



Current Treatments and Advancements in Managing Hemorrhoids

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ABSTRACT:

Hemorrhoids, often referred to as piles, are a very common issue that affects millions of people worldwide. They can result in discomfort, pain, and even bleeding. Obtaining the right diagnosis is crucial for effectively managing this condition. Procedures such as proctoscopy and colonoscopy are essential for evaluating the severity of the situation and ruling out any other potential issues. When it comes to treatment, a wide range of options is available, from conservative methods to more advanced surgical interventions. Traditional treatments like sclerotherapy and hemorrhoidectomy have been around for a long time and can provide relief for various levels of hemorrhoidal disease. However, there have been some exciting advancements recently that offer even better and less invasive solutions. For instance, laser treatment allows for precise removal with minimal pain and a quicker recovery. Additionally, stapler hemorrhoidectomy presents a less painful option compared to traditional surgery. Furthermore, the rubber band ligation (RBL) technique has undergone improvements, resulting in faster recovery and a lower risk of recurrence.

1. Introduction

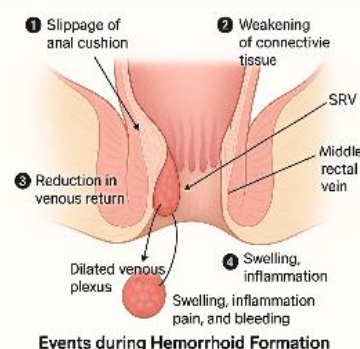
Commonly referred to as piles, hemorrhoids are the typical enlargement of the blood vessels in the anus [1]. In the anal canal, it presents an anal cushion which is fibro-elastic connective tissue containing a vascular structure blood-filled, which is present in the anal canal, the anal cushion helps to differentiate between solids, liquids, and gases. Also, it helps to maintain anal continence [2]. Hemorrhoids are subdivided into internal and external Hemorrhoids. Hemorrhoid symptoms may be painful or painless. It is painless initially, and red blood cells cover the stool. Other symptoms include itching and swelling [3]. Modification in the dietary lifestyle helps to alleviate the symptoms of hemorrhoids, as in grades III and IV, surgical treatment is required [4].

1.1. Classification:

Hemorrhoids are classified into two types: i) **Internal and ii) external hemorrhoids**. Internal hemorrhoids are divided into four grades. Hemorrhoids in **Grade I** do not extend externally and are severely strained. It may cause some bleeding, oedema, and discomfort. In **Grade -II**, hemorrhoids extend outside and the patient may feel a bump outside the anus. It moves inward after passing the stool. In **Grade III**, hemorrhoids protrude outside easily, can be physically inserted, and do not return on their own. It appears in chronic conditions.

In **Grade - IV**, hemorrhoids always protrude outside the anus and are not reducible [5]. External hemorrhoids are found beneath the dentate line, causing itching, bleeding, and pain [6].

1.2. Pathophysiology:



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Fig: Pathophysiology of hemorrhoids

Anal cushions located in the anal canal are vascular structures composed of smooth muscle, arterioles, veins, and connective tissue. These cushions assist in preserving the structure of the anal canal and also aid in preventing the involuntary expulsion



of faeces. Certain circumstances including as pregnancy, heredity, and a low-fiber diet contribute to elevated pressure inside the submucosal arteriovenous plexus, resulting in the protrusion of the haemorrhoidal cushion [3]. Four primary pathophysiological events transpire during the genesis of haemorrhoids. Initially, the displacement of the anal cushion occurs due to the deterioration of its supporting structure, resulting in movement towards the anal orifice. Secondly, it diminishes the integrity of the connective tissue, which offers strength and structural support. The third drop in venous return after faeces occurs from the sinusoid to the superior and middle rectal veins, resulting in increased pressure within the veins. As a result, blood flow from the hemorrhoidal cushion slows down. Fourth, blood flow stagnation in dilated venous plexus causes oedema, irritation, discomfort, and bleeding [7].

1.3. Causes of Hemorrhoids:

Major causes and risk factors of hemorrhoids are

2. Low water intake,
3. Inadequate fibre intake,
4. Chronic alcoholic cirrhosis,
5. Red meat consumption,
6. Obesity,
7. Chronic diarrhoea,
8. Genetics, and
9. Straining during defecation [8,9].

1.4. Symptoms:

Symptoms of internal haemorrhoids include painless rectal bleeding, while external haemorrhoids are characterised by pain, a palpable mass at the anus, discomfort, and itching. [9]

1.5. Dietary life style:

Major risk factors for haemorrhoids include a low-fiber diet, constipation, pregnancy, strenuous weightlifting, and obesity. Lifestyle and dietary modifications aid in the prevention of hemorrhoid symptoms and reduce the risk of complications. Fruits, vegetables, and grains are abundant in fibre. A fiber-rich diet can facilitate stool softening, diminish straining, and enhance bowel motility. Flavonoids are utilised to alleviate itching and bleeding associated with hemorrhoids and pain. A diet lacking in fibre may lead to constipation. Constipation results in hard stool and challenges during defecation, leading to the enlargement of anal blood vessels due to increased internal pressure.

