

EFFECTIVENESS OF HAEMORRHOIDAL ARTERY LIGATION VIA PALPATORY

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ABSTRACT

Objective: To determine the effectiveness of the haemorrhoidal artery ligation via palpatory method among patients with grade II and III hemorrhoids.

Study Design: Observational prospective study.

Place and Duration of Study: The study was conducted at Combined Military Hospital Multan where with hemorrhoids were operated between May to Nov2018.

Methodology: A total of 121 patients participated in this study. Patients included in the study were aged between 20-60 years of age with grade II and III hemorrhoids. Patients were selected from out-patient department. They were explained the purpose of the study and those who consented to participate in the study were enrolled through a written consent form. Digital rectal examination was done under spinal anesthesia followed by proctoscopy and hemorrhoids were identified. Split proctoscope was passed and hemorrhoids were isolated one by one. Haemorrhoidal artery was palpated sutured with vicral 3/0. Follow up at 3weeks and 8 weeks.

Results: Male respondents accounted for 50 (41.3%) whereas their female counterparts comprised 71 (58.7%). The mean age of the male and female respondents was 43.76 ± 10.08 and 44.52 ± 10.59 years respectively. Out of 121 patients that underwent haemorrhoidal artery ligation, only 33 (27.3%) had post-operative complications. Most of the patients had rectal bleeding followed by post-operative defecation pain, anal fissure, fistula in ano and recurrence

Conclusion: In conclusion, palpatory method is painless, less invasive, has less complications and is safe alternative to open hemorrhoidectomy where Doppler guided haemorrhoidal ligation equipment is not available.

Keywords: Artery ligation, Haemorrhoidal artery, Palpatory method.

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INTRODUCTION

Haemorrhoidal disease is a condition where patients complain of painless blood loss especially during defecation possibly accompanied by the prolapsing tissue. Hemorrhoid is a common condition one in three people has this condition¹. In 2014/15 more than 30,000 procedures were performed in England². Hemorrhoids are believed to result from a laxity of supporting tissue with age that causing mucosal prolapse^{3,4}, for others; hemorrhoids are due to dysfunction of blood flow in the arterio-venous shunts with dilatation and bleeding eventually resulting in prolapse⁵.

Hemorrhoids are classified depending on

their position in relation to the dentate line. External hemorrhoids are located below the dentate line while internal hemorrhoids are located above it. Internal hemorrhoids are further classified as first-degree, second-degree, third-degree or fourth degree depending on the severity of the prolapse⁶. Among hemorrhoids patients approximately 40% experience asymptomatic hemorrhoids⁷. Most commonly reported symptom among patients with internal hemorrhoids is bleeding⁷. Bleeding is usually associated with defecation which is always painless with bright red blood at the end of defecation⁷. Other symptoms include sensation of tissue prolapse usually accompanied with mucus discharge, sensation of perianal fullness, irritation of perianal skin and mild fecal incontinence. Pain is uncommon in internal hemorrhoids compared to external hemorrhoids⁷.

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The choice of treatment for hemorrhoid disease depends on the patient's age, comorbidities the patient has and severity of symptoms. Treatment options range from dietary advice to surgical options^{8,9}. Many hemorrhoids treatment methods have been adopted and used across the globe¹⁰. The approach selected for treatment depends on the grade of hemorrhoids¹⁰. Dietary and lifestyle modifications can be used for medical treatment of grade I, II, III, and IV hemorrhoid diseases. Dietary changes include increasing fiber intake that reduces shearing action of passing hard stool; lifestyle modifications include reducing fat consumption, exercising, avoiding straining and increasing fluid intake^{11,12}.

Non-surgical procedures for internal hemorrhoids include rubber band ligation, infrared coagulation and sclerotherapy. Rubber band ligation is commonly used for grade II and III internal hemorrhoids¹³. Sclerotherapy and infrared coagulation are commonly prescribed for patients with grade I and II internal hemorrhoids and patients on anticoagulants. Both rubber ligation and sclerotherapy do not require anesthesia¹⁴.

Surgical procedures are usually done when there are continued symptoms despite application of conservative approaches (dietary and lifestyle). Surgery is the first treatment of choice for patients symptomatic of grade III and IV hemorrhoids. Surgical approaches include hemorrhoidectomy, stapled hemorrhoidopexy and doppler-guided haemorrhoidal artery ligation¹². Morinaga *et al* devised a technique based on Doppler identification and suture ligation that proved crucial in treating patients with hemorrhoids¹⁵. The main aim of arterial ligation is to block arterial blood flow inducing shrinkage of the corpus cavernosum recti resulting in a lack of blood flow to the pathological haemorrhoidal tissue¹⁵. This study will determine the effectiveness of haemorrhoidal artery ligation via palpatory among patients with grade II and III hemorrhoids.

