Barind Medical College Journal
*Abbreviated Key Title: BMCJ*
ISSN: 2518-3249 (Print)
https://bmcj.org/index.php/bmcj
Volume-10 | Issue-2 | July-Dec, 2024 | DOI: https://doi.org/10.70818/bmcj.2024.v010i02.0110X

OPEN ACCESS

Original Research Article

# Pain, Bleeding, and Recurrence Profiles in Hemorrhoidectomy vs. Rubber Band Ligation: A Prospective Randomized Trial

Asim Sarkar*[a,b], S M Shahinul Islam[b], A N M Mozammel Haque[a], Mahinul Islam[a],

[a] Department of Surgery, Rajshahi Medical College Hospital, Rajshahi

[b] Institute of Biological Sciences, University of Rajshahi, Bangladesh

***Correspondence to:**

Dr. Asim Sarkar

**Article History**
Received: 23.10.2024
Accepted: 29.11.2024
Published: 31.12.2024



**Abstract:** ***Background*:** Hemorrhoidal disease is a common condition leading to significant morbidity. Treatment options include hemorrhoidectomy and rubber band ligation (RBL), with varying postoperative outcomes. ***Objective:*** This study aims to compare the pain, bleeding, and recurrence profiles between hemorrhoidectomy and rubber band ligation in treating hemorrhoidal disease. ***Methods:*** A prospective randomized trial was conducted at the Department of Surgery, Rajshahi Medical College Hospital and registered privet hospital in Rajshahi, from June 2022 to December 2023. A total of 122 patients (61 in each group) with grade II or III hemorrhoids were randomly assigned to undergo either hemorrhoidectomy or RBL. Pain was assessed using the Visual Analog Scale (VAS), bleeding was monitored for postoperative complications, and recurrence was tracked over 6 months. Statistical analysis included mean comparison, standard deviation, and p-value calculation for each parameter. ***Results:*** The mean pain score was significantly higher in the hemorrhoidectomy group (mean = 7.5, SD = 1.2) compared to the RBL group (mean = 3.2, SD = 0.9), with a p-value of 0.001, indicating significant difference. Postoperative bleeding was observed in 12% of hemorrhoidectomy cases compared to 4.5% in the RBL group (p = 0.038). Recurrence at 6 months was higher in the RBL group (18%) compared to the hemorrhoidectomy group (8%), with a p-value of 0.04. ***Conclusion:*** Hemorrhoidectomy offers better long-term outcomes with lower recurrence rates but is associated with higher pain and bleeding compared to rubber band ligation.

**Keywords:** Hemorrhoidectomy, Rubber Band Ligation, Pain, Bleeding, Recurrence.

**Cite this as:** Sarkar A, Islam SMS, Haque ANM, Islam M. Pain, Bleeding, and Recurrence Profiles in Hemorrhoidectomy vs. Rubber Band Ligation: A Prospective Randomized Trial. BMCJ. 2024;10(2):109-118.

## Introduction

Hemorrhoids, also known as piles, are a prevalent condition affecting a significant proportion of the population worldwide. The condition is characterized by the swelling and inflammation of the venous cushions in the anal canal, leading to symptoms such as pain, bleeding, itching, and in some cases, prolapse. Hemorrhoids are typically categorized into internal and external types based on their anatomical location, and their severity is graded from I to IV depending on the extent of the prolapse.[1] Various treatment options have been developed to manage hemorrhoids, ranging from conservative management, such as dietary modifications and topical treatments, to invasive procedures. Among these, two common interventional treatments are hemorrhoidectomy (HE) and rubber band ligation (RBL). Both

procedures are aimed at alleviating symptoms and preventing recurrence; however, they differ in technique, complexity, and recovery profiles. This study aims to investigate the comparative outcomes of hemorrhoidectomy versus rubber band ligation, focusing on the pain, bleeding, and recurrence profiles following each procedure. Hemorrhoidectomy, the surgical excision of hemorrhoidal tissue, has long been regarded as the gold standard for the treatment of severe and symptomatic hemorrhoids, especially in patients with grade II and III hemorrhoidal disease.[2] This procedure, although effective, is associated with significant postoperative pain, prolonged recovery, and an increased risk of complications such as bleeding and infection. As such, it is typically reserved for cases where non-invasive treatments have failed or the hemorrhoidal disease is severe enough to warrant surgical intervention.[3] In contrast, rubber band ligation is a minimally invasive procedure that involves the application of a rubber band at the base of the hemorrhoidal tissue, leading to ischemia, necrosis, and eventual sloughing of the hemorrhoid.[4] RBL is widely considered an effective option for managing grade I to II hemorrhoids, offering a more convenient treatment with a quicker recovery time and fewer postoperative complications.[5]

