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Original Research Article

Study of efficacy of band ligation and suture ligation in the treatment of second degree hemorrhoids

S. N. Gole, Nitin Toppo, Manoj Poptani*

Department of Surgery, Pt. Jawaharlal Nehru Memorial Medical College, Raipur, Chhattisgarh, India

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***Correspondence:**
Dr. Manoj Poptani,
E-mail: drmanoj.9695@hotmail.com

ABSTRACT

Background: Rubber band ligation (RBL) and suture ligation are treatment strategies adapted for management of second degree hemorrhoids, an anorectal condition leading to distal displacement of anal cushions. Aim of current study was to investigate efficacy of suture ligation and band ligation techniques used in management of grade two internal hemorrhoids in terms of intraoperative n post-operative complications.
Methods: An observational prospective study was conducted on 108 patients presented with grade 2 internal heamorrhoids at JNM medical college, Raipur between 2018 to 2019. Patients were divided in two equal groups receiving rubber band and suture ligation as treatment approaches. Efficacy of both treatment approaches was studied in terms of post-operative complications observed at immediate, one week and one month follow-ups and on the basis of hospital stay time required.
Results: Majority of patients in both the groups were males with most number of cases in age group of 31-40 years. There was no significant difference in dietary habits of patients in both group as well as efficacy of both treatment techniques. Post-operative pain, discomfort, prolapse were common complains in band ligation group with pain persisting even during one month follow-up. Pain, bleeding per rectum, discomfort and irritation per rectum were the most common post-operative complaints of suture ligation group during follow-up.
Conclusions: Although efficacy of both treatment strategies were equivalent, RBL would be recommended over suture ligation treatment strategy due to requirement of regional anesthesia to reduce operative difficulty and more hospital stay time in suture ligation treatment strategy.

Keywords: Grade 2 hemorrhoids, Rubber band ligation, Suture ligation

INTRODUCTION

Hemorrhoidal disease (HD) refers to a very common anorectal condition related to the vascular cushions present in the anal canal.[1] Hemorrhoids are vascular tissues comprising of connective tissues, smooth muscle and blood vessels, they are located in submucosa of anal canal and aid in stool continence.[1,2] Abnormal dilatation and distortion of vessels of anal cavity, along with distortive changes in connective tissue of anal cushion leading to an inflammatory reaction or vascular hyperplasia is observed in HD.[3,4] Rectal bleeding associated with bowl movement is the most common symptom observed in HD.[2] In HD symptomatic enlargement and distal displacement of normal anal cushions is observed.[3] The term hemorrhoids is derived from Greek word, haima meaning blood and rhoos meaning flowing. HD is commonly known as piles the word which is derived from Latin word pila meaning ball.[5] HD exhibits symptoms ranging from very low level of discomfort or inconvenience with mild itching or bleeding to severe pain with significant psychosocial impact.[4,5] HD can be classified as grade I haemorrhoids, that bleed and may protrude, but do not prolapse out of

the anal canal, grade II hemorrhoids prolapse on defecation but reduce immediately, grade III hemorrhoids require manual reduction and grade IV hemorrhoids are permanently prolapsed and do not reduce.[6]

Prolonged history of chronic hard stool can precipitate in HD which is considered to be a state developed as a result of increased pressure gradient within the hemorrhoid plexus.[7] Etiology of HD is attributed to multiple factors however, constipation and prolonged straining are considered as major etiological factors for HD.[8] Although it is challenging to determine actual prevalence of HD as many patients either do not seek medical attention or resist taking treatment due to embarrassment, still HD affects millions of people worldwide with a reported prevalence rate ranging from 4 to 40%.[9] The prevalence of reported HD cases was observed to be highest in age group of 45 and 65 and in patients of high socioeconomic status.[10] However, the reported observation related to age group and socioeconomic status may be biased due to limited and selective patients seeking for medical attention.

