Section: General Surgery

Original Research Article

A COMPARATIVE STUDY OF OPEN HEMORRHOIDECTOMY AND RUBBER BAND LIGATION IN THE TREATMENT OF HEMORRHOIDS

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Abstract

Background: The diagnosis of haemorrhoids is primarily based on the proctoscopy examination. The study evaluates the comparative results of rubber band ligation (RBL) and hemorrhoidectomy. **Materials and Methods:** A prospective randomised comparative study was conducted at Coimbatore Medical College Hospital for one year. One hundred patients were randomly selected and divided into two groups of 50 patients each (hemorrhoidectomy and RBL groups). Each patient was subjected to sigmoidoscopy to exclude other lesions higher up in the rectosigmoid. All parameters were recorded and finally analysed. Hemorrhoidectomy and RBL were equally effective, especially in second-degree haemorrhoids. However, RBL should be considered the first-line treatment in second-degree haemorrhoids because it is an outpatient procedure that is cost-effective for the patient, saves many hospital beds for more sick patients, and takes the pressure off the surgical waiting list. **Result:** The study found equal representation of males and females in both groups, with the hemorrhoidectomy group having younger individuals. Anaemia and constipation were present but not statistically significant. Pre-op bleeding was distributed equally, with 94% of the rubber band ligation group having one or fewer post-op stays. The hemorrhoidectomy group required more analgesics during post-op days 1 and 2, significantly differing in post-op pain and prolapse status. **Conclusion:** We conclude that rubber band ligation is equally effective in treating haemorrhoids. Hence it can be used in the regular management of second-degree haemorrhoids. It can also be considered in patients with comorbidities at risk for anaesthesia complications.

INTRODUCTION

The columnar epithelium that lines the top two-thirds of the anal canal and the squamous epithelium that lines the lower third of the canal meet at the dentate line. When inflated, the continuous sub-epithelial vascular cushions in the upper anal canal and the rectal columns above give the anal lumen a stellate cross-section. The internal anal sphincter and the longitudinal muscles of the rectum form a scaffolding of connective tissue that supports the cushions in the anal canal.[1,2]

A venous plexus that receives nourishment through arterio-venous connection exists within each cushion. The prolapsed anal column undergoes pathological alterations that lead to haemorrhoids. The hemorrhoidal plexus enlarges, and the anal cushions, a typical element of the anal canal, undergo pathological alterations that lead to haemorrhoids. A third of the population is affected by them, making them widespread. Repeated hospital stays for therapy cause a significant interruption in one's personal and professional life.[2,3]

The evaluation should include anoscope use and a digital rectal exam in the left lateral position. In the lithotomy position, the haemorrhoid cushions may be seen at 3, 7, and 11 o'clock in the left lateral, right anterior, and right posterior locations. A sigmoidoscope must exclude the rectal illness to make the diagnosis. Internal haemorrhoids are divided into four categories depending on the degree of prolapse. Grades 1 and 4 of the grading system are bleeding without prolapse, spontaneous reduction, prolapse with manual reduction, and imprisoned, irreducible prolapse.[2]

According to the recommendations of the American Society of Colon and Rectal Surgeons, there are three types of treatment. Increasing dietary fibre, avoiding

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straining at stools, and taking Sitz baths with ointments containing a topical anaesthetic, a mild astringent, and steroids that offer temporary relief are all components of conservative treatment. Rubber band ligation, injectable sclerotherapy, infrared coagulation, anal stretching, cryosurgery, laser hemorrhoidectomy, and Doppler-guided hemorrhoidal artery ligation are minimally invasive techniques. Hemorrhoidectomy procedures include closed, open, stapled, and whitehead procedures.[2,4] Treatment options include nutritional counselling, an outpatient rubber band ligation, and a procedure needing general anaesthetic, depending on the severity of the symptoms and prolapse. Even though RBL is inexpensive and serious side effects are uncommon, recurrence is frequent, especially in cases where prolapse is severe. Patients frequently require further bands. Although there are exceptions, surgery typically involves a stapled or conventional hemorrhoidectomy and is anaesthetic-dependent.[2,4,5] Traditional hemorrhoidectomy is linked to significant postoperative discomfort, which may require hospitalisation and cause a delay in getting back to normal activity. Recurrence, however, is rare. Compared to a conventional hemorrhoidectomy, stapled hemorrhoidopexy patients recover more quickly and experience a slightly higher recurrence rate.[6,7] The present study evaluated the results of hemorrhoidectomy and rubber band ligation and the comparative evaluation of both methods.

