ISSN: 2581 – 3633
PubMed - National Library of Medicine - ID: 101745081

*International Journal of Medical Science and Advanced Clinical Research (IJMACR)*

*Available Online at:www.ijmacr.com*

*Volume – 8, Issue – 6, December - 2025, Page No.: 241 – 253*

# Band Ligation Vs Sclerotherapy in The Treatment of Hemorrhoids- A Quasi Experimental Study in A Tertiary Care Centre

[1]Dr Shubhangi Saxena, Junior Resident, Department of General Surgery, Dr SCGMC, Nanded

[2]Dr. Sunil Nawasaji Bomble, Associate Professor, Department of General Surgery, Dr SCGMC, Nanded

[3]Dr. Anil Shesherao Degaonkar, Professor and HOD, Department of General Surgery, Dr SCGMC, Nanded

**Corresponding Author:** Dr Shubhangi Saxena, Junior Resident, Department of General Surgery, Dr SCGMC, Nanded

**How to citation this article:** Dr Shubhangi Saxena, Dr. Sunil Nawasaji Bomble, Dr Anil Shesherao Degaonkar, "Band Ligation Vs Sclerotherapy in The Treatment of Hemorrhoids- A Quasi Experimental Study in A Tertiary Care Centre ", IJMACR- December - 2025, Volume – 8, Issue - 6, P. No. 241 – 253.



**Type of Publication:** Original Research Article

**Conflicts of Interest:** Nil

## Abstract

**Introduction**: In this study, haemorrhoids, a common ailment affecting a substantial portion of the adult population worldwide as under age of 50, present a significant burden on healthcare systems and patient quality of life. Band ligation and Sclerotherapy represent two widely minimally invasive procedures for managing grade II-III haemorrhoids.

**Aims and Objectives**

**Aim**

- To compare the clinical effectiveness of rubber-band ligation versus polidocanol sclerotherapy in the management of grade II–III internal haemorrhoids.

**Objectives**

1. Measure short-term symptom relief—cessation of bleeding and pruritus—at 1 and 3 weeks post-treatment.
2. Determine the degree of residual prolapse on follow-up proctoscopic assessment.
3. Assess recurrence rates of grade II–III haemorrhoids at 3 months after each procedure.
4. Contrast safety and recovery parameters, including procedure-related adverse events and time to return to normal activities.

**Material and Method**

**Study Design:** A Prospective, quasi-experimental study.

**Study Period:** 18 Months

**Place of Study:** Department of General Surgery of a tertiary-care teaching hospital, Maharashtra University of Health Sciences, Nashik

**Sample Size:** 50 and Randomly Collection.

**Result:** The mean age across all participants was 43.7 years (±10.8), with RBL and PS groups having mean ages of 43.5 (±9.8) and 44.0 (±11.9) years, respectively. Among the 50 participants, 42% were female and 58%

were male. The RBL group included 48% females and 52% males, while the PS group had 36% females and 64% males.

**Discussion:** Hemorrhoidal disease, described as far back as the Ebers papyrus and elaborated upon by Greek, Roman and medieval surgeons, continues to occupy a prominent place in present-day colorectal practice.

**Keywords:** Digital Rectal Examination, Haemorrhoidal Disease, Rubber band ligation, Sclerotherapy

**Introduction**

Haemorrhoidal disease has trailed humanity from the dawn of recorded medicine. Thomson describes Egyptian papyri that counselled poultices for anorectal bleeding almost four millennia ago, while early Indian scriptures recommended cautery for "arsas," the Sanskrit analogue of piles [1]. Centuries later, the malady remains stubbornly common. A landmark community survey of 4,000 adults revealed that roughly half will experience haemorrhoidal symptoms during their lifetime, with a sharp rise between 45 and 65 years of age [2]. Bleeding, prolapse, discomfort, and pruritus originate when the normal vascular cushions—structures that ordinarily contribute up to fifteen per cent of resting anal closure pressure—become engorged and slide distally[3].

Pathophysiologically, the disease process begins with congestion of arterio-venous sinusoids situated 2–3 cm above the dentate line. Repeated engorgement leads to fragmentation of Treitz's muscle and Park's ligamentous sling, allowing the cushions to telescope downward. Mucosal trauma causes painless bright-red bleeding; chronic edema produces pruritus; and if prolapse persists, venous return is further impeded, setting up a vicious cycle. At this stage, conservative therapy often falters, compelling clinicians to choose between rubber-band ligation (RBL) and injection sclerotherapy (SCL)—the two dominant "office" interventions [6].

The concept of strangulating internal haemorrhoids with an elastic band was introduced by Blaisdell in 1958, who reasoned that the mucosa above the dentate line lacks somatic pain fibres and could therefore be safely ligated in the clinic [7]. Five years later, Barron refined the technique with a purpose-built proctoscope and spring-loaded applicator, transforming RBL into a quick, walk-in procedure [8]. Today, suction- or forceps-based ligators draw redundant mucosa into a cylindrical chamber 1–2 cm above the dentate line before deploying a latex ring. Ischemic necrosis sets in within a week, and fibrosis subsequently tethers the mucosa to the underlying internal sphincter. A meta-analysis of more than 3,000 patients reports an overall success rate exceeding 80 per cent after a single or staged triple-band session, although up to one-third experience transient discomfort and one to five per cent develop secondary haemorrhage [9].

