Original Article

Effect of Lateral Anal Sphincterotomy in Patients Undergoing Milligan-Morgan Hemorrhoidectomy in a Tertiary Care Hospital

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ABSTRACT

Background: Milligan-Morgan (MM) hemorrhoidectomy is associated with postoperative pain, bowel delay, and complications. Lateral internal sphincterotomy (LIS) can decrease sphincter spasm and enhance the recovery. In this paper, the authors assessed the impact of adding LIS to MM hemorrhoidectomy on postoperative outcomes.

Methods: The study was a quasi-experimental study of 60 patients who underwent MM hemorrhoidectomy (Group A (MM only, n = 30) and Group B (MM + LIS, n = 30). The Visual Analog Scale (VAS) was used to measure postoperative pain at 6 h, 24, day 3, day 7, and day 14. Other findings were included in time to first bowel movement, hospital, Wexner incontinence, and postoperative complications. The t-tests and chi-square tests were used for statistical analysis.

Results: The patients of the MM + LIS group had significantly lower pain scores ($p < 0.001$) at all-time intervals, earlier first bowel movement (25.6 $\pm$ 0.72 h vs. 30.6 $\pm$ 1.43 h, $p = 0.001$), and reduced hospital stay (2.0 $\pm$0.0 days vs. 2.93 $\pm$0.25 days, $p = 0.001$) than the patients of the MM alone group. There were also decreased postoperative complications, including urinary retention, postoperative bleeding requiring correction, and delayed wound healing. Wexner scores for incontinence were not significantly different between the two groups.

Conclusion: LIS is added to MM hemorrhoidectomy, and it has a significant effect of reducing postoperative pain, early bowel movement, short hospitalization, and complications, especially in younger and healthier patients. It is important to carefully select patients and counsel them on the risk of incontinence. These results suggest that LIS is useful as a supplement to standard hemorrhoidectomy.

Keywords: Hemorrhoidectomy; Milligan-Morgan; Lateral internal sphincterotomy; Postoperative pain; Anal spasm; Complications.

INTRODUCTION

Hemorrhoids are one of the most widespread anorectal conditions, and they are already known to millions of people around the globe. They are caused by the pathological expansion and the distal movement of the normal anal cushions, causing the development of such symptoms as bleeding, pain, and prolapse. Surgery has been the gold standard treatment for advanced disease, especially for grade III and IV hemorrhoids, where non-surgical treatment modalities are usually ineffective in alleviating the condition. Milligan-Morgan hemorrhoidectomy remains one of the most commonly used procedures, which was introduced in 1937, most commonly used procedures to excise hemorrhoids because it has been proven to be effective and exhibits low recurrence rates.[1] Nevertheless, regardless of its efficacy, the procedure is often tied to serious postoperative issues, such as pain, urinary retention, and anal stenosis in some instances.[2] Internal anal sphincter stiffness is considered the cause of postoperative pain and increases anal canal pressure, leading to ischemic pain during the immediate postoperative period.[3]

To address this situation, Lateral Internal sphincterotomy (LIS) is an additional procedure proposed to address sphincter spasm and alleviate postoperative pain. LIS is a coordinated weakening of the internal anal sphincter muscles, which virtually reduces resting anal pressure and helps alleviate pain.[4] It has been demonstrated that it should be used concurrently with hemorrhoidectomy to improve postoperative comfort, reduce analgesic needs, and improve quicker recovery without causing a large morbidity increment.[5]

Some randomized controlled trials and observational studies have reported positive results for the use of LIS as a supplement to the Milligan-Morgan hemorrhoidectomy. According to the study by Gencosmanoglu et al. reported that patients receiving combined procedures reported

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much lower postoperative pain scores and less analgesics than their counterparts who received hemorrhoidectomy alone.[6] At the same level, pain reduction and earlier return to normal activity were observed in the LIS group, as reported by Khubchandani et al.[7]

However, there are still fears about the possibility of the development of incontinence due to sphincterotomy. Although transient flatus incontinence has been reported, most research indicates that these complications are mild, self-limiting, and resolve within several weeks.[8] Another systematic review by Ho et al. also proved that the general incidence of incontinence was no different between hemorrhoidectomy and hemorrhoidectomy with LIS.[9] Also, LIS can help prevent complications, such as anal stenosis and slow wound healing, by decreasing sphincter tone and enhancing local perfusion.[10]

Given the balance of its potential advantages and disadvantages, LIS combined with the Millican-Morgan hemorrhoidectomy should be considered more closely. The objective of the current research is to compare the patient outcomes of a patient diagnosed with grade III and grade IV hemorrhoids and undergoing Milligan-Morgan hemorrhoidectomy versus no lateral internal sphincterotomy.

