

Evaluation of the Management of Haemorrhoids: A Review Article

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ABSTRACT:

Haemorrhoids are non-pathological cushions of over distended vascular tissue/plexus which stretches the over lying mucosa and anoderm, loosening their attachments to the muscle wall of the anal canal and is one of the most frequent diseases in colo-rectal surgery. With the intention of having a more customised approach, several surgical or office-based therapies are being offered. The purpose of this article was to explain the historical development of surgical therapy for haemorrhoids. It includes a description of all new surgical and office-based treatments that were developed during the first 20 years of the 2000s.

Keywords: haemorrhoids, history, surgical therapies, conventional open haemorrhoidectomy, MIPH.

INTRODUCTION:

Haemorrhoids are non-pathological cushions of over distended vascular tissue/plexus which stretches the over lying mucosa and anoderm, loosening their attachments to the muscle wall of the anal canal. They can also be divided into internal, exterior, mixed, or interno-external types, as indicated by Goligher [1], and are typically categorised based on the degree of internal component prolapse. [2] Due to the absence of a muscular layer, they are referred to as sinusoids under the microscope. [3]. Grade 1 haemorrhoids are only identified by engorged blue arteries that do not have any obvious prolapse. Grade 2 haemorrhoids prolapse with a Valsalva manoeuvre or during physical effort but spontaneously contract. Haemorrhoids in grade 3 can prolapse when exerted or when doing the Valsalva technique, but they must be manually decreased. [4] Chronically prolapsed Grade 4 haemorrhoids are impossible to manually reduce. Thus, the grade 4 haemorrhoids are very prone to complications such as strangulation, ulceration, gangrene etc. External haemorrhoids are covered in specialized skin of anal canal known as anoderm and are always below the dentate line. They are sensitive to touch, stretch, and temperature due to somatic their nerve innervations.^[5] Haemorrhoids are

cushion sinusoids which are hypothesized to function as a part of the continence mechanism and aid in complete sir tight closure of the anal canal at rest.^[6]

The prevalence of symptomatic haemorrhoids is calculated to be at 4.4% all over world. It is important to note, while haemorrhoids do not typically affect one gender more than other, women are more prone to report the presence of haemorrhoids to their doctor than men. The ASCRS (American Society of Colon and Rectal Surgeons) estimates that less than 10% of the haemorrhoid cases require surgery overall.

Multiple studies have been conducted showing MIPH to be preferred modality of treatment now-a-days due to its advantages like shorter hospital stay, decreased operation time and blood loss and lesser post op pain. However, in the settings of developing countries with lack of proper medical infrastructure, insurance and other financial aid facilities, conventional haemorrhoidectomy still remains one of the major performed procedures.

Treatment

Prevention is the best mode of treatment for haemorrhoids. The disease once started tends to get bad to worse over time due to its high association with constipation or straining.

The use of creams and suppositories, which can briefly reduce discomfort and irritation, is an alternative for medical care. In addition to preventing constipation, a diet high in fibre, low in spice, and bulk laxatives should be consumed along with plenty of water. Surgery is the basis of treatment as a result. However, operational hemorrhoidectomy is typically accompanied by serious postoperative problems, such as discomfort, bleeding, and anal stricture, which can lead to a lengthy time of recuperation. [7] Therefore, efforts to create novel methods with little discomfort and quick recovery are encouraged. A surgeon now has the choice of using bipolar electro-thermal devices, an ultrasonic scalpel, a circular stapler, or the Ligasure vessel-sealing systems thanks to recent advancements in tool technology. With the invention of the atomizer wand, it is now possible to vaporise haemorrhoids. These are a few of the surgical treatments for treating haemorrhoids:

There are several non-surgical (conservative) options, including rubber band ligation, sclerotherapy, infrared photocoagulation, cryotherapy, manual anal dilatation, LASER haemorrhoidectomy, Doppler-guided haemorrhoidal artery ligation, and the newly developed atomizing technique, which uses the atomizer wand to remove and vaporise haemorrhoids. For first- and second-degree haemorrhoids, non-operative procedures are typically performed on an outpatient basis.

