

Evaluation of Lateral Internal Sphincterotomy Combined with Open Excisional Hemorrhoidectomy in Treatment of Hemorrhoids

**Amr Mohamed ELsayed Elewa, Osama Hassan Ghareeb, Hany Mohamed Hassan,
Ahmed Shafiq Mohamed El hefnawy
General Surgery Department, Faculty of Medicine, Zagazig University, Egypt.**

Corresponding author: Amr M. Elewa, Email: a.m.elewa93@gmail.com

ABSTRACT

Hemorrhoids are not varicosities; they are clusters of vascular tissue, smooth muscle, and connective tissue lined by the normal epithelium of the anal canal. Hemorrhoids are presenting in utero and persist through normal adult life. The Hemorrhoidal disease can be classified into internal hemorrhoids that associated with definitive organic obstruction to the venous return and idiopathic hemorrhoids with no organic obstruction to superior Hemorrhoidal veins. Hemorrhoids due to obstruction of venous return are due to liver cirrhosis, portal vein thrombosis and abdominal tumor. The commonest abdominal cause is the pregnancy which causes hemorrhoids by venous congestion and laxity of pelvis, the rapid improvement occurs after parturition. Cancer rectum is another mechanical cause of internal hemorrhoids that leads to obstruction of tributaries of superior rectal vein. Idiopathic hemorrhoids where no evident organic venous obstruction thought to be due to hereditary, constipation, diarrhea, straining and dietary factors. The internal Hemorrhoids are frequently arranged in three groups at 3, 7 and 11 o'clock with the patient in the lithotomy position. A digital rectal examination is also required. The digital rectal examination seems to be a bit of a "lost art" for many clinicians, but it is a tremendously important aspect of the evaluation of patient's presenting with anorectal complaints. There are numerous therapy methods available, and the one chosen is dependent on severity and type of symptoms; degree of prolapse; expertise of the operator and the equipment available. The aim of the current study to review lateral internal sphincterotomy combined with open excisional hemorrhoidectomy in treatment of hemorrhoids.

Keywords: Sphincterotomy; Open Excisional Hemorrhoidectomy; Hemorrhoids

INTRODUCTION

The most important function of the anal sphincter mechanism is the formation of a high-pressure zone inside the anal canal. The anorectal continence is maintained as long as anal canal pressure is greater than rectal pressure (1). The internal anal sphincter (IAS) was thought to be responsible for 85% of maximal anal resting pressure. However, more recent studies attribute maximal anal resting pressure approximately 55% to the IAS, 15% to the vascular anal cushions, and the remaining 30% to the external anal sphincter (EAS) (2).

Because squeeze efforts generate high pressures for a short time, the squeeze mechanism likely acts only to prevent leaking upon presentation of enteric contents to the proximal canal at inopportune times. However, because of rapid fatigue, the

pressures generated by the external sphincter mechanism alone cannot be responsible for sustained continence (3).

The conscious sensation of urgency is mediated by extrinsic afferent neurons. These neurons are activated by mechanoreceptors. Although it has been suggested that these receptors are located in the pelvic floor, there is growing evidence that the rectal wall itself contains many mechanoreceptors. These receptors are very rare or absent more proximally in the colon. They do not act simply as tension and stretch receptors. They also detect mechanical deformation, such as flattening of myenteric ganglia (4).

Distention of the rectum triggers contraction of the external anal sphincter and significant internal anal sphincter contraction. The rectoanal inhibitory reflex (RAIR) is thought to allow the highly innervated sensitive epithelial lining of the upper anal canal to sample the contents of the distal rectum to determine its quality and consistency. This allows the patient to accurately discern flatus from stool, and liquid stool from firm. Alterations in this mechanism, either through reduced sensation, or impaired sampling can result in incontinence either through overflow or inability to discern that defecation is occurring (1).

The compliance and capacity of the rectum are important in the maintenance of continence. Decreased capacity and compliance of the rectum correlate directly with increased stool frequency and decreased continence. These were observed primarily in patients with ulcerative colitis and radiation proctitis. Moreover, a fibrotic rectum resulting from pelvic sepsis may compromise rectal reservoir function significantly (2).

Pathophysiology of Hemorrhoids:

Hemorrhoidal bleedings are arterial and not venous. This evidence is supported by the bright red color and arterial pH of the blood (5). The anal cushions consist of three spaces filled by arteriovenous communications supported by fibrous matrix and smooth muscle lying within the anal canal. This allows the anal lining to expand during defecation. But yet to form complete seal when the anal canal is closed (6).