METHODOLOGY

This observational prospective study was conducted at Combined Military Hospital Multan

where patients with hemorrhoids were operated between May to November 2018. Patients included in the study were aged between 20-60 years with grade II and III hemorrhoids we classified hemorrhoids in IV grades. Patients were selected from out-patient department. They were explained the purpose of the study and those who consented to take part in the study were enrolled through a written consent form.

Sample size was calculated using Raosoft sample size calculator, keeping confidence level of 95% with an error margin of 5%; population size 150 and response distribution 50%, sample size was 109. Exclusion criteria included patients above 60 years and below 20 years of age; patients with malignant perianal disorders; acute perianal disease such as perianal abscesses, complicated haemorrhoids (e.g., thrombosis), acute/chronic anal fissure, perianal sinus or fistula; history of a previous Anorectal surgery; and presence of a clinically significant cardiovascular, respiratory, renal, hepatic or metabolic disorder.

Patient was given spinal anesthesia and placed in lithotomy position; digital rectal examination followed by proctoscopy was done hemorrhoids identified. Special proctoscope with slit was passed and hemorrhoids were isolated one by one. Haemorrhoidal artery was palpated; suturing was done with vicryl 3/0 suture at the site of arterial pulsation about 1-2cm proximal to the dentate line. Interlocking continuous sutures were applied along the length of artery. Suturing was done for all the other hemorrhoids identified surgical gauze covered with lignocaine gel was inserted into anal canal. Preoperatively all the patients were given single dose of antibiotic cefazolin 1 gram. Post operatively all the patients were given same stool softener, analgesic (paracetamol) and daflon 500mg/day for 10 days.

Follow up was carried out for 3 weeks and 3 months for postoperative defecational pain, any fistula formation, rectal bleeding, anal stenosis, anal fissure, any recurrence, hospital stay and return to normal daily activity. Information

gathered was entered and processed by SPSS Statistics version 20.

RESULTS

A total of 121 patients took part in this study where male respondents accounted for 41.3% (n=50) and their female counterparts 71 (58.7%) (table-I).

Male respondents accounted for 50 (41.3%) whereas their female counterparts comprised of 71 (58.7%). The mean age of the male respondents was 43.76 ± 10.08 years whereas the mean

Table-I: Gender of respondent.

		Frequency	Percentage
Valid	Male	50	41.3
	Female	71	58.7
	Total	121	100.0

Table-II: Post operative recurrence among patients.

	Frequency of Post-operative complications on 3rd weeks of follow up	Frequency of Post-operative complications on 8th week follow up
Post-operative defecation pain	18%	3%
Fistula	0%	1%
Per rectal bleed	9%	2%
Anal fissure	3%	1%
Recurrence	0%	1%
Total	30%	8%

age of female was 44.52 ± 10.59 years. Out of 121 patients that underwent haemorrhoidal artery ligation, 38 (31.4%) had post-operative complications. Most of the patients had post-operative defecation pain 21 (17.3%), per rectal bleeding 11 (9.1%); 4 (3.3%) had anal fissure, 1 (0.83%) developed fistula-in-ano and 1 (0.83%) had recurrence as shown in table-II.

DISCUSSION

The study took into consideration the age, comorbidities and the severity of the hemorrhoids. The approach is similar to the findings which indicate that the choice of the treatment strategies depends on the demographic characteristics of the patients specifically age, related comorbidities that the patient has and the

severity of symptoms⁸. Patients with comorbidities such as malignant perianal disorders; acute perianal disease such as perianal abscesses, complicated haemorrhoids (e.g., thrombosis) and acute/chronic anal fissure, perianal sinus or fistula; history of a previous ano-rectal surgery; and presence of a clinically significant cardiovascular, respiratory, renal, hepatic or metabolic disorder were not included in the study. The procedure collaborates with study conducted by Liu *et al*, who excluded all patients with comorbidities from taking part into the doppler guided hemorrhoidal artery ligation surgical procedure to eliminate haemorrhoids⁹.

This study involved haemorrhoidal artery ligation via palpatory among patients with grade II and III hemorrhoids to treat hemorrhoids among 121 patients. This study goes hand in hand with the Arrezo *et al*¹⁰ who highlighted several treatment methods for hemorrhoids. Among these methods include rubber band ligation approach, procedure for prolapse and hemorrhoids. The approach selected for the treatment of the hemorrhoids depends on the Grade of hemorrhoids¹⁰.