Management and treatment strategies of HD range widely depending on its severity. Less severe cases are mostly treated or managed with strategies like lifestyle modification, fiber supplement or in mild to moderate severe cases with anti-inflammatory drugs delivered through suppositories or through venotonic drugs.[11,12] Non-operative approaches like RBL, cryotherapy, sclerotherapy, infrared photocoagulation, manual anal dilatation LASER hemorrhoidectomy, Doppler-guided hemorrhoidal artery ligation, harmonic ultrasonic scalpel hemorrhoidectomy and atomizing techniques to excise and vaporize hemorrhoids are usually used for management and treatment of moderate to severe first and second degree hemorrhoids.[13-16] Operative techniques are used for management and treatment of HD only when non-operative approaches have failed or complications have occurred as surgical procedure leads to significant morbidity such as anal stricture and incontinence.[14] Surgical operative approaches that are used for the management and treatment of HD includes clamp and cautery hemorrhoidectomy, open hemorrhoidectomy (Milligan-Morgan method), closed hemorrhoidectomy (Ferguson's technique), submucosal hemorrhoidectomy (Parks procedure), Whitehead's circumferential hemorrhoidectomy, stapled hemorrhoidectomy, radiofrequency ablation and suture fixation of haemorrhoids, pile suture method, bipolar diathermy hemorrhoidectomy, ligasure and starion hemorrhoid-ectomy with submucosal dissection.[17-20] Post-operative complications in early stages like severe pain, wound infection, bleeding, edema of the skin bridge, major short-term incontinence, difficult urination or urinary retention and anal stenosis, formation of skin tags, recurrence late stage complications limits the use of operative approaches for management and treatment of HD.[21-25]

Objective

Objective of current study was to investigate the efficacy of band ligation and suture ligation as treatment strategies for second degree hemorrhoids in terms of post-operative complication like pain, per rectal bleed, mass per rectum, urinary retention, one week and one month follow-up symptoms and duration of hospital stay.

METHODS

Study design, population, location and duration

Current investigation was an observational prospective study conducted on 108 patients presented with grade 2 internal heamorrhoids at Pt. Jawaharlal Nehru memorial medical college, Raipur from 2018 to 2019.

Procedure

Total 108 patients were divided in two groups (54 in each group), group A patients underwent band ligation as treatment strategy for management of grade 2 hemorrhoids and group B patients underwent suture ligation as treatment strategy for management of grade 2 hemorrhoids. Efficacy of both the treatment strategies were evaluated in terms of post-operative complications like pain, per rectal bleed, mass per rectum, urinary retention as follow-up symptoms and total hospital stay duration required. Post-operative follow-ups were taken at immediate, one week and one month time durations.

Statistical analysis

Data compilation and statistical analyses were done on SPSS version 16. Descriptive statistics, frequency and percentage were computed for presentation of quantitative variables and significance in variation between the data points were determined using p values, $p \leq 0.05$ was considered as statistically significant.

RESULTS

The current study findings revealed that patients of heamorrhoids were found in all age groups of 18 and above. In case of band ligation treatment strategy majority of the patients were in the age group of 31-40 years 19 (35.19%) while no patients were observed in age group of 61-70 years (Figure 1). In suture ligation treatment strategy maximum patients 15 (27.78%) were in age group of 31-40 years and very few patients were observed in age groups of <20 years and 61-70 years. A non-significant difference was observed in patients of both the groups on the basis of age distribution (p=0.06). Gender based distribution studies revealed that there was no significant difference in distribution of cases in both the group on the basis of gender (p=0.82) (Table 1).

Table 1: Distribution of patients on the basis of their gender, socioeconomic status and food habits.

Parameters	Band ligation (%)	Suture ligation (%)
Gender		
Male	75.93	74.07
Female	24.07	25.93
Socioeconomic status		
Lower class	75.92	85.18
Middle class	24.07	14.81
Food habits		
Vegetarian	16	5
Mixed	84	95

