Comparative Study between Classical Hemorrhoidectomy and Rubber Band Ligation in the Treatment of Hemorrhoid

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ABSTRACT:

BACKGROUND:

Hemorrhoids are quite common disease affecting the anus and may require traditional surgical treatment, but the rubber band ligation (RBL) emerged as a less invasive and effective method of treatment.

AIM:

This study was performed to assess the efficacy of rubber band ligation as an option in the treatment of hemorrhoid in comparison to classical hemorrhoidectomy using (pain, bleeding, return to daily activities and recurrence) as parameters.

METHOD:

A prospective study was conducted from January 2018 till July 2019 at Mosul teaching center, it compares the results of RBL and classical hemorrhoidectomy. It includes 100 patients having grade two and three hemorrhoid who were selected randomly and divided into 2 groups of 50 patients each (hemorrhoidectomy group and RBL group). Patients with other lesions such as fissures and fistulae were excluded from the study. All data were recorded and subsequently analyzed.

RESULTS:

From 100 patient, the 50 patient whom were treated by rubber band ligation had less pain , less bleeding, early mobilization, and more cost effective as they were treated as an outpatient basis compared to hemorrhoidectomy group; however, the recurrence rate (after less than 6 months) were much higher in RBL group compared to Hemorrhoidectomy group.

CONCLUSION:

RBL can be used effectively in the treatment of grade 2 and 3 hemorrhoid as it has less postoperative complications (less pain and less bleeding) and should be considered as first line in patients who are unfit for surgery as it is done as an outpatient basis. However, patients may need multiple sessions (more recurrence rate) especially those with multiple hemorrhoids and with grade 3 hemorrhoid.

KEYWORDS: rubber band ligation, hemorrhoidectomy, pile, hemorrhoid.

INTRODUCTION:

Hemorrhoids are cushions of submucosal tissue containing venules, arterioles, and smooth-muscle fibers that are located in the anal canal. Three hemorrhoidal cushions are found in the 3,7,11 o clock in lithotomy position and the treatment is only indicated if they become symptomatic [1]. Hemorrhoids may result from excessive straining, increased abdominal pressure, and hard stools and increase venous engorgement of the hemorrhoidal plexus, all contribute in prolapse of hemorrhoidal tissue that presents as bleeding, thrombosis, and symptomatic hemorrhoidal prolapse; and can be classified into external ,internal and combined with 4 grades according to the extent of prolapse which helps in assessing different therapies [2,3] .

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Numerous modalities and techniques have been developed to treat symptomatic hemorrhoids ranging from simple dietary measures and bowel habit regulation, through a number of non-operative procedures, to different techniques of excision of diseased anal cushions. The vast amount of treatment options means none are close to perfection [4]. Among these treatment modalities rubber band ligation (RBL) [5] which is considered the most widely used procedure, and it offers the possibility to resolve hemorrhoidal disease without the need for hospitalization or anesthesia, and with lower incidence of complications [6] and it is suitable for symptomatic 1st ,2nd and selected 3rd degree hemorrhoids [7], but this simple method may cause severe pain (if the rubber band is placed at or distal to the dentate line), urinary retention, infection, and bleeding [8] .

Necrotizing infection is an uncommon but a life-threatening complication. Severe pain, fever, and urinary retention are early signs of infection and should prompt immediate evaluation of the patient usually with an examination under anesthesia and débridement of necrotic tissue, drainage of associated abscesses with and broad-spectrum antibiotics. Bleeding may occur approximately 7 to 10 days after rubber band ligation, at the time when the ligated pedicle necroses and sloughs. Bleeding is usually self-limited, but persistent hemorrhage may require examination under anesthesia and suture ligation of the pedicle [9].

Although, surgical hemorrhoidectomy is more definitive in symptom control, it has a reputation for being a painful procedure for a relatively benign disorder; so, it is preserved for severe prolapsed or circumferential hemorrhoids which can be treated using a variety of surgical techniques, e.g. Milligan Morgan, Longo and others [10] .