MATERIALS AND METHODS

A prospective randomised comparative study was conducted at Coimbatore Medical College Hospital for one year.

Inclusion Criteria

Patients older than 18 and under 60 with grade 2 or 3 haemorrhoids, ASA 1 or 2 were included.

Exclusion Criteria

Patients under 18 and over 60 with contraindications for hemorrhoidectomy, pregnancy with haemorrhoids, and patients with fistula, fissure, or malignancy were excluded.

All patients with second and third-degree haemorrhoids admitted to Coimbatore Medical College Hospital were enrolled based on inclusion and exclusion criteria. One hundred patients were randomly divided into Group H (hemorrhoidectomy) and Group R (rubber band ligation) were designated. Detailed clinical history was obtained, and the following history was obtained- age, comorbidities, bleeding per rectum, constipation and prolapse. A general physical examination was done. Each patient was subjected to local examinations (DRE), proctoscopies, and sigmoidoscopies. Baseline investigations were done, and an anaesthetist assessment was obtained for fitness for surgery.

All the patients were given an enema in the evening and the morning before surgery and were kept fasting 8 hours before surgery. Surgery was done under spinal anaesthesia. Milligan and Morgan hemorrhoidectomy in H group, Rubber band ligation in R group. The patients were monitored for complications – pain and rectal bleeding during the postoperative period. After discharge, the patients were advised to review after two and six weeks. During a hospital stay, the patient is monitored for Primary haemorrhage, Secondary haemorrhage and the need for analgesics after 24 hours of surgery.

Statistical Analysis

The data collected was analysed using IBM SPSS Statistics for Windows, Version 23.0 (Armonk, NY: IBM Corp.). For categorical variables, frequency and percentage analysis were used to provide a descriptive statistical analysis of the data. The Fisher's Exact test is used when the projected cell frequency in 22 tables is less than 5 to establish the importance of categorical data. Significant is defined as 0.05 as a probability value.

RESULTS

The association of clinical, pre-op and post-op characteristics of the study participants with the type of surgery they underwent is explained in the following tables. There was equal representation of males and females in both the groups (p=1.000), while the hemorrhoidectomy group had younger individuals but was not statistically significant (p=0.362). Anaemia and constipation were equally present in both groups and were not statistically significant (p=0.110 and p=0.405, respectively). Pre-op bleeding was found to be distributed equally among study groups (p=0.648). Almost 94% of the study participants in the rubber band ligation group had one or fewer post-op stays.

In contrast, the hemorrhoidectomy group had a longer duration of stay and was found to be statistically significant (p<0.001). No significant difference was observed regarding secondary haemorrhage and post-op review bleeding among both groups. The hemorrhoidectomy group required more analgesics during post-op days 1 and 2 compared to rubber band ligation, which was statistically significant (p<0.001). A statistically significant difference was also observed for post-op pain (p<0.001) and prolapse status (p=0.026) between both groups during the review.

Table 1: Association of post-op stay duration of the study participants with the groups (N=100)

Post op stay	Hemorrhoidectomy	Rubber Band Ligation	p-value
Less than a day	0 (0)	20 (100)	<0.001
One day	0 (0)	27 (100)	
Two days	19 (86.3)	3 (13.7)	
Three days	27 (100)	0 (0)	
Four days	4 (100)	0 (0)	

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Table 2: Association of secondary haemorrhage of the study participants with the groups (N=100)

Secondary haemorrhage	Hemorrhoidectomy	Rubber Band Ligation	P value
Present	13 (44.8)	16 (55.2)	0.509
Absent	37 (52.1)	34 (47.9)	

Table 3: Association of analgesics requirements of the study participants with the groups (N=100)

