

## Original Research Article

# Hemorrhoidectomy versus rubber band ligation in treatment of second and third degree hemorrhoids: a comparative study

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### ABSTRACT

**Background:** Optimum surgical intervention for low-grade haemorrhoids is unknown. Haemorrhoidal artery ligation (HAL) has been proposed as an efficacious, safe therapy while rubber band ligation (RBL) is a commonly used Out patient treatment.

**Methods:** We compared recurrence after HAL versus RBL in patients with grade II-III haemorrhoids. The diagnosis of hemorrhoids is primarily based on the proctoscopic examination. The study evaluates comparative results of rubber band ligation (RBL) and hemorrhoidectomy. This study was conducted over a period of 1 year from January 2017 to December 2017. It includes 50 patients having second- or third-degree primary hemorrhoids who attended surgical OPD of Tertiary Care Hospital in Gujarat. These 50 patients were selected randomly and divided into two groups of 25 patients each (hemorrhoidectomy group and RBL group). Patients of fissure, fistulae, and malignancy were excluded. All parameters were recorded and finally analysed.

**Results:** Hemorrhoidectomy and RBL are equally effective especially in second-degree hemorrhoids. However, RBL should be considered the first-line treatment in second-degree hemorrhoids because being an outpatient procedure, it is cost effective for the patients, saves many hospital beds for more sick patients, and takes the pressure off the surgical waiting list. Although RBL is not as effective as hemorrhoidectomy in third-degree hemorrhoid, it does improve bleeding and prolapse and is highly recommended for patients who are unfit for surgery.

**Conclusions:** RBL should be considered as the first-line treatment for second-degree hemorrhoid. However, in the third-degree hemorrhoids, hemorrhoidectomy achieves better results, and RBL is recommend as the first-line treatment for those patients in whom there is contraindication for surgery or anesthesia.

**Keywords:** Daycare surgery, Haemorrhoids, Hemorrhoidal artery ligation, Minimal invasive management, Open surgery, Painless, Rubber band ligation

### INTRODUCTION

The anal canal is lined in upper two-thirds by columnar epithelium and in the lower third by the squamous epithelium, which meets at the dentate line. In the upper anal canal, there are subepithelial vascular cushions continuous with the rectal columns above, which when distended give stellate (triradiate) cross section to anal lumen.<sup>[1]</sup> These cushions are suspended in the anal canal

by a connective tissue framework derived from internal anal sphincter and longitudinal muscle of the rectum. Within each cushion is a venous plexus that is fed by arteriovenous communication. Hemorrhoids results from the pathological change in prolapsed anal column.<sup>1</sup> Haemorrhoids result from enlargement of the haemorrhoidal plexus and pathological changes in the anal cushions, a normal component of the anal canal. They are common, affecting about a third of the

population. Approximately 23,000 haemorrhoidal operations were done in England in 2004-05. Repeated visits to hospital for therapy represent an important disruption to personal and working lives.

Assessment should include anoscopy and digital rectal examination (DRE) in left lateral position. The haemorrhoid cushions can be viewed (by using anoscope) in the left lateral, right anterior, and right posterior positions, that is, 3, 7, 11 O'clock in lithotomy position. Sigmoidoscopic exclusion of rectal disease is essential in establishing the diagnosis. Internal hemorrhoids are classified into four degrees depending on the extent of prolapse. This classification is helpful in assessing different therapies.

- Grade I: bleeding without prolapse,
- Grade II: prolapse with spontaneous reduction,
- Grade III: prolapse with manual reduction,
- Grade IV: incarcerated, irreducible prolapsed.

Treatment is classified in three categories as per the guidelines issued by the American Society of Colon and Rectal surgeons:<sup>2</sup>

- Conservative treatment, which consists of increasing dietary fiber, avoiding straining at stools, and prolonged staying on toilet. Sitz baths in ointments containing local anesthetic, mild astringent, and steroids that provide short-term relief,
- Minimally invasive procedures which include RBL, injection sclerotherapy, infrared coagulation, anal stretch, cryosurgery, laser hemorrhoidectomy, and Doppler-guided hemorrhoidal artery ligation
- Surgical therapy includes closed hemorrhoidectomy, open hemorrhoidectomy, stapled hemorrhoidectomy and white head hemorrhoidectomy.

Treatment depends on the degree of symptoms and prolapse, ranging from dietary advice, outpatient rubber band ligation (RBL), to operation requiring anaesthesia. Although RBL is cheap and serious complications rare, recurrence is common, particularly where prolapse is substantial. Patients often require further banding. Although variations exist (e.g. ligasure haemorrhoidectomy) surgery is usually traditional haemorrhoidectomy or a stapled haemorrhoidectomy, both requiring anaesthesia.

Traditional haemorrhoidectomy is associated with considerable postoperative discomfort, sometimes necessitating admission to hospital and delayed return to normal activity, but recurrence is low. Stapled haemorrhoidectomy has a slightly higher recurrence rate but patients return to normal activity more quickly than with traditional haemorrhoidectomy.<sup>3</sup>

The present study evaluates the results of RBL, and the hemorrhoidectomy and the comparative evaluation of both the methods.