The arterial supply of these cushions comes from the superior, middle and inferior rectal arteries. Hemorrhoids are thought to be due to degeneration of the smooth muscle and fibroelastic tissues which support the cushions, allowing them to prolapse into the anal canal (7). However the underlying reason for this degeneration are not clear and although constipation and straining at stool have been implicated the evidence for this is patchy, there is a family history in about 50% of cases and it is therefore possible that a genetic predisposition exists (5).

Degrees of Hemorrhoidal Disease:

The internal hemorrhoids can be classified into: first degree Hemorrhoids in which the anal cushions do not descend below the dentate line on straining. Second degree Hemorrhoids, in which the anal cushions protrude below the dentate line on

straining, disappear again immediately once straining stops. Third degree Hemorrhoids in which the anal cushions descend to the exterior on straining or defecation and remain outside until they are digitally replaced in the anal canal. Fourth degree Hemorrhoids in which the anal cushions covered by mucosa that are permanently located outside when they are replaced (**Figure 1**)(5).

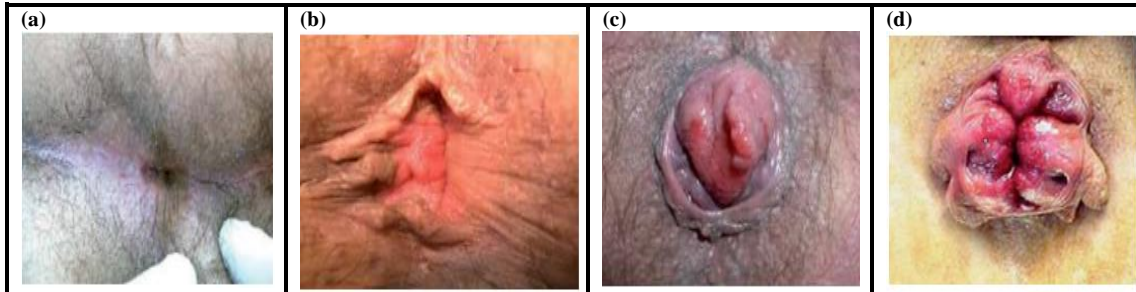


Figure (1): Hemorrhoid degree: (a) grade (I) showing normal appearance; bleeding but not prolapsing; (b) grade (II) showing bleeding and prolapse but reduce spontaneously; (c) grade (III) showing bleed and prolapse but need manual reduction and (d) grade (IV) showing bleed and permanently prolapsed.

Clinical presentation & examination:

The most common and earliest symptom the blood is bright red in color especially after passing a non-blood stained hard stool usually in absence of pain or pruritis, later profuse bleeding dripping into the pan (8). Still later continuous bright red bloody mucus discharge especially in elderly whose vascular cushions lie permanently outside the anus, the cause of bleeding in the initial phases is due to trauma to the capillaries of the lamina propria which are protected only by a single layer of epithelial cells, following prolapsed trauma due to wiping or contact with clothing often occurs due to repeated trauma, subsequently granulation tissue which is more friable and likely to bleed (8).

Prolapse occur as a protrusion with spontaneous or self-digital reduction of the mass is highly characteristic and is the other cardinal manifestation (9). Also, pain and discomfort is common in presence of prolapsed piles and is relieved by reduction especially in patients with increased anal tone. Presence of severe pain suggests another diagnosis or a complication; however some studies have found a significant incidence of pair in hemorrhoidal disease (10).

Discharge and pruritis: are seen with prolapsed piles more often other causes of pruritis must be sought. Rarely patients may present with anemia or with complications (10).

The examination is classically performed in the prone or left lateral decubitus position, but generally the left lateral position is preferred because it is more comfortable for patients and typically less intimidating than the prone or prone jack-knife positions (11).

Entities that may be encountered include skin rashes, external hemorrhoids or tags, fissures, fistulae, abscesses, neoplasms, condylomata, prolapse, hypertrophic papillae, or any combination (12).