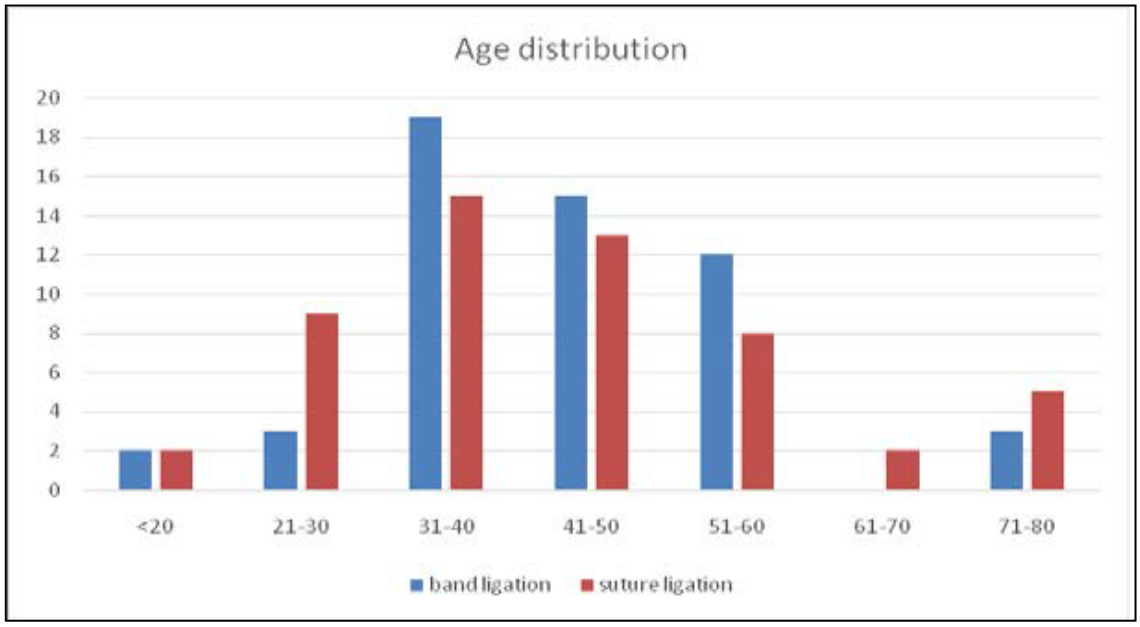

Figure 1: Distribution of patients on the basis of their age.

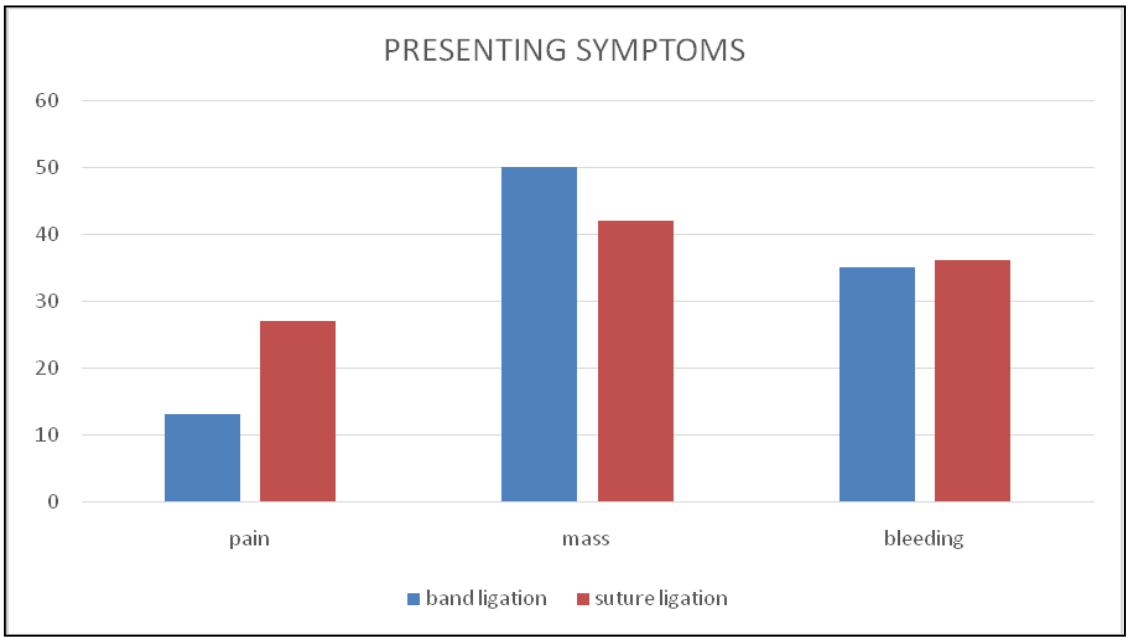

Figure 2: Distribution of patients on the basis of presenting symptoms.

