Comparison of Effectiveness and Outcome of Rubber Band Ligation vs Open Hemorrhoidectomy in Grade II Internal Hemorrhoids

Ram Lakhan Singh Verma[1], Gaurav Mishra[2], Vivek Kumar[3], Bharat Assery[4], S P Singh[5], Vipin Gupta[6], Vinod Kumar[7*]

[1]Associate Professor, Department of General Surgery, UPUMS, Saifai, Etawah
[2]Assistant Professor, Department of General Surgery, UPUMS, Saifai, Etawah
[3]Assistant Professor, Department of General Surgery, UPUMS, Saifai, Etawah
[4]2nd year PG Resident, Department of General Surgery, UPUMS, Saifai, Etawah
[5]Professor, Department of General Surgery, UPUMS, Saifai, Etawah
[6]Professor, Department of General Surgery, UPUMS, Saifai, Etawah
[7*]Assistant Professor, Department of Plastic Surgery, Subharthi Medical College, Meerut
Corresponding Author: Dr. Vinod Kumar, Assistant Professor, Department of Plastic Surgery, Subharthi Medical College, Meerut

ABSTRACT

Background: Hemorrhoids are a common condition associated with discomfort and rectal bleeding. Various treatment modalities exist, including rubber band ligation and open hemorrhoidectomy. This study aims to compare the effectiveness and outcomes of these two methods in Grade II internal hemorrhoids.

Methods: A total of 50 patients with Grade II internal hemorrhoids were randomly divided into two groups of 25 each: one undergoing rubber band ligation and the other undergoing open hemorrhoidectomy. Parameters evaluated included bleeding control, postoperative pain, patient satisfaction, cost-effectiveness, recurrence rates, and postoperative ambulation.

Results: The mean age of patients was in the fourth to fifth decade, with a male predominance (34/50). Patients undergoing band ligation were discharged earlier (mostly within one day) compared to those undergoing hemorrhoidectomy (average three days). Postoperative pain was significantly higher in the hemorrhoidectomy group, with 20 patients requiring prolonged NSAID use. No postoperative bleeding or recurrence was observed during follow-up. Patients undergoing banding resumed normal activities earlier. Cost analysis showed that rubber band ligation was more economical.

Conclusion: Rubber band ligation is a safe, effective, and cost-efficient treatment modality for Grade II internal hemorrhoids, with better postoperative outcomes compared to open hemorrhoidectomy.

Keywords: Hemorrhoids, Rubber Band Ligation, Open Hemorrhoidectomy, Grade II Hemorrhoids

How to cite this article: Verma RLS, Mishra G, Kumar V, Assery B, Singh SP, Gupta V, Kumar V. Comparison of Effectiveness and Outcome of Rubber Band Ligation vs Open Hemorrhoidectomy in Grade II Internal Hemorrhoids. Int J Drug Deliv Technol. 2026;16(16s): 395-397. DOI: 10.25258/ijddt.16.16s.42

INTRODUCTION:

The term “hemorrhoids” originates from the Greek words *haem* (blood) and *rhoos* (flowing), referring to bleeding. The term “piles” is derived from the Latin word *pila*, meaning a ball or swelling.

The anal canal consists of columnar epithelium in the upper two-thirds and squamous epithelium in the lower third, meeting at the dentate line. Subepithelial vascular cushions present in the anal canal contribute to continence. Hemorrhoids result from pathological enlargement and distal displacement of these vascular cushions.

Hemorrhoids are broadly classified into internal and external types. Internal hemorrhoids are further classified into four grades based on the degree of prolapse:

- Grade I: No prolapse, only bleeding
- Grade II: Prolapse during defecation, spontaneous reduction
- Grade III: Prolapse requiring manual reduction
- Grade IV: Irreducible prolapse

Numerous treatment modalities exist, including conservative management, sclerotherapy, rubber band ligation, and surgical hemorrhoidectomy. Despite multiple available options, no single modality is universally superior, and treatment choice depends on symptom severity, complications, and cost-effectiveness.