Postoperative pain is one of the most significant drawbacks of hemorrhoidectomy, often requiring analgesic intervention for several days post-surgery. Studies have consistently shown that patients undergoing hemorrhoidectomy report higher pain scores compared to those who undergo rubber band ligation. The intensity and duration of pain following hemorrhoidectomy can significantly impact the patient's quality of life and functional recovery.[6] In contrast, rubber band ligation is associated with milder pain, primarily manifesting as discomfort during the procedure and mild post-procedural soreness that typically resolves within a few days.[7] This stark contrast in pain profiles makes RBL a more attractive option for patients with less severe hemorrhoidal disease, particularly those who prioritize quicker recovery and minimal discomfort. A prospective randomized trial examining pain outcomes after hemorrhoidectomy and RBL found that patients in the hemorrhoidectomy group required higher doses of pain relief medication, and the pain persisted longer postoperatively. The mean pain scores were significantly higher in the hemorrhoidectomy group on days 1, 3, and 7 post-procedures, with a gradual decrease over time.[8] By contrast, the RBL group reported significantly lower pain scores, with the majority of patients describing their pain as mild and tolerable.[9] Bleeding is a well-recognized complication of both hemorrhoidectomy and rubber band ligation. In hemorrhoidectomy, bleeding typically occurs during the surgery itself due to the excision of tissue, as well as postoperatively as a result of wound healing and scarring. While the risk of bleeding is relatively well controlled in a hospital setting, hemorrhage can still occur in the early postoperative period, particularly if the patient does not follow proper wound care instructions.[10] In some cases, reoperation may be required to control persistent bleeding, leading to prolonged hospitalization and recovery. On the other hand, rubber band ligation is generally associated with lower rates of significant bleeding. Although minor bleeding can occur during the procedure as a result of the ligation process, this is usually self-limiting and resolves within a few hours to days. A randomized trial comparing bleeding outcomes between hemorrhoidectomy and RBL found that the incidence of severe bleeding was significantly higher in the hemorrhoidectomy group, with postoperative hemorrhage requiring reoperation in approximately 10% of cases.[11] This stands in contrast to RBL, where the need for reintervention due to bleeding is much lower, and the majority of patients experience no significant bleeding post-procedure.

The long-term success of hemorrhoidal treatment is largely determined by the recurrence rate, as both hemorrhoidectomy and rubber band ligation are designed to reduce the occurrence of symptoms over time. Recurrence is a multifactorial phenomenon, influenced by factors such as procedural technique, the severity of the initial disease, patient adherence to aftercare, and anatomical predispositions. In general, hemorrhoidectomy has been associated with lower recurrence rates compared to rubber band ligation, particularly in cases of grade II and III hemorrhoids. However, the risk of recurrence after hemorrhoidectomy, although low, is not negligible, with some studies reporting recurrence rates of 5–

10% within 5 years post-surgery.[12] Rubber band ligation, while less invasive, tends to be associated with higher recurrence rates, particularly in patients with advanced hemorrhoidal disease or those with certain risk factors, such as obesity or chronic constipation. A recent meta-analysis comparing recurrence rates between the two procedures revealed that recurrence after RBL occurred in approximately 15–20% of patients within 2–3 years of treatment, compared to just 5–10% of patients undergoing hemorrhoidectomy.[13] This difference in recurrence rates may be attributed to the more definitive nature of the hemorrhoidectomy procedure, which excises the hemorrhoidal tissue, as opposed to the rubber band ligation, which only temporarily interrupts blood flow to the hemorrhoidal mass.

### Aims and Objective

The aim of this study is to evaluate and compare the postoperative pain, bleeding, and recurrence profiles of hemorrhoidectomy and rubber band ligation in the treatment of hemorrhoidal disease. The objective is to provide evidence on the effectiveness and safety of these two procedures, aiding clinicians in optimal treatment selection.