Rubber band ligation was found to be the most effective form of treatment for first- to third-degree haemorrhoids, according to a recent meta-analysis of the condition.^[8]

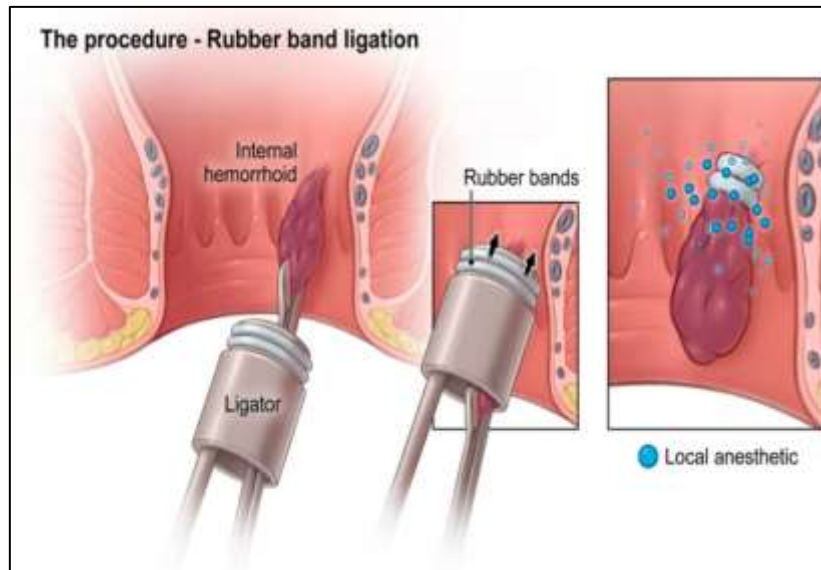


Fig 1: Barron band ligation of haemorrhoids

Injection sclerotherapy (Mitchell technique)

In 1871, Mitchell (of Illinois, USA) was the first to inject carbolic acid to treat haemorrhoids. [9] For first-, second-, and some third-degree haemorrhoids, the procedure provides efficient day care treatment. Each hemorrhoidal mass receives an injection of 1-3 ml of a sclerosant, such as quinine urea, sodium morrhuate, or 5% phenol in almond or arachis oil, into the submucosa. The goal is to cause thrombosis of the vessels by inducing inflammatory process by this irritant injection and promote fibrosis, which causes retraction of the prolapsed haemorrhoids.

Infrared photocoagulation (IPC)

For first- and second-degree haemorrhoids, infrared photocoagulation is a successful outpatient treatment. [10] A circular burn of 2 mm in depth is created at the base of the haemorrhoids by placing the infrared probe there through a proctoscope and turning it on for 1 second at each location.

Cryosurgery

For first, second, and a few selected third-degree haemorrhoids, this surgery is advised. The haemorrhoid is subjected to a cryoprobe of liquid nitrogen for around 3 minutes in order to cause the liquefaction of frozen tissue during the following 2–3 weeks. [11] Although there is no discomfort and no need for anaesthetic during this surgery, edoema and copious discharge have been reported in the majority of cases. In their trials, O'Callaghan et al. in 1982 came to the conclusion that in patients with prolapsing haemorrhoids, cryosurgery produced outcomes similar to those of open haemorrhoidectomy, but with fewer problems and a shorter hospital stay.

Manual anal dilatation (Lord's procedure)

This procedure indicated mostly for second- and third-degree haemorrhoids was advocated by Lord in 1969. During this procedure, it is aimed to stretch the anal sphincters with 4 fingers of each hand of the surgeon making the sphincter relaxed to some extent keeping an cautious eye to overzealous stretching which could damage or tear the sphincter complex. It's important to note that this procedure has been abandoned due to frequent problem of incontinence, especially if clubbed with Milligan-Morgan haemorrhoidectomy.^[12]

LASER haemorrhoidectomy

Carbon dioxide or a NdYag laser are used to evaporate or remove the haemorrhoid. [13] Precision, accuracy, and typically quick, unimpaired healing are made possible by the smaller LASER beam. It doesn't hurt. The addition of LASER therapy to other modalities is also possible. 98% of 750 patients who received LASER treatment for haemorrhoids claimed success in the study. Nearly all of the patients were satisfied. [14] For first, second, and occasionally third-degree haemorrhoids, it is a day-care operation.

