



## Combining Milligan-Morgan Technique with Left Lateral Sphincterotomy for Better Outcomes in Prolapsed Hemorrhoids

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### Abstract

**Introduction:** The "Milligan-Morgan" technique is considered as the golden standard for the surgical treatment of hemorrhoid disease [1]. However, modification aim to improve patient's outcome and reduce the number of postoperative complications and faster rehabilitation of patients has been and remains subject to many studies. The choice of technique depends on various factors, including the severity of hemorrhoids, the surgeons expertise, and the individual patients needs and preferences.

**Aim:** The study aimed to compare the outcomes of patients who underwent the Milligan-Morgan technique alone versus those who had the Milligan-Morgan technique combined with left lateral sphincterotomy. The researchers likely evaluated several factors, including postoperative pain, wound healing, complications, recurrence rates, and patient satisfaction. By comparing the two groups, the study aimed to determine whether the addition of left lateral sphincterotomy provided any additional benefits in terms of improved outcomes, reduced postoperative pain, or better overall patient satisfaction compared to the Milligan-Morgan technique alone.

**Material and Methods:** In this study, 152 patients diagnosed with hemorrhoidal prolapse were divided into two groups: Group A, consisting of 92 patients who underwent the "Milligan-Morgan" technique without left lateral sphincterotomy (MM), and Group B, consisting of 60 patients who underwent the "Milligan-Morgan" technique with left lateral sphincterotomy (MMS). We compared the data related to pain level and complications, including postoperative pain, wound healing, complications, recurrence rates, and patient satisfaction, during the hospitalization period and six months after surgery between the two groups.

**Results:** The study indicated several findings regarding the comparison of the “Milligan-Morgan” technique without left lateral sphincterotomy (Group A) and with left lateral sphincterotomy (Group B) for patients with hemorrhoidal prolapse. Here is a summary of the findings:

1. The average pain level was 4.96 for Group A and 5.26 for Group B. These results suggest that patients in Group B (MMS) had slightly higher pain levels but showed better tolerance during the postoperative period compared to Group A (MM).
2. Group A had a 43% wound closure rate, while Group B had a significantly higher closure rate of 9%. This indicates that wounds in Group B closed relatively faster compared to Group A.
3. Urinary retention was compared between the two groups, resulting in 33% in Group A and 4% in Group B. The statistical significance of  $P = 0.0001$  indicates that Group B had a significantly lower incidence of urinary retention compared to Group A.
4. Incontinence: both groups had similar rates of incontinence at the six-month mark.

**Complications:** Up to six months after surgery, there were 8 patients with anal stricture, which did not reach statistical significance ( $P = 0.14$ ). However, Group A had a higher number of complications, including: postoperative pain, wound healing issues, complications, and recurrence rates compared to Group B. Group B had a lower incidence of complications (14%) compared to Group A (37%).

**Conclusion:** The addition of left lateral sphincterotomy to open hemorrhoidectomy in patients with prolapsed hemorrhoids offers several benefits: postoperative pain reduction, faster wound healing, preserved urinary continence, reduction in postoperative complications.