Characteristics	Hemorrhoidectomy	Rubber Band Ligation	P value
Requirement of Analgesics – POD 1			
Present	50 (72.5)	19 (27.5)	<0.001
Absent	0 (0)	31 (100)	
Requirement of Analgesics – POD 2			
Present	31 (100)	0 (0)	<0.001
Absent	19 (27.5)	50 (72.5)	

Table 4: Association of pain, bleeding and prolapse after six weeks with the groups (N=100)

Review pain			
Yes	44 (78.6)	12 (21.4)	<0.001
No	6 (13.3)	38 (86.7)	
Review bleeding			
No bleeding	36 (51.4)	34 (48.6)	0.651
Reduced bleeding	11 (52.4)	10 (47.6)	
No change	3 (33.3)	6 (66.7)	
Review – Prolapse			
No prolapsed	27 (42.2)	37 (57.8)	0.026
Improvement in prolapsed	13 (54.2)	11 (45.8)	
No change	10 (83.3)	2 (16.7)	

DISCUSSION

Age distribution in the participants was 26% in less than 30 years old, 64% in 30 to 50 years and 10% in more than 50 years of age. Almost two third of the study participants were from the age group of 31-50, with a mean age of 38.3 (9.9) years. Around 60% of the study participants were males. There was equal representation of males and females in both groups, which was not statistically insignificant (p-value 1.000). The Hemorrhoidectomy group had younger individuals but was not statistically significant (p-value 0.362).

The mean age of patients in a study by Gagloo et al. was 43.5 years (17–70 years),[2] while Murie et al,[8] reported a mean age of 50 ± 12 years, and Konings et al,[9] reported the mean age of 51 years, and Hosch et al,[10] reported the mean age of 50 years.

Our study's overall male-to-female ratio was almost equal in both groups. These findings correlated well with male preponderance reported by Hosch et al,[10] (M: F = 2.4:1), Sohn et al,[11] (2:75:1), and Murie et al,[8] (M: F = 1.8:1 in the H group and 1.86:1 in the R group).

89% of our study participants were anaemic, and the PR examination had equal representation of the Grade II and Grade III haemorrhoids. Hypertension (28%) was the common comorbidity, followed by diabetes (26%). Rubber band ligation can treat patients with comorbidities with a high risk for anaesthesia. No statistically significant difference was observed regarding secondary haemorrhage and post-op review bleeding among both groups.

Ammanagi & Mathew reported the occurrence of haemorrhoids was between the age group of 36 to 45 years. They observed that the most frequent presenting complaint in 33.33% of patients was mass and bleeding per rectum. The postoperative hospital stay was one day in the groups receiving sclerotherapy and rubber band ligation. In contrast, 28 patients who underwent open hemorrhoidectomy stayed for three days, and two stayed for five days. About 70% of patients who underwent rubber band ligation and sclerotherapy responded favourably to the procedure.[12]

Almost half (47%) of the patients had a postoperative stay of 1 day or lesser. Almost 94% of the study participants in the R group had one or less post-op stays. In contrast, the H group had a longer duration of stay and was found to be statistically significant ($p<0.001$). This implies that patients in group R had a better postoperative recovery, and rubber band ligation can be done on a daycare basis. 69% of the study participants required postoperative Day 1 analgesics, reducing it to 31% during Day 2. H group required more analgesics during the postoperative day 1 and 2 compared to the R group, which was statistically significant ($p<0.001$). This implies that patients of group R had less pain during the immediate postoperative period and hence required less analgesia. A statistically significant difference was also observed for postoperative pain ($p<0.001$) and prolapse status ($p=0.026$) between both groups during the review.56% of the study participants complained of postoperative pain, and 70% had no prolapse during a review.

79% of the patients in Group H complained of pain during a review, while 21% in Group R had postoperative pain, implying that less pain and discomfort is caused by rubber band ligation. 64% of the patients had no prolapse during a review. Among these, 42% were from the H group and 58% from the R group. 24% of the patients had improvement in prolapse, among which 13% were from the H group

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and 11%were from the R group. 12% of the patients had no change after surgery, 83% from the H group and 17% from the R group. Almost two-thirds of the patient had no prolapse following treatment, which implies that better results are seen with rubber band ligation and is equally efficacious in managing haemorrhoids. No significant difference was observed regarding secondary haemorrhage and postoperative review bleeding among both groups.

