

Rubber band ligation Technique in Internal Hemorrhoids: A Study in Tertiary Care Hospital

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Abstract**Original Research Article**

Hemorrhoids are a common disease affecting people of all ages and both sexes, one of the common reasons for surgical OPD visit. Hemorrhoids are masses or clumps or “cushions” of tissues consisting of muscle and elastic fibers with enlarged, bulging blood vessels and surrounding supporting tissues present in the anal canal of an individual suffering from the disease. In this study we tried to find out effectiveness of Rubber band ligation technique 1st degree, 2nd degree & some of the 3rd degree hemorrhoids. Methods: All the patients coming to surgical OPD of tertiary care teaching hospital from June 2016 to December 2017 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 hemorrhoids were included for band ligation. Results: Total of 64 patients 37 were males and 27 were females. Bleeding per rectum (52%), discomfort during defecation (58%) and constipation (47%) was 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 2nd degree lesion, however for 3rd degree lesion Open hemorrhoidectomy is always better.

Key words: Hemorrhoids, Rubber band ligation technique, effectiveness.**Copyright © 2019:** This is an open-access article distributed under the terms of the Creative Commons Attribution license which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use (NonCommercial, or CC-BY-NC) provided the original author and source are credited.

INTRODUCTION

Hemorrhoids are not varicose veins, and not each person has hemorrhoids. But everybody has anal cushions. The anal cushions are compiled of blood vessels, smooth muscle and elastic connective tissue in the sub mucosa. They are located in the upper anal canal, from the dentate line to the anorectal ring. Three cushions lie in the following constant sites: left lateral, right anterolateral, and right postero-lateral [1]. They have been defined as a mass of dilated tortuous veins in the anorectum involving the venous plexus of the area [2]. 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 by far available. Great numbers of cases are asymptomatic & underreporting is fairly common. In US almost 50 % of male and female takes some treatment for hemorrhoids after age of 50 years [3]. 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 [4, 5]. Hemorrhoids are classified into two groups. Internal hemorrhoids 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 Hemorrhoids.

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, is deficient in 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 [6]. Internal hemorrhoids are classified into 4 grades by Goligher [7]. For surgical management these grades are important but it does not include size and numbers which are also important for surgical consideration.

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. Daflon, which is 90% Diosmin and 10% Hesperidin (Daflon 500), was introduced in France by Bensaude [8] for the treatment of haemorrhoids and other capillovenous diseases.

According to Bayer [9] Rubber Band Ligation is a safe, cheap and suitable method and can save hundreds of hospitalization days. The various disadvantages include: (1) Operator's skill; (2) Severe pain if the bands in low placed band (3). Can cause difficult micturition (4). Fever and life threatening soft tissue infections, rarely.

Rubber band ligation was developed by Barron 4 in 1963 as a modification of an outpatient ligation 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

The study was prospective and was conducted on 64 patients presenting in the outpatient department of KEM Hospital Mumbai during year 2016-2017. All the patients coming to surgical OPD of tertiary care teaching diagnosed as a case of Hemorrhoids were included in study. Written informed consent from patient. After the preliminary assessment of patients i.e. detailed history of the disease and general and systemic examination, the patients were subjected to a few baseline investigations (CBC, coagulation profile, and complete urine examination). 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 hemorrhoids. Patients undergoing rubber band ligation, no prior preparation was required and the procedure was done in the outpatient department. All piles were banded at same time. Follow-up was done on the 3rd week, 6th week and 12th week. No other preparation like stool softener was given. The patients were followed up in term of cured, improved, and failure. At 12 weeks of procedure all patients subjected to proctoscopy and based on findings divided into 3 groups: 1. Asymptomatic and no evidence of hemorrhoids declared as cured 2. Asymptomatic and hemorrhoids present 3. Symptomatic and hemorrhoids

present. Patients in group 2 and 3 considered as failure of treatment.

Exclusion criteria

Previously operated hemorrhoids, hemorrhoids previously subjected to sclerotherapy, bulky, Edematous 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 nonbulky, 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 advice to high fibrous diet with plenty of fluids, sitz bath twice daily & after passing stools. Antibiotics and analgesics were prescribed. At 1 week the symptoms and any relief was recorded. Consequent follow-ups were done on the 3rd week, 6th week and 12th week. Patients were asked for post-operative follow - up. Follow-up was done on the 3rd week, 6th week and 12th week. The patients were followed up in term of cured, improved, and failure. Patients were asked about any complaints related with bleeding per rectum, pain or discomfort during defecation, anal discharge, pruritis, discomfort during constipation.

Patients were considering completely cured if no symptoms were persisting. Treatment failure is term used when there is no improvement of any symptoms at the end of 12 weeks. When there is improvement of some major symptoms they were considered improved.

RESULTS

A total of 64 were included in study that includes patients with internal hemorrhoids (1st degree, 2nd degree and some of 3rd degree in which band ligation was possible). Out of total patients 37 were males and 27 were females. (Figure No.1).

As per table no.1 Bleeding per rectum (52%), discomfort during defecation (58%) and constipation (47%) were most common symptoms. 2nd degree hemorrhoids were most common (45 %) followed by 1st degree and 3rd degree hemorrhoids. In our study 180 patients (85.3%) have successful outcome and about 31 patients (14.7%) have unsuccessful outcome.

It is evident from table no.2 and Figure no.3 that hemorrhoids are common in age group beyond 30 years. Most common age group was 31-40 years 22 (34.8%) followed by 41 -50 years 19 (29.8%).