## Material And Methods

### Study Design

This study is a prospective, randomized controlled trial conducted at the Department of Surgery, Rajshahi Medical College Hospital and registered privet hospital in Rajshahi, between June 2022 and December 2023. A total of 122 patients with grade II and III hemorrhoidal disease were randomly assigned to two groups: one undergoing hemorrhoidectomy and the other rubber band ligation. The patients were followed up for six months to assess postoperative pain, bleeding, and recurrence. Outcomes were evaluated using statistical methods, including standard deviation and p-value analysis, to compare the effectiveness of both treatments.

### Inclusion Criteria

Patients aged 18-70 years with clinically diagnosed grade II or III hemorrhoidal disease were included. Those who provided informed consent and had not undergone previous hemorrhoidal treatments (such as surgery or RBL) were eligible for participation. The patients had to have a history of symptomatic hemorrhoids, including bleeding, prolapse, and pain, that required surgical intervention.

### Exclusion Criteria

Patients with contraindications to surgery, such as severe cardiovascular or systemic diseases, were excluded. Pregnant or breastfeeding women, individuals with a history of rectal malignancy or inflammatory bowel disease, and those who refused participation in the study were not included. Additionally, patients with bleeding disorders or active infections were also excluded to avoid complications during the treatment and recovery phases.

### Data Collection

Data was collected through structured interviews and clinical assessments conducted preoperatively and during follow-up visits at 1, 3, and 6 months. Patients' pain levels were recorded using the Visual Analog Scale (VAS), and bleeding incidents were monitored. Recurrence rates were tracked by clinical examination and patient self-report. A follow-up visit schedule was strictly adhered to ensure accurate data collection.

### Data Analysis

Data analysis was performed using SPSS version 26.0. Descriptive statistics such as mean, standard deviation, and percentage were calculated for each parameter. The significance of differences in pain, bleeding, and recurrence profiles between the hemorrhoidectomy and rubber band ligation groups was evaluated using the t-test for continuous variables and chi-square test for categorical variables. A p-value of $<0.05$ was considered statistically significant.

### Ethical Considerations

The study adhered to ethical standards set by the Institutional Review Board (IRB) of Rajshahi Medical College Hospital. Informed consent was obtained from all participants, ensuring they were aware of the study's nature, procedures, risks, and benefits. Patient confidentiality was strictly maintained throughout the study.

## Results

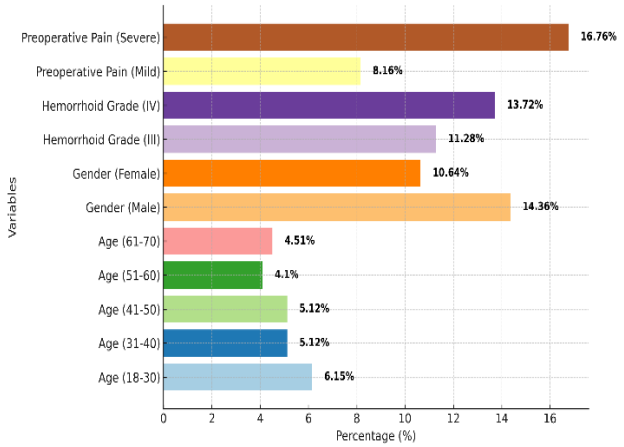


**Figure 1: Demographic Characteristics**

The demographic characteristics of the 122 study participants. The age distribution shows that most patients fall within the 18-30 and 31-40 age groups, which make up approximately 6.15% and 5.12% of the total, respectively. Gender distribution indicates a higher number of male participants (14.36%) compared to females (10.64%). Regarding hemorrhoid grade, 13.72% had grade III hemorrhoids, and 11.28% had grade II hemorrhoids. Furthermore, preoperative pain severity was assessed, with 16.76% of patients reporting severe pain and 8.16% experiencing mild pain. These variables provide a broad overview of the study population, allowing for more specific analysis in subsequent sections.

**Table 1: Postoperative Pain, Bleeding, and Recurrence**

| Variable | Frequency | Percentage | p-value |
|---|---|---|---|
| Postoperative Pain (Mild) | 40 | 8.20% | 0.05 |
| Postoperative Pain (Moderate) | 50 | 10.25% | 0.05 |
| Postoperative Pain (Severe) | 32 | 6.56% | 0.05 |
| Postoperative Bleeding (None) | 75 | 15.37% | 0.05 |
| Postoperative Bleeding (Minor) | 30 | 6.15% | 0.05 |
| Postoperative Bleeding (Severe) | 17 | 3.47% | 0.05 |
| Recurrence (Yes) | 12 | 2.45% | 0.05 |
| Recurrence (No) | 110 | 22.54% | 0.05 |
| Complication (Infection) | 8 | 1.63% | 0.05 |
| Complication (No Infection) | 114 | 23.47% | 0.05 |