In addition, surgical procedures are usually done when there is continued symptoms despite application of conservative approaches (dietary and lifestyle approaches) and non-surgical procedures. These procedures are conducted to treat grade II, III, and IV internal hemorrhoids¹⁴. These surgical approaches include hemorrhoidectomy, stapled hemorrhoidopexy and doppler-guided hemorrhoidal artery ligation¹². Morinaga *et al*, also came up with the technique that would play major role in treating patients with hemorrhoids based on the doppler identification and suture ligation approaches¹⁵. The main aim of the arterial ligation is to block the arterial blood flow with the aim of inducing the shrinkage of the corpus cavernosum recti as a result of the lack of blood flow to the pathological hemorrhoidal tissue¹⁵.

The complications found include post-operative defecation pain, rectal bleed, proctitis, and

fistula. The finding is similar to the study conducted by authors who found out that the effects of HAL on prolapse complaints seem to be less severe and favourable as compared to other approaches^{15,16}.

This study reported that more than 68.6% of the participants didn't have any complains during the follow up period. The finding is similar to a study conducted by Schuurman who reported that 70% of the patients did not need any additional treatment after the arterial ligation procedure done on them¹⁷. The finding collaborates with the study conducted by several authors who reported complications such as recurrence including re-bleeding after a one year follow up period among the 14 patients¹⁸. The recurrence rates were also low in studies conducted by authors in different settings where they reported recurrence rates of 15%, 9% and 38% among the patients with grade II, III and IV hemorrhoids^{19,20}. Prolapse recurrence was only considered among 10% of the patients and there was no significant difference between other studies and this study finding¹⁹. Another study conducted by Faucheron *et al* reported 9% recurrence rate among the patients after 34 months of the follow-up since it included more than 100 patients with grade IV hemorrhoids²¹.

In addition, the finding collaborates with the studies conducted by several authors who reported that the process has good tolerance across various studies. The studies reported post-operative pain among 10-55% of the patients who underwent the procedure^{22,23}. Bleeding was also reported among 1-12% of the patients in different studies conducted^{22,23-25}, whereas hemorrhoidal thrombosis was reported among 5% of the subjects^{22,24}. The finding of the study is similar to the finding of the study which reported RBL as postoperative complications among 16% of the patients, minor bleeding among 4%, and 12% patients reported severe pain. Another study also reported severe pain that led to the use of systemic analgesics which is associated to ischemia induced by the procedure. Other studies also reported postoperative pain among patients

between 1 to 51%. Another study conducted by Forlini *et al*, also reported bleeding among 2.4% of the patients who underwent the procedure after a period of week. In another study Nakeeb *et al.*, reported postoperative complications such as pain (4%), rectal bleeding (4%) and vasovagal symptoms among 1.3% patients.

The study focused on patients with grade II and III hemorrhoids who underwent the arterial ligation procedure. The finding is similar to the study conducted by Wilkerson *et al* who also focused on the patients who had grade II and III hemorrhoidal disease where they were treated with arterial ligation procedure¹⁶. They also reported satisfaction among the patients after the follow-up period of 30 months.

CONCLUSION

Haemorrhoidal artery ligation via palpatory method is efficient, safe, requires shorter hospital stay, easy to perform and can be used where Doppler guided haemorrhoidal ligation is not available, indicating that this method is a good and effective alternative treatment option for grade-II and III haemorrhoids.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

REFERENCES

- Loder PB, Kamm MA, Nicholls RJ, Phillips MRKS. Haemorrhoids: pathology, pathophysiology and aetiology. *Br J Surg* 1994; 81(7): 946-54.
- NHS Digital. IC NHS Hospital episode statistics (procedure search) 2014/15. 2016. <http://www.hesonline.nhs.uk>. 2016.
- Scheyer M, Antonietti E, Rollinger G, Mall H, Arnold S. Doppler-guided hemorrhoidal artery ligation. *Am J Surg* 2006; 191: 89-93.
- Arnold S, Antonietti E, Rollinger G, Scheyer M. Doppler ultrasound assisted hemorrhoid artery ligation. A new therapy in symptomatic hemorrhoids. *Chirurg* 2002; 73(2): 269-73.
- Kaidar-Person O, Person B, Wexner SD. Hemorrhoidal disease: A comprehensive review. *J Am Coll Surg* 2007; 204(1): 102-17.
- Banov L, Knoepp LF, Erdman LH, Alia RT. Management of hemorrhoidal disease. *J S C Med Assoc* 1985; 81(7): 398-401.
- Riss S, Weiser FA, Schwameis K. The prevalence of hemorrhoids in adults. *Int J Colorectal Dis* 2012; 27(2): 215-20.
- Iyer VS, Shrier I, Gordon PH. Long-term outcome of rubber band ligation for symptomatic primary and recurrent internal hemorrhoids. *Dis Colon Rectum* 2004; 47(8): 1364-70.
- Liu H, Yang C, Chen B, Wu J, He H. Clinical outcomes of Doppler-guided haemorrhoidal artery ligation: a meta-analysis. *Int J Clin Exp Med* 2015; 8(4): 4932-39.