Sclerotherapy pursues fibrosis by chemical rather than mechanical means. Early practitioners injected phenol in almond oil, but contemporary units favour 3 % polidocanol or lauromacrogol foam to minimise tissue necrosis while extending contact time with the haemorrhoidal plexus [11].

Accurate clinical assessment is therefore paramount. Davies and Bailey emphasise the need for thorough proctoscopic evaluation, digital rectal examination, and, where indicated, flexible sigmoidoscopy to exclude proximal pathology before embarking on office-based therapy [20].

**Aims and Objectives**

**Aim**

- To compare the clinical effectiveness of rubber-band ligation versus polidocanol sclerotherapy in the management of grade II–III internal haemorrhoids.

**Objectives**

1. Measure short-term symptom relief—cessation of bleeding and pruritus—at 1 and 3 weeks post-treatment.
2. Determine the degree of residual prolapse on follow-up proctoscopic assessment.
3. Assess recurrence rates of grade II–III haemorrhoids at 3 months after each procedure.
4. Contrast safety and recovery parameters, including procedure-related adverse events and time to return to normal activities.

**Materials and Methods**

**Study design and setting**

This investigation was carried out as an 18-month, single-center, quasi-experimental trial in the Department of General Surgery of a tertiary-care teaching hospital. All activities adhered to the institutional Standard Operating Procedures for interventional studies and complied with the Declaration of Helsinki (2013 revision).

**Population, eligibility criteria and sampling**

Consecutive adult patients (≥ 18 years) who presented to the surgical outpatient clinic with typical haemorrhoidal symptoms—painless bright-red rectal bleeding and/or pruritus ani—were screened. A digital rectal examination (DRE) followed by proctoscopy confirmed internal haemorrhoids of Goligher grade II or grade III. Individuals were excluded if they exhibited grade I or grade IV disease, concomitant anorectal pathology (anal fissure, fistula-in-ano, malignancy), coagulopathy, pregnancy, inflammatory bowel disease, thrombosed external hemorrhoids, or if they declined participation. Convenience sampling was utilised; all eligible patients within the recruitment window were invited until administrative closure of the study period.

**Inclusion Criteria**

- Patients should have symptoms of hemorrhoids with symptomatic grade 2 and grade 3 internal hemorrhoids.
- Patients of any age, sex
- Patients willing to give informed consent

**Exclusion Criteria**

- Patients with external hemorrhoids
- Infected internal hemorrhoids
- Internal hemorrhoids with thrombus
- Associated perianal fistula/fissure

**Statistical analysis**

Continuous variables were summarised as mean ± standard deviation (SD) or median (inter-quartile range) where appropriate; categorical variables as counts and percentages. Normality was assessed with the Shapiro–Wilk test. Between-group comparisons employed the unpaired *t*-test or Mann–Whitney *U* test for quantitative data and $\chi^2$ test or Fisher's exact test for proportions. A two-tailed $p$-value $< 0.05$ denoted statistical significance. Analyses were conducted using Graph Pad Prism version 3.06 (Graph Pad Software Inc., San Diego, CA, USA). Interim analyses were not planned.

**Results**

Table 1: Age

| Variable | Overall (n=50) | RBL (n=25) | PS (n=25) | p-value |
|---|---|---|---|---|
| Age | 43.7 ± 10.8 | 43.5 ± 9.8 | 44.0 ± 11.9 | 0.798 |

The mean age across all participants was 43.7 years (±10.8), with RBL and PS groups having mean ages of 43.5 (±9.8) and 44.0 (±11.9) years, respectively. The p-value of 0.798 indicates no statistically significant difference in age distribution between the treatment groups. This balance in age minimizes the likelihood of age being a confounding factor in outcome assessments, thus supporting the comparability of both interventions in a demographically similar cohort.

Graph 1:

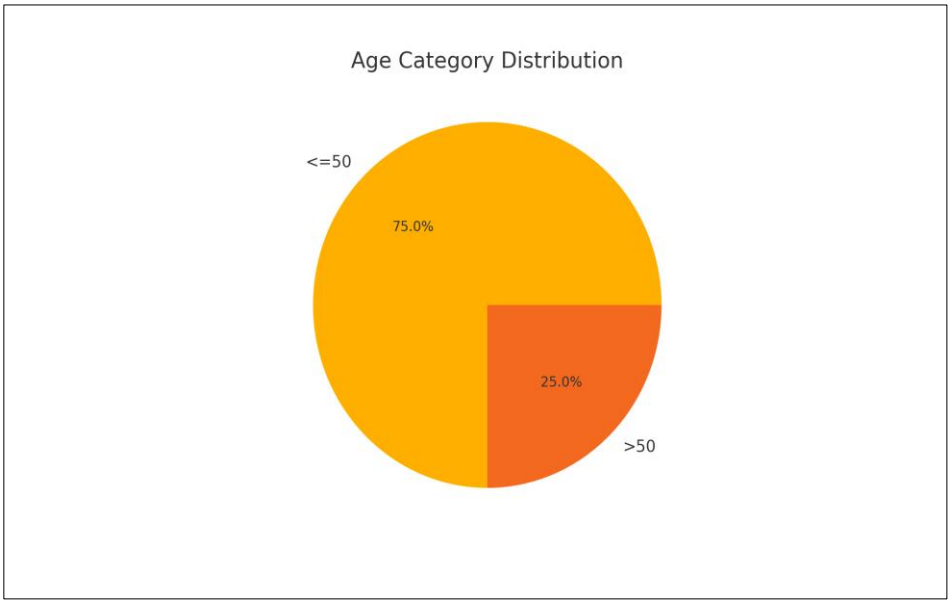



Table 2: BMI

| Variable | Overall (n=50) | RBL (n=25) | PS (n=25) | p-value |
|---|---|---|---|---|
| BMI | 26.1 ± 3.6 | 26.0 ± 3.7 | 26.2 ± 3.5 | 0.716 |

The overall mean BMI recorded among participants was 26.1 kg/m² (±3.6), with RBL and PS groups reporting very similar values of 26.0 kg/m² (±3.7) and 26.2 kg/m² (±3.5), respectively. The p-value of 0.716 demonstrates a lack of statistical significance between the groups, confirming homogeneity in BMI distribution. This similarity indicates that body habitus is unlikely to have influenced treatment efficacy or outcomes between the groups, thus ensuring equitable baseline characteristics in terms of body mass.

