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Review Article

HEMORRHOIDS: A COMPREHENSIVE REVIEW OF ETIOLOGY, PATHOPHYSIOLOGY, RISK FACTOR AND TREATMENT OPTION

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ABSTRACT

One of the most prevalent anorectal illnesses is hemorrhoids. And it has placed a formidable medical and social burden on millions worldwide. The correct etiology of hemorrhoids is still unclear, but it's related to various factors such as irregularity, constipation, obesity, pregnancy, and idle lifestyle adaptation. The pathophysiology of hemorrhoids consists of inappropriate dilatation and distortion with destructive changes in vascular channels that support the connective tissue of the anal cushion. The classification can be done on the basis of region and level of usual prolapse occurrence; there are internal, external, and mixed types. The risk factors for hemorrhoids include obesity, constipation, pregnancy, and a lazy lifestyle. The symptoms vary from rectal bleeding and pain to itching, swelling, and discomfort. Regarding treatment, it is possible to refer to both non-surgical and operative care, including topical and oral medications, lifestyle modifications, and herbal remedies. A complete treatment approach should deal with a combination of natural therapeutic options for the sake of allopathic drug therapies that enhance the chance of life with hemorrhoids.

Keywords: Hemorrhoids, Herbal treatment, Allopathy treatment, Phytotherapy, Pathophysiology.

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INTRODUCTION

Hemorrhoids are a rather common anorectal illness that manifests as the proliferation and distant relocation of normal anal cushions. They are a serious social and medical problem that affects a large number of populations globally. Hemorrhoidal development has been attributed to a number of causes, including prolonged straining and constipation. One crucial finding of hemorrhoidal illness is that it causes aberrant distension and deformation of the vascular duct, along with damaging causes that change the connective tissue within the anal mucosal cushion. Hemorrhoids may display signs of vascular hyperplasia (enlargement of the mucosa layer), and an inflammatory mediator response occurs. The current methods for both non-surgical and operative care of hemorrhoidal disease were reviewed in this article after the pathophysiology and other clinical backgrounds of the condition were examined [1]. They may result in severe financial hardships as well as psychological distress. Approximately millions of visits to ERs, doctors, and outpatient clinics occur each year in the US due to hemorrhoids, and it's one of the most prevalent gastrointestinal disorders for clinic patient visits. Numerous ideas attempt to explain the fundamental causes of hemorrhoids, despite the fact that researchers cannot completely agree upon the pathophysiology of these lesions. According to these hypotheses, hemorrhoids could be caused by conditions that impact veins in the anorectal mucosal cushions, a deterioration of the anal canal's support, or an increase in blood flow to the vascular plexus [2]. The most common theory suggests that constipation leads to chronic physiological pressure and the appearance of hardened stools, resulting in the deterioration of anal canal tissue and distal displacement of the anal cushions [3]. Various epidemiological attributes of hemorrhoids and constipation, such as gender age, affluence status, and ethnicity, indicate that there might be some discussion regarding the importance of constipation as a risk factor for the disorder known as hemorrhoid condition. Hemorrhoids are venous cushions that are enlarged inside the anal canal. Rectal bleeding, which typically occurs after defecation and is characterized by the appearance of blood in the stool also. The Goligher classification method, which is based on the degree of prolapse through the anus, is typically used to classify the severity of hemorrhoidal illness. This network assigns:

Grade 1 (hemorrhoids that bleed but do not prolapse)
Grade 2 (hemorrhoids that prolapse during straining but spontaneously reduce or revert)
Grade 3 (hemorrhoids that prolapse during straining or exertion but can be manually pushed back into the anal canal)
Grade 4 (hemorrhoids that prolapse during straining but spontaneously reduce or revert) [4].