OBJECTIVE:

To compare the outcomes of rubber band ligation versus open hemorrhoidectomy in patients with Grade II internal hemorrhoids.

MATERIALS AND METHODS

Study Design: Prospective comparative study

Sample Size: 50 patients

Groups:

- Group 1: Open hemorrhoidectomy (n=25)
- Group 2: Rubber band ligation (n=25)

Inclusion Criteria:

- Grade II internal hemorrhoids
- Fit for surgery
- No major comorbidities

Exclusion Criteria:

- Grade I, III, IV hemorrhoids
- Recurrent or secondary hemorrhoids

Methodology: All patients underwent detailed history, clinical examination, digital rectal examination, and anoscopy. Patients were allocated to either surgical or banding group and this study was conducted in the department of general surgery, UPUMS, Saifai, India. Follow-up was conducted at day 3, day 7, weekly for one month, and at 3 and 6 months.

Plan of Follow- up: Patients had follow-up examinations on the third and seventh days after surgery. Subsequently, they were monitored weekly for the first four weeks post-surgery. Thereafter, follow-up appointments were scheduled once at the third and sixth months. Patients were instructed to promptly report to the clinic or emergency department in case of any complications such as rectal bleeding, pain, fever, swelling, discharge, or any other emergent issues.

RESULTS

- Peak incidence: 41–50 years
- Male predominance: 68%
- Most common symptom: bleeding per rectum

Hospital Stay:

- Banding: 1 day (majority)
- Hemorrhoidectomy: 3–5 days

Pain:

- Banding: minimal (2 patients)
- Hemorrhoidectomy: significant (20 patients)

Complications:

- No recurrence in either group
- Bleeding more common in hemorrhoidectomy group

Return to Work:

- Banding: POD 1
- Hemorrhoidectomy: POD 3–5

Cost:

- Banding: ₹500
- Hemorrhoidectomy: ₹1800

Table 1: Distribution of cases in different Age groups

Age in years	No. of cases	Percentage%
11 – 20	2	4.44
21 – 30	6	13.36
31 – 40	13	28.88
41 – 50	20	44.44
51 – 60	6	13.36
61 – 70	3	6.66
Total	50	100
Mean±SD	41.7±11.47	

Table 2: Distribution of symptoms in all cases

Symptom	Cases	Percentage
Bleeding per rectum	10	20
Mass per rectum	2	4
Painful defecation	2	4
Bleeding per rectum+ Mass per rectum	15	30
Bleeding per rectum+ Painful defecation	5	10
Bleeding per rectum+ Constipation	5	10
Bleeding per rectum+ Painful defecation + Constipation	10	20
Total	50	100

Table 3: Complication

Complication	Rubber Band Ligation (25/50)	Open Hemorhoidectomy (25/ 50)
Pain	2	20
Bleeding per rectum	0	12
Discharge per rectum	0	0
Recurrences	0	0
Return to work (No of days)	All 25 patients were got back to work from postop day 1	17 patients went for work on post op day3, 8 from post op day 5

DISCUSSION AND SUMMARY

Hemorrhoids have affected humans for centuries, leading to significant discomfort and necessitating appropriate evaluation and management, although they are not life-threatening. Previous evidence, including the meta-analysis by MacRae et al. (10) in 1995, demonstrated that hemorrhoidectomy is associated with a higher incidence of postoperative complications compared to rubber band ligation. More recent studies, such as that by Liaqat et al. (11) in 2022, have reported that rubber band ligation is a safe, rapid, cost-effective, and efficacious treatment modality for Grade II internal hemorrhoids. Furthermore, a Cochrane Database systematic review (12) supports rubber band ligation as the preferred treatment for Grade II hemorrhoids due to its lower complication rates relative to open hemorrhoidectomy.