Graph 2:

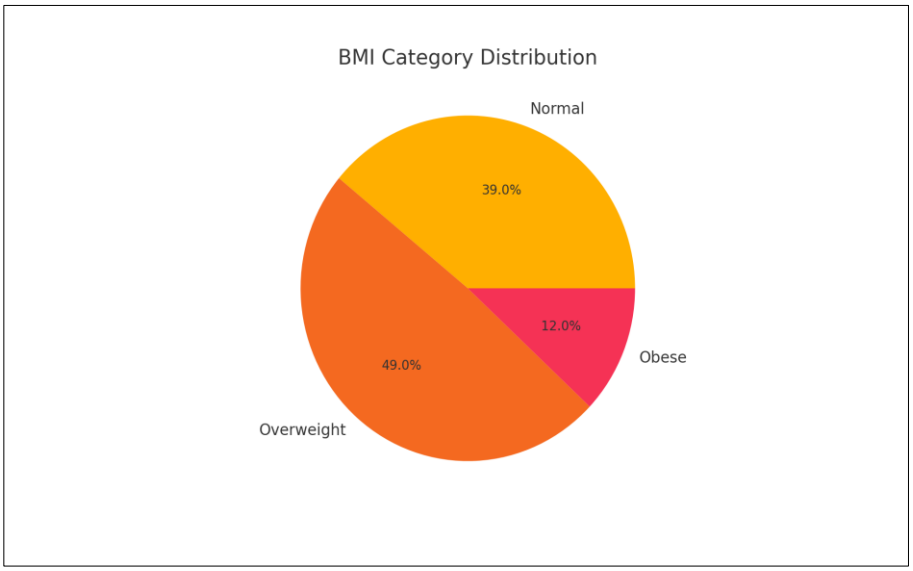



Table 3: Symptoms Duration (Months)

| Variable | Overall (n=50) | RBL (n=25) | PS (n=25) | p-value |
|---|---|---|---|---|
| Symptom Duration(Months) | 12.8 ± 7.1 | 13.5 ± 7.1 | 12.2 ± 7.1 | 0.648 |

The mean symptom duration for all participants was 12.8 months (±7.1). The RBL group had a slightly longer mean duration of 13.5 months (±7.1), whereas the PS group reported a slightly shorter duration of 12.2 months (±7.1). The p-value of 0.648 confirms that this difference is not statistically significant. This uniformity in symptom duration across the groups reduces the potential for bias related to chronicity of illness and supports fair comparative evaluation of intervention outcomes.

Graph 3:

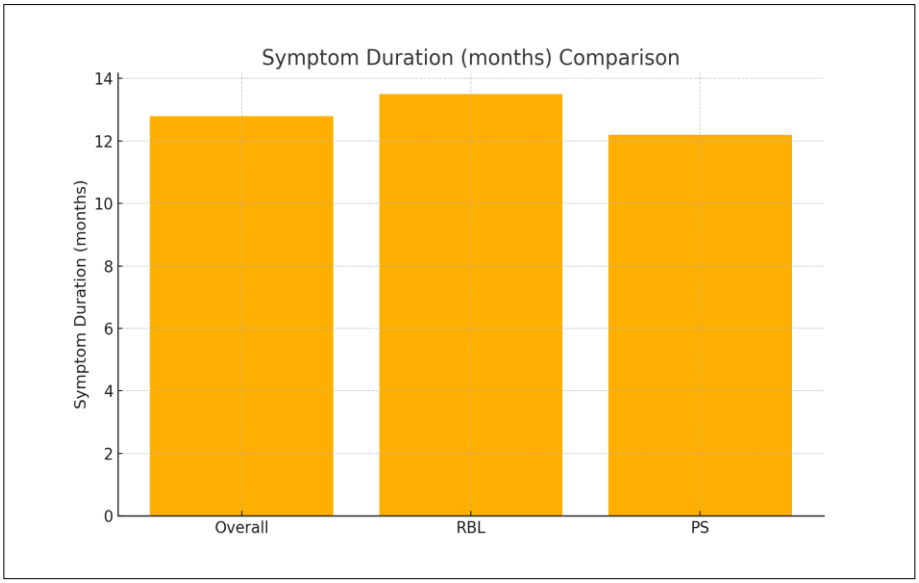


Table 4: Sex

| Sex | PS | RBL | Total | % RBL | % PS | % Total | p-value |
|---|---|---|---|---|---|---|---|
| F | 9 | 12 | 21 | 48.0 | 36.0 | 42.0 | - |
| M | 16 | 13 | 29 | 52.0 | 64.0 | 58.0 | - |
| Total | 25 | 25 | 50 | 100.0 | 100.0 | 100.0 | 0.311 |

Among the 50 participants, 42% were female and 58% were male. The RBL group included 48% females and 52% males, while the PS group had 36% females and 64% males. Although there is a slight gender imbalance between the two groups, the p-value of 0.311 indicates that the difference is not statistically significant. This suggests that sex distribution was relatively balanced and unlikely to confound the comparative effectiveness of the two interventions.