A careful examination help depict the tone of the sphincters and whether the internal sphincter has separated from the external sphincter, amplifying the inter sphincteric groove. This double sphincter sign can indicate the presence of coexistent sphincter spasm. In addition, a partially healed anal fissure can be deduced by the presence of thickening or scar in the posterior midline or roughening of the otherwise smooth anoderm. Palpation is important, because these areas may be difficult to see (13). Anoscopy is the most accurate method for examining the anal canal and the distal-most rectum. With the availability of inexpensive disposable anosopes, the procedure may be performed in the office on unprepared patients quickly, safely, and with minimum patient discomfort (13).

Surgical management:

1. Open/Closed hemorrhoidectomy:

Operative hemorrhoidectomy is indicated in the treatment of combined internal and external hemorrhoids or third- and fourth-degree hemorrhoids, especially in patients who are unresponsive to other methods of treatment or those with extensive disease. In counseling patients regarding hemorrhoid surgery, it remains essential to set expectations at the time of consultation, detailing expected postoperative recovery, potential complications, and functional result (14).

The open hemorrhoidectomy, otherwise known as the Milligan Morgan hemorrhoidectomy (MMH), is most commonly performed in the United Kingdom. This technique involves excision of the internal and external components of the hemorrhoid, with suture ligation of the hemorrhoidal pedicles. The internal defect of the mucosa is closed and the skin incision is left open to heal by secondary intention over a 4 to 8 weeks period of time. The closed hemorrhoidectomy, or Ferguson hemorrhoidectomy (FH), more commonly used in the United States, is a similar technique to the MMH except that the skin is closed primarily with a running suture (14).

Gencosmanoglu and colleagues performed a study evaluating the open and closed technique to determine any difference, comparing operating time, analgesic requirement, hospital stay, morbidity rate, duration of inability to work and healing time. The investigators found operative time to be significantly shorter when the open technique was performed (35 ± 7 minutes) compared with the closed technique (45 ± 8 minutes). There was also no significant difference observed in the duration of hospital stay or the duration of inability to work. The average healing time was significantly shorter in the closed hemorrhoidectomy group, 2.8 ± 0.6 weeks, compared with 3.5 ± 0.5 weeks for open hemorrhoidectomy. The patients who had undergone hemorrhoidectomy with the Ferguson technique were more likely to require pain medication initially, and they

were also more likely to develop complications, such as urinary retention and anal stenosis (15).

A V-shaped incision by scalpel in the skin around the base of the hemorrhoid is followed by scissor dissection in the submucous space to strip the entire hemorrhoid from its bed. The dissection is carried cranially to the pedicle, which is ligated with strong catgut and distal part excised (16).

However, the most common complications of open hemorrhoidectomy is pain due to ligation of sensitive epithelium and spasm of the sphincter (17). Acute retention of urine especially with male gender, other risk factors are more than one operation, older age, intraoperative fluids and post-operative fluids (18). Others were rare and require specific treatment. These include: anal stenosis: 2.9%, anal fissure: 0.5%, abscess: 0.6%, fistula in-ano: 1.2%, Long term incontinence was noted, other complications include anal skin tags, pseudo polyps and epidermal cysts. Anal leakage and soiling is common (50%) during early postoperative period but settles in 6-8 wks., causes include anal dilation, loss of sensation and transient reduction in anal canal pressures. Return of anal canal pressure to normal has been described (19).

2. Stapled Hemorrhoidectomy:

Meta-analysis of randomized trials performed comparing the two surgical techniques have subsequently demonstrated that whilst stapled hemorrhoidopexy is quicker to perform, less painful post operatively and with similar complication rates to conventional hemorrhoidectomy; patients are significantly more likely to have recurrent disease with increased problems of symptom recurrence and prolapse in long term follow up. It was also stated that there was insufficient evidence to advocate performing the stapled procedure in a day case setting. The studies concluded that conventional surgery offers a more effective cure for grade IV hemorrhoids and remains the 'gold standard' in the surgical treatment of hemorrhoids particularly if recurrence and prolapse are the most important clinical outcomes (20).

3. Ligasure hemorrhoidectomy:

The LS device helps to achieve hemostasis. The principle of the surgical procedure is the same as in open or closed hemorrhoidectomy. Therefore the indications are the same and comprise stage III and IV hemorrhoids (21). An anal retractor is introduced to visualize the surgical field. The hemorrhoidal complex is grasped by Allis clamps, it is important to elevate the skin to be able to see the junction between the hemorrhoid and the perianal skin (the site where the incision should be made). Now the LS device can be applied, not too much tissue should be pulled into the jaws of the device, to reduce damage to the internal anal sphincter. To reduce the risk of postoperative bleeding, the vascular pedicle of the hemorrhoids can be sealed twice (Figure 2) (21,22). A different method has been described involving a sub mucosal

dissection before applying the LS device, by conventional dissection the sub- mucous plane is demonstrated, thereby the internal anal sphincter can be identified to avoid damage, and the LS device is only applied to the mucosa and vascular pedicle (23).