ETIOLOGY

The exact reason for hemorrhoids is unclear. Some of the initial suggested factors include personality, physical characteristics, lifestyle, emotions, lack of physical activity, restrictive clothing, weather, and time of year. Individuals with spinal cord injuries often experience hemorrhoids, which can also be caused by many factors such as bowel obstruction, intestinal flux, and unhealthy bathroom habits, such as delaying bowel movement, using excessive force during bowel movement, and straining during bowel movement. The blood artery wall may be weakened by a number of reasons, including gravity, genetic predisposition, increased intra-abdominal pressure from multiple sources, and restricted venous outflow in the rectal ampulla as a result of pregnancy or constipation. Alcoholic cirrhosis is one of the causes of severe hemorrhoids, among other things. Obstructing the portal. Less frequently, but still significantly, hemorrhoids can indicate additional blood vessels forming due to portal hypertension. Treatment is essential [5]. Frequent pressure on the rectum is the primary reason for most cases of piles. This can occur because of putting pressure while defecating caused by long-term constipation or long-term diarrhea. Other factors that can cause piles include being obese or overweight, regularly lifting heavy objects, spending long periods of time sitting or standing, and excessive coughing or sneezing. Pregnancy in women can lead to undesirable hemorrhoids because of the womb's pressure and hormonal changes that cause veins, including those in the rectum, to relax [6,7].

PATHOPHYSIOLOGY

Hemorrhoids are ordinary vascular tissue cushions that occur submucosally in most of the anal pericellular surrounding the

confluence between the superior hemorrhoidal artery and the inferior rectal veins arteries [8]. The rectal cushions occur in three significant locations are mid left position, the right postero-lateral, and the right antero-lateral positions over the rectal cushions. The major part of these rectal cushions comprises bundles of elastin fibers and smooth muscle cells. The completion of the internal sphincter of the anus during defecation, and the collapse of vascular cushions assists in the closure of the anus [9]. Moreover, the vascular cushions supply 15–20% of the remaining anal pressure required for completion, which helps in the maintenance of anal completive. Sac is an organ abnormality that depicts when hemorrhoids are the last stage and the vascular cushions get maladaptive and enlarge, becoming symptomatic. This excessive vascular process is most often described in general terms as hemorrhoidal disease. The process of hemorrhoid formation is cramped by multiple theories, which include the sliding anal canal lining, increased supply of blood to the plexus, vascular malformations, tissue infection, and inward rectal prolapse [10].

TYPES OF HEMORRHOIDS

In addition to aiding in therapy selection, a hemorrhoid classification system facilitates the comparison of therapeutic results between therapies. The site and grade of rectal prolapse are the main factors used to classify hemorrhoids. External hemorrhoids are dilated veins of the inferior hemorrhoidal venous complex located behind the dentate or pectinate line, covered in pavement and tesselated epithelium, while internal hemorrhoids are derived from the complex above the dentate line or pectinate line and are screened in mucosa layer. Hemorrhoids that are combined into (interior-exterior) can develop the upper region or the below region dentate line or pectinate line [11]. Goligher's categorization, which is used in practice, further grades internal hemorrhoids according to their presence and level of rectal prolapse

(Grade I): There is bleeding but no protrusion of the anal cushions;

(Grade 11): There is bleeding prolapse protruding through the anus during the bowel movement and returning to normal after bowel movement

(Grade III): hemorrhoids inside the anus and rectum prolapse but do not return unless the patient pulls them back in

(Grade IV): The rectal prolapse is irreducible and occurs outside and cannot be pushed back into the anus. Fourth-degree hemorrhoids also include thrombosed hemorrhoids involving circumferential rectal mucosal prolapse and acutely thrombosed [12].

RISK FACTORS

Obesity

Some individuals who are overweight or obese frequently struggle with their diet. Many people overindulge in carbohydrates and sugars, which can lead to constipation, and lack a diet high in wholesome fibers [13]. Some people who are obese may also go on to acquire unhealthy lifestyle choices, including abusing alcohol, which might worsen their peripheral circulation [14]. Furthermore, being overweight may make you less active and more likely to sit still for long periods of time [15]. The lower gastrointestinal tract is put under additional pressure by this inactivity, and the abdominal muscles weaken and become unsupportive of it. According to several studies, obesity and the sedentary lifestyle it is associated with cause damage to the very muscles and connective tissues of the anus and rectum [16].