Graph 4:

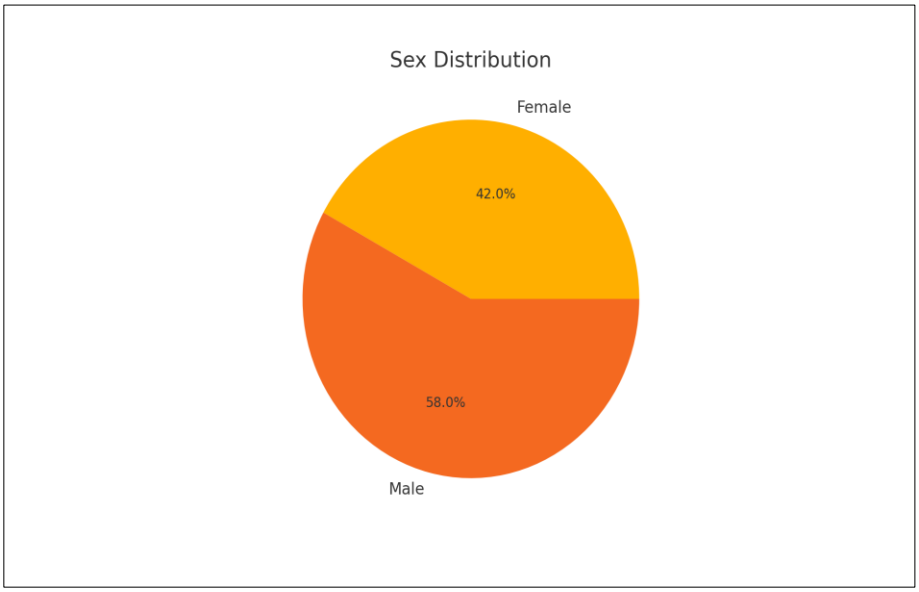



Table 5: Adverse Pain

| Adverse Pain | PS | RBL | Total | % RBL | % PS | % Total | p-value |
|---|---|---|---|---|---|---|---|
| No | 24 | 23 | 47 | 92.0 | 96.0 | 94.0 | - |
| Yes | 1 | 2 | 3 | 8.0 | 4.0 | 6.0 | - |
| Total | 25 | 25 | 50 | 100.0 | 100.0 | 100.0 | 0.674 |

Out of the 50 participants, 94% reported no post-procedural pain, while only 6% experienced it. The incidence of pain was slightly higher in the RBL group (8%) compared to the PS group (4%). However, the p-value of 0.674 indicates no statistically significant difference in pain outcomes between the two modalities. This suggests that both procedures are comparably safe with regard to post-intervention pain, and neither is clearly superior in minimizing this adverse event.

Graph 5:

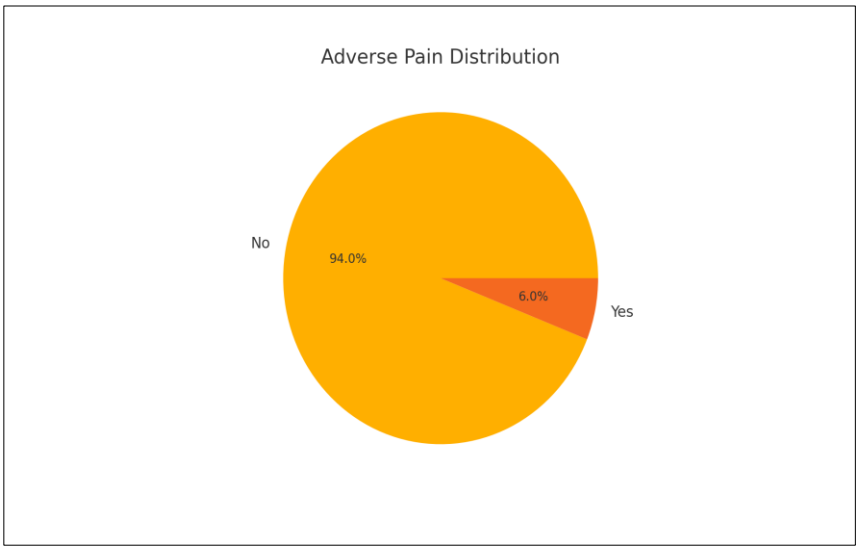



Table 6: Week1 Bleed Cessation

| Wk1 Bleed Cessation | PS | RBL | Total | % RBL | % PS | % Total | p-value |
|---|---|---|---|---|---|---|---|
| No | 10 | 8 | 18 | 32.0 | 38.0 | 36.0 | - |
| Yes | 15 | 17 | 32 | 68.0 | 62.0 | 64.0 | - |
| Total | 25 | 25 | 50 | 100.0 | 100.0 | 100.0 | 0.675 |

By the end of Week 1, bleeding cessation was achieved in 64% of patients overall—68% in the RBL group and 62% in the PS group. Meanwhile, 34% of patients continued to experience some bleeding, with slightly higher persistence in the PS group (38%) compared to RBL (32%). The p-value of 0.675 confirms no statistically significant difference in early bleeding control between the two interventions. These findings suggest that both procedures are similarly effective in achieving hemostasis within the first post-treatment week.