**Keywords:** Open Hemorrhoidectomy; Pain; Sphincterotomy; Hemorrhoids; Hemorrhoidal Prolapse

## Introduction

The surgical treatment techniques for hemorrhoidal prolapse are specifically focusing on the “Milligan-Morgan” technique (open hemorrhoidectomy) and the left lateral sphincterotomy technique [1]. The “Milligan-Morgan” technique is considered the gold standard for surgical treatment of hemorrhoid disease, while the left lateral sphincterotomy is commonly used for the treatment of anal fissures [2]. Hemorrhoidal prolapse, a condition described by Hippocrates in 460 BC, affects a significant number of individuals, with approximately 10 million Americans experiencing it annually. It is more prevalent in women between the ages of 40 and 65 and is commonly observed in pregnant women [3]. Hemorrhoids are highly vascular cushions located along the anal canal, with three typical columns - left lateral, right lateral, and anterior. Pathophysiologically and anatomically, hemorrhoid disease is characterized by a decrease in elasticity and an increase in the volume of hemorrhoid structures [4]. There are two main types of hemorrhoids: internal and external. They can be further classified into four grades based on their localization and the degree of prolapse (Grades 1 and 2) [5]. The presence or absence of postoperative wounds is used to classify surgical treatment techniques into two groups: open hemorrhoidectomy and closed hemorrhoidectomy. The “Milligan-Morgan” technique, which falls under open hemorrhoidectomy, has been widely used since 1979 and is considered the golden standard for surgical treatment of hemorrhoid disease [6]. The left lateral sphincterotomy technique, on the other hand, is primarily employed for the surgical treatment of benign anal fissures [7]. It involves cutting the internal anal muscle up to the cryptal level, resulting in muscle relaxation, improved blood supply in the anal canal, reduced pain, and fissure recovery. The open technique is typically performed for patients undergoing this procedure [8].

## Material and Methods

The study was conducted from September 2009 to October 2013 and aimed to evaluate various aspects of surgical treatment for hemorrhoidal prolapse. Here are some key points regarding the study: 1. Patient Population: The study included a total of 152 patients (male and female) diagnosed with hemorrhoidal prolapse. They were divided into two groups: Group A (92 patients) underwent the “Milligan-Morgan” technique without left lateral sphincterotomy, and Group B (60 patients) underwent the “Milligan-Morgan” technique with left lateral sphincterotomy. 2. Diagnostic Process: The diagnosis of hemorrhoidal prolapse was made through anoscopy, and patients did not present anemia resulting from rectal bleeding. Before the surgery, patients underwent colonoscopy, abdominal ultrasound, routine, and biochemical laboratory examinations. The study did not evaluate the difference in sex and age of the patients. 3. Surgical Procedure: All interventions were performed with spinal anesthesia using a lidocaine solution. The preoperative preparation included a light hydric diet and the administration of antibiotics and omeprazole. Two rectal enemas were administered prior to the surgery. The surgeries were performed by the same surgeon. 4. Surgical Techniques: The “Milligan-Morgan” technique was used in both groups, and left lateral sphincterotomy was performed in Group B. The use of electro-lancet was minimized, and the Parks Retractor was used with minimal dilating effect. Hemorrhoid peduncles were ligated with Vicryl 2-0. Postoperative pain level was evaluated using the visual analog scale (VAS). 5. Postoperative Care and Follow-up: After the surgery, a fiber diet was initiated, and lactulose was administered to facilitate the first defecation. Patients were discharged from the hospital after the first defecation, provided they had no complications, and the pain level was tolerable. Follow-

up visits were scheduled every 10 days in the first month and every month for the next three months, with the final visit occurring six months after surgery. Incontinence was assessed using the "Pescatori score" scale at the six-month mark. Parameters Evaluated: The study evaluated various parameters, including postoperative pain level, pain level during the first defecation, quantity and duration of postoperative rectal bleeding, duration of wound closure, urinary retention, anal sepsis, and incontinence grade six months after surgery.

**Statistical analysis**

We conducted a prospective study comparing the outcomes between two groups: Group A (MM technique without left lateral sphincterotomy) and Group B (MM technique with left lateral sphincterotomy). The categorical variables we analyzed included the use of analgesic injection, duration of rectorrhagia, wound healing process, urinary retention, anal sepsis (all estimated one month after surgery), incontinence grade (estimated six months after surgery using the "Pescatori score"), and complications identified up to six months after surgery. To assess the statistical significance of these categorical variables between the two groups, we used the Chi-square test. For the continuous data related to the level of postoperative pain and pain during the first defecation, we used the T-test to compare the means between the two groups. The

T-test is a statistical test used to determine if there is a significant difference between the means of two groups. A p-value less than 0.05 was considered statistically significant. This significance level was commonly used to assess whether the observed differences between groups are likely due to chance or if they represent true differences. We aim to determine if there were significant differences between the two treatment techniques (with and without sphincterotomy) in terms of the variables assessed.

