

# Evaluation of Rubber band ligation technique for Internal Haemorrhoids

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## Abstract

**Introduction:** Hemorrhoids are masses or clumps or “cushions” of tissues consisting of muscle and elastic fibres with enlarged, bulging blood vessels and surrounding supporting tissues present in the anal canal of an individual suffering from the disease. It is one of the common reasons for surgical OPD visit. In this study we tried to find out effectiveness of Ring band ligation technique 1<sup>st</sup> degree, 2<sup>nd</sup> degree & some of the 3<sup>rd</sup> degree hemorrhoids. **Methods:** All the patients coming to surgical OPD of tertiary care teaching hospital from June 2012 to December 2013 and diagnosed as a case of Hemorrhoids were included in study. Proctoscopic examination found to have first-, second-, and non-bulky, non edematous third-degree haemorrhoids were included for band ligation. **Results:** Out of total patients 202 were males and 145 were females. Bleeding per rectum (52%), discomfort during defecation (58%) and constipation (47%) were most common symptoms. Most common post-ligation/residual symptoms were bleeding (32 %), pain & discomfort (29.4 %) & constipation (21 %). 70 % of patients are cured and 14 % have shown significant improvement. **Conclusion:** Rubber band ligation as first line treatment for 2<sup>nd</sup> degree lesion, however for 3<sup>rd</sup> degree lesion Open hemorrhoidectomy is always better.

**Key words:** Hemorrhoids, 2<sup>nd</sup> degree hemorrhoids, Rubber band ligation technique

## Introduction

Hemorrhoids, also called *piles* or “varicose veins of the anus and rectum” are masses or clumps or “cushions” of tissues consisting of muscle and elastic fibres with enlarged, bulging blood vessels and surrounding supporting tissues present in the anal canal of an individual suffering from the disease. Exact pathophysiology is not known but it is contributed to prolonged labour, prolonged sitting & driving etc. It is one of most common reason for Surgical OPD visit.

Data regarding prevalence is not easily available. Large numbers of cases are asymptomatic & underreporting is fairly common. In US nearly 50 % of male and female takes some treatment for hemorrhoides after age of 50 years [1]. Nearly one million cases reported annually and prevalence increases after 50 years of age. Other studies have shown prevalence of 39 % with nearly 50 % were asymptomatic [2, 3]. Hemorrhoides are classified into two groups. Internal hemorrhoides are remained under the mucosal lining of

rectum and only evident when they become enlarged and protrude from the anus. On the other hand, the vein that forms outside the rectum and surround the anus is called the External Hemorrhoides.

Swelling in the anal or rectal veins causes hemorrhoids. The factors that may cause this swelling are chronic constipation or diarrhea, straining during bowel movements, sitting on the toilet for long periods of time, lack of fiber in the diet, being overweight, weakening of the connective tissue in the rectum and anus that occurs with age and Pregnancy in which increasing pressure in the abdomen [4].

Internal hemorrhoides are classified into 4 grades by Goligher [5].

For surgical management these grades are important but it does not includes size and numbers which are also important for surgical consideration.

## Classification of Internal haemorrhoids [5]

Manuscript received: 19<sup>th</sup> Oct 2014  
Reviewed: 29<sup>th</sup> Oct 2014  
Author Corrected: 12<sup>th</sup> Nov 2014  
Accepted for Publication: 4<sup>th</sup> Dec 2014

**Research Article****Grades Definition**

1. Normal appearance externally, bleeding but not prolapsing
2. Anal cushions prolapsed on straining but reduce spontaneously
3. Anal cushions prolapsed on straining or exertion and require manual reduction
4. Permanent prolapsed, irreducible

Several forms of treatment are now available for internal hemorrhoids which can be operative and non-operative.

Non-operative treatment modalities are: Medical treatment, Injection sclerotherapy, Rubber band ligation, Manual dilatation (Lord's procedure), Cryosurgery, Infrared coagulation, Bipolar diathermy coagulation. Rubber band ligation was developed by Barron in 1963 as a modification of an outpatient ligature method indicated essentially in the second degree hemorrhoids.

It is contraindicated in external hemorrhoids. This study was conducted to assess spectrum of hemorrhoids in Indian population & effectiveness of rubber band ligation as an outpatient procedure in the treatment of first, second & (selected) third degree internal hemorrhoids.

**Material and Methods**

All the patients coming to surgical OPD of tertiary care teaching hospital from June 2012 to December 2013 and diagnosed as a case of Hemorrhoids were included in study.

