



Update Review of Evaluation and Management of Hemorrhoids

EslamFayzTolba Nada, Hany Mohamed, Hatem Mohammad Abdelmoneim, Elsayed

I.Elhendawey

General Surgery Department, Faculty of Medicine, Zagazig University, Egypt.

Corresponding author: Eslam F. Nada, Email: islamfaiznada33@gmail.com

ABSTRACT

Background: Hemorrhoid disease is not a recent development. Hemorrhoids are edematous masses of pale connective tissue surrounded by mucosa that ranges in color from gray to tan. Typical excised hemorrhoidal tissue measures a few centimeters in aggregate. The most frequent signs are bleeding, anal swelling, prolapse, discomfort, pain, discharge, hygiene problems, and pruritus. Hemorrhoids are classified according to how close they are to the dentate line. These can be classified as internal, external, or mixed. Topical treatment of hemorrhoids was mentioned in Egyptian writings from 1700 BC, and the first report of a surgical treatment (a hemorrhoidopexy of sorts) was included in the Hippocratic Treatises of 460 BC. The anoscope is an excellent instrument with which to examine the introitus and distal rectum. The exam can be quickly performed at the bedside, without sedation or prep, using very inexpensive, disposable, self-lighted instruments. All too often the flexible endoscope is utilized to evaluate the anorectum, but unfortunately, these techniques are less accurate than simple anoscopy. When the patient's intermittent problem recurs, the production of an image can facilitate the diagnosis, particularly of early rectal prolapse, which may not be severe enough to show itself on physical examination. Several techniques attempt to correct the hemorrhoidal cushion prolapse by causing a re-fixation of the tissue to the underlying structures, as well as to decrease vascularity and to reduce some of the redundant tissue, and each technique has its strengths and weaknesses. Therefore, the aim of the present study was to review and summarize the proper evaluation and management of hemorrhoid diseases.

Keywords: Hemorrhoids; Diagnosis; Surgical Intervention

DOI Number: 10.14704/nq.2022.20.11.NQ66095

NeuroQuantology 2022; 20(11): 1001-1011

Introduction

Hemorrhoidal disease mostly affects adults after 40 years of age. Symptomatic hemorrhoids have a prevalence ranging from 4.4% in the general population, to 36.4% in the population attending general practitioners (1). Males equal to females, although males more likely to seek medical attention but mostly affects females during pregnancy and postpartum (2).

The development of hemorrhoids is multifactorial; several risk factors have been reported to be associated with the

formation of hemorrhoids such as low-fiber high-fat diet, chronic constipation and straining with defecation, diarrhea, congenital, advancing age, high resting anal sphincter pressures, obesity, rectal surgery, prolonged sitting, anal intercourse and pelvic tumors (3). The varicose vein theory stems from the assumption that the discrete venous dilations within hemorrhoids occur as a result of pathological change. These were thought to be a result of increased localized venous pressure or a localized weakness in the vein wall. Studies of infant specimens



showed that these dilations are normal structures, giving rise to the anal cushion theory (4). The vascular hyperplasia theory was popularized in the nineteenth century; haemorrhoids were thought to be a form of metaplasia of erectile tissue. Vascular anatomy remains unchanged in haemorrhoids(5).

• **Types of Hemorrhoids**

Internal haemorrhoids are those that originate above the dentate line from the inferior hemorrhoidal venous plexus. External haemorrhoids are caused by dilated venules of the external hemorrhoidal plexus and appear below the dentate line. Both above and below the dentate line, mixed haemorrhoids (interno-external) form(6).

Internal hemorrhoids have been according to the degree of prolapse, it is graded I–IV. Grade I hemorrhoids are

defined as those that bleed but do not prolapse, grade II hemorrhoids are those which prolapse but reduce spontaneously, grade III where hemorrhoids prolapse but can be reduced manually, and grade IV hemorrhoids are where they are permanently prolapsed and cannot be reduced (Table 1)(7). Other classification systems have been described on alternative clinical findings, such as hemorrhoidal position. The three main anal cushions are situated in the left lateral, right anterior, and right posterior areas of the anal canal. Symptomatic hemorrhoids may therefore be described according to their anatomical relation to these cushions and described as primary (at the sites of the mentioned anal cushions), secondary (between the anal cushions), or circumferential (6).

