Management of Hemorrhoids

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ABSTRACT

This article discusses the pathophysiology, risk factors, classification, clinical evaluation and current nonoperative and operative treatment of hemorrhoids. Hemorrhoids are defined as the symptomatic enlargement and distal displacement of the normal anal cushions. The most common symptom of hemorrhoids is rectal bleeding associated with bowel movement. The abnormal dilatation and distortion of the vascular channel, together with destructive changes in the supporting connective tissue within the anal cushion, is a paramount finding of hemorrhoids. It appears that the dysregulation of the vascular tone and vascular hyperplasia might play an important role in hemorrhoidal development, and could be a potential target for medical treatment. In most instances, hemorrhoids are treated conservatively, using many methods such as lifestyle modification, fiber supplement, suppository-delivered anti-inflammatory drugs and administration of venotonic drugs. Nonoperative approaches include sclerotherapy and, preferably, rubber band ligation. An operation is indicated when nonoperative approaches have failed or complications have occurred. Several surgical approaches for treating hemorrhoids have been introduced including hemorrhoidectomy and stapled hemorrhoidopexy, but postoperative pain is invariable. Some of the surgical treatments potentially cause appreciable morbidity such as anal stricture and incontinence. The applications and outcomes of each treatment are discussed.

Keywords: Hemorrhoids, pathophysiology, treatment, management, outcome

Hemorrhoids are abnormally enlarged anal cushions containing arteriovenous anastomosis, traditionally described as occurring in the 3, 7, and 11 o'clock positions. The vascular supply is from branches of the superior rectal artery, which are drained by veins (internal venous plexus) emptying into the superior rectal vein. Internal hemorrhoids, which originate from above the dentate line of the anal canal, occur when these anal cushions are dragged down the canal. They affect millions of people around the world, and represent a major medical and socioeconomic problem. Multiple factors have been claimed to be the etiologies of hemorrhoidal development, including constipation and prolonged straining.

PATHOPHYSIOLOGY

The muscular fibers of the anal canal and anal sphincters lie within the connective tissue matrix. Studies have shown that, this matrix muscle ratio changes with age, showing an increase in connective tissue with age. This leads to a loss of elasticity, allowing the anchoring muscle fibers that give support to the anal cushions and sphincter complex to fragment resulting in prolapse of hemorrhoidal tissue. Other risk factors are constipation, straining and also diarrhea. Straining while sitting for long in toilet with an unsupported and relaxed perineum leads to engorgement of the anal cushions and increases the downward shearing force upon them. Along with the loss of supporting muscle fibers the venous plexus distends causing the hemorrhoids to bulge.

Hemorrhoids are common in the later stages of pregnancy and may be due to the gravid uterus causing compression on the pelvic venous system. External hemorrhoids are those that originate from varicosities of veins (external venous plexus) draining the territory of the inferior rectal artery and they occur distal to the dentate line.

CONSERVATIVE MANAGEMENT

The single most important conservative intervention is increasing the daily fiber intake to >25 g/day via the diet with/without fiber supplements. Together with increasing liquid intake, minimizing time on the
toilet and evacuating soon after feeling the urge, these interventions are aimed at minimizing constipation and straining.\(^3\) Bathing in warm water has a soothing effect on anal discomfort.\(^3\) Venotonic agents, such as diosmin (a flavonoid), used in addition to the above measures may improve the outcome of conservative treatment; venotonic injection at the hemorrhoidal site is also possible but has a poor outcome.\(^3\) For quick relief of symptoms topical agents containing local anesthetics, steroids, astringents and/or antiseptics may be satisfactory, but prolonged application may induce maceration and allergy. Conservative management is sufficient to improve or resolve symptoms in many patients. Overall, fiber supplementation can decrease severity of symptoms by a mean of around 50% in patients with Grade I-III hemorrhoids. In fact, fiber supplementation is as effective as sclerotherapy (Table 1).

### NONOPERATIVE MANagements

Nonoperative procedures are usually considered first for persistent Grade I-III hemorrhoids.