PATIENTS AND METHODS

After obtaining ethical approval (FMH-23/04/2025-IRB-1649) and study duration, this quasi-experimental study was conducted in the Department of General Surgery, Fatima Memorial Hospital, Lahore. The sample size was calculated using the mean pain score in the Milligan–Morgan hemorrhoidectomy group (5.63±0.66) and the lateral internal sphincterotomy group (3.83 ± 0.69)[11] by taking 80% power of the test, 5% margin of error, and 10% drop out rate, resulting in 60 (30 in each group). Patients were allocated to treatment groups using a non-probability consecutive sampling technique based on clinical eligibility and departmental practice.

A total of 60 patients diagnosed with Grade III and IV hemorrhoids were enrolled in the study after obtaining written informed consent. The study included patients diagnosed with Grade III and Grade IV hemorrhoids who were planned for Milligan-Morgan hemorrhoidectomy. Only those with a normal uterine cavity and appropriate endometrial thickness were included. Patients were excluded if they were pregnant, had suspected or confirmed malignancy, active pelvic infection, uterine anomalies, large fibroids distorting the cavity, a history of prior ablation or uterine surgery affecting cavity integrity, or severe medical conditions contraindicating the procedure.

Patients were divided into two equal groups: Group A: Milligan-Morgan hemorrhoidectomy only, and Group B: Milligan-Morgan hemorrhoidectomy with Lateral Internal sphincterotomy (LIS). The consultants also performed all surgical procedures under spinal anesthesia, with at least 5 years of post-fellowship experience in procedural consistency. The two groups received standard preoperative preparation and postoperative care.

A Visual Analog Scale (VAS) was used to assess postoperative pain, ranging from 0 (no pain) to 10 (worst pain imaginable). The pain ratings were collected at 6 h, 24 h, day 3, day 7, and day 14 after surgery.[12]

Incontinence was any involuntary loss of flatus or feces after an operation. Clinical evaluation was performed using the Wexner Incontinence Score, a validated instrument commonly used in studies of anorectal surgery.[13,14]

Postoperative complications include urinary retention, bleeding that needs intervention, delay in healing of the wound (healing time, which is more than 3 weeks), and incontinence. All these parameters were recorded with every follow-up visit.

The patients were followed up on postoperative day 7, 14, 21, and 28 to assess pain progression, continence status, wound healing, and other complications. Age, gender, body mass index (BMI), and comorbidities were recorded on a structured pro forma as demographic and baseline clinical data. Each participant was also to record the time of the first bowel movement and the amount of time spent in the hospital.

All data were properly entered into data sheets, which were organized and analyzed in SPSS version 26. Mean ± SD were used to present quantitative variables such as age, body mass index (BMI), pain scores, length of hospital stay, and time to first bowel movement, and the groups were compared using the independent-samples t-test or the Mann-Whitney U test, depending on the data's normality. Qualitative variables such as gender, incontinence experience, and postoperative complications (urinary retention, bleeding, delayed wound healing) were reported as frequencies and percentages, and the Chi-square test or Fisher's exact test was used as appropriate. The p-value was significant ($p < 0.05$).

RESULTS

Table 1 presents the baseline features of the 60 patients in this study. Group A (only Milligan-Morgan) had a mean age of 50.40 ± 3.17 years, whilst Group B (Milligan-Morgan with Lateral Internal sphincterotomy) had a mean age of 41.80 ± 3.04 years, indicating that patients receiving the combination procedure were usually younger. Group B (25.11 ± 0.52 kg/m^2) also recorded a lower mean BMI than Group A (27.77 ± 0.88 kg/m^2). Regarding gender distribution, Group A had more males (53.3%) and Group B had more females (83.3%). Group A

(53.3) had more comorbidities than Group B (13.3).

Table 1. Descriptive statistics of study participants (n = 60)

Variable	Group A (MM only)	Group B (MM + LIS)	Total (n = 60)
Age (years) (Mean ± SD)	50.40 ± 3.17	41.80 ± 3.04	46.10 ± 5.64
BMI (kg/m²) (Mean ± SD)	27.77 ± 0.88	25.11 ± 0.52	26.44 ± 1.53
Gender			
Male	16 (53.3%)	5 (16.7%)	21 (35.0%)
Female	14 (46.7%)	25 (83.3%)	39 (65.0%)
Comorbidities			
Yes	16 (53.3%)	4 (13.3%)	20 (33.3%)
No	14 (46.7%)	26 (86.7%)	40 (66.7%)

Table 2: Comparison of postoperative outcomes between group A (MM only) and group B (MM + LIS)