Table 1: Banov et al. classification of internal hemorrhoids(6).

Grade I	Bleeding without prolapse
Grade II	Hemorrhoids with bleeding and protrusion, with spontaneous reduction
Grade III	Hemorrhoids with bleeding and protrusion that require manual reduction
Grade IV	Irreducible hemorrhoids

• **Diagnosis of Hemorrhoids**

(I) **Clinical picture:**

A variety of symptoms, with varying degrees, are experienced by patients with hemorrhoidal disease. Severity of piles engorgement and prolapse is usually correlated to the severity of symptoms(8).

1. Bleeding is the most typical sign of a hemorrhoidal problem, and it usually appears first. However, should not be taken as a rule. The blood is usually brilliant red and appears initially on the toilet paper after defecation; in this case, the previously passed droppings are not bloodstained (6). The bright crimson blood may be much more copious in more

advanced hemorrhoidal complaints, spattering and staining the washroom, especially when the piles are blocked by the sphincters. When bright red bleeding is accompanied with substantial hemorrhoidal prolapse, it may be coupled with mucus discharge in other circumstances. Still, if hemorrhoidal piles appear to be affected by significant traffic, the possibility of other causes of the bleeding must be considered, and further examination should eventually be addressed by colonoscopy, which is especially important in those groups of cases at risk of colorectal tumors (9).

2. Hemorrhoidal or muco-hemorrhoidal prolapse is a frequent symptom of



hemorrhoidal disease. Between hemorrhoidal and muco-hemorrhoidal prolapse, there must be a distinction made between full-thickness rectal prolapse, manifestation of a disease with a completely different pathophysiology, and diagnostic and therapeutic techniques. In hemorrhoidal sickness, prolapse reduction can be spontaneous or done digitally or manually by the patient. The degree of prolapse and its capacity to be decreased into the anal canal are commonly utilized to characterize hemorrhoidal disease (7).

3. Discomfort and Pain:A basic hemorrhoidal sickness is typically painless, despite its severity in terms of bleeding and prolapse. When a patient complains of pain or major anal discomfort, the likelihood of severe hemorrhoidal illness (1). The presence of one or more thrombosed pile(s), external or internal, indicates that the anal pain is strictly related to this complicated hemorrhoidal disease: pain is continuous or intermittent, frequently severe and requiring medication, and is exacerbated by stool transit through the anal canal in this situation (9).

4. Mucorrhea, Hygiene Difficulties, and Pruritus:Significant protrusion of internal piles, which are covered by mucosa, beyond the anal border can generate mucous discharge from the anus; even a tiny quantity of blood can stain the mucous secretion pale crimson. Mucorrhea can cause patients distress by soiling their underwear and causing skin maceration. Irritation from skin tags is very prevalent. They are most frequently the outcome of clogged, prolapsing haemorrhoids that have been thrombosed several times when they are enormous and fibrotic (10).

(II) Investigations:

Hemorrhoidal disease is a clinical diagnosis with limited role for the

investigation but some tests can be done by:

1- A straining test:It's advised to checking the prolapse again after the patient has tried straining at the toilet. It is a very useful test to check the involved anal sphere, the degree of the prolapse, and the bleeding of hemorrhoids(11).

2- A prolapse test for hemorrhoids using

bilobaranoscope:Aragawa's bilobaranoscope is inserted into the anus toward the hemorrhoids and withdrawn open to find the hemorrhoidal pile, which will have been pulled out(3).

3- A prolapse test using gauze and an anoscope:It's to check the degree of prolapse by withdrawing the gauze inserted into the anus through a circular anoscope. But this test is relatively difficult to perform in the office (9).

