

COMPARATIVE ANALYSIS OF BAND LIGATION TECHNIQUE VERSUS CONVENTIONAL HEMORRHOIDECTOMY FOR THE TREATMENT OF GRADE III HEMORRHOIDS

ABHISHEK MAHNA*

Assistant Professor, Department of General Surgery, Adesh Medical College and Hospital, Shahbad, Haryana, India.
Email: abhimahna87@gmail.com

Received: 22 February 2022, Revised and Accepted: 05 April 2022

ABSTRACT

Objectives: A comparative study between band ligation technique and conventional hemorrhoidectomy for the treatment of Grade III hemorrhoids was carried out to compare operative and post-operative variables.

Methods: This study was done on a sample size of 70 patients with Grade III hemorrhoids from 2019 to 2020 in the department of surgery of a medical college. Informed written consent was taken from the patients after explaining the benefits and side effects of both methods. The eligible patients were randomly divided into Group A (35 patients) for treatment by band ligation procedure and Group B (35 patients) who were treated by the conventional technique. The obtained data were subjected to statistical analysis by applying an unpaired t-test using SPSS 19.0 software.

Results: The difference between the two groups of the average age was comparable. The operative time and intraoperative bleeding were significantly lower in Group A than in Group B. The time to first bowel movement (hr) and average hospital stay were significantly lower in Group A than in Group B. Furthermore, the average number of analgesic doses required was significantly lower in Group A than in Group B. Furthermore, the time required for wound healing was significantly lower in Group A. The overall complications were found to be quite less in Group A than in Group B.

Conclusion: The rubber band ligation technique revealed better results in terms of operative and post-operative parameters as compared to the conventional hemorrhoidectomy.

Keywords: Grade III hemorrhoids, Band ligation technique, Conventional hemorrhoidectomy.

© 2022 The Authors. Published by Innovare Academic Sciences Pvt Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>) DOI: <http://dx.doi.org/10.22159/ajpcr.2022v15i6.44526>. Journal homepage: <https://innovareacademics.in/journals/index.php/ajpcr>

INTRODUCTION

Hemorrhoids occur due to swelling and inflammation of veins in the rectum. The most common etiological factors include pregnancy, obesity, and strained bowel movements. These lesions tend to increase with age occurrence with age and are encountered equally among both sexes. Discomfort, itching, and bleeding are the most common symptoms which lead to social embarrassment and inconvenience to the patients [1].

Hemorrhoids occur due to downward displacement of the anal cushions [2,3]. The exact treatment modality for hemorrhoids has been a controversy amongst surgeons for ages. Over the past few decades, surgeons have tried various methods and techniques to achieve the best results with minimal complications [2]. Numerous modalities have been developed over time to treat symptomatic cases ranging from simple dietary changes and bowel movement regulation, through several non-operative procedures, to different excision techniques for diseased anal cushions, but no method has been established as the gold standard so far [4,5]. Although surgical hemorrhoidectomy is more beneficial in cases presenting with severe symptoms, it is a relatively painful procedure [3]. First, the second- and third-degree hemorrhoids are generally treated by non-surgical techniques such as sclerotherapy, cryotherapy, photocoagulation, or laser. The rubber band ligation technique has been implemented for treating internal hemorrhoids of any grade for many years. This method requires no anesthesia, has a lower incidence of complications, and is economically suitable for the patient [5,6]. Hence, the study was conducted to compare the efficiency of the band ligation technique over conventional hemorrhoidectomy for the treatment of Grade III hemorrhoids.

METHODS

The study was done on 70 patients who were diagnosed with Grade III hemorrhoids from May 2019 to May 2020 in the department of general

surgery of a medical college. The patients were informed about the benefits and side effects of both the treatment modalities. Informed written consent was taken before carrying out the procedures. The exclusion criteria were based on the elimination of the patients with severe associated illnesses such as hypertension, uncontrolled diabetes, and coagulation disorders. The eligible patients were randomly divided into Group A (35 patients) who were treated with the rubber ligation technique and Group B (35 patients) who were subjected to treatment by conventional hemorrhoidectomy. The data collected were subjected to statistical analysis by applying an unpaired t-test using SPSS 19 version software.

RESULTS

The difference in terms of average age between the two groups was comparable ($p > 0.05$; $t = 1.82$; $df = 68$). However, the operative time was significantly lower in Group A than in Group B ($p < 0.0001$; $t = 11.45$; $df = 38$). Furthermore, no intraoperative bleeding occurred in Group A patients, which was significant in Group B patients ($p < 0.0001$; $t = 47.82$; $df = 68$). The time-lapse between surgery and the first bowel movement was less in Group A patients than in Group B ($p < 0.0001$; $t = 15.87$; $df = 68$). The number of days in terms of hospitalization was less in Group A than in Group B patients ($p < 0.0001$; $t = 9.24$; $df = 68$). After the operative procedure, the requirement for analgesics in terms of the number of tablets taken by the patient was significantly lower in Group A than in Group B ($p < 0.0001$; $t = 17.82$; $df = 68$). The time required for wound healing was significantly lower in Group A than in Group B ($p < 0.0001$; $t = 19.82$; $df = 68$) (Table 1).