Variable	Group A (Mean ± SD)	Group B (Mean ± SD)	Mean Difference (95% CI)	t-value	p-value
VAS Pain (6 hours)	7.40 ± 0.50	4.60 ± 0.50	2.80 (2.54–3.06)	21.76	0.0001
VAS Pain (24 hours)	6.40 ± 0.50	3.60 ± 0.50	2.80 (2.54–3.06)	21.76	0.0001
VAS Pain (day 3)	5.40 ± 0.50	2.60 ± 0.50	2.80 (2.54–3.06)	21.76	0.0001
VAS Pain (day 7)	3.87 ± 0.35	2.00 ± 0.00	1.87 (1.74–2.00)	29.57	0.0001
VAS Pain (day 14)	2.73 ± 0.45	1.00 ± 0.00	1.73 (1.57–1.89)	21.11	0.0001
Wexner incontinence score	0.40 ± 0.49	0.00 ± 0.00	0.40 (0.22–0.58)	4.47	0.00004
Time to first bowel movement (hours)	30.60 ± 1.43	25.60 ± 0.72	5.00 (4.42–5.58)	17.10	0.0001
Hospital stay (days)	2.93 ± 0.25	2.00 ± 0.00	0.93 (0.84–1.02)	20.15	0.0001

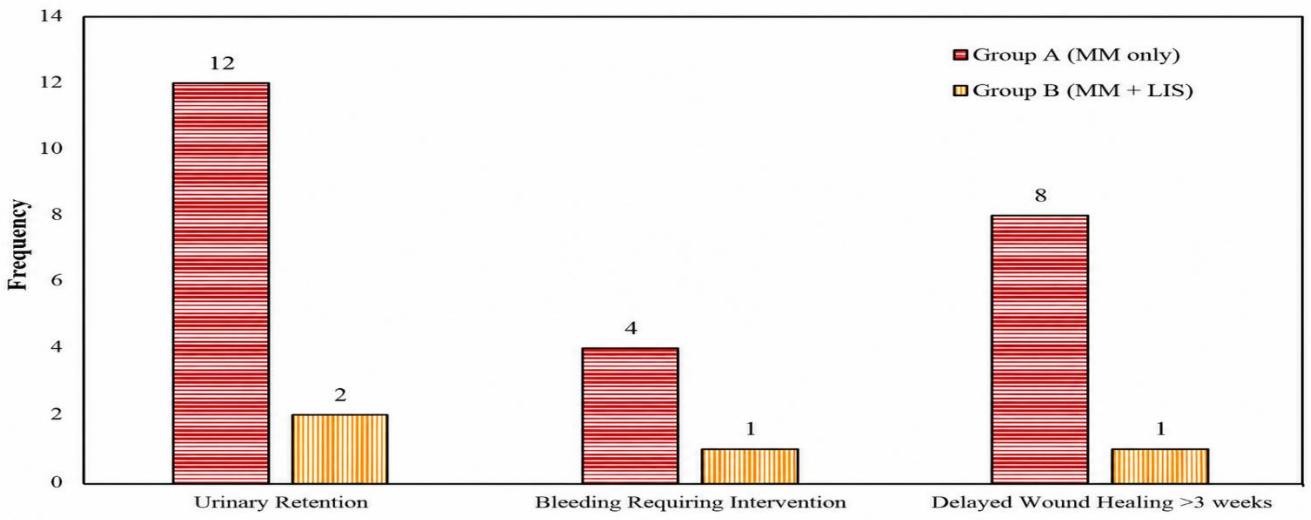

Figure 1: Comparison of postoperative complications between Groups A and B

The patients in Group B (Milligan-Morgan hemorrhoidectomy and lateral internal sphincterotomy) had significantly lower pain scores during the postoperative period at all intervals, a sooner bowel movement, and shorter hospital stay than the patients in Group A (hemorrhoidectomies only), all of which were statistically significant (p <0.001) (Table 2).

The frequency of postoperative complications was found to be greater in the Milligan-Morgan (MM only) group, in comparison to the group that underwent an extra lateral internal sphincterotomy (MM + LIS). In Group A, 20 percent of patients had urinary retention; in Group B, the rate improved to 3.3 percent, indicating that postoperative comfort and early voiding were significantly improved. On the same note, the MM + LIS group had less bleeding that required intervention (1.7) than MM alone (6.7). The patients who received combined procedure also had significantly lower rates of delayed wound healing of

more than three weeks (1.7% vs. 13.3). These results are comparable to those of the literature that indicate that combined lateral internal sphincterotomy and traditional hemorrhoidectomy lowers the amount of postoperative pain, decreases sphincter spasm, and improves wound healing rates (Figure 1).