Constipation

Excessive straining brought on by constipation might result in hemorrhoids on the inside or outside. External hemorrhoids that occur close to the anus opening might eventually become quite painful, but internal hemorrhoids rarely cause pain (although they can bleed, swell, and itch) [17]. The major goal of conservative HD treatment should be to provide a balanced diet with enough fiber and fluids to improve stool consistency [18].

Preganacy

The development of hemorrhoids is caused by pregnancy and spontaneous vaginal delivery because these events can happen due to abnormal bowel movement, blotting problems, and decreased outflow in the veins, due to which enhance in circulatory blood volume and progesterone's venous relaxing result, and an enlarged matrix that puts stress on the rectal veins [19]. Around some population of pregnant women experience this illness in the third trimester of their pregnancy (lasts between 12 and 14 weeks) [20]. Pregnant women's symptoms can be.

Significantly reduced by taking preventive steps, such as increasing their intake of fresh produce and drinking lots of water. These precautions ought to be taken both throughout pregnancy and the postpartum period [21].

Lazy lifestyle

A western diet, lack of exercise, long working hours and a sedentary lifestyle are all bad lifestyle choices. The way people work also plays a big role. Unlike previous generations, many of today's young people are employed in jobs that are more mentally demanding (than physically demanding) and require them to be glued to a chair for 8–10 h a day. This, coupled with a lack of exercise and poor eating habits, is a recipe for disaster. This is not a good combination as it can make you more susceptible to various diseases such as diabetes, obesity, and constipation [22].

With a lazy lifestyle, you may be overweight and have constipation. Both factors help develop hemorrhoids. Being overweight can put more pressure on the anal area and the tissues and veins around it. Constipation makes you more stressed, which puts more pressure on the veins and tissues around your anus, which can lead to hemorrhoids. Hence, it's a vicious circle. The longer you sit, the more constipation is developed. The more constipated you are, the more likely you are to get hemorrhoids or make them worse [23].

SIGN AND SYMPTOM [10]

None

CHARACTERISTICS OF ALLOPATHY DRUGS [42]

Drug name	Route of administration	Result	Mechanism of action
Hydrocortisone	Topical	Relive itching	Diffuses across cell membrane to form complexes with specific receptors
Anu Cort-HC	Topical	Itching/ swelling relive	Inhibit the pain mediator and cause relief
Proctofoam-HC	Topical	Relive itching	Reducing the action of inflammation.
Anusol-HC	Topical	Relive irritation	Reduce chemicals that cause inflammation
Lidocaine	Topical	Relive swelling	Act as a local anesthetic and block voltage-gated sodium channel
Benzocaine topical	Topical	Relive swelling	Rapid plasma hydrolysis by pseudocholinesterase producing (PABA)
Pramoxine and zinc oxide	Topical	Relive pain	Decreases the permeability of neuronal membrane to sodium ions