2. Diagnosis of Hemorrhoids

The initial step in diagnosing hemorrhoids is to conduct a physical examination and review the patient's medical history. The examination consists of a thorough examination of the patient's body to look for signs of sickness. It comprises diagnostic tests such as the colonoscopy and proctoscopy [13].

2.1. Proctoscope:

A proctoscope is a diagnostic tool that is used to detect hemorrhoids. It is used to observe the left lateral, right posterior, and right anterior positions, which correspond to the 7, 11, and 3 o'clock positions [14]. The proctoscope is inserted thoroughly into the rectum to provide a clear view of the rectum. Then, it is retracted to the dentate line, and faecal fluid is extracted using gauze to enhance visibility [15].

2.2. Colonoscopy:

Colonoscopy is a medical treatment that involves the endoscopic examination of the entire colon and rectum of the patient. It is utilised to identify polyps that develop within the colon and rectum. It also facilitates biopsy and histological validation of the diagnosis. [16].

This procedure is conducted with a colonoscope that is inserted through the anus. The colonoscope is a slender, pliable tube equipped with a miniature camera and light at its terminus, which conveys images to a display monitor. The length is sufficient to visualise the entire large intestine and the distal segment of the small intestine. The colonoscope comprises several essential components: the control section, shaft, tip, connecting section, connection line, and instrument channel. Currently, colonoscopy instruments employ fibre-optic technology to transmit light from the source to the imaging region. Colonoscopy devices can do biopsies in addition to suctioning air and water. A charged-coupled device is affixed to the end of the colonoscope. While most techniques employ comparable colonoscopes, they differ in purpose; for example, the shafts designed for paediatric patients are narrower and more pliable, whereas those intended for adults often possess a diameter of a 12–14 mm [17].

The process commences with a digital rectal examination that aids in identifying any anomalies, such as anal strictures or rectal tumours. It also assists in assessing the adequacy of intestinal preparation for the colonoscopy. Subsequently, the colonoscope, a flexible tube equipped with a camera, is inserted through the anus and progressed through the



rectum into the colon. Subsequently, air will be introduced through the colonoscope to distend the intestines and inspect the various sections of the colon [18].

3. Treatments of Hemorrhoids

3.1. Sclerotherapy:

In 1928, Blanchard pioneered the use of sclerotherapy for the treatment of hemorrhoids; however, this technique was subsequently abandoned due to significant difficulties. The technology of sclerotherapy has developed and advanced in clinical environments over time. Currently, injectable sclerotherapy can be conducted while meticulously observing the general state of hemorrhoids [19]. Sclerotherapy is a technique that utilises the physical, chemical, and biological properties of a substance to damage targeted tissue. This disruption facilitates the production of hardened byproducts, termed sclerosed tissue, which can significantly modify or impair their functioning post-therapy [20]. Injection sclerotherapy is among the oldest non-surgical interventions for haemorrhoids. It is quite straightforward and highly successful; however, it may occasionally result in significant difficulties. This technique is very beneficial for addressing early-stage haemorrhoids and has demonstrated efficacy. Numerous individuals consider injection sclerotherapy a superior alternative to the existing coagulation procedure for outpatient treatment, as it is more expedient, less cumbersome, and typically more comfortable, while still yielding effective early outcomes. Nonetheless, it is important to note that a substantial single-session dose of sclerotherapy yields only transient advantages for the majority of individuals suffering from symptomatic hemorrhoids [21].

Typically, grade I and II haemorrhoids are treated with non-surgical interventions. This frequently entails modifying your diet and employing injectable sclerotherapy. The treatment utilises a stiff proctoscope and an elongated injector needle, similar to a lumbar puncture needle. A sclerosant, including 5% phenol in almond oil, 5% quinine, and urea or 23.4% hypertonic saline, is administered at the base of the hemorrhoidal complex [22].

3.2. Hemorrhoidectomy:

It is a commonly used surgical procedure in proctology. A haemorrhoidectomy is a more complex procedure typically recommended solely for third and fourth-degree haemorrhoids [23]. Furthermore, it represents the "gold standard" approach for contemporary haemorrhoidectomy [24].

The main reason for surgeons refusing surgery in patients is to manage postoperative pain following haemorrhoidectomy [25].