Atomizing haemorrhoids

The atomizer wand utilizes the electrical current innovatively wherein a specialized electrical probe vaporizes one or more cell layers at a time, obliterating haemorrhoids to minute particles of fine mist or spray of carbon and water molecules, which is immediately suctioned in. The outcomes are comparable to those of LASER haemorrhoidectomy, with the exception that there is less bleeding and the atomizer is less expensive. For haemorrhoids in grades I, II, and III, the procedure is appropriate. The patient is discharged from the hospital. At the moment, only Arizona, USA, offers atomizing haemorrhoids.^[15]

Operative options include the clamp and cautery haemorrhoidectomy, open haemorrhoidectomy, closed haemorrhoidectomy, sub-mucosal haemorrhoidectomy, whitehead circumferential haemorrhoidectomy, stapled haemorrhoidectomy, radiofrequency ablation and suture fixation haemorrhoidectomy, pile suture' method, the bipolar diathermy haemorrhoidectomy, the Ligasure haemorrhoidectomy and the harmonic ultrasonic scalpel haemorrhoidectomy. Operative haemorrhoidectomies are reserved mainly for third- and fourth-degree haemorrhoids and second-degree haemorrhoid which is not responding to medical managements.

Operative procedures

“Now-a-days, surgeons are equipped with multiple operative procedures to suit individual cases.

Operative haemorrhoidectomy is necessary in the following situations:

1. Failed non-operative management of the second-degree haemorrhoids.

2. Advanced disease process unlikely to respond to conservative management like in case of grade 3 and 4.
3. Interno-external haemorrhoids.
4. Incarcerated internal haemorrhoids needing urgent intervention.
5. Anaemic patients requiring definitive management for haemorrhoidal bleeding.
6. Fibrosed haemorrhoids”.

Contraindications

“Relative contraindications include the following:

1. Patients unable to undergo general/spinal anesthesia due to medical co-morbidities
2. Baseline fecal incontinence.
3. Rectocele.
4. Presence of inflammatory bowel diseases such as Crohn disease or ulcerative colitis.
5. Portal hypertension with rectal varices.
6. Uncontrolled bleeding disorder”.

Clamp and Cautery haemorrhoidectomy

The advantage of this approach, which is no longer used, is that tissue planes are not dissected in any way. In Smith's pile clamp, the haemorrhoid is held in place between the insulated blades. The majority of the haemorrhoid mass is then removed with scissors, leaving just a stump. This stump is then cauterised with hot copper to stop bleeding.^[16]

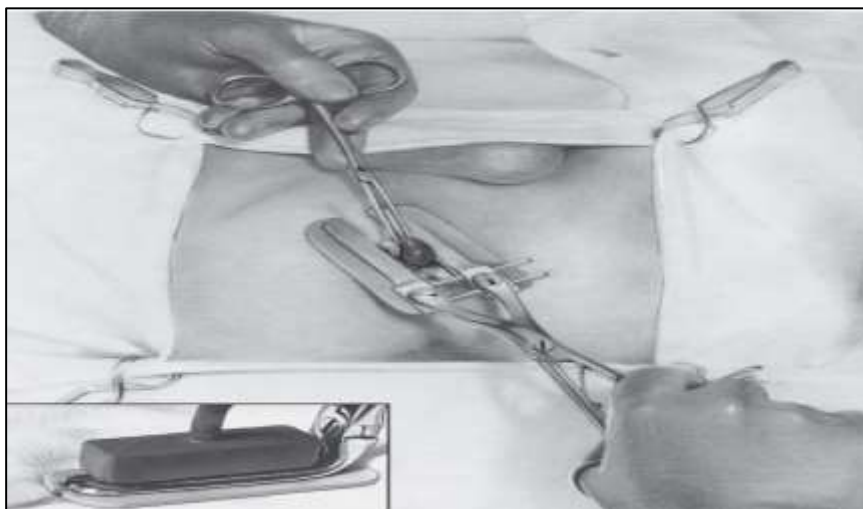


Fig 2: Clamp and cautery haemorrhoidectomy

Open haemorrhoidectomy (Milligan-Morgan method)

The most popular and generally regarded surgical method for treating haemorrhoids is this one, which is also the most frequently utilised method. [17] Open hemorrhoidectomy is a typical procedure at our facility. In Port Harcourt, Nigeria, Adotey and Jebbin demonstrated that the most common surgical procedure for treating haemorrhoids was open haemorrhoidectomy. [18] Open hemorrhoidectomy was also shown to be straightforward, safe, and cost-effective by Uba et al. in Jos, Nigeria, with postoperative discomfort, acute urinary incontinence, and bleeding being the most frequent side effects. [19,20] For third- and fourth-degree haemorrhoids, it is the preferred technique.