Most of the patients relived with single sitting (67.5 %). Remaining patients needed 2 or 3 sittings (Table no.3).

According to table no.4 most common post ligation symptoms were bleeding (32 %), pain & discomfort (29.4 %) & constipation (21 %).

It is evident from table no.5 that 70 % of patients are cured and 14 % have shown significant improvement. Failure rate was nearly 8.6 %.



Fig-1: Showing the distribution of cases according to sex

Table-1: Symptoms of patients

Symptoms	Number Of Case	%
1. Bleeding per rectum	33	51.6
2. Discomfort during defecation	36	56.2
3. Constipation	30	46.8
4. Prolapse or something coming out per rectum	27	42.5
5. Anal discharge	24	37.5
6. others	4	6.2

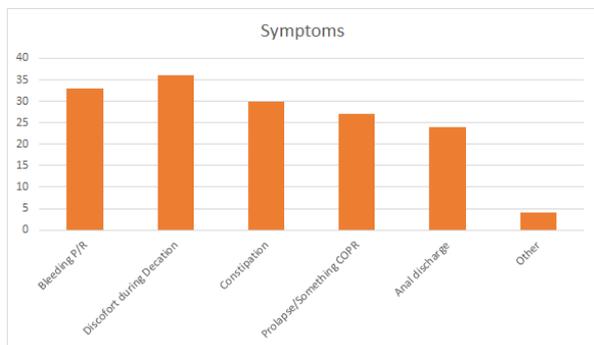


Fig-2: Showing the distribution of symptoms

Table-2: Age wise distribution of the patients

Age in years	No. of cases	%
<20	2	3.1
21-30	10	15.6
31-40	22	34.3
41-50	19	29.9
51-60	6	9.3
61-70	5	7.8
Total	64	100

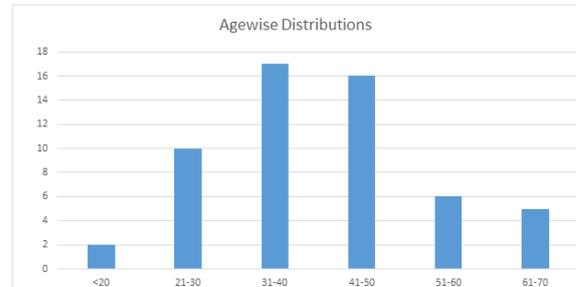


Fig-3: Showing the Age wise Distribution of cases

Table-3: Number of sitting required for rubber band Ligation

No. of sittings	No. of cases	%
1 sitting	43	67.3
2 sitting	14	21.8
3 sitting	7	10.9
Total	64	100

Table-4: Post ligation residual symptoms

Residual symptoms	Number of cases	%
Pain/Discomfort	20	31.2
Bleeding	22	34.3
Constipation	14	21.8
Prolapse	8	12.7
Total	64	100

Table-5: Treatment assessment

Assessment	No. of cases	%
Cured	45	70.3
Relived	9	14.1
Little improvement	5	7.8
Failure	5	7.8
Total	64	100

DISCUSSION

The wall of the anorectum contains the terminal branches of the superior haemorrhoidal artery in the internal haemorrhoidal plexus and the enlargement of these results in internal hemorrhoids. The three principal hemorrhoids are found at the 3, 7 and 11 o'clock position.

Ideal surgical treatment of hemorrhoids is supposed to have lower recurrence rate, least post-operative complications and pain. It should be safe with minimal morbidity. Conventional hemorrhoidectomy is still considering most effective gold standard treatment. Post-operative pain, anal discharge & discomfort are major complications linked 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 [10]. Similarly in portal hypertension although anus is most common site for varices and bleeding but it is not associated with increased incidence of hemorrhoids [11]. Hence varices and hemorrhoids are considering two different entities previous theory of pathogenesis is obsolete.

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 [12]. Inflammatory process involving vasculature system & connective tissue is also associated with micro infarct of anal mucosal lining [10].

As per American Society of Colon and Rectal surgeons treatment is classified into three categories [13] (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 [14], injection sclerotherapy [15], infrared coagulation [16], anal stretch [17], cryosurgery [18], laser hemorrhoidectomy [19], and Doppler-guided hemorrhoidal artery ligation [20], and (c) surgical therapy includes closed hemorrhoidectomy [21], open hemorrhoidectomy [22] & stapled hemorrhoidectomy [23].

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 [24]. Other studies also have similar results with mean age 51 & 50 years [25, 26]. 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 [27, 24, 25].

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 [26, 28]. Rectal prolapsed was

present in 42 % of our patients. Results are comparable with Steinberg *et al.* 64 % and O' Regan *et al.* in 62 % of patients [28, 29]. As per Sudhir Navadiya *et al.* internal hemorrhoids have male to female ratio as 2.1:1. The average duration of bleeding at presentation was 2.5 days \pm 1.5 in the Rubber Band Ligation group and 2.4 days \pm 1.2 in the Daflon group.

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 [28]. 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 [30, 31]. 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 [32].

On follow up bleeding has improved in nearly 68 % of patients. Results are comparable with Murie *et al.* and Steinberg *et al.* [28, 30]. 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 an operative procedure needs anesthesia and 3-5 days hospital stay. It is also associated with secondary hemorrhage, stenosis or incontinence [33].

CONCLUSION

Hemorrhoidectomy is gold standard treatment for hemorrhoids. Rubber band ligation should be considering first line of treatment in 1st and 2nd 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 2nd degree lesion; however for 3rd degree lesion Open hemorrhoidectomy is always better.

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