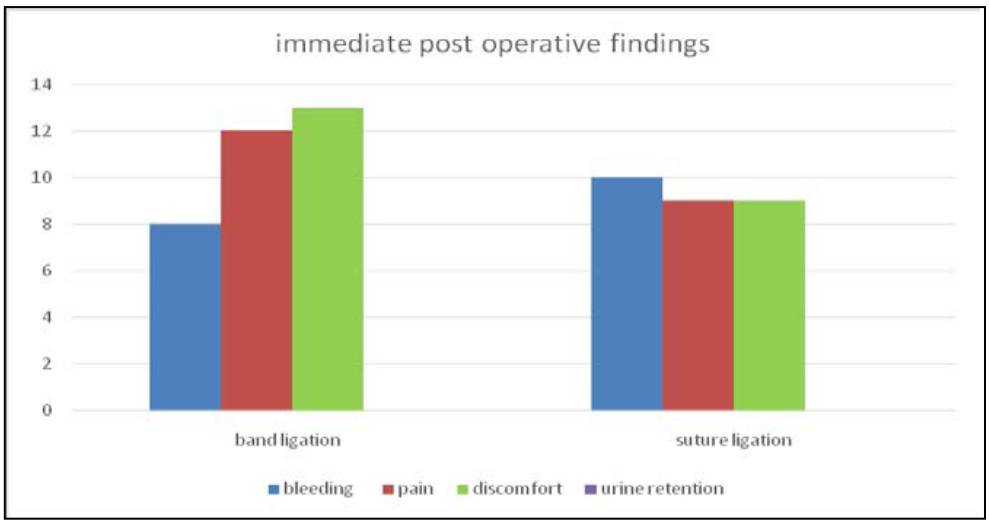

Figure 3: Distribution of patients on the basis of immediate postoperative findings.

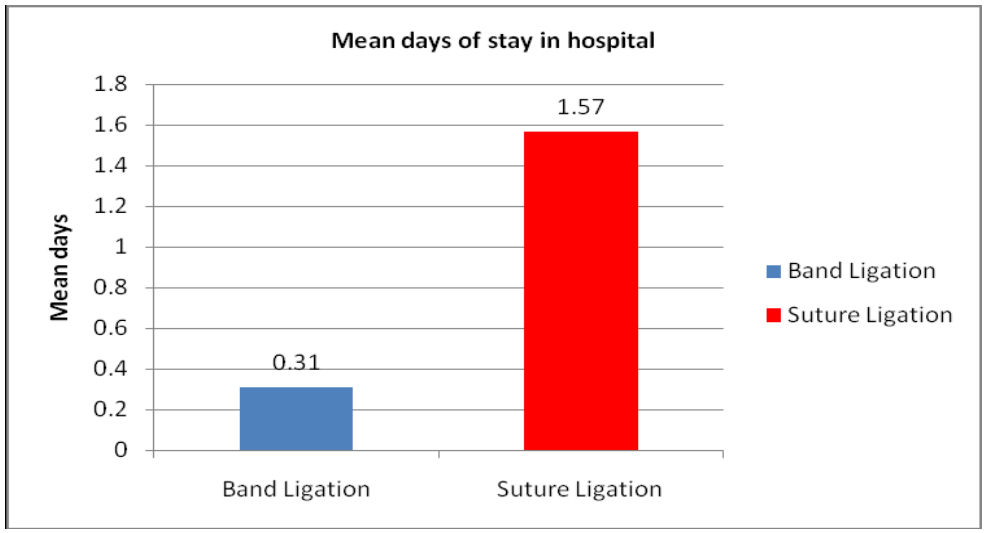

Figure 4: Duration of hospital stay among patients of both the groups.