PATIENTS & METHODS:

This is a prospective clinical case series study conducted at Mosul teaching center from January 2018 till July 2019 and involved 100 patients divided into 2 groups (50 RBL and 50 hemorrhoidectomy) who chose the method of treatment after detailed history and proper examination followed by discussion of each treatment modality(7 patients were excluded from the original sample size because they had fistula and fissures in ano or they had grade IV hemorrhoids).Hemorrhoidectomy group; each patient was sent for baseline investigation including CBC, virology screen, and RBS. The patient was kept fasted for 8 hours duration, and was operated upon by Milligan-Morgan operation. For RBL group, after applying a proctoscope, the mucosa located 1 to 2 cm proximal to the dentate line is grasped and pulled into a rubber band applier. After firing the ligator, the rubber band strangulates the underlying tissue, causing scarring and preventing further bleeding or prolapse Figure 3. In general, only one or two quadrants are banded per visit as shown in figure (1).

Before band **After banding** **20 days later**

Figure 1: RBL in different time period.

The outcome measures were assessed depending on four parameters (pain, bleeding, recurrence and early return to daily activities). Post-operative pain was checked on scale shown in figure (2).

Post-operative analgesia was given in the form of paracetamol amp 500 mg iv and parenteral NSAID for more severe pain in both groups.

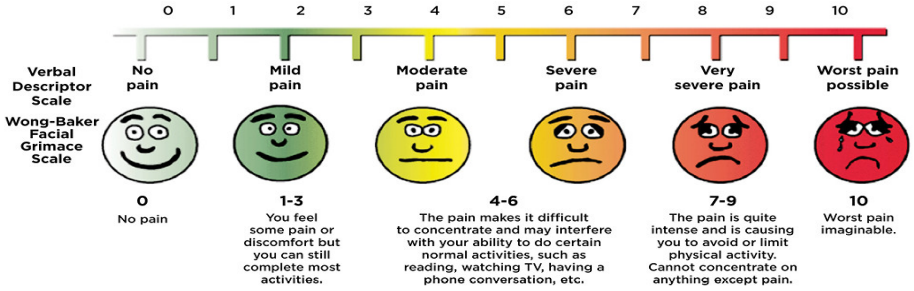

Figure 2: Pain sliding scale.

RESULTS:

This study includes 100 patients with hemorrhoid. The mean age of patients was 44years ±15 (from 30 to 60 years old). Fifty six patients (56%) were males and forty four (44%) were female patients.

Male to female ratio 14:11; although there is a difference in the gender with the 2 procedures but it is not significant statistically (chi square 0.16 and p-value 0.68).

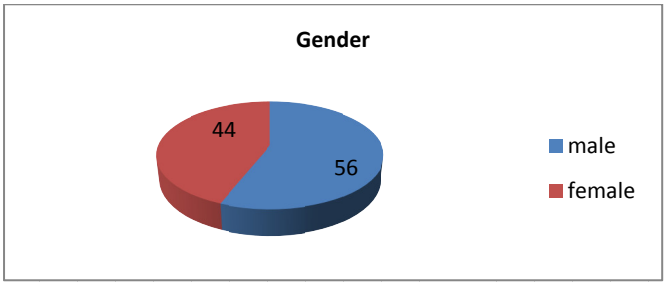

Figure 3: Male to Female Ratio.

Different grades of hemorrhoid are present and the percentage of grading with each treatment modality is shown in figure 4; there is a significant difference between grade II and III hemorrhoid (chi square 4 and p-value 0.0455) which means that more patients with grade II hemorrhoids were included in this study.

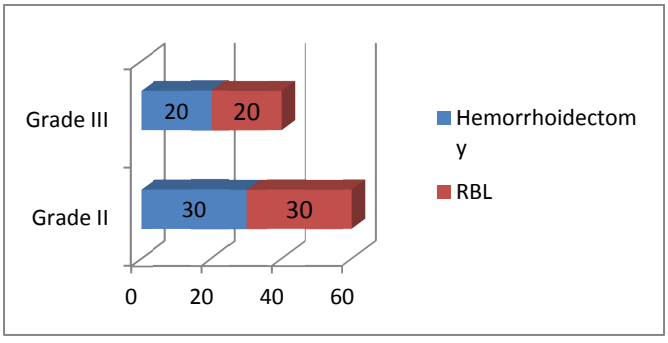

Figure 4: Ratio of hemorrhoid grading per procedure used.