DISCUSSION

The results obtained in this study were compared as follows: patients who received a classical Milligan-Morgan hemorrhoidectomy (MM) (Group A) and those who received MM and the lateral internal sphincterotomy (LIS) (Group B). The patients with MM + LIS had much lower postoperative pain scores at all measured time points (6 h, 24 h, day 3, day 7, and day 14), earlier first bowel movements, shorter hospitalization, and fewer complications than those with MM alone. A difference in the mean VAS pain of approximately 2.8 points at early time points corresponds to a clinically significant difference, and 1.73 points at day 14. The results are in line with past results. Mathai et al. reported a decrease in pain observed with lateral internal sphincterotomy, but the risk of incontinence also increased slightly[15]. Kanellos et al. demonstrated that pain was much less with the use of LIS after open hemorrhoidectomy[16], and Nisar et al. indicated that pain was significantly less with the use of MM in combination with LIS, without effect on Wexner incontinence scores, after the first bowel movement.[17] In another retrospective RCT, Selvarajan also found better postoperative recovery and less pain.[18] These results were reported in regional studies, such as Ali et al., which found lower pain scores and lower analgesic requirements in patients undergoing LIS alongside hemorrhoidectomy.[19] In a meta-analysis of chemical and surgical sphincterotomy, Zhao et al. found that worsening of the sphincter tone lessens the pain after hemorrhoidectomy.[20] Despite evidence indicating that LIS is more effective for pain reduction, particularly in carefully selected patients, this modality of intervention does not significantly reduce pain differences, as reported by Eisenhammer et al.[21] However, they identified the risk of incontinence. Our study found a shorter first bowel movement and lower urinary retention, which can be attributed to relaxation of the internal sphincter spasm, reduced resting anal pressure, and removal of the inhibitory reflex on bladder action. The reduction in hospital stay in the LIS group is probably due to earlier restoration of bowel and bladder function and decreased pain. The reduced rates of postoperative complications (blood loss requiring treatment, slow wound healing, etc.) could also be partially explained by reduced sphincter tension. Still, the Group B patients were younger and had fewer comorbidities, which may have contributed to the outcomes.

From a clinical perspective, our findings support the use of lateral internal sphincterotomy (LIS) as an adjunct to Milligan–Morgan hemorrhoidectomy in carefully selected patients, particularly younger, healthier individuals with fewer comorbidities and an anticipated higher anal canal tone.[22] Surgeons should counsel patients about the potential risk of incontinence. However, in our study, Wexner incontinence scores were negligible, especially since recent systematic reviews show that even excisional hemorrhoidectomy alone carries a measurable risk of incontinence (early 5.32 % [95 %CI 2.74–8.51 %]; late 2.48 % [95 %CI 1.09–4.25 %]).[23] Limitations of our study include a small sample size, single-center design, baseline imbalance between groups, short follow-up duration, and lack of long-term assessment of anal continence, recurrence, and quality of life outcomes. Additionally, the quasi-experimental design may have introduced selection bias, potentially influencing postoperative outcomes. There is a need for future multicenter randomized controlled trials that measure sphincter tone objectively using manometry and assess long-term outcomes. To sum up, the inclusion of LIS in the Milligan-Morgan hemorrhoidectomy can considerably lower postoperative pain, enable earlier bowel movements, reduce the length of hospital stay, and reduce complications, as supported by most of the available literature, but it still requires careful patient selection.

CONCLUSION

Lateral internal sphincterotomy (LIS), when added to Milligan-Morgan hemorrhoidectomy, can greatly enhance the postoperative results of the latter procedure. Those patients who underwent the combined procedure had significantly lower pain scores at all measured time points, an earlier first bowel movement, a shorter hospital stay, and a reduction in postoperative complications, including urinary retention, bleeding, and delayed wound healing. These advantages seem most evident in younger, healthier patients with limited comorbid conditions and higher or better anal canal tone. There is a low risk of incontinence, but it is critical to counsel the patients and select them carefully. The results of our study provide evidence that LIS can be used as an adjunct in selected patients to enhance recovery and postoperative comfort. Multicenter randomized trials with longer follow-up and objective measurement of sphincter function would be desirable in the future to confirm these findings and compare long-term functional outcomes.

Author Contributions

AW: Conception and design, analysis and interpretation of data, drafting the article, critical revision for important intellectual content, and final approval.
HN: Conception and design, analysis and interpretation of data.
MHA: Analysis and interpretation of data, drafting the article.
AN: Acquisition of data, conception and design, analysis and interpretation.
MJC: Conception and design, analysis and interpretation of data.
SAS: Conception and design, analysis and interpretation of data.

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