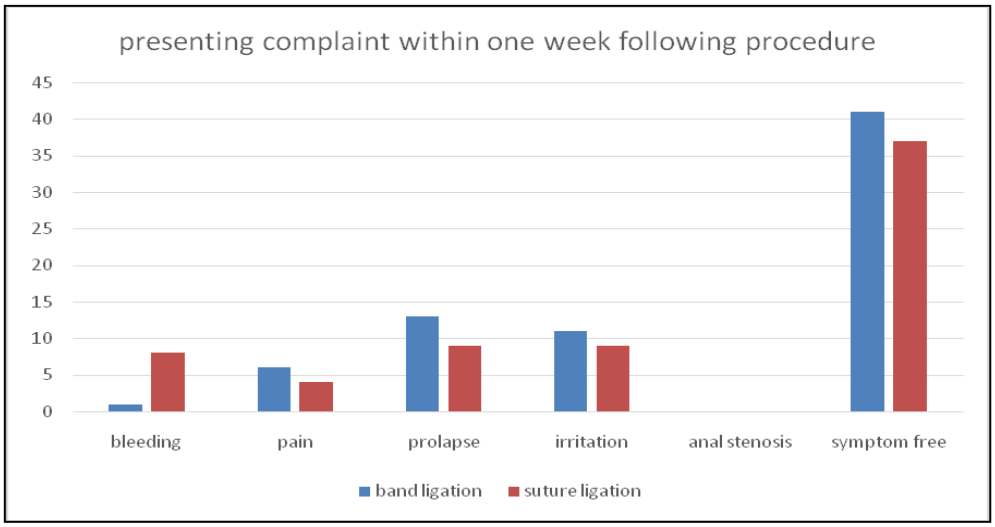

Figure 5: Distribution of patients on the basis of one week follow-up for postoperative complaints.

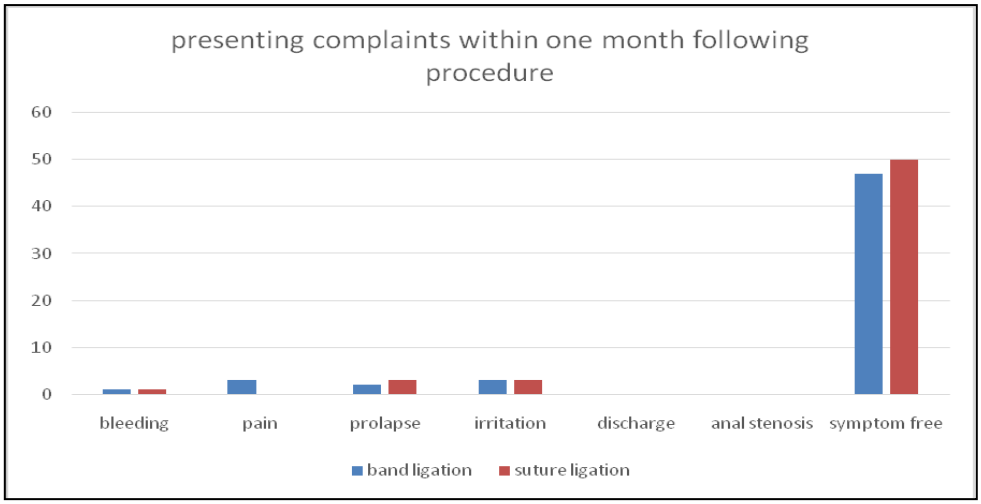

Figure 6: Distribution of patients on the basis of one moth follow-up for postoperative complaints.

Distribution of the patients on the basis of socioeconomic status revealed that there was no significant difference observed between patients of both the groups (p=0.22) (Table 1). It was observed through current study findings that there was no significant difference in patients of both the groups based on their preferences for food (p=0.07). Both band ligation and suture ligation groups exhibited majority of patients 45 (83.33%) and 94.44% respectively, with mixed food preferences (Table 1).

Study findings for both band ligation and suture ligation groups revealed that mass per rectum was the most common symptom with 50 (92.59%) and 42 (77.78%) patients, respectively. A significant difference (p=0.03) in pain as presenting symptom was observed between the cases of band ligation 13 (24.07%) and cases of suture ligation 27 (50%). Bleeding per rectum as a presenting symptom was observed in 35 (64.81%) cases in band ligation, and 36 (66.67%) cases in suture ligation (Figure 2).