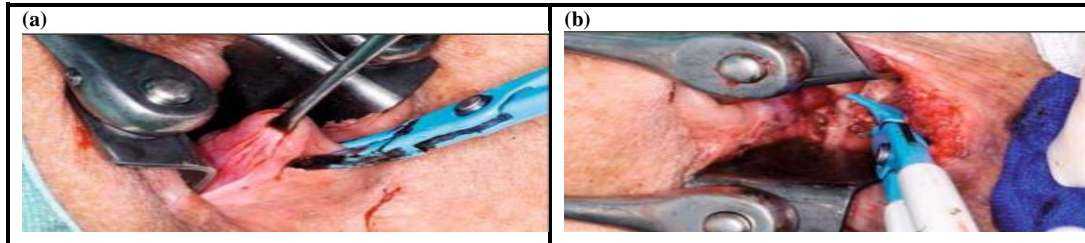


Figure (2): Ligasure hemorrhoidectomy showing (a) preparation between hemorrhoid and perianal skin and (b) sealing of the vascular pedicle using the Ligasure™ device (22).

Lateral internal sphincterotomy (LIS):

It can be performed using either a closed or open technique. In the open LIS, the surgeon opens the mucosa to directly expose the internal sphincter muscle fibres and divides them under direct vision. In the closed LIS, the mucosa is left intact, and the surgeon passes a blade either directly under the mucosa or in the intersphincteric groove prior to dividing the muscle. In a retrospective review of patients undergoing open or closed LIS found no difference in healing or incontinence rates between the two methods. In another retrospective review of patients with an open approach vs. with a closed sphincterotomy, there was no difference in symptomatic relief, recurrence rate, or the need for reoperation (24).

However, the open group had a higher incontinence rate for flatus, soiling and solid stool at a mean follow-up of 3 years. Although the incontinence rates are higher than others reported the patients reported transient or infrequent symptoms only. Accordingly, studies reporting functional outcomes are not always directly comparable. The authors concluded that both techniques produce acceptable rates of healing but the closed technique offers less risk of permanent alterations incontinence (25).

The proximal extent of the LIS continues to be a topic of debate. Whereas many surgical texts describe the length of division of the internal sphincter during LIS as at or just above the dentate line, this may result in excessive division of muscle, especially in those patients with a short anal canal. The aim of preserving more muscle while still promoting healing is achieved. In a retrospective review of 287 patients, ‘tailoring’ the division of the internal sphincter resulted in an incontinence to flatus of 1.4%, minor staining of 0.35% and difficulty with urgency of 0.7%. No patient developed incontinence of feces or leakage of stool, and only 1.4% of patients developed a recurrence (26).

A high prevalence of hemorrhoids (up to 40%) is found during screening colonoscopy in the general population, and 44.7% of patients with hemorrhoids are symptomatic and require interventions. An excisional hemorrhoidectomy (EH) is the most effective treatment for high-grade symptomatic hemorrhoids with a 2% medium-term recurrence rate and a 10% long-term recurrence rate (27,28). However, EH has some shortcomings, especially postoperative pain. The cause of this postoperative pain is multifactorial. One contributory factor may be spasm of the internal anal sphincter (IAS), which is exposed and impinged after EH. Therefore, different methods and techniques have been employed to overcome this inevitable problem (29,30).

Thus, LIS is a widely used adjunct treatment following EH. Its advocates have stated that LIS can abolish spasm of the IAS and subsequently relieve postoperative pain. However, this view has not been consistently supported by recent clinical trials. Some researchers have reported limited ability of LIS to relieve postoperative pain and increased incidence of other complications, such as bleeding and fecal incontinence. Few large-sample prospective clinical trials involving this problem have been performed to date, and the precise role of LIS following EH remains controversial (31).

CONCLUSION

Lateral internal sphincterotomy is an additional intervention to excisional hemorrhoidectomy that successfully relieves postoperative pain and reduces the incidence of anal stenosis but increases the incidence of fecal incontinence.

No Conflict of interest.

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