3.2.1. Open Haemorrhoidectomy (Milligan-Morgan):

Milligan-Morgan's activity tends to return to the regular stage early. Because of this technique, operators and patients will accept and control randomised research published in the medical literature [25]. Open haemorrhoidectomy is frequently practiced in Europe, with comparable postoperative pain and recovery rates [23]. Milligan and Morgan's. Despite its popularity for haemorrhoid surgery, it frequently causes pain, bleeding, and infections, extending the hospital stay [26].

3.2.2. Closed hemorrhoidectomy (Ferguson) techniques [27]:

The closed haemorrhoidectomy (Ferguson-Heaton procedure) is the most prevalent technique used in the USA, as it promotes quick wound healing and minimises postoperative pain [23]. It provides superior results in terms of wound healing and postoperative pain [26]. It exhibits reduced residual stenosis while also preserving the sensory function of the anus [23]. It additionally mitigates the risk of haemorrhaging [10].

3.3. Stapled hemorrhoidopexy:

Dr. Antonio Longo pioneered the development of stapled hemorrhoidopexy [28]. Referred to as the procedure for prolapse and haemorrhoids in 1998 [29]. The utilisation of circular staplers serves as a viable alternative to open haemorrhoidectomy [28]. Over the past five years, it has gained global popularity because to its reduced complication and pain rates compared to traditional haemorrhoidectomy.

Its operational duration is reduced and reaches a standard phase, as demonstrated by multiple investigations [29]. Longo employs stapled resection rather than excision. A specialised stapling equipment is employed to excise the lining within the dentate line; by removing this strip, the haemorrhoids are effectively retracted into the anal canal, where they are less prone to cause complications [31]. The drawbacks of stapled haemorrhoid surgery include: At times, it fails to adequately address external hemorrhoids. Significant requirement for subsequent surgical intervention Causes intense pain during defecation following bowel motions [32].



3.4. Laser treatment:

Scientists have developed a novel, painless, non-surgical laser therapy (HELP) for haemorrhoids that reduces discomfort. It is a minimally invasive procedure that yields favourable outcomes and has low problems post-operation [33]. Laser therapy for internal haemorrhoids. Lasers with wavelengths of 810 nm, 980 nm, and 1470 nm are presently utilised. Nonetheless, there is no optimal quantity of laser energy to employ. A study was done to evaluate the efficacy and safety of a 1940 nm laser at different energy levels for the treatment of internal haemorrhoids. Wavelengths between 810 and 1940 nanometres are utilised in several forms of light. Lasers are utilised to treat haemorrhoids primarily through two methods:

- i) **Directly Inside:** A laser is used to target the hemorrhoid tissue itself.
- ii) **Through the Skin:** A laser is used on the skin near the hemorrhoid, aiming to affect the blood flow and tissue underneath [34]. This method is good because it works with the natural healing of the body and doesn't harm the nearby tissue. It also quickly heals, kills bacteria, and causes less pain after the operation [35]. Nd: YAG, CO₂, and argon are mostly used in laser medicine. The laser beam induces various degeneration at different depths, as well as tissue shrinkage due to the laser light application because of the laser strength.[36].

3.5. Rubber band ligation:

Rubber band ligation is still the most popular outpatient treatment to haemorrhoid therapy. Its appeal arises from its high safety profile, demonstrated efficacy, and simple approach [37]. RBL, first presented by Bleisdell in 1958 and modified by Barron in 1963, supplanted injection sclerotherapy because to its lower discomfort and simplicity. Today, it is a minimally invasive, cost-effective in-office grade I to grade III therapy for internal haemorrhoids that includes tissue excision, mucosal stabilisation, and prolapse correction [38]. Rubber band ligation is not suggested for patients in Grade IV. The most common post-ligation consequences include rectal pain, tenesmus, and mild bleeding. Serious adverse effects, however uncommon, can include considerable bleeding requiring a transfusion, perineal sepsis, or urine retention. About 32% of patients may have pain or tenesmus [39].

4. Conclusion

Hemorrhoids are a common condition that affects people of all age groups, often caused by poor diet, constipation,

and lack of physical activity. Early-stage hemorrhoids can be managed through lifestyle changes, high-fiber diets, and topical treatments. When conservative methods fail, non-surgical procedures such as rubber band ligation and sclerotherapy are often effective. In severe cases, surgical treatments like hemorrhoidectomy or stapled hemorrhoidectomy may be required.

Recent advancements, such as laser therapy, have made treatment less painful and more efficient. Diagnostic tools like proctoscopes and colonoscopes have improved the accuracy of identifying hemorrhoids and ruling out other conditions. In addition, there is increasing interest in herbal and alternative therapies. Overall, the combination of early diagnosis, modern treatments, and lifestyle changes has significantly improved the management and outcomes of hemorrhoid cases.

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