



COMPARATIVE STUDY OF OPEN HEMORRHOIDECTOMY WITH OR WITHOUT LATERAL INTERNAL SPHINCTEROTOMY

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ABSTRACT **Background:** Hemorrhoids, affecting 4.4% to 36.4% of the population, can be classified as internal or external, with varying degrees of severity. Surgical intervention, particularly hemorrhoidectomy, is often necessary for advanced cases but is associated with significant postoperative pain. The addition of lateral internal sphincterotomy (LIS) during hemorrhoidectomy has been proposed to alleviate this pain by reducing internal anal sphincter hypertonicity. This study aims to compare postoperative outcomes, including pain relief and complications, in patients undergoing open hemorrhoidectomy with and without lateral internal sphincterotomy. **Material and Methods:** A comparative study was conducted at Index Medical College and Research Center over six months, involving 50 patients aged 18 to 65 years diagnosed with Grade 3 and Grade 4 hemorrhoids. Patients were randomly assigned to undergo either open hemorrhoidectomy alone (Group A) or with LIS (Group B). Postoperative pain was assessed using a numeric pain scale 24 hours post-surgery, and complications were monitored during the follow-up period. **Results:** The mean age of participants was 48.75 ± 13.15 years, with a higher proportion of males (60%). Patients in Group B demonstrated a significant reduction in postoperative pain at 12, 24, and 48 hours post-surgery ($p=0.01$). At 24 hours, 85% of those experiencing pain relief were from Group B, indicating the effectiveness of LIS in pain management. Furthermore, complications such as postoperative infection and bleeding were lower in the LIS group, while fecal incontinence was more prevalent. **Conclusion:** Lateral internal sphincterotomy during open hemorrhoidectomy significantly improves postoperative pain relief and reduces complications compared to hemorrhoidectomy alone. This study supports the incorporation of LIS as a beneficial adjunct in the surgical management of advanced hemorrhoids.

KEYWORDS : Hemorrhoids, Hemorrhoidectomy, Lateral Internal Sphincterotomy, Postoperative Pain, Complications, Surgical Management.

INTRODUCTION

Hemorrhoids refer to the anal cushions, affecting between 4.4% and 36.4% of the general population. [1] Hemorrhoids can be internal or external. Internal hemorrhoids develop above the dentate line and are classified into four degrees. First-degree hemorrhoids present as painless bleeding, while second-degree hemorrhoids prolapse through the anus but reduce spontaneously. Third-degree hemorrhoids prolapse through the anal canal and require manual reduction, and fourth-degree hemorrhoids bleed, prolapse, and cannot be manually reduced. External hemorrhoids are covered by anoderm proximally and by skin distally, both of which are sensitive to pain. [2]



Figure 1. Grading of Hemorrhoids

For first and second-degree hemorrhoids, outpatient treatments such as rubber band ligation, infrared coagulation, injection sclerotherapy, and cryotherapy are often effective. Hemorrhoidectomy is typically reserved for third and fourth-degree internal hemorrhoids or external ones. [3] Around 10% to 15% of patients with hemorrhoids will eventually need surgical excision. [4] Hemorrhoidectomy is associated with significant postoperative pain, often caused by reflex spasm of the internal anal sphincter. [5,6]

Several methods have been used to minimize post-hemorrhoidectomy pain. Over time, lateral internal sphincterotomy has gained recognition as a beneficial addition to hemorrhoidectomy for better postoperative pain relief. This procedure reduces the hypertonicity of the internal anal sphincter, thereby alleviating pain after surgery. [2,7]

A recent local study found that 98.2% of patients experienced pain

within the first 48 hours after hemorrhoidectomy without lateral internal sphincterotomy, compared to 44.5% of patients who experienced pain after undergoing hemorrhoidectomy with lateral internal sphincterotomy. [8]

This study aims to compare open hemorrhoidectomy with and without lateral internal sphincterotomy, focusing on postoperative complications and pain relief.

MATERIAL & METHODS

After obtaining approval from the institutional ethical committee, this comparative study was conducted in the Department of General Surgery at Index Medical College and Research Center (IMCHRC). The study took place for a period of 6 months (Nov 2022 to May 2023), involving 50 patients aged 18 to 65 years and diagnosed with Grade 3 and Grade 4 hemorrhoids. A written informed consent was obtained from all patients after explaining the complete protocol of the study. These patients were randomly assigned to undergo either open hemorrhoidectomy with lateral internal sphincterotomy or open hemorrhoidectomy without lateral internal sphincterotomy.