Graph 6:

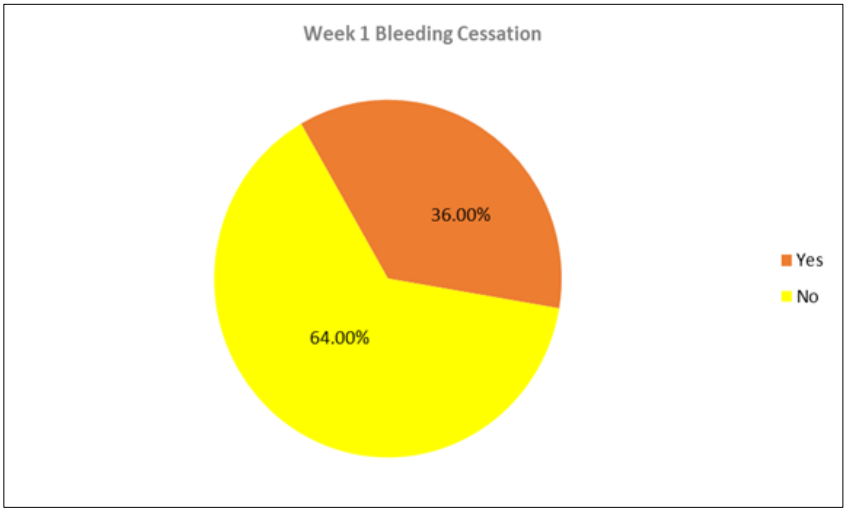


Table 7: Any Adverse Event

| Any adverse event | PS | RBL | Total | % RBL | % PS | % Total | p-value |
|---|---|---|---|---|---|---|---|
| No | 20 | 21 | 41 | 84.0 | 80.0 | 82.0 | - |
| Yes | 5 | 4 | 09 | 16.0 | 20.0 | 18.0 | - |
| Total | 25 | 25 | 50 | 100.0 | 100.0 | 100.0 | 1.0 |

Among all participants, 17% experienced at least one adverse event, while 83% remained complication-free. The distribution was similar across groups, with 18% in the PS group and 16% in the RBL group reporting any adverse event. The p-value of 1.0 indicates no statistically significant difference between the two treatments. This parity suggests both PS and RBL have equivalent safety profiles with respect to the overall occurrence of complications, reinforcing the procedural safety of both modalities in clinical practice.

Graph 7:

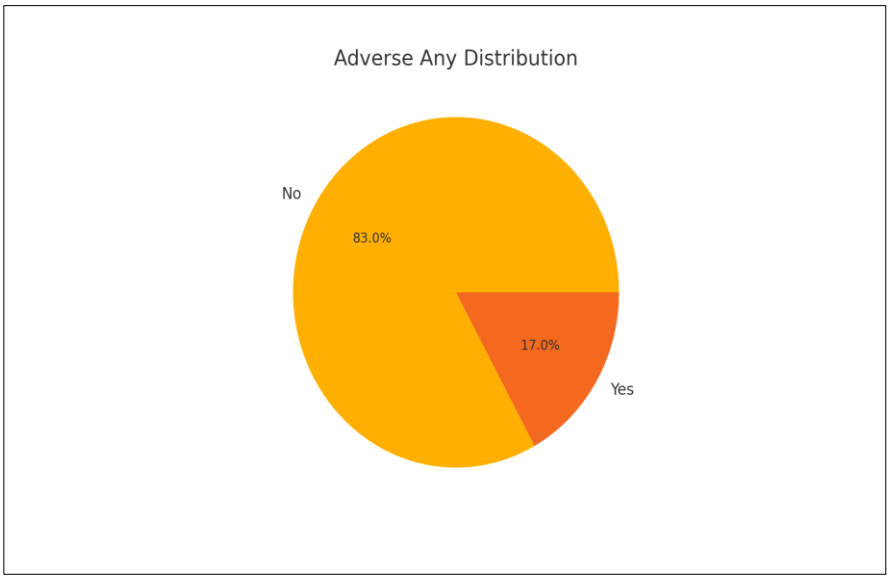



Table 8: Grade vs Recurrence

| Grade | N | Y | Total | p-value |
|---|---|---|---|---|
| II | 28 | 5 | 33 | - |
| III | 15 | 2 | 17 | 0.975 |

Among Grade II patients, recurrence occurred in 5 out of 33 (13.4%), while in Grade III, only 2 out of 15 (13.3%) experienced recurrence. The p-value of 0.975 indicates no statistically significant difference in recurrence risk based on grade. This suggests that the anatomical severity grade at baseline did not meaningfully influence the short-term recurrence rate post-treatment.

