

Rubber Band Ligation vs Standard Hemorrhoidectomy for Treatment of Haemorrhoids

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ABSTRACT

Objective: To compare rubber band ligation (RBL) vs standard hemorrhoidectomy for the treatment of haemorrhoids.

Study Design: Quasi-experimental study.

Place and Duration of Study: Department of General Surgery, Pak Emirates Military Hospital Rawalpindi, from Feb 2020 to Jan 2021.

Methodology: A total of 200 patients with 2nd and 3rd-degree haemorrhoids who met the inclusion and exclusion criteria were included in the study. Group-A patients underwent rubber band ligation, while in Group-B, Milligan Morgan hemorrhoid-ectomy was done.

Results: There were 200 patients (100 in each Group). There were 135 males (67.5%) and 65 females (32.5%). The female to male ratio was 1:2.01. Mean age was 44.73±8.36 years in Group-A and 43.48±8.98 years in Group-B. Mean duration of complaints was 8.72±4.32 months in Group-A and 10.89±3.80 in Group-B. Post-procedure patients were called for follow up in a third and eighth week. The most common complication seen in Group-A was recurrence which was 18% (*p*-value 0.001), and pain in Group-B, 82% (*p*-value 0.001), which was statistically significant.

Conclusion: We concluded that Rubber band ligation is a quick, safe and cost-effective procedure for the outpatient department for Grade II and III haemorrhoids. The recurrence rate is high compared to standard hemorrhoid-ectomy, but its advantages make it a first-line procedure for Grade II and III haemorrhoids in the outpatient departments.

Keywords: Haemorrhoids, Hemorrhoidectomy, Rubber band ligation.

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INTRODUCTION

Haemorrhoids are dilatation of internal venous plexus with the distal displacement of normal anal cushions.¹ It is one of the commonest problems for surgical consultation.² Its prevalence is about 50% in the USA while 60-70% in the UK.³ Hemorrhoids are the most common cause of per rectal bleed in patients presenting to primary care setups.⁴ It is more common in males, with the peak incidence between 45-65 years.¹ Factors responsible are chronic constipation, sedentary lifestyle, low fibre diets, excessive straining during defecation, obesity, pregnancy and hereditary.^{5,6} The factors mentioned earlier weaken the supportive tissue and prolapse the anal cushions, which leads to abnormal dilatation of hemorrhoidal venous complexes.⁷

The management of the disease depends on the Grade of the disease. Goligher's classification of the haemorrhoids is: Grade -I: The anal cushions bleed but do not prolapse, Grade-II: The anal cushions prolapse through the anus on straining but reduce spontaneously, Grade-III: The anal cushions prolapse

through the anus on straining or exertion and require manual replacement into the anal canal, Grade-IV: The anal cushions prolapse stays out at all times and is irreducible.⁷

Treatment of haemorrhoids involves operative and non-operative steps. Lifestyle changes like an increasing fibre diet, adequate water intake and a healthy diet are required with any Grade of hemorrhoidal disease. Non-operative techniques include rubber band ligation (RBL), injection sclerotherapy and infrared coagulation. Invasive procedures include Hemorrhoidal artery ligation, laser hemorrhoidectomy, hemorrhoidectomy (open, closed, Ligasure, Harmonic) and stapler hemorrhoidopexy.⁸

Rubber band ligation is considered the safest, non-invasive treatment modality for early haemorrhoids in OPD cases with low complications.⁹ Standard hemorrhoidectomy, also called Milligan Morgan hemorrhoidectomy, involves excision of hemorrhoidal tissue, and the wound is left open to be healed by secondary intention.¹⁰

In our study, we compare the short-term outcome of rubber band ligation of haemorrhoid versus Milligan Morgan hemorrhoidectomy in terms of safety

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and post-operative complications to set our local protocols.

METHODOLOGY

This quasi-experimental study was conducted at the General Surgery Department of Pak Emirates Military Hospital from February 2020 to January 2021 after approval by Hospital Ethical Committee (A/28/EC/238/2021). Non-probability consecutive sampling technique was used. The sample size of 200 cases (100 in each Group) was estimated by keeping 80% power of stud, 5% significance level and post-operative pain, i.e. 15% with Rubber Band Ligation and 91.7% with open Hemorrhoidectomy.¹¹

Inclusion Criteria: Adult patients 18 years and above having 2nd or 3rd-degree haemorrhoids without previous perineal surgery or bleeding disorder were included in the study.

Exclusion Criteria: Patients with complicated (thrombosed, prolapsed), previously treated haemorrhoids or recurrent haemorrhoids were excluded from the study.

Two hundred patients divided into Groups A and B via a lottery method. Written informed consent was taken from all the patients. Group-A patients underwent Rubber Band Ligation with a banding gun in the OPD. No more than three rubber bands were applied in one session. In Group-B, open hemorrhoidectomy was done under spinal anaesthesia by the Milligan Morgan technique and patients were discharged on the first postoperative day. Post-procedure patients were observed for bleeding, pain, and urinary retention. A visual analogue scale (VAS) was used for pain estimation. The anal pack was removed 4 hours after surgery inward. Urinary retention, if developed, was addressed by passing a Foley catheter overnight. Injection Paracetamol 500mg intravenous was used to address severe pain. Patients with more than seven scores were labelled as having intense pain. Both Group-s were followed up in 3rd and 8th weeks. They were assessed for anal incontinence, bleeding and anal stenosis by clinical assessment, DRE, and proctoscopy if required.