Any patient who has bleeding per rectum, something coming from rectum, pain or discomfort during defecation, itching or pruritis around anus, Anal mucosal discharge & chronic constipation has undergone for proctoscopy.

Proctoscopic examination found to have first-, second-, and non-bulky, non edematous third-degree haemorrhoids.

**Exclusion criteria:**

Previously operated hemorrhoids, hemorrhoids previously subjected to sclerotherapy, bulky, Oedematous 3° & 4° Hemorrhoids, external hemorrhoids, thrombosed hemorrhoids, hemorrhoids associated with diseases such as Tuberculosis, Crohn's disease, coagulation disorders or with pregnancy. Presences of other ano-rectal pathologies like fissures, fistulas, colorectal tumors etc. were also excluded from the study.

**Surgical Methods**

All the patients were informed regarding operative process.

This study include first-, second-, and non-bulky, non edematous third-degree hemorrhoids in OPD.

After applying lignocaine jelly wide bore proctoscope is introduced in the anal canal and pedicle of hemorrhoid was located, then the pistol grip of the Rubber band applicator with tapered loading cone (Barron's ligator/banding gun) was triggered to shoot off the rubber ring from its position on the pedicle of hemorrhoid. In this way, band is applied at the base of the hemorrhoid well above the dentate line.

Post-op patient is advised to high fibrous diet with plenty of fluids, sitz bath twice daily & after passing stools. Antibiotics and analgesics were prescribed.

Patients were asked for post operative follow - up. Patients were advised to come for follow-up at 15 days, 1, 3 & 6 months of the procedure.

Patients were asked about any complaints related with bleeding per rectum, pain or discomfort during defecation, anal discharge, pruritis, discomfort during constipation.

Patients were considered completely cured if no symptoms were persisting.

Treatment failure is term used when there is no improvement of any symptoms.

When there is improvement of some major symptoms they were considered improved.

## Results

A total of 347 were included in study that includes patients with internal hemorrhoids (1<sup>st</sup> degree, 2<sup>nd</sup> degree and some of 3<sup>rd</sup> degree in which band ligation was possible). Out of total patients 202 were males and 145 were females.

**Table 1: Presenting features of patients**

1. Bleeding per rectum	179 (52%)
2. Discomfort during defecation	193 (56%)
3. Prolapse or something coming out per rectum	143 (42%)
4. Anal discharge	129 (37%)
5. constipation	163 (47%)
6. others	23 (6.6%)

As per table Bleeding per rectum (52%), discomfort during defecation (58%) and constipation (47%) were most common symptoms. 2<sup>nd</sup> degree hemorrhoids were most common (45 %) followed by 1<sup>st</sup> degree and 3<sup>rd</sup> degree hemorrhoids. In our study 180 patients (85.3%) have successful outcome and about 31 patients (14.7%) have unsuccessful outcome.

**Table 2: Age wise distribution of the patients**

Age in years	No of Cases	%
<20 years	11	3.1
21-30 years	56	16.1
31-40 years	92	26.5
41-50 years	90	25.9
51-60 years	49	14.1
61-70 years	49	14.1

It is evident from table that hemorrhoids are common bin age group beyond 30 years.

**Table 3: Number of sitting required for rubber band ligation**

No. of sittings	No. of Cases	%
1 sitting	234	67.5
2 sittings	75	21.6
3 sittings	38	10.9

Most of the patients relived with single sitting (67.5 %).

Remaining patients needed 2 or 3 sittings.

**Table 4: Post ligation residual symptoms**

1. Pain/ discomfort	102	29.4 %
2. Bleeding	112	32.3%
3. constipation	74	21.2 %
4. prolapse	43	12.4 %

Most common post-ligation/residual symptoms were bleeding (32 %), pain & discomfort (29.4 %) & constipation (21 %).

**Table 5: Treatment assessment**

Assessment	No. of Cases	%
cured	241	69.4
relived	49	14.3
Little improvement	27	7.7
Failure	30	8.6

It is evident from table that 70 % of patients are cured and 14% have shown significant improvement. Failure rate was nearly 8.6 %

## Discussion

Ideal surgical treatment of hemorrhoids should have lower recurrence rate, least post operative complications and pain. It should be safe with minimal morbidity.

Conventional hemorrhoidectomy is still consider most effective gold standard treatment. Post operative pain, anal discharge & discomfort are main complications associated with this gold standard treatment. Various treatment protocols both medical and surgical are evaluated over the years.