**Results**

The male to female ratio in the study was 1:2. In Group A, there were 58 men and 34 women, while in Group B, there were 43 men and 17 women. The average age of patients in Group A was 46.8 years old, and in Group B, it was 52.5 years old. The study found a significant difference in postoperative pain and pain during the first defecation between the two groups. The report states that the pain level in Group A was 8:18 compared to 6:21 in Group B, with a T-test result of 4. Similarly, the pain level during the first defecation was higher in Group A compared to Group B, with a reported ratio of 9:32 to 7:32 and a T-test result of 5:26.

The postoperative rectorrhagia was more frequent beginning from the eleventh to the twentieth day (table 1).

Variables	Group A (N = 92)	Group B (N = 60)	P value*
Average postoperative pain level by VAS**	8.18 (cfare njesi %???)	6.21	0.0001
Average pain level during first defecation	9.32	7.23	0.0001
Number of morphine vials			
Three vials	76(82.6) ***	10(16.7)	0.0001
Two vials	16(17.4)	14(23.3)	NS
One vial	0(0.0)	36(60.0)	0.0001
Rectorrhagia duration			
1 to 10 days	92(100.0)	60(100.0)	N.S
11 to 20 days	76(82.3)	35(58.3)	0.001
21 to 30	31(33.7)	2(3.3)	0.0001
over 30 days	5(5.4)	0(0.0)	NS
Wound healing process			
Up to 30 days	49(53.2)	51(85.0)	0.0001
Over 30 days	43(46.7)	9(15.0)	0.0001
Urinary retention	33(35.9)	4(6.6)	0.0001

**Table 1:** Characteristics of patients who underwent Milligan-Morgan technique without left lateral sphincterotomy (Group A) and Milligan-Morgan technique with left lateral sphincterotomy (Group B) during hospitalization.

\* Chi-square test and T-test used for statistical analysis as appropriate (p<0.005 was considered as significant).

\*\*Percent (all such values).

VAS, visual analog scale.

Wound healing was faster in patients who underwent sphincterotomy (Group B) compared to those without sphincterotomy (Group A). By the thirtieth day after surgery, 85% of patients in Group B had epithelized wounds, while only 53% of patients in Group A had achieved wound closure. Urinary retention was more prevalent in patients in Group A, and it was also correlated with the pain level. This suggests that patients in Group A experienced more difficulties with urinary retention compared to those in Group B. Anal sepsis was more evident in Group A, possibly due to ischemia. This implies that patients in Group A had a higher incidence of anal sepsis compared to those in Group B. Regarding incontinence grade, there was no significant difference between the two groups. This means that both groups had similar rates of incontinence, and the presence of sphincterotomy did not significantly affect incontinence outcomes. One notable complication that showed a significant difference between the two groups was the occurrence of anal stricture. However, specific details regarding the significance level or statistical analysis for this finding were not provided (Table 2).

Perianal sentinel	2(2.2)	1(1.7)	NS
Unclosed wounds	5(5.4)	0(0.0)	NS
Anal fissures	5(5.4)	0(0.0)	NS
Anal stricture	8(8.7)	0(0.0)	0.014
Without complications	58(63.0)	58(96.6)	0.0001

**Table 2:** Characteristics of patients who underwent Milligan-Morgan technique without left lateral sphincterotomy (Group A) and Milligan-Morgan technique with left lateral sphincterotomy (Group B) after surgery.

\* Chi-square test used for statistical analysis (p < 0.005 was considered as significant);

\*\* All such values are mean;

\*\*Percent (all such values).