4- Anoscopy:After gently inserting the anoscope up to the low rectum, it is retracted through the entire anal canal to observe the conditions of the anal mucosa (if inflamed or eroded, or the presence of other diseases), hemorrhoidal piles (engorgement, possible bleeding, and tendency to prolapse under several attempts of straining, during progressive device retraction), and dentate line (in advanced engorgement, it can be disappeared) (8).

5- Endoanal ultrasound and anorectal manometry:It can be useful in the evaluation of the sphincter complex and mechanisms of action. This is important in the assessment prior to intervention for hemorrhoids, as this may influence the type of intervention the surgeon decides upon, dependent on the risk of developing incontinence after surgery (12).

6- Flexible Sigmoidoscopy and Colonoscopy:The detection of haemorrhoids with flexible sigmoidoscopy or colonoscopy is less reliable. The



flattening of the internal haemorrhoids caused by distension of the rectum during retroflexion during colonoscopy leads to an underestimate of the degree of the internal hemorrhoidal illness (3).

7- Magnetic resonance imaging:It indicated only in case of suspected coexistence of other disorders (anal fissure, anal fistula or abscess, obstructed defecation syndrome,), suspicious malignant changes to detect the extension of the tumor (7).

Preoperative investigations asCBC, Coagulation profile, liver and kidney functions, random blood sugar and viral markers.ECG and ECHO in cardiac patients or in patients > 40 years old(9).

• **Treatment of Hemorrhoids**

The treatment of hemorrhoids should focus on eliminating the symptoms and minimizing postoperative pain,

complications, and recurrences. Against this background, noninvasive surgical treatments of hemorrhoids have shown great advances in recent years. Multiple techniques are now available. Rubber band ligation (RBL), sclerotherapy, and infrared coagulation are the most common, but other techniques are also employed: cryosurgery, bipolar diathermy, laser coagulation(2).

It has been widely demonstrated that grade I and II hemorrhoids respond to conservative management, with hygienic-dietary measures and medical treatment, but in some cases symptoms persist and noninvasive surgical treatments are required(Figure 1). A high percentage of grade III hemorrhoids also respond to these treatments, with only the most serious cases of grade III hemorrhoids, as well as those of grade IV, requiring surgical excision (13).

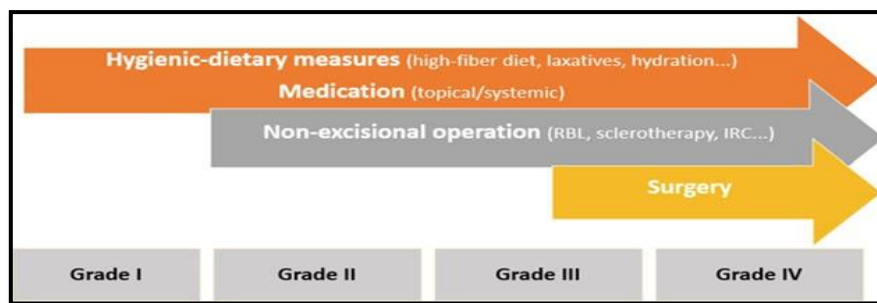


Figure (1) Treatment recommended for each grade of hemorrhoidal disease(13).

I. Rubber Band Ligation (RBL):

The main indications for RBL are symptomatic and Grade II and III hemorrhoids. However, RBL can be used in selected Grade IV cases (such as in patients with high surgical risk because of comorbidity). The RBL technique is also useful to treat non-excised internal hemorrhoids during hemorrhoidectomy, and it has also been employed to remove rectal polyps (13).The most frequent exclusion criteria for RBL are first and fourth degree hemorrhoids, thrombosed hemorrhoids, anorectal pathologies (fissures, fistulas, and abscess), colitis,

colorectal malignancies, pregnancy and coagulation disorders: unless it appears to be safe to stop antiplatelet and anticoagulant therapy before the procedure (14).

