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## Review Paper

# A Review on Hemorrhoidal Disease

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## ABSTRACT

Hemorrhoids are characterized by the symptomatic enlargement and downward displacement of the normal anal cushions. The most common symptom associated with hemorrhoids is rectal bleeding during bowel movements. These vascular structures are typically identified by abnormal dilation and distortion of blood vessels, along with degenerative changes in the connective tissue supporting the anal cushions. Emerging evidence suggests that disrupted regulation of vascular tone and abnormal vascular proliferation may play a critical role in hemorrhoid development, making them potential targets for therapeutic intervention. Treatment typically begins with conservative approaches, including dietary modifications, increased fiber intake, anti-inflammatory suppositories, and venotonic agents. Non-surgical interventions, such as sclerotherapy and rubber band ligation—particularly the latter—are preferred when conservative measures are ineffective or complications arise. In cases where these options fail, surgical intervention becomes necessary. Symptomatic hemorrhoidal disease is among the most prevalent anorectal disorders and significantly impacts patients' quality of life. A wide range of treatment strategies exists, from non-invasive therapies to office-based procedures and surgical techniques. This review aims to explore the pathophysiology, diagnosis, and treatment options for hemorrhoids, emphasizing that management should be tailored to each patient's specific needs given the variety of available therapies.

## INTRODUCTION

Hemorrhoids are a widespread anorectal disorder, typically defined by the symptomatic enlargement and downward displacement of the normal anal cushions. This condition impacts millions globally

and presents significant medical and socio-economic challenges. Several contributing factors have been linked to the development of hemorrhoids, including chronic constipation and prolonged physical exertion. Key pathological features include the abnormal dilation and

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deformation of vascular structures, accompanied by degenerative changes in the connective tissue that supports the anal cushions [1]. Inflammation [2] and excessive growth of vascular tissue (vascular hyperplasia) [3,4] are also frequently observed in hemorrhoidal disease. This article begins by exploring the underlying pathophysiology and clinical context of hemorrhoids, followed by a discussion on current non-surgical and surgical treatment strategies. Hemorrhoids rank as the fourth most frequent gastrointestinal diagnosis in outpatient settings, accounting for approximately 3.3 million medical visits annually in the United States [5]. The self-reported yearly prevalence of hemorrhoids in the U.S. is around 10 million cases, or roughly 4.4% of the population. The condition most commonly affects individuals between 45 and 65 years of age, with no significant gender difference. It is more prevalent among white individuals than African-Americans and is seen more frequently in those with higher socio-economic status [6]. Factors such as pregnancy and physical strain—which increase intra-abdominal pressure or weaken the supportive structures of the anal canal—are known to elevate the risk of symptomatic hemorrhoids.

## **ANATOMY OF HEMORRHOIDS:**

Within the anal canal, hemorrhoids are organized into three primary clusters of vascular smooth muscle and connective tissue, typically located in the left lateral, right anterior, and right posterior positions. Rather than functioning as arteries or veins, these structures resemble sine wave-like vascular cushions, as they lack muscular walls [7]. In healthy individuals, hemorrhoidal tissue commonly surrounds the anastomosis between the superior rectal artery and the superior, middle, and inferior rectal veins. Despite this anatomical basis, the term “hemorrhoids” is often used to describe the pathological condition associated with

symptomatic hemorrhoidal disease rather than the normal anatomical structure. Hemorrhoids are classified based on their location relative to the dentate line. External hemorrhoids develop below the dentate line from ectodermal tissue. They are covered by anoderm, a type of squamous epithelium, and are innervated by somatic nerves from the perineal skin, making them painful when inflamed. Venous drainage of external hemorrhoids occurs through the inferior rectal vein, into the pudendal vein, and subsequently the internal iliac vein. In contrast, internal hemorrhoids originate from endodermal tissue and are located above the dentate line. These are covered by columnar epithelium and are innervated by visceral nerve fibers, which means they are typically painless. Their venous return is through the middle and superior rectal veins, which drain into the internal iliac vein. Internal hemorrhoids are clinically classified by the extent of prolapse. First-degree hemorrhoids remain inside the anal canal and do not prolapse. Second-degree hemorrhoids may prolapse during straining or defecation but spontaneously retract. Third-degree hemorrhoids prolapse and require manual reduction. Fourth-degree hemorrhoids are irreducible, even with manual intervention [8]. External hemorrhoids, however, do not have a standardized clinical classification.