No primary haemorrhage was observed among the study participants. In contrast, secondary haemorrhage was observed among 29%, of which 45% were from the H group, and 55% were from the R group, implying that there is less haemorrhage in both groups. Around 70% of the study participants had no review bleeding during a postoperative examination. 51% were from group H and 49% were from group R. 21% of the patients had reduced bleed during a review, in which 52% belonged to group H, and 48% belonged to group R. 9% had no change after surgery, 33% belonged to group H, and 67% belonged to group R.

Aghaei Afshar et al. demonstrated that pain was present in 100% of the H group and 67.7% of the R group (P 0.05) on the first visit one week after surgery. There was a statistically significant difference between the two groups regarding the number of days off from work. After six months, patients' satisfaction and recurrence were comparable in both groups. They concluded that staged rubber band ligation works well for treating grade 4 haemorrhoids.[13]

CONCLUSION

We conclude that Rubber band ligation is equally effective in treating haemorrhoids. Hence it can be used in the regular management of second-degree haemorrhoids. It can also be considered in patients with comorbidities at risk for anaesthesia complications. Though open hemorrhoidectomy treats prolapse better, and the effect is long-lasting, patient compliance will be better in rubber band ligation.

REFERENCES

1. Ahmed A, Arbor TC, Qureshi WA. Anatomy, Abdomen and Pelvis: Anal Canal. StatPearls Publishing; 2023.
2. 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;75:356–60.
3. Thakkar NB. Hemorrhoidectomy versus rubber band ligation in treatment of second and third-degree hemorrhoids: a comparative study. Int J Res Med Sci 2019;7:2394.
4. Rowsell M, Bello M, Hemingway DM. Circumferential mucosectomy (stapled haemorrhoidectomy) versus conventional haemorrhoidectomy: randomised controlled trial. Lancet 2000;355:779–81.
5. Lohsiriwat V. Hemorrhoids: from basic pathophysiology to clinical management. World J Gastroenterol 2012;18:2009–17.
6. Yeo D, Tan KY. Hemorrhoidectomy - making sense of the surgical options. World J Gastroenterol. 2014;20:16976-83.
7. Nienhuijs S, de Hingh I. Conventional versus LigaSure hemorrhoidectomy for patients with symptomatic Hemorrhoids. Cochrane Database Syst Rev. 2009;2009: CD006761.
8. Murie JA, Mackenzie I, Sim AJ. Comparison of rubber band ligation and hemorrhoidectomy for second and third-degree haemorrhoids: a prospective clinical trial. BJS. 1980;67:786–788.
9. Konings M, Debets JM, Baeten CG. Rubber band ligation of hemorrhoids: symptoms almost gone after 6 weeks but many patients need retreatment in the long run. Ned Tijdschr Geneeskd. 1999;143:1265–8.
10. Hosch SB, Knoefel WT, Pichlmeier U, Schulze V, Busch C, Gawad KA, et al. Surgical treatment of piles: prospective, randomized study of Parks vs. Milligan-Morgan hemorrhoidectomy. Dis Colon Rectum 1998;41:159–64.
11. Sohn N, Aronoff JS, Cohen FS, Weinstein MA. Transanal hemorrhoidal dearterialization is an alternative to operative hemorrhoidectomy. Am J Surg 2001;182:515–9.
12. AmmanagiAS, MathewT.A comparative study of sclerotherapy and rubber band ligation versus open hemorrhoidectomy in second-degree hemorrhoids. Int Surg J 2019;6:1545-8.
13. Aghaei AM, Hadavi H, Vahedian M, Poorseyedi B, Zeynali NH, Lashkari ZM, et al. Comparative Study of Staging Rubber Band Ligation (RBL) and Hemorrhoidectomy in Treatment of Forth Degree Hemorrhoids. Ann Colorect Res. 2012; 1: 63-7.

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