II. Sclerotherapy:

The principle of sclerotherapy is that the sclerosing agents lead to necrosis of the hemorrhoidal tissue, causing a scar that fixes the mucosa and submucosal layers to the muscular layer, avoiding prolapse.The use of aluminum potassium sulfate and tannic acid, has been widespread in recent years.The main advantage of this sclerosing agent is that



it is effective in grade III hemorrhoids, as opposed to the injection of 5% phenol in almond oil (15).

Sclerotherapy is indicated in grade I and II hemorrhoids with rectal bleeding that have not responded to conservative measures. With the introduction of ALTA, the indication has been extended to grade III hemorrhoids and, in selected cases, to grade IV hemorrhoids (16).

The contraindications for the use of sclerotherapy are inflammation in the perianal region, abscess, fissures, fistulas, external hemorrhoids, and other proctological conditions, hemorrhoidal thrombosis and acute hemorrhoidal prolapse. Previous anal surgery and previous sclerotherapy are relative contraindications(13).

III. Infrared Coagulation

Infrared coagulation (IRC), described by Neiger in 1979, is based on the controlled application of infrared energy (converted to heat) to hemorrhoidal tissue, causing tissue destruction, protein coagulation, and inflammation, events which lead to scarring and tissue fixation (17). One or two hemorrhoids are treated per session, with repeated sessions as needed every 2–4 weeks. Infrared coagulation is indicated in grade I-II hemorrhoids when

conservative treatment has failed, and in selected cases of grade III hemorrhoids (18). Complications include pain, bleeding, fissure, or spasm of the internal sphincter (19).

IV. Bipolar Diathermy and Heater Probe Coagulation:

Heater probe and bipolar diathermy devices generate heat, causing coagulation of the hemorrhoidal tissue, resulting in a fibrotic reaction at the treatment site, with fixation of the treated tissue. These methods are indicated for grade I-II-III hemorrhoids after failure of conservative measure(19).

V. Laser Coagulation:

CO₂ or Nd-YAG and diode lasers have been used to treat hemorrhoids. The laser beam is applied to the submucosal layer and causes shrinkage and degeneration of hemorrhoidal tissue at different depths, depending on the laser power (irradiance) and the duration of laser light application (Figure 2). The Nd-YAG laser has an output of 10-20 W. It uses a 0.2- to 0.4-mm probe for excision and a 0.4- to 0.6-mm probe for coagulation. The advantages of this method are minimal bleeding during the procedure, less pain after the procedure, and short treatment time (20).

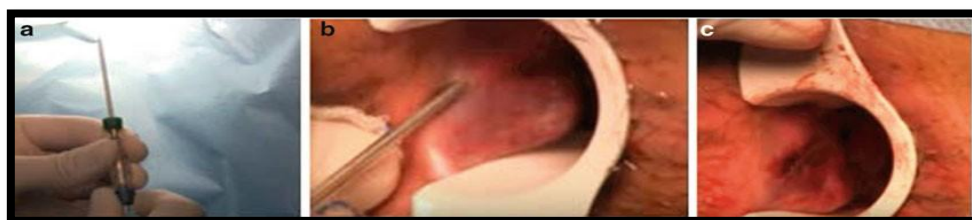


Figure (2): Laser coagulation of hemorrhoids. (a) Laser probe. (b) Laser sclerotherapy of hemorrhoids. (c) Final result of laser hemorrhoid coagulation(20).

VI. Cryosurgery:

Cryosurgery became popular in the 1970s and 1980s, but it is now obsolete. Liquid nitrogen is injected into the hemorrhoidal tissue, generating a lasting necrotizing effect. The biggest downside is

that each session takes a long time; also, the procedure might induce secondary bleeding (16).