Overall, the post-operative complications such as urinary retention, bleeding, incontinence of flatus, external skin tags, recurrence, and stenosis of the anal canal were more in Group than Group A (Table 2).

Table 1: Distribution of the patients as per the various study variables

Study variables	Group A (Mean±SD) (n=35)	Group B (Mean±SD) (n=35)	p-value (t-unpaired)
Average age (yrs.)	46±2.92 yrs.	49±5.13 yrs.	p>0.05; t=1.82; df=68
Operative time (min)	17±7.23	40±6.34	p<0.0001; t=11.45; df=38
Intraoperative bleeding	10.21±2.92 ml	64±5.72 ml	p<0.0001; t=47.82; f=68
Time to first bowel movement (h)	15.41±4.5 h	34±2.14 h	p<0.0001; t=15.87; df=68
Average hospital stay (Days)	2.35±1.23 days	4.16±2.93 days	p<0.0001; t=9.24; df=68
Average analgesic required (No. of Tab.)	8±3 Tabs	26±3.1 Tabs	p<0.0001; t=17.82; df=68
Wound healing (Days)	10±3.92 days	31±4.72 days	p<0.0001; t=19.82; df=68

Table 2: Distribution of the patients as per post-operative complications in two different treatments groups

Complications	Group A (n=35)	Group B (n=35)
Urinary retention	1 (2.85)	4 (11.42%)
Bleeding	1 (2.85)	2 (5.71%)
Incontinence of flatus	1 (2.85)	4 (11.42%)
External tags	1 (2.85)	5 (14.28%)
Recurrence	1 (2.85)	1 (2.85%)
Anal stenosis	0 (0)	2 (5.71%)
Total	6 (17.14)	18 (51.42%)

DISCUSSION

The first known record of this hemorrhoids dates back to 1700 BCE Egyptian papyrus. In 460 BCE, Hippocrates suggested a treatment similar to modern rubber band ligation using a needle and tying them with thick woolen thread [7-10]. Despite centuries of studies, precise etiology is still a dilemma since the disease presents with various symptoms. Hemorrhoids affect about 4.7–39.8% of the general population [8,11]. The anatomical and histological classifications given to characterize the disease are based on studies in the past 30 years, leading to the development of several novel treatment options. This technique of banding or ligating the hemorrhoidal mass has laid the foundation of many methods over decades [12]. The rubber band ligation technique was introduced by Blaisdell in 1958 but popularized by Barron. The shrinkage of vessels supplying hemorrhoids leads to ulceration and sloughing, which eventually heals over time [12,13]. The location of the dentate line by the surgeon is critical as operating the lesion above this level helps reduce pain and discomfort. This technique yields good results in cases with Grades II, III, and even IV hemorrhoids. Barron's technique originally implicated the ligation of one hemorrhoid at a time and further bandings at intervals of 3 weeks [13]. However, studies conducted over the period suggest no significant increase in discomfort to the patient or any other complications, with multiple bandings in a single procedure [14,15]. None of the study group patients had symptoms of anal stenosis during the study. Larger trials and meta-analyses reveal that rubber band ligation is more effective and less likely to require any further treatment [16].

In the present study, the difference between the two groups in average age was comparable ($p>0.05$; $t=1.82$; $df=68$). The operative time was significantly lower in Group A than in Group B ($p<0.0001$; $t=11.45$; $df=38$). Intraoperative bleeding was nil to minimal in Group A compared to Group B ($p<0.0001$; $t=47.82$; $df=68$). The time-lapse between the procedure and the first bowel movement (hr) was significantly lower in Group A than in Group B ($p<0.0001$; $t=15.87$; $df=68$). The number of days of hospitalization was also lower in Group A than in Group B ($p<0.0001$; $t=9.24$; $df=68$). The average number of doses of analgesics required was significantly lower in Group A than in Group B ($p<0.0001$; $t=17.82$; $df=68$). The time for wound healing was significantly lower in Group A than in Group B ($p<0.0001$; $t=19.82$; $df=68$). The overall post-operative complications were more in Group B (51.42%) as compared to Group A (10%). The complications such as urinary retention, bleeding, incontinence of flatus, external tags recurrence, and anal stenosis were more common in Group B than in Group A. The results of the present

study were similar to those in the study by Nikam *et al.* During the first follow-up, the success rate for Grade II hemorrhoids was 85% (35/41) as compared to 21% (4/19) in Grade III hemorrhoids. The unsuccessful 20 patients were subjected to repeat surgery by banding. However, only two patients responded to the procedure. At the end of 6 weeks, 36 patients with Grade II hemorrhoids (88%) were free of the lesion. The failure rate was higher for Grade III hemorrhoids (68.42%, $n=13$) [16].