**Discussion**

The study findings indicate that the group of patients who underwent the Milligan-Morgan technique without left lateral sphincterotomy (Group A) experienced higher levels of postoperative pain compared to the group that received sphincterotomy (Group B). Pain post-hemorrhoidectomy is a well-known complication resulting from various factors such as wound tension, electrocoagulation, suture placement, and the high sensitivity of the anal canal [10]. The release of inflammatory mediators like TNF-a, interleukins, cyclooxygenase, histamine, and chemokines contributes to the pro-inflammatory effects and pain amplification [11]. By relaxing the internal anal muscle, sphincterotomy improves blood supply, reduces postoperative edema and spasm, and ultimately leads to pain reduction. The earlier defecation in patients who underwent sphincterotomy compared to those without sphincterotomy leads to an early recovery [12]. The difference in pain levels is also evident from the number of morphine vials administered, with a higher proportion of Group A patients requiring three vials compared to Group B patients (82% vs. 16.7%). Additionally, wounds in Group B patients epithelized at a faster rate than those in Group A patients. Urinary retention, a known complication after anorectal surgery, was more prevalent in Group A (33%) compared to Group B (6%). Urinary dischargers were used instead of catheters, and no patient left the hospital with a urinary catheter. Local sepsis was observed in only 7 patients

Variables	Group A (N = 92)	Group B (N = 60)	P value*
Anal sepsis (one month after surgery)**	7(7.6) (cfare nje-sie???)	0(0.0)	0.014
Incontinence Grade (6 months after surgery)			
Continent	91(98.9) ***	59(98.3)	NS
Gas incontinence	1(1.1)	1(1.7)	NS
Liquid defecation incontinence	0(0.0)	0(0.0)	
Normal defecation incontinence	0(0.0)	0(0.0)	
Complications (up to 6 months after surgery)			
Serious rectorrhagia	3(3.3)	1(1.7)	NS
Anorectal Fecaloma	2(2.2)	0(0.0)	NS
Hemorrhoidal Thromboses	4(4.4)	0(0.0)	NS
Anal canal secretions	5(5.4)	0(0.0)	NS

from Group A, and they received appropriate local treatment. In terms of incontinence evaluation, there was no significant difference between the two groups, with incontinence rates ranging from 1.3% to 2.9%, which is consistent with previous studies. However, the overall rate of postoperative complications within six months was higher in Group A. Rectorrhagia cases were resolved with local anesthesia and saturation in the hospital. Fecaloma cases were manually removed, and thrombosed hemorrhoids were treated by removing the thrombus under local anesthesia. Unhealed wounds persisted until the 45th day, requiring repeated stimulation to promote closure. Anal fissures were treated with rectal cream containing nifedipine and lidocaine. Anal stenosis was observed in 8 cases, all of them were in Group A and showed a statistically significant difference compared to the literature. The study results align with similar studies conducted by Altomare., *et al.* and Khubchandani., *et al.* which reported comparable findings regarding anal stricture and rectorrhagia [13,14]. Altomare., *et al.* found a 6% anal stricture rate, while Khubchandani., *et al.* reported a low rate of gas incontinence (3%) in their respective studies [14].

## Conclusions

The lateral sphincterotomy performed alongside with open hemorrhoidectomy in patients with hemorrhoid prolapse has several positive effects: 1-Reduction of postoperative pain: Sphincterotomy helps in relaxing the internal anal muscle, improving blood supply, and reducing postoperative edema and spasm [15]. This leads to a decrease in postoperative pain compared to patients who did not undergo sphincterotomy. 2-Faster epithelization of postoperative wounds: The study showed that patients who received sphincterotomy had a higher percentage of wound epithelization compared to those without sphincterotomy. This suggests that sphincterotomy promotes faster healing and closure of surgical wounds [16]. 3-Reduction in catheterization: Urinary retention is a known complication after anorectal surgery. The study found that sphincterotomy reduced the incidence of urinary retention, resulting in a lower number of patients requiring catheterization. 4-Decreased incidence of wound sepsis: Sphincterotomy may help reduce the occurrence of anal sepsis, which was observed more frequently in patients who did not undergo sphincterotomy. By improving blood supply and reducing ischemia, sphincterotomy may contribute to a lower risk

of wound infection [17]. 5-Reduction in overall complications: The study indicated that sphincterotomy was associated with a lower incidence of complications. This includes avoiding complications such as anal stricture, which can significantly impact the patient's quality of life and often necessitates additional surgical intervention [18].

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