VII. Anal Dilatation (Lord's Procedure)

After spinal or general anaesthesia, anal dilatation (digital stretching of the

anus to reduce sphincteric pressure) is done. Using both index fingers, the surgeon slowly and lightly dilates the fibrotic band of the internal sphincter. It is critical to softly and not excessively widen the sphincter. The procedure is especially beneficial for haemorrhoids that have

been incarcerated for a long time (**Figure 3**). Although Lord's method showed some promise for haemorrhoids and anal fissures, several patients experienced postoperative incontinence, and response rates were lower than with other procedures(**21**).



Figure (3): Lord's procedure for the treatment of hemorrhoids (21).

• **Surgical Procedures :**

Surgical treatments fall into three main categories: formal excisional surgery, stapled hemorrhoidopexy, also known as procedure for prolapsed hemorrhoids (PPH), and hemorrhoidal artery ligation (HAL), also known as Doppler guided hemorrhoidal artery ligation (DGHAL), and is typically performed in combination with sutured mucopexy. HAL is also known as trans-anal hemorrhoidal dearterialization (THD) or hemorrhoidal artery ligation operation (HALO). Excisional surgery involves excising the external component of the hemorrhoid along with its vascular pedicle. This is most commonly done using an open or closed. Technique where the proximal part of the vascular pedicle is suture ligated and divided after dissection has been carried out with either scissors or diathermy. It can also be carried out with energy devices that can seal and divide the vascular pedicle without the need for sutures(**22,23**).

I. Excisional Strategies:

Milligan-Morgan's and Ferguson's Operations, open and closed hemorrhoidectomy respectively, have been the baseline gold standard of

surgical treatment. Milligan and Morgan described the open hemorrhoidectomy technique, it has been practiced for almost a century with low morbidity and excellent outcomes. the closed technique, suggesting less pain and faster healing compared to the open hemorrhoidectomy(**23**). It is indicated in patients with symptomatic grade III and IV hemorrhoids or with grade II hemorrhoids that have had failures of other treatment modalities (**24**).

II. Transanal haemorrhoidal dearterialization (THD) Doppler Technique:

Indications should be established on the basis of the patient's symptoms and physical findings. If the main complaint is bleeding, this can be addressed by dearterialization alone, ligating of the hemorrhoidal arteries along the low rectal circumference. Usually, at least six arteries are found and ligated using the THD Doppler device. In case of bleeding associated with hemorrhoidal or mucosal and hemorrhoidal prolapse, mucopexy should be added to the dearterialization. In fact, mucopexy can be regarded as an "on-demand" step of THD, depending also on the location and severity of mucosal prolapse. It is mandatory that the prolapsing hemorrhoidal piles and rectal

mucosa should be reduced, so that they will reach their respective anatomical sites(8).

Only the movable section of the proctoscope is pulled back, exposing the rectal mucosa and allowing mucopexy to be conducted under direct vision. Mucopexy is performed in a proximal-to-distal orientation, along a longitudinal axis, with a continuous suture that includes the superfluous and prolapsing mucosa and submucosa. The suggested spacing between each stitch is roughly 0.5 cm, which is ideal for avoiding too tight sutures or too loose (a longer distance with consequent formation of wide enfolding of rectal mucosa/submucosa and increased risk of early postoperative rupture of the running suture).The mucopexy running suture is stopped at the proximal apex of the internal hemorrhoid, avoiding its inclusion in the mucopexy. Thereafter the suture is gently tied, finalizing the replacement of the prolapsing rectal mucosa/submucosa into the rectum. For this reason, the THD Doppler procedure can effectively be considered a hemorrhoid-sparing procedure(25).

The most common complication is tenesmus, which sometimes can turn into rectal discomfort or pain. It can be managed with analgesics and anti-inflammatory drugs. Rectal bleeding can occur in a very limited number of patients, usually within 2 weeks after the operation. Relative tissue ischemia at the level of the mucopexy suture line can result in a limited necrosis of the mucosa/submucosa and consequent bleeding (26).