#### Rubber Band Ligation

The gold-standard is rubber band ligation (Fig. 1). It has the lowest recurrence rate at 12 months compared to sclerotherapy and infrared photocoagulation. It is recommended as the first-line treatment for Grade I and II hemorrhoids. The patient should be warned of anticipated rectal bleeding at 5-14 days after the procedure. Mild/moderate pain occurs in roughly 30% of cases. Success rate is around 75% and the complication rate stands at 0.7%.\(^4\) Recurrence at 4-5 years is around 70%, but repeating the procedure is usually sufficient; only 10% of cases would require eventual hemorrhoidectomy. A significant bleeding tendency and treatment with warfarin or heparin are absolute contraindications for banding. Antiplatelet agents, such as aspirin, should be withdrawn for a week before and after the procedure. When banding is contraindicated, other nonoperative approaches can be offered.

This method has been shown to be the most effective nonsurgical treatment for hemorrhoids.\(^4\) It is particularly effective for Grade II, but less for Grade

### Table 1. Internal Hemorrhoids: Goligher Grading and Management

<table>
<thead>
<tr>
<th>Grade</th>
<th>Symptoms and signs</th>
<th>Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>First degree</td>
<td>Bleeding; no prolapse</td>
<td>Dietary modifications</td>
</tr>
<tr>
<td>Second degree</td>
<td>Prolapse with spontaneous reduction</td>
<td>Rubber band ligation</td>
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<tr>
<td></td>
<td>Bleeding, seepage</td>
<td>Coagulation</td>
</tr>
<tr>
<td>Third degree</td>
<td>Prolapse requiring digital reduction</td>
<td>Surgical hemorrhoidectomy</td>
</tr>
<tr>
<td></td>
<td>Bleeding, seepage</td>
<td>Rubber band ligation</td>
</tr>
<tr>
<td>Fourth degree</td>
<td>Prolapsed, cannot be reduced</td>
<td>Surgical hemorrhoidectomy</td>
</tr>
<tr>
<td></td>
<td>Strangulated</td>
<td>Urgent hemorrhoidectomy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dietary modifications</td>
</tr>
</tbody>
</table>

![Figure 1. Rubber band ligation.](image-url)
III hemorrhoids because of recurrence. Comparison of rubber band ligation with excisional hemorrhoidectomy has shown no significant difference in control of bleeding and complication rate; however, ligation has higher recurrence rate.

**Sclerotherapy**

Sclerotherapy for hemorrhoids is a less-invasive, less-painful procedure that causes the problematic hemorrhoid to shrivel and dissipate within a short period of time.

Sclerotherapy usually is successful, but it is not a permanent solution and might need to be repeated, and there is a chance of fairly heavy bleeding. Five percent phenol in almond oil is injected in submucosa just above the base of hemorrhoid causing inflammation and scarring. It is an OPD procedure but complications like prostatitis and sepsis can occur.

**Bipolar Diathermy**

Bipolar diathermy for hemorrhoid uses electric current of very high frequency. The electrical energy is then used to thicken the affected tissue. Bipolar diathermy for hemorrhoid may just require several sessions before one could get rid of all the piles though.

**Infrared Photocoagulation**

Infrared photocoagulation (also called coagulation therapy) is a procedure used to treat small- and medium-sized hemorrhoids. During the procedure, device that creates an intense beam of infrared light is used. Heat created by the infrared light causes scar tissue, which cuts off the blood supply to the hemorrhoid. The hemorrhoid dies, and a scar forms on the wall of the anal canal. The scar tissue holds nearby veins in place; so, they don't bulge into the anal canal.

Only one hemorrhoid can be treated at a time. Other hemorrhoids may be treated at 10- to 14-day interval. Risks of coagulation therapy include: Considerable pain during the procedure, bleeding from the anus, infection in the anal area and temporary inability to urinate.

**Cryotherapy**

Cryotherapy is based on the concept that freezing the internal hemorrhoid at low temperatures can lead to tissue destruction. A special probe is used, through which nitrous oxide at −60° to −80°C or liquid nitrogen at −196°C is circulated.