INCLUSION CRITERIA

- All diagnosed cases of Grade 3 and Grade 4 hemorrhoids irrespective of gender;
- Uncomplicated 3rd and 4th-degree hemorrhoids aged 18 years to 65-year age; and
- Patients who consented for the study

EXCLUSION CRITERIA

- Diagnosed cases of 1st or 2nd degree hemorrhoids;
- Patients with associated anorectal pathology;
- Patients with severe comorbidities including uncontrolled diabetes mellitus, hypertension, chronic liver disease and coagulopathies;
- Patients who had undergone prior intervention for hemorrhoids;
- Fecal incontinence;

- Patients already treated with Sclerotherapy for hemorrhoids; and
- Those who refused to participate in the study were excluded others all included

METHODOLOGY

A thorough history, physical examination, and baseline diagnostic workup were completed for each patient. An abdominal ultrasound was performed to exclude intra-abdominal pathologies, particularly chronic liver disease and ascites. Additionally, preoperative anesthesia evaluations included electrocardiograms (ECG) and chest X-rays.

The patients were randomly divided into two groups using computer-generated random numbers. Group 1 consisted of patients undergoing open hemorrhoidectomy without lateral internal sphincterotomy, while Group 2 included those who underwent hemorrhoidectomy with lateral internal sphincterotomy. The procedure details were fully explained to the patients, and informed consent was obtained for the specific surgery chosen for each. All surgeries were performed by the same surgeon to ensure consistency.

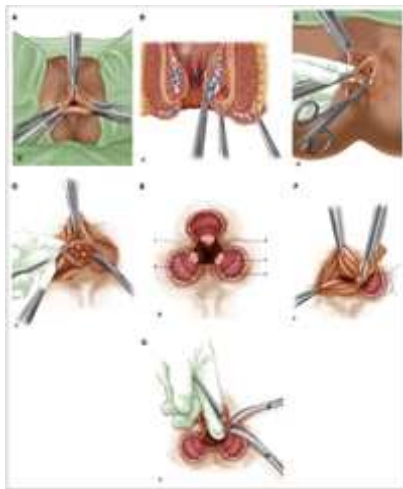


Figure 2. Surgical Procedure (A) Milligan-Morgan hemorrhoidectomy, position of the three sets of clamps; (B) Placement of three clamps on the hemorrhoidal group, frontal view; (C) Dissection of the left hemorrhoidal group; (D) Exposure of the internal sphincter after division of Parks' ligament; (E) Final post-operative appearance. 1: left anterior muco-cutaneous bridge. 2: internal anal sphincter. 3: posterior muco-cutaneous bridge. 4: sub-cutaneous fibers of the external anal sphincter. 5: right anterior muco-cutaneous bridge; (F) Suture ligation of the hemorrhoidal pedicle; (G) Cleaning up the muco-cutaneous bridges.

Postoperative pain was assessed using a numeric pain scale 24 hours after surgery. Pain relief was considered satisfactory for patients who scored between 0 and 5, while scores above 5 indicated no relief. Postoperatively, all patients were kept nil per os (NPO) for at least 4 hours and were administered intravenous Flagyl (400 mg) every 8 hours for 3 days. All patients were advised to take sitz baths for 5 days following the procedure. Upon discharge, they were instructed to follow a high-fiber diet. Follow-up appointments were scheduled for 3 weeks postoperatively.

STATISTICAL ANALYSIS

Raw data was collected on a prestructured proforma and entered into Microsoft excel 10.0 and analyzed using SPSS version 22.0. Descriptive statistics were computed for all variables. Mean and standard deviation were calculated for quantitative variables, such as age and pain score, while frequency and percentages were used for qualitative variables, such as sex and postoperative pain relief following the different treatment modalities. A Chi-Square test was used to compare postoperative pain relief between the two groups, with a p-value of less than 0.05 considered statistically significant.

(F) Suture ligation of the hemorrhoidal pedicle; (G) Cleaning up the muco-cutaneous bridges.