III. Stapled Hemorrhoidopexy:

Hemorrhoidopexy with circular stapler or anopexy or Longo technique is a surgical procedure that emerged for the treatment of hemorrhoidal disease.

Longo's modification of the technique, which used a more proximal staple line away from the dentate line in a region devoid of pain fibers, provided an appealing surgical option for prolapsing haemorrhoids that avoided the painful anodermal wound and lengthy postoperative recovery associated with traditional excisional hemorrhoidectomy(27).

The stapler used first is 33 mm disposable similar to that used in colorectal and esophagogastric surgery and is called PPH-33-01. Nowadays, the gun that is used is a modification of the same one that receives the name of PPH33-03 and that presents some advantages with respect to the first. The staplers are sold commercialized in what is called "kit of Longo," which consists of circular stapler, either PPH33-01 or PPH33-03, transparent anoscopy, ports for suture pins and fixed anvil, which reduces accidental separation (28).

1. Insertion of the Circular Anal Dilator (CAD):

At the anal margin, four quadrant silk sutures are placed, cut long, and kept in place with hemostats. The insertion of the CAD with obturator is made easier by applying traction with these sutures. After that, the obturator is removed and the CAD is fully placed into the anal canal. With the CAD protecting the dentate line, the anal columns and lower rectal mucosa should be visible. The stay sutures are then threaded through the CAD's flange apertures to keep it in place during the surgery (Figure 4). Before administering the CAD, gentle and gradual digital anal dilatation may help to reduce the risk of postoperative anal fissure. In older individuals or those who are at risk of incontinence, an Eisenhammer retractor might be used instead of an anal dilator to reduce the danger of sphincter injury (28).





Figure (4): Insertion of the circular anal dilator (CAD), followed by insertion of the purse string anoscope which demonstrates a large prolapsing hemorrhoid in the left lateral position(27).

2. Insertion of the Purse String:

The purse string anoscope is inserted, and the purse string is put on a 30 mm round body needle with a 2/0 polypropylene suture. The dentate line is not usually apparent, although the proximal extent of the hemorrhoidal tissue can be seen more clearly. As a result, it's recommended to avoid utilizing the dentate line as a guideline for purse string placement. The suture should be placed 1–2 cm above the apex of the hemorrhoidal tissue, with the goal of include a cuff of rectal mucosa and the most proximal section of the hemorrhoidal complex rather than the entire hemorrhoidal complex. A purse string that is too close to the dentate line can cause postoperative discomfort and defecatory incontinence (28).The purse string should be begun at 12 o'clock in the

anterior midline. At each phase, the anoscope should be withdrawn and reinserted, rather than rotating in the anal canal. Suture bites should only take mucosa and submucosa, not the rectum's muscularispropria. Excessive muscle integration into the doughnut may expose the perianal tissues to microorganisms, resulting in the unusual complication of perianal sepsis (27).

3. Insertion of the Stapler:

The whole length of a suitable circular stapling device is opened. Before being moved proximal to the purse string, the head can be lubricated. Before being tied down, the purse string is cinched closed around the central rod to ensure the whole circle of the rectal mucosa is snug around the central rod(Figure 5). Using the suture-threading tool, the suture ends are drawn through the stapler head's holes(28).

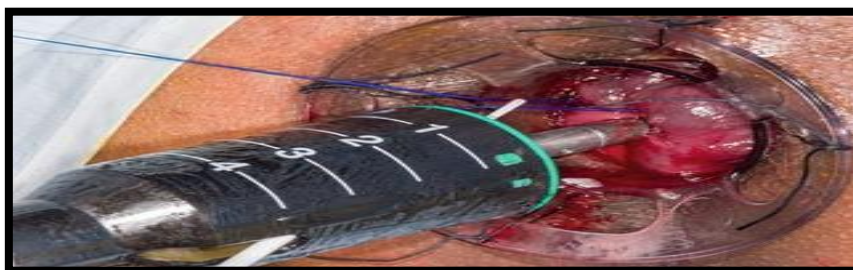


Figure (5): The two suture ends are pulled through the side hole in the stapler head using a suture-threading instrument (27).