Post-operative complications

I.Pain: In Hemorrhoidectomy group, 32 patients (64%) had severe pain post operation and needed analgesia, while in RBL group 8 patients (16%) only had severe pain. The statistical results showed significant difference in the selection of operation to pain observation (chi square 24, p-value 0.000001).

II.Bleeding: Bleeding in hemorrhoidectomy group post operatively was observed in 8 patients (16%), while in RBL group, it occurred in 5 patients (10%). These results showed that the bleeding is much more in surgery but statistically the selection of procedure has no significant effect on bleeding complication (chi square 2.8369, p-value 0.092123). The bleeding in all patients was mild and although the patient got panic it didn't require surgical intervention.

III.Recurrence: Recurrence in hemorrhoidectomy group occurred for 1 patient (2%) and on the other hand in RBL group 5 patients (10%) needed more than one session. Statistically the recurrence was not affected by type of procedure (chi-square = 2.8369. The p-value = 0.092123).

IV.Return to daily activity: In hemorrhoidectomy group, 20 patients (40%) returned early to their daily activities while in RBL group, 48 patients (96%) were able to return early to their daily activities. Statistically the result is significant, i.e. more patients returned early to their activities in RBL group compared to hemorrhoidectomy group (chi square 36.0294, p-value less than 0.00001 which is extremely significant). A graphical representation for the postoperative results is illustrated in figure4.

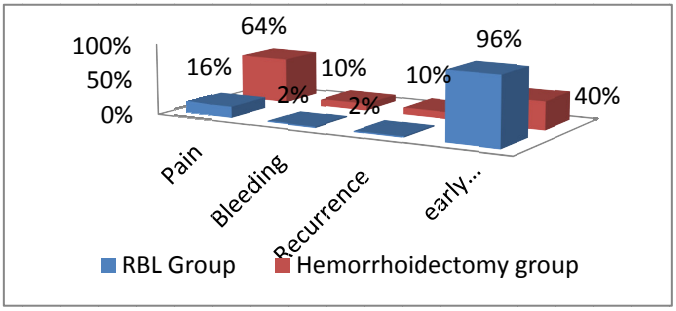

Figure 5: Post-Operative Results.

Simple infection (local abscess was recorded in one case of RBL which required surgical treatment). Minor complications include simple rectal ulcer which was recorded in 3 cases 6% and responded to conservative treatment.

DISCUSSION:

RBL acts by mucosa fixation to underlying anal skin, which prevents protrusion of hemorrhoid cushion during defection. The procedure can be done as outpatient basis in a short time with no anesthesia. In hemorrhoidectomy we excise most of hemorrhoidal plexus of veins to achieve relief of symptoms. However, we should perform that on inpatient basis including anesthesia and post-operative hospital stay [(11)].

In this study, the mean age of our patients was 44 years (30–60 years). This is comparable to Murie et al. study (12) who reported the mean age of 50±12 years, Konings et al. (13) with mean age of 51 years and Hosch et al. [(14)] with mean age of 50 years. Some of our patients had symptoms earlier in their lives but they did not seek surgical advice (grade I hemorrhoid responds to altered diet habit and so they present late).

In our study, overall M: F ratio was 14:11. This finding correspond to the finding of male preponderance noted by Sohn et al. [(15)] (2.75:1), Hosch et al. (14) (M:F 2.4:1). This can be simply explained by oriental culture of our society in which female patient visits female surgeons.

The cases included in this study suffered from grade II and III hemorrhoids (which means prolapse) and bleeding present in some patient with pruritis and difficult defecation; the success of surgery (patient's satisfaction) depends on relief or improvement of symptoms with minimal post procedure complications.