The data was analyzed by computing frequency and percentages for categorical variables, while mean and standard deviation were calculated for numerical data. The chi-square test was used to calculate the *p*-value for qualitative variables. An independent sample t-test was applied for quantitative variables. The significance level was set at *p*<0.05.

RESULTS

The total number of patients included was 200 (100 in each Group). There were 135 males (67.5%) and 65 females (32.5%). Mean age was 44.73±8.36 years in Group-A and 43.48±8.98 years in Group-B. Mean duration of complaints was 8.72±4.32 months in Group-A and 10.89±3.80 in Group-B. Presenting complaints were mentioned in Table-I.

Table-I: Demographics and Clinical Characteristics of the Patients (n=200)

Characteristics	Rubber Band Ligation (RBL) (Group-A)		Standard Hemorrhoidectomy (Group-B)	
	Males	Females	Males	Females
Age (years)	44.73±8.36		43.48±8.98	
Gender	69%	31%	66%	34%
Grades of hemorrhoids	II 48%	III 52%	II 42%	III 58%
Pain	17%		14%	
Constipation	28%		16%	
Perianal burning sensation	10%		11%	
Bleeding	33%		28%	
Protrusion	27%		30%	
Duration of complaints (months)	8.72±4.32		10.89±3.80	

Post-procedure patients were called for follow-up in 3rd and 8th weeks, and complications were noted, which were mentioned in Table-II. The most common complication seen in Group-A was recurrence which was 18% (*p*-value 0.001), and pain in Group-B, 82% (*p*-value 0.001), which was statistically significant.

Table-II: Comparison of Outcome in Both Groups(n=200)

Outcome	Rubber Band Ligation	Hemorrhoidectomy	<i>p</i> -value
Immediate bleeding	7%	24%	0.001
Delayed bleeding	11%	2%	0.010
Urinary retention	4%	14%	0.013
Anal stenosis	1%	6%	0.050
Anal incontinence	0%	4%	0.044
Intense pain	17%	82%	0.001
Recurrence	18%	2%	0.001

DISCUSSION

Haemorrhoids have bothered mankind for a long. Hippocrates believed that haemorrhoids were caused by inflammation of veins and treated them with a hot iron.¹² Hemorrhoids occur due to engorgement of sub-mucosal venous plexus of anal canal.¹³ The hemorrhoidal disease usually requires treatment when symptomatic. Standard hemorrhoidectomy involves the excision of both internal and external components using

various techniques with or without anorectal mucosa closure.¹⁴ Rubber Band Ligation is the most successful nonsurgical and safe technique for Grade II and III haemorrhoids in outpatient departments.^{9,10,15} Rubber band ligation causes fixation and removal of excess tissue followed by fibrosis and healing by secondary intention.¹⁶ The disadvantage of Rubber Band Ligation is that it is ineffective for skin components of haemorrhoids and skin tags.¹⁷ The reason behind not applying more than three bands at one visit is that it causes significant pain and may lead to anal stenosis.¹⁷

Kombrozzos *et al.* and Whermann *et al.* reported that 8.6% and 25% of their patients experienced pain post Rubber Band Ligation, respectively, for 2-3 days.^{18,19} This is comparable to our results, where 18% of patients had pain. Dekker *et al.* experienced that patients had more pain and discomfort when multiple bands were applied at one time.²⁰ Postoperative pain after standard hemorrhoidectomy is one of the commonest problems. Diana *et al.* reported that postoperative pain after standard hemorrhoidectomy could be reduced by doing internal sphincterotomy in the same session. The cause of intense postoperative pain is unknown, but it may be due to internal sphincter spasm.²¹

Postoperative bleeding was observed after standard hemorrhoidectomy in 24% of patients compared to Rubber Band Ligation, where it was significantly lower (7%). Our results are comparable with Forlini *et al.* who reported that 2.4% of patients experienced bleeding after Rubber Band Ligation.¹⁵

In our study, 82% of patients were relieved of their symptoms after Rubber Band Ligation compared to standard hemorrhoidectomy, where 98% became asymptomatic. A study by Forlini *et al.* reported that 90% of Grade II and 75% of Grade III patients remain asymptomatic in a 1-year follow-up after Rubber Band Ligation.¹⁵ Misauno *et al.* reported that 90% of their patients became symptom-free after Rubber Band Ligation.²²

Dilaweiz *et al.* reported that only 6% of their patients reported recurrence after Rubber Band Ligation, for which procedure was repeated.²³ A study by Ayman *et al.* reported that 11.04% of their patients developed recurrence, comparable to our results.²⁴ Ashraf *et al.* reported that Rubber Band Ligation is a procedure of choice as it causes less bleeding and pain.²⁵

CONCLUSION

Rubber band ligation is a quick, safe and cost-effective procedure for Grade II and Grade III haemorrhoids, which do not require hospital admission and anaesthesia. The recurrence rate is high compared to standard hemorrhoidectomy, but its advantages make it an easy procedure for Grade II and III haemorrhoids patients presenting with OPD. Therefore, standard hemorrhoidectomy should be kept as a procedure of choice only for recurrence cases, relieving the hospital burden of perianal surgeries.

Conflict of Interest: None.

Author's Contribution:

FL.: UG., MT., AA: Manuscript writing, MQB: Supervise, MSK: Stats work.

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