4. Closure of the Stapler:

The two suture tails can be combined in a hemostat, which can then be used to gently traction the purse string. The PPH stapler's head is entirely

closed at the same time by moving the closure mechanism in an anticlockwise manner. The stapling instrument must be properly aligned with the axis of the anal canal. The presence of the orange

position marker in the green firing zone on the handle of the 33 mm PPH instrument confirms closure. At this stage, double-check that the posterior vaginal wall is not caught within the instrument's head. Many surgeons prefer to keep the stapler in the closed position for approximately 20 s before firing in order to compress any edema out of the rectal wall thus facilitating application of the staples (30).

5. Firing of the Stapler:

To use the PPH stapler, first release the safety mechanism and then close the handles completely in one stroke. The stapler does not separate the purse string after it has been fired because the suture stays within the instrument head. The stapler should be removed after it has been fired by opening the head and twisting the closing mechanism one half turn clockwise. The doughnut of mucosa excised from the instrument head should be removed and submitted for histology. The ideal specimen should be free of smooth muscle fibers and have no breaks in its continuity. A gauze swap should be put into the anal canal while the specimen is being removed from the instrument to aid hemostasis(27).

6. Checking the Staple Line:

The most common complication is bleeding, albeit it occurs at a reduced incidence as compared to excisional hemorrhoidectomy. Primary bleeding usually occurs shortly after the surgery, with subsequent bleeding beginning 7 days later. With the advent of more contemporary stapling equipment with a lower staple height, the incidence of bleeding from the staple line has decreased. A thorough evaluation of the staple line is essential to reduce the risk of significant postoperative bleeding (30). To assist systematic inspection for staple line bleeding, the purse string anoscope should be re-inserted. Irrigation and

suction can be used to identify bleeding spots that should be closed with a 3/0 absorbable suture. Around the staple line, electrocautery should not be utilized. To aid with hemostasis, a degradable anal sponge dressing can be used (29).

Complications of stapled hemorrhoidopexy including bleeding, pain, urinary retention, fecal Urgency, incontinence, proctitis, rectal pocket and rectovaginalFistula(30).

CONCLUSION:

Surgery is recommended for patients with grade IV haemorrhoids, those who are unable to tolerate an office-based operation, and those who have failed non-surgical treatment.

No Conflict of interest.

References:

- 1- Scaldaferrri, F., et al. (2018). "Medical Therapy of Hemorrhoidal Disease 5." Hemorrhoids: 49.
- 2- Sheikh, P., et al. (2020). "The prevalence, characteristics and treatment of hemorrhoidal disease: results of an international web-based survey." Journal of Comparative Effectiveness Research 9(17): 1219-1232.
- 3- Sandler, R. S. and A. F. Peery (2019). "Rethinking what we know about hemorrhoids." Clinical Gastroenterology and Hepatology 17(1): 8-15.
- 4- Shah, M. I. (2018). Comparative Study of Minimal Invasive Procedure for Hemorrhoids Vs Conventional Hemorrhoidectomy in Management of Hemorrhoids, Sumandeep Vidyapeeth.
- 5- Jamouille, M. (2018). Report to the VDGM group. Qualitative analysis of the communications to the WONCA group Vasco De Gama annual meeting 2018, Porto, Portugal, Marc Jamouille.
- 6- Yildiz, A., et al. (2019). "Thrombectomy for Acute Treatment of Trombosed Hemorrhoids."