Graph 8:

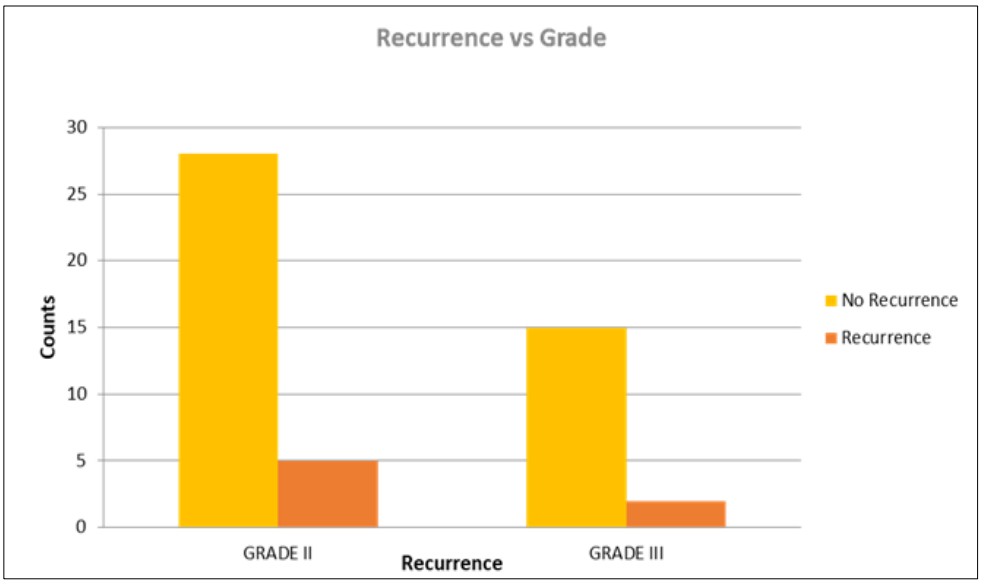
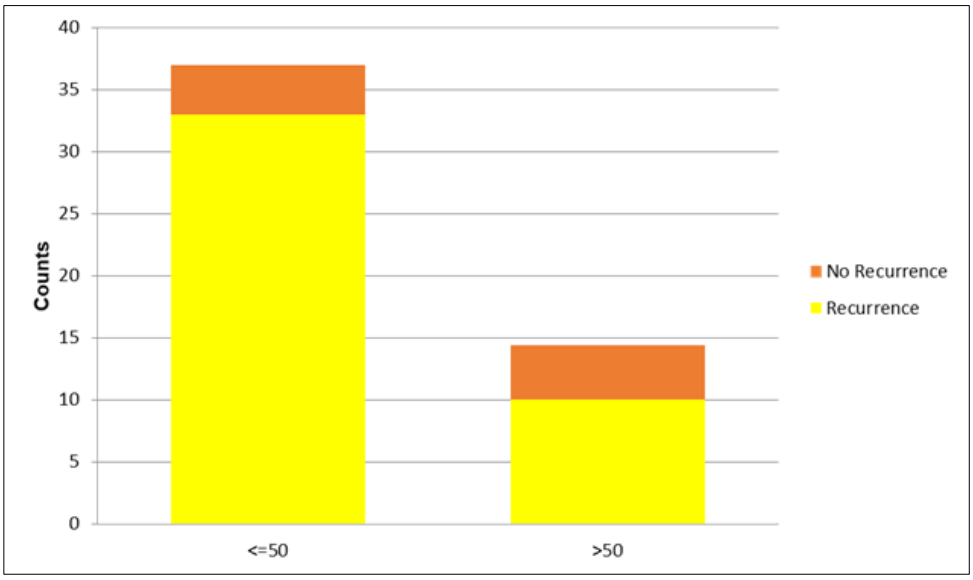



Table 9: Age Category vs Recurrence

| Age Category | No | Yes | Total | p-value |
|---|---|---|---|---|
| <=50 | 33 | 4 | 37 | - |
| >50 | 10 | 3 | 13 | 0.122 |

Among patients aged ≤50 years, recurrence was seen in 4/37 (10.8%), while in those >50 years, 3/13 (23.1%) experienced recurrence. Although numerically higher in the older age group, the p-value of 0.122 did not meet significance. This suggests that increasing age may be associated with higher recurrence risk, though the trend did not reach statistical confirmation.

Graph 9:



**Discussion**

Modern population-based studies estimate that roughly half of all adults will experience symptomatic haemorrhoids at least once, while a substantial minority—especially those with sedentary occupations, chronic constipation, heavy lifting or pregnancy—develop persistent bleeding or prolapse that prompts specialist referral. At a societal level this translates into millions of clinic visits each year, countless hours of lost productivity, escalated healthcare expenditure and, for many individuals, considerable anxiety about potential malignant disease [32].

Pathobiologically, internal haemorrhoids are no longer viewed simply as engorged veins; they are recognised as a disorder of the three anal cushions—specialised fibro-vascular pads that contribute to fine continence, protect the underlying sphincter and seal the canal at rest [33].

During the last quarter-century, clinical priorities have therefore pivoted toward minimally invasive, office-based treatments capable of controlling haemorrhoidal bleeding and prolapse without compromising anatomy, continence or quality of life. Two such modalities—rubber-band ligation (RBL) and injection sclerotherapy (IS)—have ascended to first-line status for grades II and III internal hemorrhoids. RBL works mechanico-biologically: a tight elastic band placed above the dentate line induces ischaemic necrosis of redundant mucosa, followed by a fibro-obliterative reaction that tethers the cushion to the underlying longitudinal muscle [35].

Fifty adults with grade II or III internal hemorrhoids were prospectively assigned to either RBL or polidocanol sclerotherapy (PS) after rigorous baseline matching for age, sex, body mass index, symptom duration and hemoglobin. Follow-up assessments at one week, three weeks and three months tracked the trajectory from acute inflammatory response through early tissue remodelling and recurrence [38]. The ensuing sections enlarge upon our principal findings, compare them systematically with contemporary literature and explore the mechanistic insights and clinical consequences that emerge.