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RESULTS

In the period of 6 months 50 patients of 3rd degree, 4th degree & external hemorrhoids were enrolled in the study, 30 patients (group A) underwent open hemorrhoidectomy alone and 20 patients (group B) underwent open hemorrhoidectomy with lateral internal sphincterotomy.

In the present study, Patients aged 18 to 65 years were selected based on the inclusion criteria. The overall mean age of the study population was 48.75 ± 13.15 years. In Group A, the mean age was 51.42 ± 10.88 years, whereas in Group B, the mean age was 42.78 ± 12.85 years. Of total 50 patients 30 (60%) were males and 20 (40%) were females. There were 19 (63.3%) male and 11 (36.7%) female patients in group A while in group B there were 11 (55%) male and 9 (45%) female patients (Table 1).

Patients who underwent Lateral internal sphincterotomy (LIS) showed a significant reduction in postoperative pain at 12 hours, 24 hours, and 48 hours. Out of total 50 patients, 20 (40%) had pain relief at 24 hours post operatively, while 30 (60%) had no pain relief (P value=0.01). Of 20 patients who had pain relief 3 (15%) were from group A and 17 (85%) were from group B (Table 2).

Other Side effects such as postoperative infection, bleeding, and urinary retention were significantly lower after LIS and fecal incontinence was significantly higher after LIS.

Table 1: Distribution of patients by gender

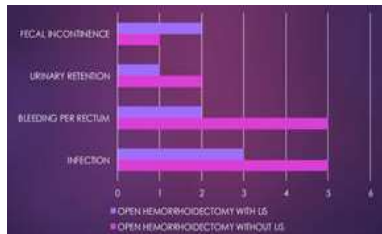
	Group A (N=30)		Group B (N=20)		Total (N=50)	P value
	No.	%	No.	%		
Gender						
Male	19	63.3%	11	55%	30 (60%)	0.01* Sig
Females	11	55%	9	45%	20 (40%)	
Total	30	60%	20	40%	50 (100%)	
Age						
Mean + SD	51.42±10.88 years		42.78±12.85 years		48.75 ± 13.15 years	>0.05 (NS)

Table 2: Distribution by pain relief at 24 hours postoperatively

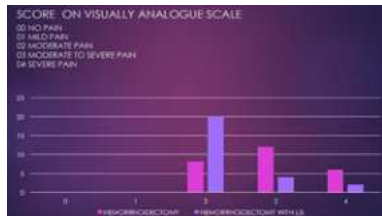
	Group A (N=30)		Group B (N=20)		Total (N=50)	P value
Pain relief within 24 hours	No.	%	No.	%		
Yes	3	10%	17	85%	20 (40%)	0.01* Sig
No	27	90%	3	15%	30 (60%)	
Total	30	60%	20	40%	50 (100%)	

Table 3. Distribution of patients by post op complications

Complication	Group A: (N=30)	Group B:
Infection	5	3
Bleeding per rectum	5	2
Urinary retention	2	1
Fecal incontinence	1	2



Graph 1. Distribution of patients by post op complications



Graph 2. Pain Score as evaluated on visual analogue score

DISCUSSION

Hemorrhoids are a common issue within the general population and clinical practice. Various anorectal conditions, such as fissures, fistulae, abscesses, and irritation or itching (pruritus ani), may exhibit similar symptoms and are often misidentified as hemorrhoids. While many individuals may have hemorrhoids, not everyone experiences symptoms. [10]

The most common symptom of internal hemorrhoids is bright red blood appearing on the stool, on toilet paper, in the toilet bowl, or as a red streak on one side of hard stools. Internal hemorrhoids may also protrude through the anus, causing irritation and pain. Factors like constipation, excessive straining, and aggressive cleaning can lead to irritation, bleeding, and itching, creating a vicious cycle of symptoms. Additionally, draining mucus can contribute to itching. Although there is no known sex predilection, men are more likely to seek treatment for this condition. [11]

In the present study, the overall mean age of participants was 48.75 ± 13.15 years. Smith et al. reported that the prevalence of hemorrhoids tends to increase with age, peaking in individuals aged 45 to 65 years. This was in concurrent with findings of the present study. [11]

