorrhoidal tissue with a rubber band causes ischemic necrosis, ulceration and scarring, leading to fixation of the connective tissue to the rectal wall. The rubber bands are placed above the dentate line. Complication rates are low and include vasovagal attacks and persistent anal pain.¹⁷ Other reported complications include late haemorrhage (1-2 weeks after the procedure),

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thrombosed external haemorrhoids, ulceration, slippage of the rubber band, pelvic sepsis and, very rarely Fournier's gangrene.¹⁸⁻²⁰ The risk of delayed bleeding makes rubber band ligation contraindicated in patients on anticoagulants.

Infrared coagulation

This procedure involves the application of radiation to the base of the haemorrhoid causing coagulation, occlusion and sclerosis of the haemorrhoidal tissue. The scarring that ensues reduces blood flow to the haemorrhoid. Success rates of infrared coagulation are lower than those of rubber band ligation²¹ but it can safely be offered to those on anticoagulant therapy.²

(4) Operative treatment

Haemorrhoidectomy

The most effective treatment for haemorrhoids with the lowest rate of recurrence compared to other treatments is haemorrhoidectomy.²² An elliptical incision over the haemorrhoidal complex is done, the haemorrhoidal complex is then mobilized from the underlying sphincter and subsequently excised. The wound is then sutured.² Indications include failure of non-operative management, strangulation or thrombosis of haemorrhoids, concomitant anorectal conditions e.g. anal fissure or fistula, and patient preference.²³

Complications of haemorrhoidectomy include post-operative pain²⁴, acute urinary retention, post-operative bleeding, septic complications, wound breakdown, delayed wound healing, loss of anal sensation, prolapsing of the mucosa, anal stricture, and fecal incontinence.²⁵

A Cochrane review of three RCTs by Shanmugam et al.²⁶ comparing excisional haemorrhoidectomy to rubber band ligation showed ligation to be associated with less post-operative pain. Excisional haemorrhoidectomy was also associated with overall greater individual complication rates but there was no statistically significant difference in the incidence of urinary retention, haemorrhage and anal stenosis. Patient satisfaction was

similar in both groups. Excisional haemorrhoidectomy in patients with Grade 3 haemorrhoids resulted in less symptom recurrence and a reduced need for subsequent procedures. The authors concluded that rubber band ligation can be considered to be the treatment of choice for Grade 2 haemorrhoids while excisional haemorrhoidectomy should be reserved to Grade 3 haemorrhoids or following recurrence after rubber band ligation.

Stapled haemorrhoidopexy

In stapled haemorrhoidopexy a circular device excises a ring of redundant rectal mucosa proximal to the haemorrhoid and resuspends the haemorrhoid back within the anal canal interrupting the blood

supply to the haemorrhoidal tissue.²⁷ Post-operatively, patients have a circular staple line above the dentate line. Post-operative pain is less than with excisional haemorrhoidectomy but there is a higher risk of recurrent haemorrhoids.^{28,29} Stapled haemorrhoidopexy is mainly reserved for patients with circumferential prolapsing haemorrhoids and those having ≥ 3 lesions of advanced internal haemorrhoids.¹

Conclusion

The treatment of haemorrhoids depends on the degree and severity of symptoms. It includes dietary and lifestyle modifications, medical treatment such as flavonoids and topical treatment and, where indicated, surgical treatment. **S**