## **PATHOGENESIS OF HEMORRHOIDAL DISEASE:**

The exact pathophysiology underlying the development of hemorrhoids remains unclear. Previously, the widely accepted theory attributed hemorrhoids to varicose veins in the anal canal. However, this "varicose vein theory" has since been debunked, as hemorrhoids and anorectal varices are now recognized as distinct conditions. Notably, individuals with varices or portal hypertension do not show a higher incidence of

hemorrhoids [9]. The currently prevailing explanation is the "sliding anal canal lining theory" [10]. According to this theory, hemorrhoids develop as a result of the weakening or deterioration of the connective tissue that supports the anal cushions. This leads to the abnormal downward displacement of these cushions, accompanied by venous dilation, forming what is clinically referred to as hemorrhoids. Typically, there are three primary anal cushions—located at the right anterior, right posterior, and left lateral positions. In addition to these, several smaller cushions are often found along the left side of the anal canal [11].

## **MANAGEMENT AND TREATMENT OF HAEMORRHOIDS:**

### **MANAGEMENT OF POST-OPERATIVE PAIN (POP)**

To reduce postoperative pain (POP), it is recommended that patients begin taking bran or laxatives a few days prior to surgery, as this helps ease discomfort during the initial postoperative period. Administering pudendal nerve blocks using long-acting local anesthetics early in the surgical process is also advised, as it can provide significant pain relief for approximately 24 hours after the procedure [12]. Among surgical techniques, the multipedicle hemorrhoidectomy tends to cause more postoperative pain than other methods. Performing an associated sphincterotomy to alleviate this pain is not recommended, as it carries a risk of fecal incontinence [13]. The choice of surgical tool—whether scissors, a cold scalpel, or electrocoagulation—has no significant impact on POP. However, techniques such as thermofusion (e.g., LigaSure™) [14] and ultrasonic dissection (e.g., Harmonic scalpel) [15] have been shown to effectively reduce early postoperative discomfort (Level 1 evidence).

To manage pain, analgesics should be administered either preoperatively or intraoperatively and continued during the recovery period. Because opioid medications are associated with adverse effects such as constipation, urinary retention, nausea, and vomiting, first-line treatment should include non-opioid options like paracetamol combined with non-steroidal anti-inflammatory drugs (NSAIDs) [16]. However, caution is advised with nefopam, as it may increase the risk of urinary retention immediately following surgery. In cases where non-opioid analgesics are insufficient, weak opioids such as codeine or tramadol may be used, particularly when the effect of the pudendal block begins to wear off.

### **STANDARD SURGICAL PROCEDURE:**

Essentially, traditional surgery entails the removal of the piles. Surgery was discovered to be the most efficient treatment option in a meta analysis of 18 prospective randomised studies comparing it to outpatient techniques such rubber band ligation, sclerotherapy, and infrared coagulation. Hemorrhoidectomy performed opens (MilliganMorgan) or closed (Ferguson). The most widely utilised procedures include hemorrhoidectomy[17]. Urinary retention, postoperative haemorrhage, discomfort, anal stenosis, and incontinence are complications linked to these procedures[18].

### **HEMORRHOIDECTOMY:**

Open hemorrhoidectomy is often the preferred surgical approach for managing severe cases of acute gangrenous hemorrhoids, particularly when conservative treatment is ineffective due to extensive tissue necrosis and significant mucosal edema [19]. Complete mechanical bowel preparation prior to the procedure is generally not recommended. Additionally, the intraoperative



use of antibiotics has not demonstrated any clear benefit in such cases [20].

## SCLEROTHERAPY:

Sclerotherapy is a suitable treatment option for patients with grade I or grade II internal hemorrhoids, and it may also be considered for individuals taking anticoagulant medications. Similar to rubber band ligation, sclerotherapy does not require local anesthesia. The procedure is performed using an anoscope to locate the internal hemorrhoids, which are then injected with a sclerosant agent—commonly a phenol solution in vegetable oil. The injected sclerosant penetrates the submucosal layer, leading to localized fibrosis and fixation of the tissue to the anal canal. Over time, the redundant hemorrhoidal tissue shrinks and eventually disappears. While the procedure is generally safe, potential side effects include mild pain or bleeding. More serious complications, such as rectal fistulas or perforations, are extremely rare and usually result from injection errors [21].

## CONCLUSION:

Hemorrhoidal disease is both common and multifaceted. When patients present with symptoms suggestive of hemorrhoids, a thorough evaluation is essential to rule out other conditions that may mimic its presentation. A wide range of treatment options is available, and the choice of therapy should be tailored to the patient's specific symptoms, overall health, and clinical findings.

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