The procedure is time consuming and associated with a foul-smelling profuse discharge, irritation and pain. The procedure is no longer recommended for the treatment of internal hemorrhoids.

**OPERATIVE MANAGEMENTS**

For symptomatic Grade III-IV hemorrhoids and hemorrhoids resistant to nonoperative procedures, a surgical approach can be adopted. This is required in only 5-10% of patients.5

**Open Milligan-Morgan Hemorrhoidectomy**

The Milligan-Morgan procedure is the most widely practiced technique and is considered the current gold standard’ for surgical management.5

Indications are when patients fail to respond satisfactorily to repeated attempts at conservative measures, hemorrhoids are severely prolapsed and require manual reduction, hemorrhoids are complicated by strangulation or associated pathology, such as ulceration, fissure, fistula or hemorrhoids are associated with symptomatic external hemorrhoids or large anal tags.

Complications of Open Hemorrhoidectomy

The major considerations accompanying open hemorrhoidectomy are the significant postoperative pain and the protracted recovery time (a minimum of 4 weeks with the MMH). A postoperative plan for pain relief devised in alliance with the patient is very important for better recovery.5 Other possible short-term complications include urinary retention, bleeding and infection.3 Long-term concerns include anal stenosis, fecal incontinence, anal fissure and fistula-in-ano.3

**Closed Ferguson Hemorrhoidectomy**

This differs from Milligan-Morgan hemorrhoidectomy (MMH) as the wound is sutured primarily. MMH may be overall better than Ferguson hemorrhoidectomy (FH) particularly as regards complication rate (Table 2).

**Circular Stapled Hemorrhoidopexy**

It is a recently introduced, operative technique for hemorrhoids. This technique is also known as ‘procedure for prolapse and hemorrhoids (PPH)’ or stapled anopexy/mucosectomy/prolapsectomy. PPH was introduced by Longo A in 1998.

It employs a circular stapling device, which removes mucosa and submucosa circumferentially 2-3 cm above the dentate line, anastomosing the proximal and distal edges, interrupting the blood supply to the remnant hemorrhoidal tissue. PPH is significantly less
painful and allows quicker recovery than MMH, but the recurrence rate may be higher in the long run. One study showed the recurrence rate of PPH versus MMH to be 5.7% versus 1% at 1 year and 8.5% versus 1.5% overall. A recent meta-analysis showed that although the short-term benefits of stapled hemorrhoidectomy may be better, the recurrence rate is significantly higher.

**Doppler-guided Hemorrhoidal Artery Ligation**

A promising procedure, first described by Morinaga et al in 1995, this technique can be performed under sedation and/or local anesthesia. It involves a proctoscope with a Doppler transducer integrated in the probe allowing sequential identification of the position and depth of superior rectal arterial branches (usually 5-7 are found at one level), which are then selectively ligated 2-3 cm above the dentate line at two levels 1-1.5 cm apart by absorbable sutures via a lateral ligation window within the scope. The interference with the blood supply suppresses the bleeding and volume of the hemorrhoids and symptomatic relief is usually evident within 6-8 weeks. Several studies have found this technique to give good results for Grade II and III hemorrhoids as it results in minimal postoperative discomfort, but randomized clinical trials and long-term follow-up are awaited to compare this technique with the open method.

Other techniques for hemorrhoidectomy include the application of the LigaSure System, Harmonic Scalpel. Dissection and coagulation are achieved via the application of pressure with graded electrical energy with the LigaSure or fine oscillatory motion with Harmonic Scalpel instruments, providing precision, a relatively bloodless field and minimal collateral tissue damage. These methods are not widely used yet but some reports show initial positive results.

**CONCLUSION**

Conventional hemorrhoidectomy is the gold standard operation against which other hemorrhoidal procedures should be compared. Nonetheless, it has its own postoperative morbidity, including pain, bleeding and infection. This has led to the application of more recent techniques to improve the treatment of this very common disease. General practitioners and colorectal surgeons have to be familiar with these novel treatment options so as to be able to guide their patients appropriately.

**REFERENCES**