

## Prospective Interventional Study of Rubber Band Ligation Method for the Management of Grade I and Grade II Internal Hemorrhoids

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### ABSTRACT

**Background:** Hemorrhoids are a common anorectal disorder with significant impact on quality of life. Conservative management is the mainstay for Grade I and II hemorrhoids; however, patients with persistent symptoms require procedural intervention. Rubber Band Ligation (RBL) is a minimally invasive and cost-effective technique suitable for outpatient settings.

**Objective:** To evaluate the effectiveness and morbidity of RBL in managing Grade I and II internal hemorrhoids.

**Methods:** A prospective interventional study was conducted on 40 patients at Dr. L.N. Pandey Government Medical College, Ratlam. Patients underwent RBL using suction ligators and were followed up for two months to assess postoperative pain, bleeding, healing, and recurrence.

**Results:** 90% of patients experienced complete symptom relief. Minor pain occurred in 32.5%, bleeding in 10%, and recurrence in 5%.

**Conclusion:** RBL is a safe, effective, and minimally invasive outpatient procedure for early hemorrhoids with minimal morbidity and high patient satisfaction.

**KEYWORDS:** Hemorrhoids, Rubber Band Ligation, Outpatient Procedure, Minimally Invasive Surgery, Anorectal Disorders

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### 1. INTRODUCTION

Hemorrhoidal disease is among the most prevalent anorectal conditions worldwide, affecting individuals across all socioeconomic groups. It arises from pathological enlargement and distal displacement of the normal anal cushions, leading to bleeding, prolapse, and discomfort.<sup>1</sup> Although the exact etiology is multifactorial—related to straining, constipation, prolonged sitting, and heredity—its impact on daily activities can be substantial.<sup>2,3</sup>

For Grade I and II hemorrhoids, conservative management—such as dietary fiber, sitz baths, and topical agents—is often first-line. However, patients unresponsive to these measures require procedural interventions. Among the available options, Rubber Band Ligation (RBL), first performed by Blaisdell in 1958 and refined by Barron in 1964, remains the most widely accepted technique due to its simplicity, safety, and cost-effectiveness.<sup>4,5</sup>

RBL involves placing a small elastic band above the dentate line, strangulating the hemorrhoidal tissue, which then sloughs off within days. It offers significant advantages—minimal anesthesia, negligible blood loss, rapid recovery, and the ability to treat multiple sites in one sitting.<sup>6,7</sup>

This study aims to assess the effectiveness, safety, and morbidity profile of RBL in Grade I and II hemorrhoids in a tertiary care hospital in central India. Emphasis is placed on evaluating patient comfort, postoperative pain, healing time, and recurrence during a standardized two-month follow-up period.

## 2. MATERIALS AND METHODS

Objectives:

1. To assess the therapeutic effectiveness of Rubber Band Ligation method.
2. To evaluate the morbidity and complications associated with the procedure.

Study Design: Prospective Interventional Study Study Centre: Department of General Surgery, Dr. L.N. Pandey Government Medical College, Ratlam (M.P.) Study Duration: 6 months Sample Size: 40 patients

Inclusion Criteria: Grade I & II hemorrhoids unresponsive to conservative treatment, Age >18 years.

Exclusion Criteria: Grade III-IV hemorrhoids, inflamed or thrombosed piles, carcinoma, Crohn's disease.

Procedure: After ethical approval and informed consent, RBL was performed using a proctoscope and suction ligator. Patients were followed up for 2 months post-procedure.

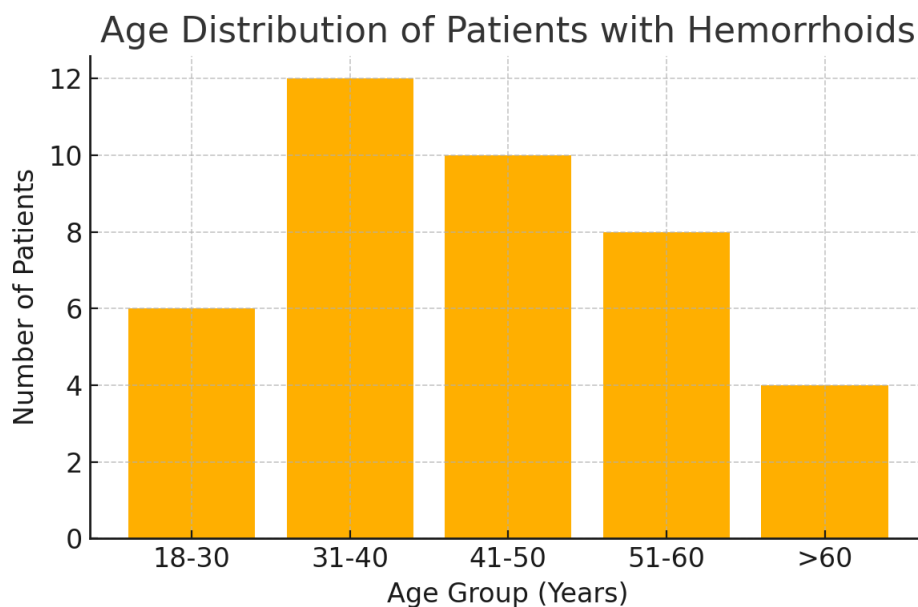
## 3. RESULTS

A total of 40 patients were included in the study (27 males, 13 females). The age and complication distributions are as follows:

**Table 1: Age Distribution**

Age Group (Years)	Number of Patients
18-30	6
31-40	12
41-50	10
51-60	8
>60	4

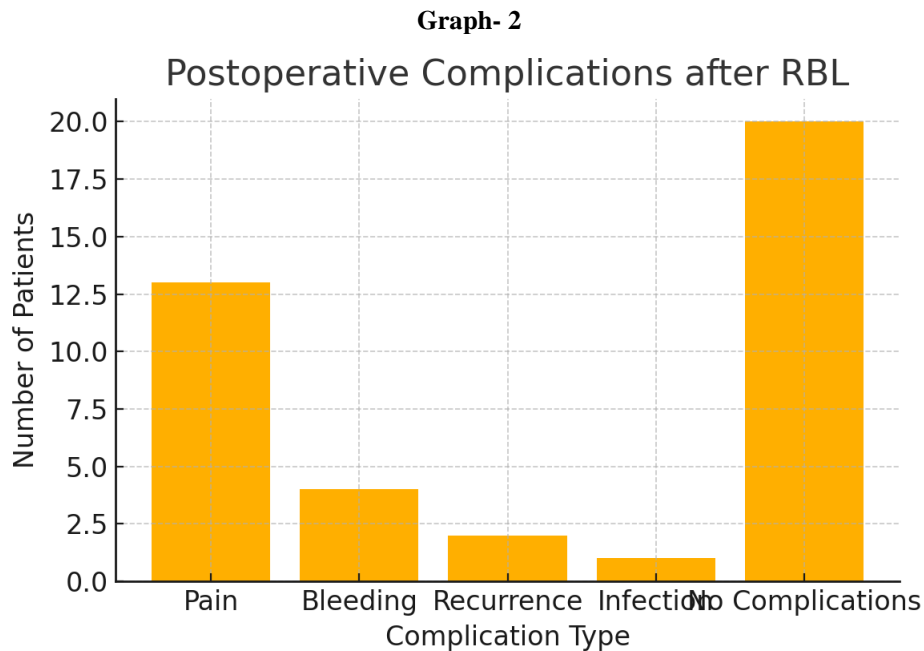
**Graph- 1**



**Table 2: Postoperative Complications**

Complication	Number of Patients
Pain	13
Bleeding	4
Recurrence	2
Infection	1

No Complications	20
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In this study, Rubber Band Ligation was found to be highly effective for Grade I and II hemorrhoids, with minimal morbidity. Mild postoperative pain and minor bleeding were the most frequent but self-limiting complications. The recurrence rate (5%) was low compared to open hemorrhoidectomy. These findings align with prior studies by Barron (1964), Gupta (2008), and others confirming the efficacy of RBL as a primary outpatient treatment modality for early hemorrhoids.

4. DISCUSSION

The results of this study confirm that Rubber Band Ligation is a safe, simple, and effective outpatient treatment for Grade I and II internal hemorrhoids. In our cohort of 40 patients, 90% achieved excellent symptomatic relief, while complications such as pain (32.5%) and minor bleeding (10%) were mild and self-limiting. Only 5% experienced recurrence within two months, aligning with global data reporting recurrence rates between 2–8%.

When compared to conventional hemorrhoidectomy, RBL demonstrated significant advantages—shorter procedural time, no hospital admission, rapid return to routine activities, and minimal postoperative morbidity. These outcomes are consistent with previous studies by Gupta (2008), MacRae (1995), and Pavlidis (2012), who reported high patient satisfaction and low complication rates.

Use of modern suction-operated and multiband ligators further simplifies the procedure, reducing discomfort and improving efficiency. Moreover, RBL’s suitability for low-resource and rural settings enhances its relevance in India, where accessibility and cost are crucial factors.

In summary, RBL represents an optimal first-line interventional therapy for early hemorrhoids, balancing effectiveness, affordability, and patient comfort. Its adoption in outpatient surgical practice can significantly reduce the burden of hemorrhoidal disease, minimizing hospital stay and healthcare expenditure while maintaining excellent therapeutic outcomes.

5. CONCLUSION

Rubber Band Ligation is a safe, effective, and minimally invasive procedure for Grade I and II internal hemorrhoids. It offers excellent patient satisfaction, minimal complications, and can be efficiently performed in an outpatient setting, making it ideal for rural healthcare centers.

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