In our study in hemorrhoidectomy group, 32 patients (64%) had severe pain post operation and needed analgesia, while in RBL group, 8 patients

(16%) only had severe pain; this was measured by pain scale score. These results are better than the results of Murie et al. [16] who reported pain in 100% of hemorrhoidectomy group and 30% in RBL group. This can be explained by the new models of pain management protocols (multimodality and before occurrence of pain and probably because of different pain threshold). While Cheng et al also recorded pain in all hemorrhoidectomy group but only in 7.5% of RBL group (his study depends on 30 patients only.(4) Caro et al mentioned less pain in RBL group while hemorrhoidectomy had severe pain extends to 48 -72 hours [17]

Regarding bleeding, most of the published articles discussed bleeding as a symptom or recurrent symptom of hemorrhoid while in this article we recorded bleeding as a complication after different procedures. Bleeding occurred in 10 % in the RBL group and 16 % in the Hemorrhoidectomy group. Statistically, this finding showed that bleeding is not affected by the type of procedure at p-value 0.05. Above findings are correlated well with that of Murie et al. (18) and Steinberg et al. (19) and Panda et al. (20). Our results are better than Bostjan et al who recorded 27.5% incidence of post-operative bleeding all of which treated conservatively [21].

Regarding post procedural bleeding, all our patient who had bleeding were treated conservatively as it was mild bleeding which usually occurs after 10-14 days , probably due to the sloughing of the ligated hemorrhoids[22,23,24].

Finally, we have to mention the last complication which is massive bleeding that may occur especially in patient taking anti-platelet and/or anti-coagulant medication and which have a higher risk of secondary bleeding. There are cases of massive life-threatening hemorrhage following hemorrhoidal RBL in patients on acetylsalicylic acid (ASA) [23,25,26] and clopidogrel[24].

In our study, 90 % of patients had no prolapse RBL group compared with 98 % in hemorrhoidectomy group. These findings are comparable with the findings of Steinberg et al. [19], Panda et al . [20], Murie et al. (18). Most of the recurrence cases recorded in grade III hemorrhoid which -according to this study- is preferable to be treated surgically and this is agreed by Tutino R . While Caro et al recorded the same results for grade III and to avoid bias, we have to follow the patient for long time (the defect in this study is the short term of follow up)[17] .

Sha HL et al and Mushtaq et al found that for grade III hemorrhoids they reported recurrence in 50 % of their patients following RBL compared with 12.5 % following hemorrhoidectomy; these findings suggest that RBL is not as effective as hemorrhoidectomy in the treatment of large hemorrhoid requiring manual reduction (grade III) [28,29] which is also proved by the largest Italian study of more than 32000 patients [30]

Murie et al. [18]. Cheng et al. (4) observed that hemorrhoidectomy has low recurrence, but higher rate of post-op pain, and longer hospital stay; this finding correlates well to our study findings in which we found RBL group has higher possibility of early return to daily activity 96% compared to only 46% in hemorrhoidectomy group. Time off work was recorded in one study Murie et al [18] while this study RBL treated as an outpatient and returned to their daily activities with 3±1.5 day while in hemorrhoidectomy 4±2.

Finally, we have to mention that systemic review done by S.Brown shows that heterogeneity presents between different articles, but most articles mentioned that better results obtained in surgery for grade 3 hemorrhoid; less pain and hospital stay mentioned for RBL which is similar to the current study [31].

Fortunately, we didn't record mortality while it was recorded in 7 cases in RBL due to septic complications [32, 33, 34, 35, 36].

CONCLUSION:

RBL can be used effectively in the treatment of grade 2 and 3 hemorrhoid as it has less postoperative complications (less pain and less bleeding) and should be considered as first line in patients who are unfit for surgery as it is done under local anesthesia and as an outpatient basis. However, patients may need multiple sessions (more recurrence rate) especially those with multiple hemorrhoid and with grade 3 hemorrhoid.

Ethical consideration

Approvals were obtained from Iraqi committee for medical specialization and scientific council for surgery of Iraqi Board; also approval from the local ethical committee was obtained and all patients accepted to participate in this study.

Statistical analysis

All the data has been edited, processed and analyzed by the use of statistical software package graphpad. A p-value ≤ 0.5 was considered statistically significant.

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