Anal canal contain three main cushions in anal canal at left lateral, right anterior & right posterior location (3,7 & 11 o'clock position). Hemorrhoids are symptomatic displacement & enlargement of these cushions. Very little is known about pathophysiology of hemorrhoids.

On pathological examination of hemorrhoids there are no evidences of AV malformation [6]. Similarly in portal hypertension although anus is most common site for varices and bleeding but it is not associated with increased incidence of hemorrhoids [7]. Hence varices and hemorrhoids are consider two different entity previous theory of pathogenesis is obsolete.

**Research Article**

Currently most accepted theory is sliding cushions. Muscles & fibrous tissue of anal canal is replaced by fibrous tissues and collagen. It leads to poor support to all the cushions [8]. Inflammatory process involving vasculature system & connective tissue is also associated with micro infraction of anal mucosal lining [6].

As per American Society of Colon and Rectal surgeons treatment is classified into three categories [9] (a) conservative treatment in form of increased dietary fiber, avoiding straining at stools, and prolonged staying on toilet.

Other modalities which can give symptomatic relief include Sitz bath, and steroids (b) minimally invasive procedures which include RBL [10], injection sclerotherapy [11], infrared coagulation [12], anal stretch [13], cryosurgery [14], laser hemorrhoidectomy [15], and Doppler-guided hemorrhoidal artery ligation [16], and (c) surgical therapy includes closed hemorrhoidectomy [17], open hemorrhoidectomy [18] & stapled hemorrhoidectomy [19].

Rubber band ligation produces mucosal ulcer that heals by cicatrization fixing mucosa to underlying skin, which prevents descent of hemorrhoids during defecation. The technique can be performed on OPD basis in a few minutes without anesthesia. Hemorrhoidectomy needs anesthesia with hospital stay for 3-5 days.

Mean age in our study was 45.5 years that is comparable with other studies by Murie et al who reported mean age of 50 +/- 12 years [20]. Other studies also have similar results with mean age 51 & 50 years [21,22].

Male to female ratio is 1.4: 1 in our study that is comparable with other studies who have also noted male preponderance in their studies [23, 20, 21].

Rectal bleeding was most common symptom (52 %) associated with hemorrhoids in our study. Other studies by Steinberg et al 91.2 % and Hosch et al. 82 % have similar results [22, 24]. Rectal prolapse was present in 42 % of our patients. Results are comparable with Steinberg et al 64 % and O' Regan et al in 62 % of patients [24, 25].

Mucous discharge from anus was present in 37 % of our patients. Results are comparable with Steinberg et al. who reported it in 23.2 % of patients [24]. Pain or discomfort was observed in 56 % of our patients. Other studies by Murie et al. (44 %) and Vellacot & Hardcastle (35 %) have similar kind of results [26, 27].

Constipation was present in 47 % of all patients. Prevalence varies from one geographical area to other. Broader et al. has observed it in 10 % of cases [28].

On follow up bleeding has improved in nearly 68 % of patients. Results are comparable with Murie et al and Steinberg et al. [24, 26].

Results are comparable if we compare with open hemorrhoidectomy for grade 1 and grade 2 hemorrhoids. Almost 69 % of patients have been cured and nearly 14 % has been improved following Rubber band ligation.

RBL is associated with less fever and pain than open hemorrhoidectomy. Hemorrhoidectomy is a operative procedure needs anesthesia and 3-5 days hospital stay. It is also associated with secondary hemorrhage, stenosis or incontinence [29].

**Conclusion**

Hemorrhoidectomy is gold standard treatment for hemorrhoids. Rubber band ligation should be considered first line of treatment in 1<sup>st</sup> and 2<sup>nd</sup> degree hemorrhoids. However hemorrhoidectomy is having more lasting results. Hemorrhoidectomy needs longer hospital stay for 3-5 days and anesthesia. RBL is painless, OPD process that doesn't need anesthesia.

We support use of rubber band ligation as first line treatment for 2<sup>nd</sup> degree lesion. However for 3<sup>rd</sup> degree lesion Open hemorrhoidectomy is always better.

**Funding:** Nil, **Conflict of interest:** None

**Permission from IRB:** Yes

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**How to cite this article?**

Saxena A, Parate SK. Evaluation of Rubber band ligation technique for Internal Haemorrhoids. *Int J Med Res Rev* 2014;2(6):604- 609. doi:10.17511/ijmrr.2014.i06.16

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