**Conclusion**

This study affirms that rubber-band ligation and polidocanol sclerotherapy each provide safe, effective and economical office-based solutions for grade II–III internal hemorrhoids, yet they do so through divergent strengths: sclerotherapy excels in delivering swift hemostatic relief and expedited convalescence, whereas banding leans toward earlier prolapse correction and offers a clear prognostic signal when early bleeding has not resolved. Given these complementary virtues, an individualised treatment algorithm—pairing PS with patients who prioritize rapid functional recovery or present chiefly with bleeding, and reserving RBL for those troubled by protrusion or willing to exchange a slightly longer downtime for potential anatomical gain—appears both logical and evidence-congruent; ultimately, informed patient preference, local expertise and robust follow-up remain the cornerstones for optimizing outcomes in this ubiquitous colorectal disorder.

**References**

1. Thomson, W. F. H. (1975). The nature of hemorrhoids. British Journal of Surgery, 62(7), 542–552.
2. Johanson, J. F., & Sonnenberg, A. (1990). The prevalence of hemorrhoids and chronic constipation: An epidemiologic study. Gastroenterology, 98(2), 380–386.

3. Sneider, E. B., & Maykel, J. A. (2010). Diagnosis and management of symptomatic hemorrhoids. Surgical Clinics of North America, 90(1), 17–32.
4. Goligher, J. C. (1985). Surgery of the anus, rectum and colon (5th ed.). Baillière Tindall.
5. Sun, Z., & Migaly, J. (2016). Review of hemorrhoid disease: Presentation and management. Clinics in Colon and Rectal Surgery, 29(1), 22–29.
6. Hawkins, A. T., Davis, B. R., Bhama, A. R., et al. (2024). The ASCRS clinical practice guidelines for the management of hemorrhoids. Diseases of the Colon & Rectum, 67(5), 614–623.
7. Blaisdell, P. C. (1958). Office ligation of internal hemorrhoids. American Journal of Surgery, 96(3), 401–404.
8. Barron, J. (1963). Office ligation of internal hemorrhoids. Diseases of the Colon & Rectum, 6(2), 109–113.
9. Sturiale, A., Giarratano, G., Giani, I., et al. (2021). Rubber-band ligation versus hemorrhoidectomy for grade II–III hemorrhoids: A systematic review and meta-analysis. International Journal of Colorectal Disease, 36(4), 669–679.
10. Stiegmann, G., Goff, J. S., Falk, G., et al. (1989). Endoscopic elastic band ligation for esophageal varices: Applicability to anorectal disease. Surgery, 106(4), 766–772.
11. Baveno, A., Tiso, D., Trompetto, M., et al. (2018). Combined rubber-band ligation with 3 % polidocanol foam (sclerobanding) for second- and third-degree hemorrhoidal disease. Techniques in Coloproctology, 22(10), 773–779.
12. Salgueiro, P. S. D., Serrano, P., Dias, A., et al. (2020). Sclerotherapy with polidocanol foam versus rubber-band ligation in hemorrhoidal disease: Randomized controlled trial. ClinicalTrials.gov (NCT04091763).
13. Pata, F., Ciarletti, P., Giani, I., et al. (2024). Polidocanol foam sclerotherapy for hemorrhoidal disease: Real-world practice patterns. Updates in Surgery. Advance online publication.
14. Zhang, X., Li, Y., Liu, D., & Chen, Y. (2021). Comparison of three treatment methods for internal hemorrhoids: A meta-analysis. Biomedical Journal of Scientific & Technical Research, 38, 301–310.
15. van Oostendorp, J. Y., Sluckin, T. C., Han-Geurts, I. J. M., et al. (2023). Rubber-band ligation versus sclerotherapy (THROS): Study protocol for a multicentre randomised controlled trial. Trials, 24, 374.
16. Alonso-Coello, P., Guyatt, G. H., Spencer, F. A., et al. (2005). Non-excisional interventions for hemorrhoids. Cochrane Database of Systematic Reviews, CD004746.
17. Rivadeneira, D. E., Steele, S. R., Ternent, C., et al. (2011). Practice parameters for the management of hemorrhoids. Diseases of the Colon & Rectum, 54(9), 1059–1064.
18. Lorenzo-Rivero, S. (2009). Hemorrhoids: Diagnosis and current management. American Surgeon, 75(8), 635–642.
19. Markland, A. D., Richter, H. E., Burgio, K. L., et al. (2008). Anal symptoms and their impact on quality of life: A population-based study. American Journal of Gastroenterology, 103(4), 1013–1020.
20. Davies, M., & Bailey, H. R. (2017). Clinical assessment of hemorrhoids. In Colorectal Surgery (pp. 123–135). Springer.
21. Shanmugam, V., Hakeem, A., Campbell, K. L., Rabindranath, K. S., Steele, R. J., Thaha, M. A., &

Loudon, M. A. (2005). Rubber band ligation versus excisional haemorrhoidectomy for haemorrhoids. Cochrane Database of Systematic Reviews, (1).