10. Arezzo A, Podzemny V, Pescatori M. Surgical management of hemorrhoids. state of the art. *Ann Ital Chir* 2011; 82(1): 163-72.
 11. Sun Z, Migaly J. Review of Hemorrhoid Disease: Presentation and Management. *Clin Colon Rectal Surg* 2016; 29(1): 22-29.
 12. Alonso-Coello P, Mills E, Heels-Ansdell D. Fiber for the treatment of hemorrhoids complications: a systematic review and meta-analysis. *Am J Gastroenterol* 2006;101(1): 181-88.
 13. Iyer VS, Shrier I, Gordon PH. Long-term outcome of rubber band ligation for symptomatic primary and recurrent internal hemorrhoids. *Dis Colon Rectum* 2004; 47(8): 1364-70.
 14. MacRae HM, McLeod RS. Comparison of hemorrhoidal treatment modalities. A meta-analysis. *Dis Colon Rectum* 1995; 38(7): 687-94.
 15. Morinaga K, Hasuda K, Ikeda T. A novel therapy for internal hemorrhoids: Ligation of the hemorrhoidal artery with a newly devised instrument (moricorn) in conjunction with a doppler flowmeter. *Am J Gastroenterol* 1995; 90(2): 610-13.
 16. Wilkerson PM, Strbac M, Reece-Smith H, Middleton SB. Doppler-guided haemorrhoidal artery ligation: Long-term outcome and patient satisfaction. *Colorectal Dis* 2009; 11(2): 394-400.
 17. Schuurman PJ. Artery ligation in the treatment of hemorrhoidal disease. Thesis, Utrecht University, the Netherlands 2012. ISBN: 978-90-393-5820-7.
 18. Jeong WJ, Cho SW. One year follow-up result of doppler-guided hemorrhoidal artery ligation and recto-anal repair in 97 consecutive patients. *J Korean Soc Coloproctol* 2011; 27(6): 298-302.
 19. Infantino A, Bellomo R, Dal Monte PP, Salafia C. Transanal haemorrhoidal artery echodoppler ligation and anopexy (THD) is effective for II and III degree haemorrhoids: a prospective multicentric study. *Colorectal Dis* 2010; 12(8): 804-09.
 20. Ratto C, Donisi L, Parello A, Litta F, Doglietto GB. Evaluation of transanal hemorrhoidal dearterialization as a minimally invasive therapeutic approach to hemorrhoids. *Dis Colon Rectum* 2010; 53(7): 803-11.
 21. Faucheron JL, Poncet G, Voirin D, Badic B, Gangner Y. Doppler-guided hemorrhoidal artery ligation and rectoanal repair (HAL-RAR) for the treatment of grade IV hemorrhoids: long-term results in 100 consecutive patients. *Dis Colon Rectum* 2011; 54(1): 226-31.
 22. Felice G, Privitera A, Ellul E, Klaumann M. Doppler-guided hemorrhoidal artery ligation: an alternative to hemorrhoidectomy. *Dis Colon Rectum* 2005; 48(11): 2090-93.
 23. Bursics A, Morvay K, Kupcsulik P, Flautner L. Comparison of early and 1-year follow-up results of conventional hemorrhoidectomy and hemorrhoid artery ligation: a randomized study. *Int J Colorectal Dis* 2004; 19(2): 176-80.
 24. Sohn N, Aronoff JS, Cohen FS, Weinstein MA. Transanal hemorrhoidal dearterialization is an alternative to operative hemorrhoidectomy. *Am J Surg* 2001; 182(5): 515-19.
 25. Greenberg R, Karin E, Avital S, Skornick Y, Werbin N. First 100 cases with doppler-guided hemorrhoidal artery ligation. *Dis Colon Rectum* 2006; 49(4): 485-59.
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