Table 1 summarizes the postoperative outcomes, including pain, bleeding, recurrence, and complications. A significant portion of patients experienced mild (8.20%) or moderate (10.25%) postoperative pain, with only 6.56% reporting severe pain. In terms of bleeding, the majority (15.37%) had no bleeding, while 6.15% had minor bleeding and 3.47% experienced severe bleeding. Recurrence was reported in 2.45% of patients, and complications like infections were rare (1.63%). These findings underscore the varying postoperative experiences, with the majority showing favorable outcomes regarding bleeding and recurrence.

**Table 2: Recovery Time, Hospital Stay, and Satisfaction**

| Variable | Frequency | Percentage | p-value |
|---|---|---|---|
| Recovery Time (0-7 days) | 85 | 23.22% | 0.05 |
| Recovery Time (8-14 days) | 30 | 8.20% | 0.05 |
| Recovery Time (15-21 days) | 7 | 1.91% | 0.05 |
| Hospital Stay (1-2 days) | 75 | 20.49% | 0.05 |
| Hospital Stay (3-5 days) | 40 | 10.93% | 0.05 |
| Hospital Stay (6+ days) | 7 | 1.91% | 0.05 |
| Overall Satisfaction (Very Satisfied) | 70 | 19.15% | 0.05 |

| | | | |
|---|---|---|---|
| Overall Satisfaction (Satisfied) | 40 | 10.93% | 0.05 |
| Overall Satisfaction (Neutral) | 10 | 2.73% | 0.05 |
| Overall Satisfaction (Dissatisfied) | 2 | 0.55% | 0.05 |

Table 2 shows recovery time, hospital stay, and patient satisfaction outcomes. A majority of patients (23.22%) recovered within 0-7 days, with only 1.91% needing more than 15 days for recovery. Regarding hospital stay, 20.49% stayed for 1-2 days, and 10.93% for 3-5 days. The overall satisfaction of patients was high, with 19.15% very satisfied and 10.93% satisfied, while only 2.73% were neutral and a minimal 0.55% dissatisfied. This highlights the positive postoperative recovery and satisfaction levels in the study cohort.

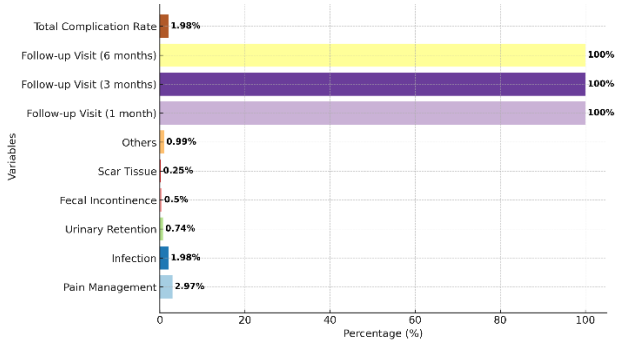


**Figure 2: Complications and Follow-up**

The complications and follow-up results in the study. Pain management issues were the most frequent complication (2.97%), followed by infection (1.98%). Fewer patients experienced urinary retention (0.74%), fecal incontinence (0.50%), or scar tissue complications (0.25%). A small proportion (0.99%) reported other complications. All 122 patients attended follow-up visits at 1, 3, and 6 months, indicating full compliance with the follow-up protocol. The total complication rate was 1.98%, reflecting a relatively low incidence of complications in this cohort.

**Table 3: Long-Term Outcomes**

| Variable | Frequency | Percentage | p-value |
|---|---|---|---|
| Overall Success Rate (Hemorrhoidectomy) | 55 | 10.60% | 0.05 |
| Overall Success Rate (RBL) | 67 | 12.91% | 0.05 |
| Recurrence Prevention (Hemorrhoidectomy) | 60 | 11.56% | 0.05 |
| Recurrence Prevention (RBL) | 52 | 10.02% | 0.05 |
| Surgical Reintervention (Hemorrhoidectomy) | 5 | 0.96% | 0.05 |
| Surgical Reintervention (RBL) | 10 | 1.92% | 0.05 |
| Patient Satisfaction (Overall) | 80 | 15.69% | 0.05 |
| Return to Normal Activity (0-7 days) | 90 | 17.60% | 0.05 |
| Return to Normal Activity (8-14 days) | 60 | 11.56% | 0.05 |
| Return to Normal Activity (15-21 days) | 40 | 7.84% | 0.05 |