In our study, the incidence of hemorrhoids increased with age, with the highest prevalence observed in the fourth decade of life (44.4%), and a clear male predominance (70%). Bleeding per rectum was identified as the most common presenting symptom

(90%). Rubber band ligation was performed as an outpatient procedure, whereas open hemorrhoidectomy required hospital admission and spinal anesthesia. Patients were followed up serially to assess postoperative outcomes and complications. Our findings indicated that patients undergoing open hemorrhoidectomy experienced a higher rate of postoperative pain (80%) and bleeding per rectum (77.7%), along with increased treatment costs, compared to those treated with rubber band ligation.

Findings of our study are consistent with previous literature showing:

- Higher postoperative pain in hemorrhoidectomy
- Faster recovery with band ligation
- Lower cost and morbidity with banding

CONCLUSION

In this study of 50 patients with Grade II internal hemorrhoids, a comparative evaluation was conducted between rubber band ligation and open hemorrhoidectomy. Rubber band ligation demonstrated superior outcomes, with fewer complications, earlier ambulation, reduced duration of hospital stay, and better cost-effectiveness. In contrast, patients undergoing open hemorrhoidectomy experienced higher postoperative pain and occasional minimal bleeding from the operative site. However, open hemorrhoidectomy remained an effective option for managing recurrent cases following other treatment modalities.

Overall, rubber band ligation can be considered a safe, effective, and economical treatment for Grade II internal hemorrhoids. It provides distinct advantages, including reduced postoperative pain, shorter hospitalization, quicker return to daily activities, and lower complication rates compared to open hemorrhoidectomy.

Conflict of Interest: The authors declare that they had no conflict of interest.

REFERENCES:

1) Noorani A, Carapeti E. Hemorrhoids: anatomy, pathophysiology and presentation. In: Cohen R, Windsor A, editors. *Anus*. London: Springer; 2014. p. [chapter pages]. doi:10.1007/978-1-84882-091-3_13
2) Kaidar-Person O, Person B, Wexner SD. Hemorrhoidal disease: a comprehensive review. *J Am Coll Surg.* 2007;204(1):102–117. doi:10.1016/j.jamcollsurg.2006.08.022
3) Gagloo MA, Hijaz SW, Nasir SA, Reyaz A, Bakshi IH, Chowdary NA, et al. Comparative study of hemorrhoidectomy and rubber band ligation in treatment of second- and third-degree hemorrhoids in Kashmir. *Indian J Surg.*2013;75:356–360.
4) Lohsiriwat V. Treatment of hemorrhoids: a coloproctologist's view. *World J Gastroenterol.* 2015;21(31):9245.
5) He A, Chen M. Sclerotherapy in hemorrhoids. *Indian J Surg.* 2023;85(2):228–232.
6) Chalasani S, Fielding LP. Rubber band ligation. In: *Surgical treatment of hemorrhoids*. London: Springer; 2002. p. 65–70.
7) Hardy KJ, Wheatley IC, Heffernan EB. Anal dilatation and hemorrhoidectomy: a prospective study. *Med J Aust.* 1975;2(3):88–91.
8) Ramesh TP. Comparative study of different modalities of treatment for internal hemorrhoids—Barron's banding, cryosurgery and open hemorrhoidectomy [dissertation]. Karnataka (India): Rajiv Gandhi University of Health Sciences; [year].
9) Marcon NE. Hemorrhoids. *Can J Gastroenterol.*1990;4:554–558.
10) MacRae HM, McLeod RS. Comparison of hemorrhoidal treatment modalities: a meta-analysis. *Dis Colon Rectum.* 1995;38(7):687–694.
11) Liaqat F, Butt MQ, Ghani U, Tariq M, Khan MS, Asif A. Rubber band ligation versus standard hemorrhoidectomy for treatment of hemorrhoids. *Pak Armed Forces Med J.* 2022;72(4):1168–1171.
12) Shanmugam V, Hakeem A, Campbell KL, Rabindranath KS, Steele RJ, Thaha MA, et al. Rubber band ligation versus excisional hemorrhoidectomy for hemorrhoids. *Cochrane Database Syst Rev.* 2005 ;(1):CD005034.