In our study, males predominated with a male to female ratio of 1.5:1, and the majority of participants were in their fourth decade of life, with a mean age of 47 years. Similar findings were reported by Murie et al., who observed a male to female ratio of 2:1, which aligns closely with the results of our study. [12]

Pain is nearly a constant concern following hemorrhoidectomy, frequently leading patients to delay seeking treatment for prolapsing, bleeding, and discomfort related to hemorrhoids. Eisenhammer et al. were the first to propose that post-hemorrhoidectomy pain arises from spasms of the internal sphincter, suggesting that dividing the sphincter through one of the hemorrhoidal wounds can effectively alleviate postoperative pain. [13]

This study compares two treatment modalities: open hemorrhoidectomy and hemorrhoidectomy with lateral internal sphincterotomy (LIS) in terms of postoperative pain relief at 12, 24, and 48 hours. The results indicate that patients who underwent LIS demonstrated a significant reduction in postoperative pain at all three time points—12 hours, 24 hours, and 48 hours—compared to those who had the standard open hemorrhoidectomy.

Concurrent results have been reported in controlled trials done by Willima NS et al. and Smith RA et al. indicating that the combination of hemorrhoidectomy with lateral internal sphincterotomy (LIS) can lead to reduced postoperative pain and accelerated wound healing. The

addition of LIS alleviates the spasm of the internal sphincter, resulting in diminished pain following anal procedures. [10,11]

William et al. conducted a study that revealed a significant decrease in the incidence of postoperative pain when lateral internal sphincterotomy (LIS) was performed alongside hemorrhoidectomy, with pain rates falling to 10.45% compared to 28.8% in patients who underwent open hemorrhoidectomy alone. This finding is consistent with the results of our study. [10]

Kanellos et al. in a similar study found that more patients reported experiencing excruciating pain in the non-internal sphincterotomy group compared to the internal sphincterotomy group, with these differences being statistically significant. [14]

Concurrent to findings of our study, Amorroti et al. also evaluated the efficacy of lateral internal sphincterotomy combined with hemorrhoidectomy using the Milligan-Morgan technique, concluding that left lateral sphincterotomy is a safe procedure that effectively reduces postoperative pain and the risk of stenosis. [15]

Another study done by Nienhuijs and Ozer et al. indicated that conventional hemorrhoidectomy is associated with increased postoperative pain and described various methods for pain reduction, proposing that LIS performed simultaneously with hemorrhoidectomy is among the simplest and most effective strategies to decrease postoperative pain. [16-18] Similar observations were reported in a study published in Diseases of the Colon & Rectum in 2005. [19]

Further, Ascanelli et al. noted that open hemorrhoidectomy is linked to higher postoperative pain scores. [20] In research conducted by Sami et al., it was found that routinely performing sphincterotomy through one of the hemorrhoidectomy wounds significantly alleviated postoperative pain and complications. [21] Additionally, Galizia's study revealed that the addition of lateral internal sphincterotomy to hemorrhoidectomy significantly improves the postoperative course and can be safely performed. [22]

Diana C. et al. observed that traditional hemorrhoidectomy without LIS is associated with increased postoperative pain and delayed functional recovery. [23] Lastly, a study by Chauhan A. et al. demonstrated markedly reduced postoperative pain in patients who underwent hemorrhoidectomy with LIS compared to those who had open hemorrhoidectomy. [24] These findings were consistent with results of our study.

The study's limitations include a relatively small sample size and a short follow-up period, which may affect the generalizability of the findings and the long-term assessment of postoperative outcomes. Additionally, the subjective nature of pain assessment could introduce variability in reported pain relief among patients.

CONCLUSION

In conclusion, the comparative analysis of hemorrhoidectomy with and without lateral internal sphincterotomy (LIS) highlights key considerations in the management of hemorrhoids. While the inclusion of LIS significantly enhances immediate postoperative pain relief, it is also associated with a higher risk of fecal incontinence. However, both surgical techniques demonstrate comparable healing rates and recurrence risks, indicating that either option can be effective for treating hemorrhoids. Ultimately, patient preferences and individual risk factors should guide treatment decisions, ensuring that each patient receives a tailored approach that balances pain management with the potential for complications. Further research may be necessary to refine these techniques and enhance patient outcomes.

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