## METHODS

The study evaluates comparative results of rubber band ligation (RBL) and hemorrhoidectomy. This study was conducted over a period of 1 year from January 2017 to December 2017. It includes 50 patients having second- or third-degree primary hemorrhoids who attended surgical OPD of Tertiary Care Hospital in Gujarat. These 50 patients were selected randomly and divided into two groups of 25 patients each (hemorrhoidectomy group and RBL group). All parameters were recorded and finally analysed.

Detailed clinical history was taken in all the patients with particular reference to bleeding per rectum, constipation, prolapse, painful defecation, discharge per rectum, dietary habits, and family history of hemorrhoids. Detailed general physical exam was done in all. Each patient was subjected to local examination (DRE), proctoscopy, and sigmoidoscopy. Baseline investigations including CBC, Blood sugar, urine exam, CXR, and ECG were done in all patients. All the patients were given proctoclysis enema in the evening and the morning before surgery or RBL. All the patients with second or third degree piles were included in study and Randomly divided in both the groups. We excluded patients with perianal sepsis, inflammatory bowel disease, colorectal malignancy, pre-existing sphincter injury, and immunodeficiency, hypercoagulability disorders, and patients who were unable to have general or spinal anaesthetic.

All the 25 patients of the hemorrhoidectomy group were kept fasting 8 h prior to surgery. All the patients were advised to report in casualty in case of any complication in the form of bleeding per rectum, pain, fever, swelling, discharge, etc. Final assessment was done at 6 months post procedure regarding effect of treatment on rectal bleeding, prolapse, pain, and subjective improvement (patient assessment). We used basic statistical analysis to look for the results of the study.

## RESULTS

The age of patients ranged from 17 to 70 years in both R and H groups with a mean age of 43.5 years. The commonest symptoms were prolapse (100 %) and bleeding P/R (94%), and the least common was discharge per rectum (23%).

Of the 50 patients, 35 were males and 15 were females (M: F=7:3) in the rubber band ligation (R) group, 15 patients were males and 10 females (M:F=1.5:1), and in the hemorrhoidectomy (H) group, 17 were males and 08 females (M: F= 2.1:1) (Table 1).

All the patients were vegetarians with less fiber in their diet. Positive family history of hemorrhoids was present in 30 patients (19 in R group and 11 in H group). Proctoscopic examination revealed that 62 % patients had

grade II hemorrhoids and 38 % had grade III hemorrhoids in all. In the R group, 18 of the patients (72 %) had grade II and 07 (28 %) had grade III hemorrhoids. In the H group, 13 patients (52 %) had grade II and 12 patients (48 %) had grade III hemorrhoids (Tables 2 and 3).

**Table 1: Gender of patients in this study.**

Gender	R Group	H Group	Total
Male	15	17	35
Female	10	08	15
Ratio(M:F)	1.5:1	2.1:1	7:3

**Table 2: Proctoscopic examination of R group.**

Findings	No. of cases	Percentage
Grade I hemorrhoid	0	0%
Grade II (spontaneous reduction)	18	72%
Grade III (manual reduction)	7	28%

**Table 3: Proctoscopic examination in H group.**

Findings	No. of cases	Percentage
Grade I hemorrhoid	0	0%
Grade II (spontaneous reduction)	13	52%
Grade III (manual reduction)	12	48%

Assessment at 6 months postprocedure revealed the following points: RBL resulted in no bleeding in 70 % of patients compared with 80 % after hemorrhoidectomy.

There were 18 patients in the R group and 13 patients in the H group with grade II hemorrhoids (spontaneous reduction of prolapse) 12 patients (78 %) had no prolapse following RBL compared with 12 patients (92 %) after hemorrhoidectomy (Tables 4 and 5).

**Table 4: Effect on spontaneous reduction of prolapse (grade II hemorrhoid) by RBL.**

Effects	No. of cases	Percentage
No prolapse	14	78%
Improvement	03	16%
No change	01	06%

**Table 5: Effect on spontaneous reduction of prolapse (grade II hemorrhoid) by hemorrhoidectomy.**

Effects	No. of cases	Percentage
No prolapse	12	92%
Improvement	01	08%
No change	00	00%

Effect on manual reduction of prolapse (grade III hemorrhoids): There were 07 patients (with grade III hemorrhoids in the R group and 12 patients with grade III

hemorrhoids in the H group. 58% of patients showed no prolapse after RBL compared with 75% after hemorrhoidectomy (Tables 6 and 7).

**Table 6: Effect of RBL in grade III haemorrhoid.**

Effects	No. of cases	Percentage
No prolapse	04	58%
Improvement	02	28%
No change	01	14%

**Table 7: Effect of hemorrhoidectomy in grade III haemorrhoid.**

Effects	No. of cases	Percentage
No prolapse	09	75%
Improvement	03	25%
No change	00	00%

Patient assessment of treatment following RBL showed excellent improvement in 16 patients (64%), moderate improvement in 05 patients (20%), and no improvement in 04 patients (16%) compared with 70%, 20%, and 10%, respectively following hemorrhoidectomy. 20% patients required analysis following RBL compared with 100 % following hemorrhoidectomy up to 48 h of the procedure.