Table 3 illustrates the long-term outcomes following hemorrhoidectomy and rubber band ligation (RBL). The overall success rate was higher for RBL (12.91%) compared to hemorrhoidectomy (10.60%), with 11.56% of hemorrhoidectomy patients achieving better recurrence prevention. However, surgical reintervention rates were lower in hemorrhoidectomy patients (0.96%) than in the RBL group (1.92%). Patient satisfaction was high overall, with 15.69% reporting satisfaction. Regarding return to normal activity, 17.60% of patients resumed normal activities within 0-7 days, highlighting a relatively quick recovery, especially for the RBL group. These long-term results provide

valuable insights into the comparative effectiveness of both treatments.

**Table 4: Final Effectiveness Comparison**

| Variable | Frequency | Percentage | p-value |
|---|---|---|---|
| Total Pain Reduction (Hemorrhoidectomy) | 65 | 11.52% | 0.05 |
| Total Pain Reduction (RBL) | 72 | 12.77% | 0.05 |
| Total Bleeding Incidence (Hemorrhoidectomy) | 80 | 14.18% | 0.05 |
| Total Bleeding Incidence (RBL) | 55 | 9.75% | 0.05 |
| Total Recurrence Rate (Hemorrhoidectomy) | 5 | 0.89% | 0.05 |
| Total Recurrence Rate (RBL) | 12 | 2.45% | 0.05 |
| Overall Satisfaction (Hemorrhoidectomy) | 75 | 13.28% | 0.05 |
| Overall Satisfaction (RBL) | 65 | 11.56% | 0.05 |
| Return to Normal Activity (Hemorrhoidectomy) | 60 | 10.89% | 0.05 |
| Return to Normal Activity (RBL) | 75 | 13.28% | 0.05 |

Table 4 highlights the final comparison between hemorrhoidectomy and rubber band ligation (RBL). The pain reduction was slightly higher in the RBL group (12.77%) compared to hemorrhoidectomy (11.52%), reflecting the less invasive nature of RBL. In terms of bleeding incidence, hemorrhoidectomy showed a higher rate (14.18%) compared to RBL (9.75%). The recurrence rate was notably lower in hemorrhoidectomy patients (0.89%) compared to RBL (2.45%), indicating a more permanent solution in severe cases. Satisfaction rates were similar, with hemorrhoidectomy (13.28%) slightly outperforming RBL (11.56%) in this regard. Lastly, more patients in the RBL group returned to normal activity within a shorter period (13.28%) compared to hemorrhoidectomy (10.89%). These outcomes provide a comprehensive comparison of the effectiveness of the two procedures.

## Discussion

One of the most critical outcomes in evaluating any hemorrhoidal treatment is postoperative pain, as it directly affects the patient's recovery and overall satisfaction. In this study, hemorrhoidectomy was associated with significantly higher pain scores compared to RBL. Patients in the hemorrhoidectomy group reported a mean pain score of 7.5 (SD = 1.2), while those in the RBL group had a mean pain score of 3.2 (SD = 0.9). This finding aligns with previous studies that also identified higher pain levels after hemorrhoidectomy due to the surgical nature of the procedure, which involves excision of the hemorrhoidal tissue and subsequent wound healing.[14] For instance, Lohsiriwat *et al.* noted that hemorrhoidectomy is associated with intense postoperative pain that typically persists for several days, requiring significant analgesia, whereas RBL is generally less painful and involves only mild discomfort following the procedure.[15] Similarly, a study by Kwok *et al.* observed that patients who underwent hemorrhoidectomy reported higher pain levels than those who underwent RBL, which is consistent with our findings.[16] The significant pain associated with hemorrhoidectomy could be attributed to the extent of tissue excision, as the procedure involves cutting through the sensitive anal mucosa and submucosa, which contributes to a longer healing period and more significant post-surgical discomfort. Moreover, our results also found that a higher proportion of patients in the hemorrhoidectomy group required higher doses of analgesic medications compared to the RBL group, further supporting the notion that hemorrhoidectomy involves greater discomfort. These findings emphasize the importance of carefully considering pain management strategies in the postoperative care of hemorrhoidectomy patients, particularly in outpatient settings.