References

1. Lohsiriwat V. Hemorrhoids: From basic pathophysiology to clinical management. *World Journal of Gastroenterology* 2012; 18(17): 2009-17.
2. Kaidar-Person O, Person B, Wexner SD. Hemorrhoidal Disease: A comprehensive review. *J Am Coll Surg* 2007; 204(1):102-17.
3. Mounsey AL, Halladay J, Sadiq TS. Hemorrhoids. *American Family Physician* 2011; 15;84(2):204-10.
4. Goligher JC, Duthie HL, Nixon HH, eds. *Surgery of the Anus, Rectum and Colon*. 5th ed. London, UK: Baillière Tindall; 1984:98-149.
5. Johanson JF, Sonnenberg A. The prevalence of hemorrhoids and chronic constipation. An epidemiologic study. *Gastroenterology* 1990; 98(2):380-6.
6. Riss S, Weiser FA, Schwameis K, et al. The Prevalence of hemorrhoids in adults. *Int J Colorectal Dis* 2011; 27(2):215-20.
7. Johanson JF, Sonnenberg A. Constipation is not a risk factor for hemorrhoids: a case-control study of potential etiological agents. *Am J Gastroenterol* 1994; 89:1981-6.
8. Cataldo P, Ellis CN, Gregorcyk S, et al. Standards Practice Task Force, The American Society of Colon and Rectal Surgeons, USA. Practice parameters for the management of hemorrhoids (revised). *Dis Colon Rectum* 2005;48(2):189-94.
9. Alonso-Coello P, Guyatt G, Heels-Ansell D, et al. Laxatives for the treatment of hemorrhoids. *Cochrane Database Syst Rev*. (4). 2005; CD004649.
10. Perera N, Liolitsa D, Iype S, et al. Phlebotonics for hemorrhoids. *Cochrane Database Syst Rev*. 2012 15;8:CD004322.
11. Alonso-Coello P, Zhou Q, Martinez-Zapata MJ, et al. Meta-analysis of flavonoids for the treatment of hemorrhoids. *British Journal of Surgery* 2006; 93:909-20.
12. Johanson JF. Nonsurgical treatment of hemorrhoids. *J Gastrointest Surg* 2002; 6:290-4.
13. Johanson JF, Rimm A. Optimal nonsurgical treatment of hemorrhoids: a comparative analysis of infrared coagulation, rubber band ligation, and injection sclerotherapy. *Am J Gastroenterol* 1992; 87:1600-6.
14. Mann CV, Motson R, Clifton M. The immediate response to injection therapy for first-degree hemorrhoids. *J R Soc Med* 1988; 81:146-8.
15. Guy RJ, Seow-Choen F. Septic complications after treatment of hemorrhoids. *Br J Surg* 2003; 90:147-56.
16. Ricci MP, Matos D, Saad SS. Rubber band ligation and infrared photocoagulation for the outpatient treatment of hemorrhoidal disease. *Acta Cir Bras* 2008; 23:102-6.
17. Hewett PJ, Maddern GJ. Hemorrhoids: Evidence? *ANZ J Surg* 2004; 74:679-80.
18. Scarpa FJ, Hillis W, Sabetta RJ. Pelvic cellulitis: a life-threatening complication of hemorrhoidal banding. *Surgery* 1988; 103:383-5.
19. Clay LD 3rd, White JJ Jr, Davidson JT, et al. Early recognition and successful management of pelvic cellulitis following hemorrhoidal banding. *Dis Colon Rectum* 1986;29:579-81.
20. McCloud JM, Jameson JS, Scott AN. Life-threatening sepsis following treatment for hemorrhoids: a systematic review. *Colorectal Dis* 2006; 8(9):748-55.
21. Walker AJ, Leicester RJ, Nicholls RJ, et al. A prospective study of infrared coagulation, injection and rubber band ligation in the treatment of hemorrhoids. *Int J Colorectal Dis* 1990; 5(2):113-6.
22. MacRae HM, McLeod RS. Comparison of hemorrhoidal treatment modalities. A meta-analysis. *Dis Colon Rectum* 1995; 38:687-94.
23. American Gastroenterological Association medical position statement: Diagnosis and treatment of hemorrhoids. *Gastroenterology* 2004; 126:1461-2.
24. Lohsiriwat D, Lohsiriwat V. Outpatient hemorrhoidectomy under perianal anesthetics infiltration. *J Med Assoc Thai* 2005; 88:1821-4.
25. Sayfan J. Complications of Milligan-Morgan hemorrhoidectomy. *Dig Surg* 2001; 18: 131-3.
26. Shanmugam V, Thaha MA, Rabindranath KS, et al. Rubber band ligation versus excisional haemorrhoidectomy for haemorrhoids. *Cochrane Database Syst Rev*. 2005; (3):CD005034.
27. Longo A. Treatment of hemorrhoid disease by reduction of mucosa and hemorrhoid prolapse with a circular suturing device: a new procedure. In: *Proceedings of the Sixth World Congress of Endoscopic Surgery*. 1998; Rome:77-84.
28. Jayaraman S, Colquhoun PH, Malthaner RA. Stapled versus conventional surgery for hemorrhoids. *Cochrane Database Syst Rev*. 2006;(4):CD005393.
29. Giordano P, Gravante G, Sorge R, et al. Longterm outcomes of stapled hemorrhoidopexy vs conventional hemorrhoidectomy: a meta-analysis of randomized controlled trials. *Arch Surg* 2009;144(3):266-72.