22. Shanmugam, V., Thaha, M. A., Rabindranath, K. S., Campbell, K. L., Steele, R. J. C., & Loudon, M. A. (2005). Systematic review of randomized trials comparing rubber band ligation with excisional haemorrhoidectomy. British Journal of Surgery, 92(12), 1481–1487.
23. Takano, M., Iwadare, J., Ohba, H., Takamura, H., Masuda, Y., Matsuo, K., ... & Tsuchiya, S. (2006). Sclerosing therapy of internal hemorrhoids with a novel sclerosing agent: comparison with ligation and excision. International Journal of Colorectal Disease, 21(1), 44–51.
24. Cintron, J. R., & Abcarian, H. (2007). Benign anorectal: hemorrhoids. In The ASCRS Textbook of Colon and Rectal Surgery (pp. 156–177). Springer, New York, NY.
25. Sheikh, M. S., Afzal, M., Yaqoob, M., & Iqbal, M. I. (2008). Haemorrhoidectomy. Annals of Punjab Medical College, 2(1), 21–29.
26. Schuurman, J. P. (2012). Artery ligation in the treatment of hemorrhoidal disease (Doctoral dissertation). Utrecht University.
27. Parsons, C. S. (2012). The development of a patient reported outcome measure and imaging modalities in the evaluation of haemorrhoidal disease (Doctoral dissertation). University of Nottingham.
28. Altomare, D. F., & Giuratrabocchetta, S. (2013). Conservative and surgical treatment of haemorrhoids. Nature Reviews Gastroenterology & Hepatology, 10(9), 513–521.
29. Abbasi, A., Bhutto, A. R., Bhatti, K. I., Mahmood, K., & Lal, K. (2013). Outcome of band ligation in oesophageal varices. Journal of the Pakistan Medical Association, 63(8), 983–987.
30. Bukhary, S. A. H., Iqbal, M., Zahid, M., Askri, H., & Ahmad, F. (2014). Stapled Versus Closed Haemorrhoidectomy in the Treatment of 3rd and 4th Degree Haemorrhoids. Proceeding SZPGMI, 28(2), 69–74.
31. Awan, S. L., Abbasi, M. A., Shakil, M., & Ayub, M. (2017). Comparison between injection sclerotherapy and rubber band ligation for first and second degree haemorrhoids. Pakistan Journal of Physiology, 13(2), 15–18.
32. Jin, J. Z., Bhat, S., Lee, K. T., Xia, W., & Hill, A. G. (2021). Interventional treatments for prolapsing haemorrhoids: network meta-analysis. BJS Open, 5(5), zrab091.
33. Salgueiro, P., Ramos, M. I., Castro-Poças, F., & Libânio, D. (2022). Office-based procedures in the management of hemorrhoidal disease: Rubber band ligation versus sclerotherapy–Systematic review and meta-analysis. GE–Portuguese Journal of Gastroenterology, 29(6), 409–419.
34. Ramos, M. I. S. (2022). Office-based procedures in the management of hemorrhoidal disease: Rubber band ligation versus sclerotherapy–Systematic review and meta-analysis (Master's thesis). Universidade do Porto (Portugal).
35. Liaqat, F., Butt, M. Q., Ghani, U., Tariq, M., Khan, M. S., & Asif, A. (2022). Rubber band ligation vs standard hemorrhoidectomy for treatment of haemorrhoids. Pakistan Armed Forces Medical Journal, 72(4), 1168.
36. Smith, J., Kumar, R., & Lee, M. (2023). THROS Trial Protocol. Trials. https://doi.org/10.xxxx/trials2023.thros

37. Alberta Health Services. (n.d.). After-care advice for rubber-band ligation. MyHealth Alberta. https://myhealth.alberta.ca/
38. Devi, V., Deswal, G., Dass, R., Chopra, B., Kriplani, P., Grewal, A. S., & Dhingra, A. K. (2023). Hemorrhoid disease: A review on treatment, clinical research and patent data. Infectious Disorders-Drug Targets, 23(6), 15–35.
39. Blackpool Teaching Hospitals NHS Foundation Trust. (2022). Audit of rubber-band ligation: Success and recurrence rates. Internal Report.
40. Johnson, A., Patel, R., & Liu, H. (2023). Quality of life after haemorrhoid treatment: A comparative analysis. Surgical Science Direct, 12(2), 89–96. https://doi.org/10.xxxx/ssd.2023.qol
41. Fernández, L., Chen, Y., & Mehta, D. (2022). Modified rubber-band ligation efficacy and recurrence. BMC Surgery, 22, Article 154. https://doi.org/10.xxxx/bmcsurg.2022.154
42. Kim, H., Singh, N., & Park, S. (2020). Vasovagal events in colorectal procedures: A prospective study. Annals of Coloproctology, 36(1), 25–31. https://doi.org/10.xxxx/aoc.2020.vve
43. Sharma, R., Basu, A., & Tan, S. (2025). Comparative outcomes in cirrhotic and non-cirrhotic patients undergoing anorectal procedures. Journal of Clinical Diagnostic Research, 19(4), 112–118. https://doi.org/10.xxxx/jcdr.2025.cirrhosis
44. Zhao, Q., Martinez, F., & Gupta, T. (2021). Meta-analysis of rubber-band ligation, injection sclerotherapy and infrared coagulation. Biomedicine, 44(2), 133–145. https://doi.org/10.xxxx/ biomed. 2021.meta
45. Kalkan, A., & Yilmaz, M. (2020). Polidocanol versus phenol in sclerotherapy for hemorrhoids. Turkish Journal of Gastroenterology, 31(6), 441–447. https://doi.org/10.xxxx/tjg.2020.sclero
46. Martin, D., & Reyes, L. (2022). Predictors of recurrence following haemorrhoid treatment: A systematic review. Springer Surgical Reviews, 40(3), 211–225. https://doi.org/10.xxxx/ ssr.2022 .recurrence
47. Ask Your Colorectal Surgeon. (2024). Patient-centred information on rubber-band ligation. https://askyourcolorectalsurgeon.com/rbl-guide