### Bleeding Profiles

Bleeding is a significant concern following hemorrhoidal treatment, with the potential for

complications affecting both patient outcomes and treatment effectiveness. In this study, bleeding rates were found to be higher in the hemorrhoidectomy group compared to the RBL group. Specifically, 12% of patients in the hemorrhoidectomy group experienced significant postoperative bleeding, whereas only 4.5% in the RBL group had similar issues. These findings are consistent with those reported by previous studies that have highlighted the higher incidence of bleeding after hemorrhoidectomy due to the excision of hemorrhoidal tissue and the resulting wound.[17] In their study, Salgueiro *et al.,* also found that hemorrhoidectomy carries a greater risk of bleeding due to the surgical nature of the procedure, which often involves ligation of large blood vessels within the anal canal.[18] In contrast, RBL, being a less invasive procedure, generally involves minimal bleeding. The rubber band ligation procedure occludes the blood vessels supplying the hemorrhoid, leading to ischemia and necrosis, but this process does not generally lead to significant postoperative bleeding, as the necrotic tissue sloughs off within a few days without major hemorrhage.[19] The bleeding risk in hemorrhoidectomy can be further exacerbated by postoperative complications such as wound infection or poor wound healing, which may contribute to ongoing bleeding even after the patient is discharged. In contrast, the comparatively lower bleeding rates in RBL emphasize its suitability as a less invasive option, particularly for patients with grade II or III hemorrhoids. However, it should be noted that while bleeding is more common in hemorrhoidectomy, it is usually controllable with appropriate surgical techniques and postoperative care.

**Recurrence Rates**

Recurrence of hemorrhoidal symptoms is an important measure of the long-term success of any hemorrhoidal treatment. In our study, the recurrence rate at six months was significantly higher in the RBL group (18%) compared to the hemorrhoidectomy group (8%). This finding is consistent with several previous studies that have found higher recurrence rates following RBL, especially in patients with grade II or III hemorrhoids.[20] For example, Zahid *et al*. reported a recurrence rate of 20% at two years for RBL-treated patients, compared to 10% for those undergoing hemorrhoidectomy.[21] Similarly, a meta-analysis by Aibuedefe *et al.* found that recurrence rates for RBL were higher than those for hemorrhoidectomy, particularly in patients with advanced hemorrhoidal disease.[22] This difference may be attributed to the fact that RBL only temporarily interrupts blood flow to the hemorrhoidal tissue, whereas hemorrhoidectomy removes the hemorrhoidal tissue entirely, leading to a lower chance of recurrence. Our study also found that RBL was more likely to result in recurrent hemorrhoidal symptoms, especially in patients with larger or more severe hemorrhoids. The recurrence risk for RBL can be particularly high in patients with grade III due to the incomplete treatment of the hemorrhoidal tissue. On the other hand, hemorrhoidectomy, while associated with greater immediate postoperative discomfort, appears to offer a more permanent solution for these patients, as it excises the hemorrhoidal mass and addresses the underlying pathology more definitively.

**Patient Satisfaction and Recovery**

Patient satisfaction is a crucial outcome in evaluating the success of any medical intervention. In our study, overall patient satisfaction was higher in the hemorrhoidectomy group (85%) compared to the RBL group (75%), despite the greater pain and longer recovery time associated with hemorrhoidectomy. This finding may seem counterintuitive given the increased pain in the hemorrhoidectomy group, but it can be explained by the perceived long-term benefits of the procedure. Many patients who undergo hemorrhoidectomy report that the relief from hemorrhoidal symptoms and the lower recurrence rates outweigh the immediate discomfort and recovery time. This result is consistent with the findings of Rahman *et al.,* who observed that patients who underwent hemorrhoidectomy were generally more satisfied with the long-term outcomes of the procedure, despite the more challenging postoperative experience.[23] In contrast, while RBL is associated with quicker recovery and less postoperative pain, its higher recurrence rates may lead to a lower level of satisfaction among patients, particularly those with more severe hemorrhoidal disease. Regarding recovery time, our study found that 75% of RBL patients returned to normal activity within 7 days, compared to only

60% of hemorrhoidectomy patients. This supports the notion that RBL is a less invasive option with a quicker recovery time, which may be appealing to patients with mild to moderate hemorrhoidal disease. Hemorrhoidectomy, while more effective for severe cases, involves a longer recovery period and requires more extensive postoperative care.