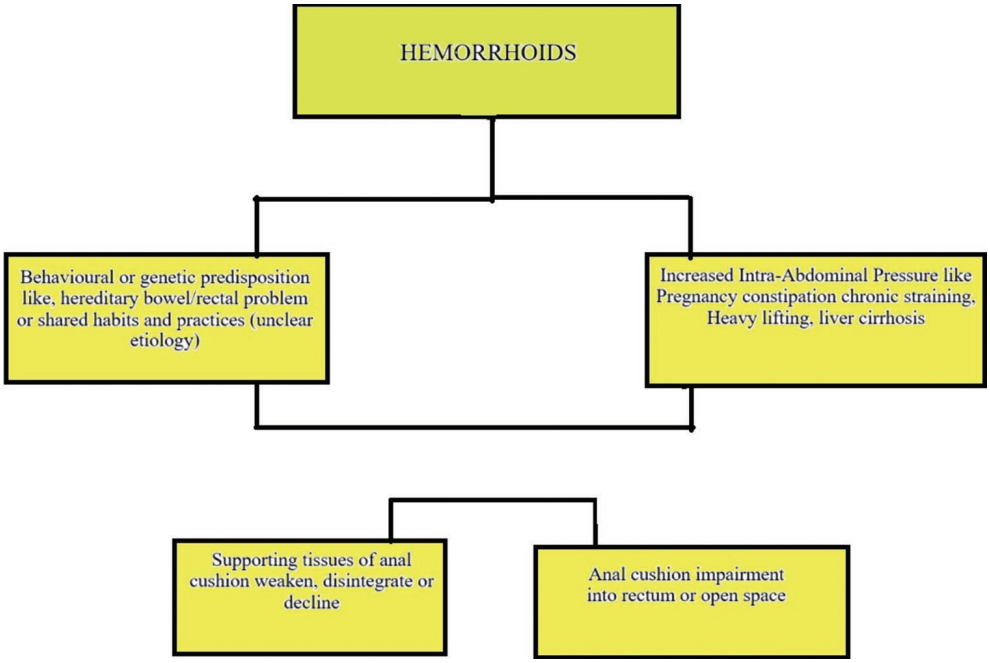


Fig. 1: Description of hemorrhoid pathophysiology [10]

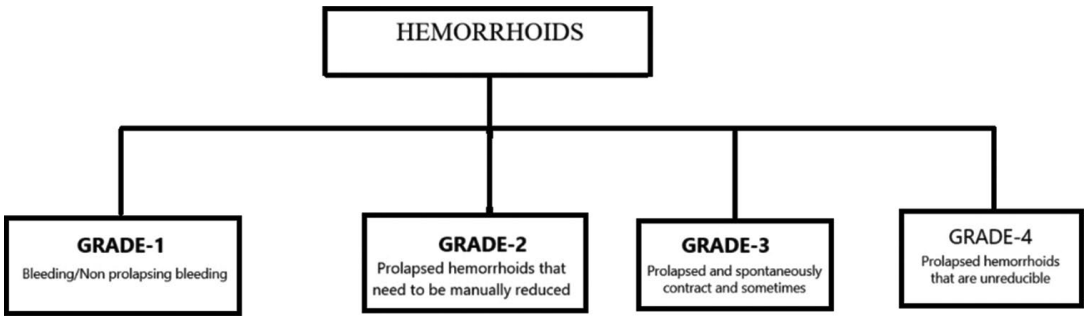


Fig. 2: (Description of Types of Hemorrhoids) [14]