## DISCUSSION

Recurrence 12 months after HAL was significantly lower than after RBL. Haemorrhoidal disease is a benign condition with treatment primarily aimed at addressing symptoms. In the absence of a validated symptom scoring system, we felt the most important determinant of treatment success was patient-reported outcome of improvement and the need to avoid additional procedures. Where patients had undergone further intervention for haemorrhoids, they were considered to have recurred. Based on this premise, HAL appears superior. This apparent superiority should be put in practical context. 18% of the participants in the RBL group underwent repeat banding. This is common practice and patients might find this re-banding a more palatable option than having an operation if it has the same potential for improvement. Indeed some clinicians deem RBL as a course of treatment. Including these patients as a success (if they reported improvement at 12 months) resulted in a reduction in recurrence and no statistical difference between the groups.<sup>4</sup>

The mean age of patients in our series was 43.5 years (17-70 years). This is comparable to that reported by Murie et al who reported the mean age of 50±12 years, Konings et al who reported the mean age of 51 years and Hosch et al who reported the mean age of 50 years.<sup>5</sup>

The overall male:female ratio in our study was 70:30 (7:3) with 2.1:1 in the H group and 1.5:1 in the R group. These finding correlate well with male preponderance

noted by Stefan et al. (M:F=2.4:1), Sohn et al. (2:75:1), Murie et al (M:F=1.8:1) in the H group and 1.86:1 in the R group), Murie et al (M:F=2:1) in the R group and 1.9:1 in the H group).<sup>6</sup>

Rectal prolapse was present in 100 % of our patients. This is comparable to the findings of Murie et al (100 %). However, our study is at variance with that of Steinberg et al. who reported prolapse in 64 % and O'Regan et al. who reported prolapse in 62% of their patients. Discharge per rectum which was present in 23 % of our patients comparable with that of Steinberg et al.<sup>7</sup> (23.2 %) and varies with the series of Murie et al (53 %). In our series of patients, pain was reported in 36 %, both in the H and R groups. In the series of Murie et al.<sup>8</sup> pain was reported in 44 % of patients (36 % in R group and 52 % in H group), and in the study by Vellacott and Hardcastle (35 %).

Constipation in our series was reported in 64 % of patients, which was at variance with that of Broader et al (10 %). This variance could be explained by sociocultural and climatic condition of our valley, as all the patients (100 %), were vegetarians with decreased fiber content in their diets.

At 6-month follow-up we observed no bleeding in 70 % in the R group and 80 % in the H group. Improvement of bleeding was reported by 20% in the R group and 16 % in the H group and no improvement by 10 % in the R group and 4% in the H group. Above findings closely correlated with those of Murie et al and Steinberg et al and Panda et al. These findings suggest RBL as an excellent method and equally efficient as hemorrhoidectomy in control of bleeding.<sup>9</sup>

In our study, 78 % patients had no prolapse following RBL compared with 92 % following hemorrhoidectomy in grade II hemorrhoids. These findings closely correlate with findings of Murie et al, Steinberg et al, Panda et al.<sup>8-10</sup> These findings indicate that RBL produces comparable results to hemorrhoidectomy in prolapse with spontaneous reduction (grade II) Murie et al. Cheng et al, report that hemorrhoidectomy is good in curing the disease, but higher possibility of post-op pain, complications and longer hospital stay would not justify its use in the treatment of second hemorrhoid. Lewis et al are of view that RBL is cheaper alternative to hemorrhoidectomy and reduces the demand for beds and pressure on surgical waiting list.<sup>11</sup>

For grade III hemorrhoids (prolapse requiring manual reduction). We reported no prolapse in 58% of our patients following RBL compared with 75% following hemorrhoidectomy, improvement in prolapse following RBL in 28% compare to 12.5% after hemorrhoidectomy and no change in 21% in RBL group compared to 0% in Hemorrhoidectomy group.<sup>12</sup> These findings are age comparable to those of Murie et al. These findings suggest that RBL is not as effective as hemorrhoidectomy

in the treatment of large hemorrhoid requiring manual reduction (grade III). Lewis et al, reported that cryotherapy and RBL are unsuitable for treatment of large prolapsing hemorrhoids; however, they may be considered as cost-effective and acceptable treatment in short term, but in long term some patients will develop recurrence, requiring hemorrhoidectomy.<sup>13</sup>

## CONCLUSION

Although recurrence after HAL was lower than a single RBL, HAL was more painful than RBL. We support the view that RBL should be considered the first-line treatment in second-degree hemorrhoids. However, in the third-degree hemorrhoids, hemorrhoidectomy achieves better results and RBL is recommended as the first-line of treatment for those patients in whom there is contraindication for surgery or anesthesia.

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