CONCLUSION

The band ligation technique is preferred over the conventional approach for the treatment of Grade III hemorrhoids, as it involves a much lower risk of pain and a shorter recovery period as compared to the surgical methods. This procedure is a safe, effective, less time-consuming, low-cost, and easy-to-use method. The operative outcomes such as minimal intraoperative bleeding, less time-lapse between procedure and the first bowel movement, the lesser requirement for post-operative analgesics, and low morbidity indicate that the rubber band ligation method is better as compared to a conventional hemorrhoidectomy. However, the location of the dentate line is an important aspect of the success of the procedure. Further studies with a larger sample group can be conducted in the future to establish a solid conclusion.

AUTHORS' FUNDING

None, as the study was conducted on patients admitted after being diagnosed with hemorrhoids in the surgery department of the medical college.

CONFLICTS OF INTEREST

None.

REFERENCES

- Hardy A, Chan CL, Cohen CR. The surgical management of hemorrhoids-a review. *Dig Surg* 2005;22:26-33. doi: 10.1159/000085343, PMID 15838168
- Phillips RK, Hollingshead JR. Hemorrhoids: Current diagnosis and treatment. *Postgrad Med J* 2016;92:4-8.
- Brown SR, Tiernan JP, Watson AJ, Biggs K, Shephard N, Wailoo AJ, *et al.* Hemorrhoidal artery ligation versus rubber band ligation for the management of symptomatic second-degree and third-degree hemorrhoids (Hubble): A multicentre, open-label, randomized controlled trial. *Lancet* 2016;388:356-64.
- Lohsiriwat V. Treatment of hemorrhoids: A coloproctologist's view. *World J Gastroenterol* 2015;21:9245-52. doi: 10.3748/wjg.v21.i31.9245, PMID 26309351
- Lu LY, Zhu Y, Sun Q. A retrospective analysis of short and long term efficacies of RBL for hemorrhoids. *Eur Rev Med Pharmacol Sci* 2013;17:2827-30. PMID 24174368
- Nisar PJ, Scholefield JH. Managing hemorrhoids. *Br Med J* 2003;327:847-51. doi: 10.1136/bmj.327.7419.847, PMID 14551102
- Cataldo P, Ellis CN, Gregoreyk S, Hyman N, Buie WD, Church J, *et al.* Practice parameters for the management of hemorrhoids (revised). *Dis Colon Rectum* 2005;48:189-94. doi: 10.1007/s10350-004-0921-4, PMID 15711856
- Hulme-Moir M, Bartolo DC. Hemorrhoids. *Gastroenterol Clin North Am* 2001;30:183-97. doi: 10.1016/s0889-8553(05)70173-4, PMID 11394030

9. Sardinha TC, Corman ML. Hemorrhoids. Surg Clin North Am. 2002;82:1153-67, vi. doi: 10.1016/s0039-6109(02)00082-8, PMID 12516845
10. Available from: <https://www.en.wikipedia.org/wiki/EbersPapyrus>
11. Kombozoros VA, Skrekas GJ, Pissiotis CA. Rubber band ligation of symptomatic internal hemorrhoids: Results of 500 cases. Dig Surg 2000;17:71-6. doi: 10.1159/000018803, PMID 10720835
12. Armstrong DN. Multiple hemorrhoidal ligations: A prospective, randomized trial evaluating a new technique. Dis Colon Rectum 2003;46:179-86. doi: 10.1097/01.DCR.0000049224.86580.41, PMID 12576891
13. Longman RJ, Thomson WH. A prospective study of outcome from rubber band ligation of piles. Colorectal Dis 2006;8:145-8. doi: 10.1111/j.1463-1318.2005.00873.x, PMID 16412076
14. McLeod RS, MacRae HM. Comparison of hemorrhoidal treatment modalities. A meta-analysis. Dis Colon Rectum 1995;38:687-94. doi: 10.1007/BF02048023, PMID 7607026
15. Poen AC, Felt BR, Cuesta M, Deville W, Meuwissen SG. A randomized controlled trial of RBL versus infrared coagulation in the treatment of internal hemorrhoid. Eur J Gastroenterol Hepatol 2000;12:535-9.
16. Nikam V, Deshpande A, Chandorkar I, Sahoo S. A prospective study of efficacy and safety of rubber band ligation in the treatment of Grade II and III hemorrhoids-a western Indian experience. J Colorectal (Rio J) 2018;38:189-93.