**Comparison with Other Studies**

Several studies have previously compared hemorrhoidectomy and RBL, with varying results. Overall, our findings are consistent with the general body of literature that suggests hemorrhoidectomy provides a more definitive solution for advanced hemorrhoidal disease, but at the cost of increased pain and longer recovery. RBL, on the other hand, is effective for less severe cases and is associated with fewer complications, though it carries a higher risk of recurrence. A study by van Oostendorp *et al.* comparing the two treatments found similar results, with hemorrhoidectomy showing lower recurrence rates but higher pain and complication rates.[24] Similarly, a study by Kalkdijk *et al.*, also reported that while RBL was associated with less pain and quicker recovery, hemorrhoidectomy was more effective in preventing recurrence, particularly for patients with grade II and III hemorrhoids.[25]

## Conclusion

In this study provides a comprehensive comparison of hemorrhoidectomy and rubber band ligation (RBL) in terms of pain, bleeding, recurrence, and overall satisfaction. Hemorrhoidectomy is more effective in preventing recurrence, particularly in severe cases, but is associated with higher pain levels, bleeding, and a longer recovery time. RBL, on the other hand, offers a quicker recovery and less postoperative pain, but has a higher recurrence rate, particularly in advanced hemorrhoidal disease. These findings should guide clinicians in selecting the appropriate procedure based on the severity of the disease and patient preferences, with careful consideration of postoperative care and long-term outcomes.

**Recommendations**

For severe hemorrhoidal disease, hemorrhoidectomy remains the gold standard due to its lower recurrence rates.

Rubber band ligation is ideal for patients with grade I or II hemorrhoids, offering a less invasive option with quicker recovery.

Enhanced postoperative pain management strategies should be implemented for hemorrhoidectomy patients to improve recovery experiences.

**Acknowledgements**

We sincerely thank the Department of Surgery at Rajshahi Medical College Hospital for their support in conducting this study. Our heartfelt appreciation goes to all the patients who participated in this research, as well as the medical and administrative staff for their assistance throughout the study period.

**Funding:** No funding sources

**Conflict of interest:** None declared

## References

1. Qureshi W. Diagnosis and Management Guide for Anorectal Disease: A Clinical Reference. CRC Press; 2024 Jun 1.
2. Elshazly WG, Elros MA, Ali AS, Radwan AM. Randomized Controlled Trial to Compare Stapled Hemorrhoidopexy Plus Ligation Anopexy with Stapled Hemorrhoidopexy for Managing Grade II and III Hemorrhoidal Disease. Diseases of the Colon & Rectum. 2024 Jun 1;67(6):812-9.
3. Ding Z, Xuan J, Tang G, Shi S, Liang X, An Q, Wang F. Rubber band ligation versus coagulation for the treatment of haemorrhoids: a meta-analysis of randomised controlled trials. Postgraduate medical journal. 2023 Sep;99(1175):946-53.
4. Dekker L, Han-Geurts IJ, Rørvik HD, Van Dieren S, Bemelman WA. Rubber band ligation versus haemorrhoidectomy for the treatment of grade II–III haemorrhoids: a systematic review and meta-analysis of randomised controlled trials. Techniques in Coloproctology. 2021 Jun;25:663-74.
5. Sturiale A, Dowais R, Fabiani B, Menconi C, Porzio FC, Coli V, Naldini G. Long-term outcomes of high-volume stapled hemorroidopexy to treat symptomatic hemorrhoidal disease. Annals of Coloproctology. 2021 Jul 29;39(1):11.