- 7- acobs, D. (2014).** "Clinical practice. Hemorrhoids." *The New England journal of medicine* **371**(10): 944-951.
- 8- Deshapande, D. (2019).** A Role Of Colonoscopy In Hemorrhoidal Disorders.
- 9- Ratto, C., et al. (2018).** "Clinical assessment of hemorrhoids." *Coloproctology* **2**: 35-45.
- 10- Hollingshead, J. and R. Phillips (2016).** "Haemorrhoids: modern diagnosis and treatment." *Postgraduate medical journal* **92**(1083): 4-8.
- 11- Spivey, T., et al. (2017).** "COLON, RECTUM, AND ANUS." *Any screen. Any time. Anywhere.:* 332.
- 12- Soeseno, S. W., et al. (2021).** "Diagnosis and Management of Internal Hemorrhoids: A Brief Review." *European Journal of Medical and Health Sciences* **3**(5): 1-5.
- 13- Cocorullo, G., et al. (2017).** "The non-surgical management for hemorrhoidal disease. A systematic review." *Il Giornale di chirurgia* **38**(1): 5.
- 14- Salati, S. A. (2019).** "Research Article Rubber Band Ligation of Internal Hemorrhoids: A Study."
- 15- Miyamoto, H., et al. (2016).** "Aluminum potassium sulfate and tannic acid sclerotherapy for Goligher grades II and III hemorrhoids: results from a multicenter study." *World journal of hepatology* **8**(20): 844.
- 16- Tomiki, Y., et al. (2015).** "Treatment of internal hemorrhoids by endoscopic sclerotherapy with aluminum potassium sulfate and tannic acid." *Diagnostic and therapeutic endoscopy* **2015**.
- 17- a Silva Neves, S. (2020).** "Sclerotherapy with polidocanol foam versus Rubber band ligation versus Hemorrhoidal Artery Ligation with Recto Anal Repair in the treatment of second and third-grade hemorrhoidal disease: a prospective study."
- 18- Lohsiriwat, V. (2018).** "Anatomy, Physiology, and Pathophysiology of Haemorrhoids." *Haemorrhoids*, 1st ed.; Ratto, C., Parello, A., Litta, F., Eds: 9-18.
- 19- Trompetto, M., et al. (2015).** "Evaluation and management of hemorrhoids: Italian society of colorectal surgery (SICCR) consensus statement." *Techniques in coloproctology* **19**(10): 567-575.
- 20- Akindiose, C., et al. (2016).** "Evaluation of two injection sclerosants in the treatment of symptomatic haemorrhoids in Nigerians." *Nigerian Postgraduate Medical Journal* **23**(3): 110.
- 21- Kumar, P. (2020).** "Routine lateral sphincterotomy with open haemorrhoidectomy: Our experience of 100 cases." *International Journal of Surgery* **4**(2): 207-210.
- 22- Longchamp, G., et al. (2021).** "Non-excisional laser therapies for hemorrhoidal disease: a systematic review of the literature." *Lasers in medical science* **36**(3): 485-496.
- 23- Jeong, H. Y., et al. (2021).** "Analysis of risk factors for delayed bleeding after semi-closed hemorrhoidectomy." *International journal of colorectal disease* **36**(4): 857-864.
- 24- Ratto, C., et al. (2018).** "Dearterialization of Hemorrhoids and Mucopexy: Techniques and Results." *Hemorrhoids*: 345.
- 25- Consalvo, V., et al. (2019).** "Transanal hemorrhoidal dearterialization with doppler arterial identification versus classic hemorrhoidectomy: a retrospective analysis of 270 patients." *Annals of Coloproctology* **35**(3): 118.
- 26- Wild, J. R. and D. G. Jayne (2018).** "Technical Tips and Tricks of Stapled Hemorrhoidopexy." *Hemorrhoids*: 303.



27- Martínez, M. d. M. A., et al. (2018).

"Stapled Hemorrhoidopexy: Techniques and Results." Hemorrhoids: 279.

28- Puia, I. C., et al. (2021).

"Stapled Hemorrhoidopexy: Technique and Long Term Results." Chirurgia **116**: 102-108.

29- Sturiale, A., et al. (2021).

"Stapled surgery for hemorrhoidal prolapse: from the beginning to modern times." Reviews on Recent Clinical Trials **16**(1): 39-53.