This technique was created in 1937 by Dr. Milligan and Morgan in the United Kingdom, mostly for haemorrhoids of grades II–IV.^[21]



Fig 3, 4, 5 & 6: Open Haemorrhoidectomy

Closed haemorrhoidectomy (Ferguson's technique)

This is a version of the Milligan-Morgan method that was created in the United States in 1952 by Drs. Ferguson and Heaton. Comparable to the Milligan-Morgan treatment, this operation has similar indications. Following the surgical removal of the haemorrhoids, the incisions are here completely or partially repaired with absorbable running suture. Because sutures frequently break during bowel movements, the Ferguson approach has no advantage in terms of wound healing. This approach has a number of changes.^[22]





Fig 7 – 12: Closed Haemorrhoidectomy

Sub-mucosal haemorrhoidectomy (Parks procedure)

This procedure was developed in the 1950s by Parks, who published results and details of the technique in 1956.^[23] It was designed to reduce postoperative pain and avoid anal and rectal stenosis. It is indicated for second- to fourth-degree haemorrhoids. A recent study by Yang *et al.*, 2005, concludes that the modified lift-up sub-mucosal haemorrhoidectomy is an easier operative method compared with the procedure originally developed by Parks.^[24]

Whitehead's circumferential haemorrhoidectomy

Dr. Walter Whitehead published the first description of this technique in 1882. It is also known as a whole or circumferential hemorrhoidectomy. The treatment was initially successful but was eventually stopped because of the high rates of complications, including haemorrhage, anal stenosis, and ectropion (Whitehead's deformity). During the surgery, the hemorrhoid-bearing rectal mucosa that is close to the dentate line must be removed circumferentially. Recent research by Maria *et al.* has demonstrated that in certain circumferential haemorrhoids instances, the Whitehead's haemorrhoidectomy is still an option.^[25]

MIPH and Stapled haemorrhoidopexy

This surgery is also referred to as a "procedure for prolapse and haemorrhoids" or circumferential mucosectomy (PPH). Longo originally described it in 1998 for second- to fourth-degree haemorrhoids. He proposed that the haemorrhoidal cushions are lifted into the anal canal by stapled resection of a full circular strip of mucosa above the dentate line.^[26-28]





Fig 13 - 20: Stapler Haemorrhoidopexy

In addition to being a substantially less painful procedure, stapled hemorrhoidopexy has major advantages in terms of hospital stay and long-term symptom control, allowing for a significantly earlier return to work.

Doppler-guided haemorrhoidal artery ligation

This novel method was also initially introduced by the Japanese surgeon Kazumasa Morinaga in 1995[29], who used an ultrasound technique called Doppler to locate the haemorrhoidal arteries. During this procedure, the operating surgeon wraps the hemorrhoidal mass with a suture material using a specialised proctoscope equipped with a Doppler probe and an appropriate working window. The method provides a secure and efficient substitute for hemorrhoidectomy, according to the study's findings by George et al. [30] This treatment would not be effective for pure external haemorrhoids.



Fig 21 - 23: Doppler guided haemorrhoidal artery ligation

Radiofrequency ablation and suture fixation of haemorrhoids (RFA)

For haemorrhoids in grades III and IV, Gupta created this novel treatment in 1998. [31] The method involves the ablation of haemorrhoids using an Ellman dual-frequency, 4-MHz radiofrequency generator. Compared to a stapled haemorrhoidectomy and a Doppler-guided haemorrhoidal artery ligation, it provides better results in terms of postoperative pain and haemorrhage.^[32]



Fig 24: RFA of haemorrhoids

Pile ‘suture’ method

“Also called the pile stitching method, it was first described in 1978 by Faraq for haemorrhoids of grades II and III. The method entails use of three interrupted sutures to secure the haemorrhoids in place without excision.^[33] This procedure is plagued with very high rate of recurrence”.