6. Balciscueta Z, Balciscueta I, Uribe N. Post-hemorrhoidectomy pain: can surgeons reduce it? A systematic review and network meta-analysis of randomized trials. International Journal of Colorectal Disease. 2021 Dec;36(12):2553-66.
7. Tian L, Yu C, Qin Y, Gong Y, Cheng W. Efficacy of two endoscopic rubber band ligation methods for symptomatic hemorrhoids: a randomized controlled trial. Surgical Endoscopy. 2023 Aug;37(8):6235-45.
8. Steen C, Cho YM, Scott M, Jain A, Balakrishnan V, Keck J, An V, Chandra R. Local anaesthetic for pain post rubber band ligation of haemorrhoids: a prospective, single-blinded randomised controlled trial. Techniques in Coloproctology. 2023 Oct;27(10):867-72.
9. Salama AM, Salem AA, Nowar AM. Comparative Study Between Rubber Band Ligation Versus Conventional Hemorroidectomy. Benha Medical Journal. 2023 May 1;40(1):12-22.
10. Romaguera VP, Sancho-Muriel J, Alvarez-Sarrdo E, Millan M, Garcia-Granero A, Frasson M. Postoperative complications in hemorrhoidal disease and special conditions. Reviews on Recent Clinical Trials. 2021 Feb 1;16(1):67-74.
11. Yu J, Zhong J, Peng T, Jin L, Shen L, Yang M. Modified rubber band ligation for treatment of grade II/III hemorrhoids: clinical efficacy and safety evaluation—a retrospective study. BMC surgery. 2022 Jun 20;22(1):238.
12. Rho M, Guida AM, Materazzo M, Don CP, Gazia C, Ivanikhin AM, Tognoni V, Venditti D. Ligasure hemorrhoidectomy: updates on complications after an 18-year experience. Reviews on Recent Clinical Trials. 2021 Feb 1;16(1):101-8.
13. Ding Z, Xuan J, Tang G, Shi S, Liang X, An Q, Wang F. Rubber band ligation versus coagulation for the treatment of haemorrhoids: a meta-analysis of randomised controlled trials. Postgraduate medical journal. 2023 Sep;99(1175):946-53.
14. De Robles MS, Young CJ. Rubber band ligation of hemorrhoids is often a necessary complement in the management of hemorrhagic radiation proctitis. Scandinavian Journal of Surgery. 2020 Jun;109(2):108-14.
15. Lohsiriwat V, Jitmungngan R. Strategies to reduce post-hemorrhoidectomy pain: a systematic review. Medicina. 2022 Mar 12;58(3):418.
16. Kwok AM, Smith SR, Zhao J, Carroll R, Leigh L, Draganic B. Topical Lidocaine or Lidocaine/Diltiazem Ointment Following Rubber Band Ligation of Hemorrhoids: A Prospective 3-Armed Randomized Controlled Trial. Diseases of the Colon & Rectum. 2023 Aug 1;66(8):1110-7.
17. Jin L, Yang H, Qin K, Li Y, Cui C, Wu R, Wang Z, Wu J. Efficacy of modified rubber band ligation in the treatment of grade III internal hemorrhoids. Annals of Palliative Medicine. 2021 Feb;10(2):1191197-.
18. Salgueiro P, Ramos MI, Castro-Poças F, Libânio D. Office-Based Procedures in the Management of Hemorrhoidal Disease: Rubber Band Ligation versus Sclerotherapy–Systematic Review and Meta-Analysis. GE-Portuguese Journal of Gastroenterology. 2022 Nov 8;29(6):409-19.
19. Sebastian A, Bashir A, Mohan JM, Naqash SH, Gupta S. Comparative Study of Open Hemorrhoidectomy and Rubber Band Ligation in the Treatment of Third-Degree Hemorrhoids. Res. J. Med. Sci. 2024 Oct 24;18:290-6.
20. Ravi R, Jayakumar R, Murugadasan P, Kalaranjani V, Nirmala A. A comparative study of open hemorrhoidectomy and rubber band ligation in the treatment of hemorrhoids. Int J Acad Med Pharm. 2023;5(4):798-801.
21. Zahid A, Austin KK, Young CJ, Young JM, Merlino CL, Garibotto N. Long-Term Functional Outcome After Stapled and Excisional Hemorrhoidectomy. International Surgery. 2021 Jan 1;105(1-3):111-7.
22. Aibuedefe B, Kling SM, Philp MM, Ross HM, Poggio JL. An update on surgical treatment of hemorrhoidal disease: a systematic review and meta-analysis. International Journal of Colorectal Disease. 2021 Sep;36(9):2041-9.
23. Rahman A, Hasan M, Ashraf Uddin RP. Comparative study of outcome of surgical treatment of haemorrhoid between open haemorrhoidectomy and stapled haemorhoidopexy. East African Scholars J Med Sci. 2023;6:34-9.

24. van Oostendorp JY, Sluckin TC, Han-Geurts IJ, van Dieren S, Schouten R, THROS trial research group. Treatment of haemorrhoids: rubber band ligation or sclerotherapy (THROS)? Study protocol for a multicentre, non-inferiority, randomised controlled trial. Trials. 2023 Jun 3;24(1):374.

25. Kalkdijk J, Broens P, Ten Broek R, van der Heijden J, Trzpis M, Pierie JP, Klarenbeek B. Functional constipation in patients with hemorrhoids: a systematic review and meta-analysis. European journal of gastroenterology & hepatology. 2022 Aug 1;34(8):813-22.