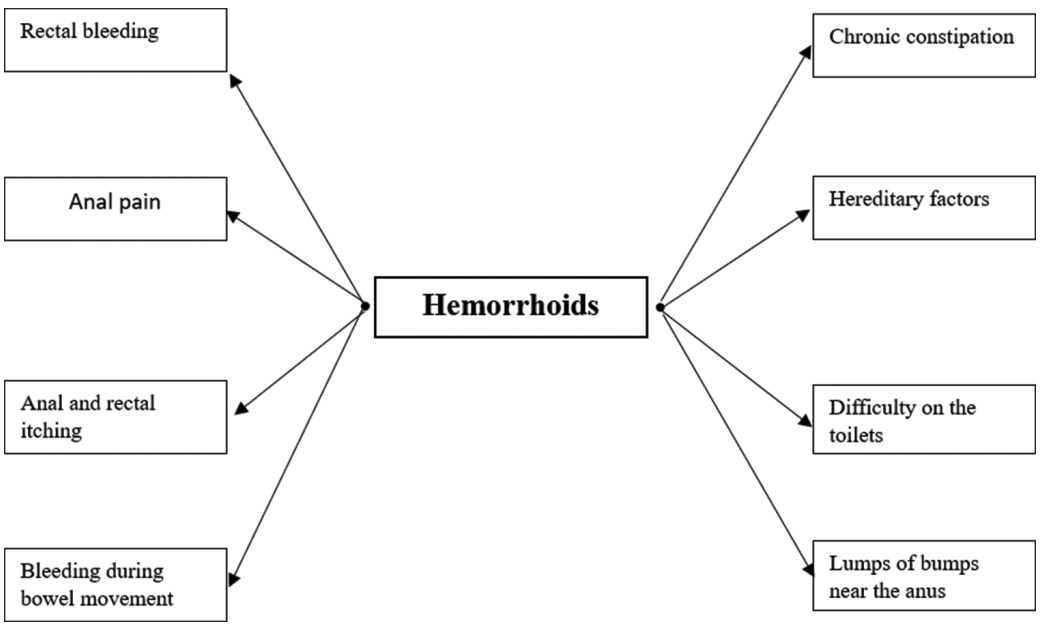
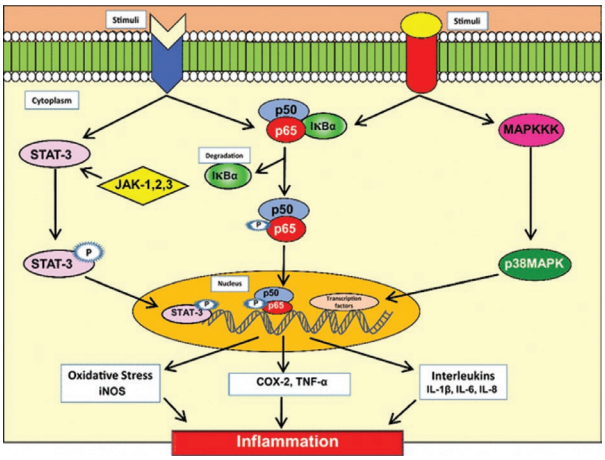


Fig. 3: List of the signs and symptoms, which are commonly observed in hemorrhoids

CHARACTERISTICS OF HERBAL DRUGS [43]

Drug name	Route of administration	Result	Mechanism of action
Acacia ferruginea DC	Topical	Cure itching, Blood-related diseases	Reduced PGE2 inflammatory
	Oral	Treated in Dysentry, Bronchitis	Reduced capillary permeability
Allium iranicum	Topical	Pain control like headache	Promote antioxidant
Balanites aegyptiaca	Oral, topically, intranasally	Anti-inflammatory	Reduced PGE2 inflammation
Euphorbia prostrata	Oral	Treat digestive system disorder	Inhibit PGE2 and thromboxane A2(TXA2)
Malva sylvestris	Oral	reduced inflammation	Reduce inflammatory mediator
Myrtus communis	Topical	Treat inflammation	inflammatory cytokine reduces
Phlomis grandiflora	Topical	Stimulant effect	Reduced inflammation target
Polygonum cognatum	Oral	Anti-inflammatory	Reduced PEG2
Portulaca oleracea	Oral	Anti-bacterial	Inhibit IL-6 cytokine

MOLECULAR PATHWAYS ENGAGED IN INFLAMMATION



The molecular mechanisms underlying inflammation. Potential sites of inhibition by plant-derived products are indicated by red arrows with crossed lines, while potential sites of activation by plant-derived products are indicated by green arrows [26,41].

CURRENT MANAGEMENT OF HEMORRHOIDS

Traditionalist

The most crucial conservative measure is to increase daily fibers' intake to more than 25 gm through diet, either with or without fiber supplements. Combined consuming more liquid, spending less time on using the restroom, and leaving as soon as you feel the need of these. The goal of therapies is to reduce constipation and extending effort. Warm water bathing provides a calming impact on Pain in the anal. Three monotonic substances, dioxin, and a flavonoid, were added to the previously mentioned actions that could enhance the results of conservative therapy; monotonic injection at the location of hemorrhage is also feasible, although the results are not good. For short symptoms' alleviation, topical medications with local astringent, antiseptics steroids, and/or anesthetics may be adequate yet drawn out. Just as successful as chemotherapy is supplements [27].