Bipolar diathermy haemorrhoidectomy

This procedure is offered specially to the patients with second-, third- and fourth-degree haemorrhoids. A randomized trial study conducted and published by Andrews *et al.* showed that diathermy haemorrhoidectomy has no significant advantage over the Milligan-Morgan procedure.^[34]



Fig 25: Bipolar haemorrhoidectomy

The harmonic ultrasonic scalpel haemorrhoidectomy

“The harmonic scalpel uses ultrasonic energy, which allows for both cutting and coagulation of haemorrhoidal tissue at precise points of application, resulting in minimal lateral thermal damage.^[35] It uses temperatures lower than those of electro-surgery or LASERS”. Although it has been established that the Ligasure haemorrhoidectomy needs lesser operating time with causing less pain to the patient.^[36]

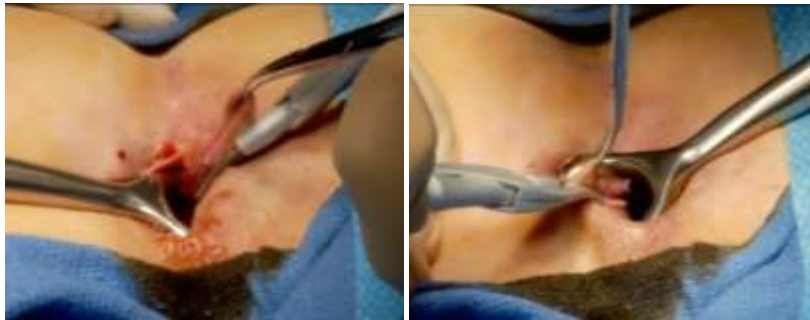


Fig 26: Harmonic scalpel haemorrhoidectomy

Ligasure and Starion haemorrhoidectomy with sub-mucosal dissection

Power for vessel sealing and bipolar surgery is provided by the Ligasure vessel-sealing generator, an isolated-output electrosurgical generator. [37] It delivers heat energy precisely and applies electrode pressure to vessels to permanently fuse the lumen wall. The Ligasure generator is comparable to the Starion thermal welding device, which uses tissue-welding technology to simultaneously fuse vessels and tissue structures closed.

“**Khanna R et al. (2010)** found that conventional haemorrhoidectomy for grade III and IV haemorrhoids was and is still a tedious procedure associated with significant morbidity and a prolonged convalescence.^[38]”

Agbo SP et al. (2011) wrote in their paper that haemorrhoids are common human afflictions known since the dawn of the history.^[39]

Yeo D et al. (2014) found that while debate continues as to which is the best surgical method for the treatment of haemorrhoids, none of the currently available surgical methods approach had claimed the first choice which should be ideally most effective while being safe and painless.^[40]

Agrawal S et al. (2016) pointed out that haemorrhoids are fibro-vascular cushions containing arterio-venous communications that are located in the sub-epithelial space of anal canal and are a normal part of human anatomy.^[41]

Sharma B et al. (2017) observed that haemorrhoids and piles are used interchangeably very often but originally the words have entirely different meanings.^[42]

Thirumalagiri VR et al. (2017) focused on a study to compare open haemorrhoidectomy with minimally invasive procedure for haemorrhoids with special reference to operative time, post-operative pain, post-operative bleeding, duration of hospital stays and recurrence.^[43]

Patel UP et al. (2017) showed that MIPH (Minimal invasive procedure for prolapsed piles) was found to be adventitious than conventional haemorrhoidectomy and performed at day stay unit.^[44]

Vinayaka NS *et al.* (2018) claimed that the aim of the study was to compare the results of Ligasure haemorrhoidectomy and conventional haemorrhoidectomy in terms of operating time and blood loss, post-operative pain, post-operative complications, hospital stay and time to return to work.^[45]

Gupta S *et al.* (2019) exclaimed that haemorrhoid was and would be one of the commonest anorectal disorders which usually requiring surgical intervention.^[46]

Kaushal A *et al.* (2020) observe that stapler haemorrhoidopexy (SH) has evolved over time as a procedure of choice over conventional surgery due to less postoperative pain.^[47]

Malyadri N *et al.* (2021) found that stapled haemorrhoidopexy had been considered as a novel technique in the surgical treatment of prolapsed haemorrhoids.^[48]

Sadeghi PM *et al.* (2021) concluded that conventional haemorrhoidectomy is still used for patients but a variety of less invasive treatments are also developed.^[49]

Zhang C *et al.* (2022) conducted study to investigate the clinical effect and outcome of traditional haemorrhoidectomy and procedures for prolapse and haemorrhoid (PPH) for the treatment of grades III and IV haemorrhoids".^[50]

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