Immediate post-operative (within 12 hours) symptoms based evaluation studies revealed that post-operative pain and discomfort were most commonly observed symptoms in patients with band ligation whereas bleeding was most common symptom in patients of suture ligation group (Figure 3). Level of pain and discomfort were equivalent in both the groups, also no patient of either group reported complains of urine retention.

A significant difference (p=0.001) was observed in the patients of both the groups on the basis of duration of hospital stay (Figure 4). The mean duration of hospital stay was 0.31 days in patients with band ligation whereas it was 1.57 days in patients with suture ligation.

One week post-operative follow-up investigation studies in band ligation group revealed that 13 (24.07%) patients exhibited prolapse as most common symptom post-operatively, irritation was second most common symptom seen in 11 (20.37%) patients, while pain was observed in 6 (11.11%) cases and bleeding was observed in only 1 (1.85%) case (Figure 5). No cases of discharge per rectum or anal canal stenosis were observed and 41 (75.93%) patients were found to be symptom free. In suture ligation group, prolapse per rectum and irritation both were most common symptom post-operatively observed in 9 (16.67%) patients. Bleeding was observed in 8 (14.81%) patients and pain in 4 (7.41%) patients (Figure 5). No cases of discharge per rectum or anal canal stenosis were observed and 37 (68.52%) patients were found to be symptom free. Statistical studies for comparing symptoms among patients in both the groups revealed that p value for pain (0.50), prolapse (0.34), irritation per rectum (0.62) were non-significant. Comparative non-significant p value (0.074) was also observed amongst patients of both the groups who were symptoms free. Only symptom of bleeding per rectum (p=0.015) was observed to be significantly more in suture ligation patients.

One month post-operative follow-up investigation studies revealed that in band ligation group, pain was most common symptom observed in 3 (5.56%) patients whereas irritation was second most common symptom seen in 3 (4.84%) cases (Figure 6). Bleeding was observed in 1 (1.61%) case and prolapse in 2 (3.7%) cases. No cases were found to have post-operative discharge or anal canal stenosis and 47 (87.04%) patients were found to be symptom free (Figure 6). In suture ligation group, irritation per rectum was the most common symptom present in 3 (6.52%) patients post-operatively after one month, whereas prolapse per rectum was second most common symptom seen in 3 (5.56%) cases. Pain was not observed in any patient and 97 (89.81%) patients were found to be symptom free and no cases of anal canal stenosis or discharge were observed. The p value for symptoms like pain (0.078), prolapse (0.64), irritation per rectum and for symptom free patients (0.34) were all non-significant, hence there is no statistically significant difference observed in presenting symptoms during one moth post-operative follow-up investigation.

DISCUSSION

It was observed through current study findings that most number of cases for both treatment approaches was in age group of 31-40 years. Amongst the patients of both the groups males were more common. No significant difference was observed between the patients of both the groups in terms of dietary habits. Prolapse was observed to be the most common symptom in RBL whereas pain was most common symptom in suture ligation group. Post-operative pain and discomfort were most common symptoms in band ligation group whereas bleeding per rectum and discomfort were most common symptoms in suture ligation group. In post-operative follow-up investigations after one month time duration, it was observed that through current study findings that in band ligation group, pain was most common symptom post-operatively and in suture ligation group, irritation per rectum was most common symptom post-operatively.

From all the observations of current study findings it was summarized that RBL can be done on outpatient treatment under local anesthesia not needing much expertise to perform the treatment procedure. Suture ligation is slightly difficult operative procedure and requires spinal and caudal block. Hemorrhoidal ligation does not necessitate the need for expensive equipment and can be done with minimal infrastructure without need for operation theatre. RBL would save time of patients in terms of bed rest required, would require minimal medical expert attention and patient would be ambulatory following treatment and can carry on routine work.

Limitations

Small sample size and shorter follow-up duration were the limitations of the current investigational study.

CONCLUSION

It was concluded based on current study findings that although efficacy of both the treatment approaches were equivalent, RBL can be recommended as an effective outpatient treatment for second degree hemorrhoids. Suture ligation treatment approach was slightly difficult and required regional anesthesia to reduce operative difficulty, moreover, suture ligation approach would also require more hospital stay time.

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