NON-OPERATIONAL MANAGEMENT

Rubber band ligation

Is the gold standard; it has the lowest recurrence rate when using infrared photocoagulation and sclerotherapy. It's suggested as the primary course of care for Grade I type and Grade II type hemorrhoids [27]. Hemorrhoidectomy has better results rates, but it is related to more complications and pain rather than the rubber band ligation method [28]. The rubber band ligation method should be examined as a first-line treatment to third-line treatment in internal hemorrhoids. Stated for bleeding and prolapsing. Surgical therapy can be considered in the presence of an important external component, thrombosis, or recurrence after repeated banding [29].

Sclerotherapy

Hemorrhoids can be treated with sclerotherapy, a less intrusive and unpleasant process that quickly shrinks and disappears the troublesome hemorrhoids. Although sclerosing normally works, it is not a permanent cure and may need to be repeated. Although it is an OPD surgery, sepsis, and prostatitis are possible side effects [30,31].

Infrared coagulation therapy

This method uses infrared light produced by a tungsten halogen lamp placed atop an apparatus that has the appearance of a trigger-happy gun. Using infrared energy, a non-operative technique, the bulk is reduced, and the hemorrhoidal tissue is scarred as a result of submucosal fibrosis and thrombosis that results in mucosal fixation. Another non-surgical technique is injection sclerotherapy, which is carried out in the left decubitus position using a proctoscope [32].

Cryotherapy

Employed for internal hemorrhoids, and in cases where larger internal hemorrhoids were removed, the initial report's findings about the methods' efficacy were overwhelmingly positive [33,34]. It takes a lot of time to compare methods, and subsequent reports have revealed unsatisfactory outcomes. Cryotherapy side effects include increased discomfort, foul-smelling discharge, and a decreased need for further medication [35]. Therefore, cryotherapy is rarely utilized today to treat cases of hemorrhoids.

Severity	Non-surgical treatment	Surgical treatment	Key notes
Mild (Grade 1)	High-fiber diet- Stool softeners- Topical creams (hydrocortisone, witch hazel)- Warm sitz baths- Hydration- Over-the-counter pain relievers (e.g., acetaminophen)	N/A	Conservative measures often sufficient for mild hemorrhoids.
Moderate (Grade 2)	High-fiber diet- Stool softeners- Topical creams (hydrocortisone, witch hazel)- Sitz baths- Hydration- OTC pain relievers	Rubber band ligation (RBL)- Sclerotherapy	Rubber band ligation and sclerotherapy for moderate symptoms.
Severe (Grade 3)	High-fiber diet- Stool softeners- Topical creams (hydrocortisone, witch hazel)- Sitz baths- Hydration- OTC pain relievers	Rubber band ligation (RBL)- Infrared coagulation (IRC)- Direct current therapy (DCT)- Hemorrhoidectomy (surgical removal)	If symptoms persist, consider hemorrhoidectomy or other surgical interventions.

(Grade 4)	(Topical Treatment, pain relief, stool softener)	Hemorrhoidectomy (surgical removal) Stapled hemorrhoidopexy	Surgery is often the only effective treatment for Grade 4

MANAGEMENT OF HEMORRHOID [37-40]

- Mild (Grade 1): Hemorrhoids are present inside the rectum, with no prolapse.
- Moderate (Grade 2): Hemorrhoids prolapse but can be manually pushed back inside the rectum.
- Severe (Grade 3): Hemorrhoids prolapse and require manual reduction.
- Prolapsed (Grade 4): Hemorrhoids prolapse and cannot be reduced, often requiring surgery.

CONCLUSION

Hemorrhoids present a multidisciplinary challenge that involves a comprehensive approach to treatment. While natural therapeutic options show promise in providing diverse and potentially safer interventions, extensive research is needed to establish their effectiveness. Allopathic drug therapies, on the other hand, provide relief and have a broader body of evidence supporting their use. By combining these therapeutic modalities and specific treatment plans, clinicians can enhance outcomes and improve the quality of life for hemorrhoid patients.

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