https://doi.org/10.29309/TPMJ/2023.30.07.7355

The Professional Medical Journal
www.theprofesional.com
2023, Volume, 30 Issue, 07

ORIGINAL ARTICLE

Topical Calcium channel blockers for effective post operative analgesia for hemorrhoidectomy patients; A Randomized Control Trial at a Tertiary Care Hospital.

Rubina Shahzad[1], Sehrish Siddique[2], Haniyah Anwar[3], Jahangir Sarwar Khan[4]

Article Citation: Shahzad R, Siddique S, Anwar H, Khan JS. Topical Calcium channel blockers for effective post operative analgesia for hemorrhoidectomy patients; A Randomized Control Trial at a Tertiary Care Hospital. Professional Med J 2023; 30(07):881-885. https://doi.org/10.29309/TPMJ/2023.30.07.7355

ABSTRACT… Objective: To compare the mean pain scores after hemorrhoidectomy in patients given topical calcium channel blocker and patients being given routine post-operative treatment only. **Study Design:** Randomized Controlled Trial. **Setting:** Surgical Department of Holy Family Hospital. **Period:** 7th January 2022 to 7th July 2022. **Material & Methods:** Patients fulfilling the inclusion criteria were divided into two groups. Group A patients will receive topical calcium channel blockers whole group B will receive conventional analgesic medications. Patients in both groups underwent open hemorrhoidectomy under saddle block anesthesia. At the end of procedure, a lignocaine gel-soaked pack was placed in rectum which was removed after 6 hours. The post-operative treatment of test group was similar in all regards except that they were given 2% diltiazem ointment to apply to perianal region twice a day. Oral stool softeners were started after NPO duration. The patients were advised to start warm sitz bath and application of 2% lignocaine gel to perianal region 12 hourly after removal of pack. The patients in both groups were compared for the degree of pain on the second post-operative day using visual analogue scale. **Results:** In this study, on comparison of mean pain scores after hemorrhoidectomy in patients given topical calcium channel blocker and patients being given routine post-operative treatment only shows that pain in Group-A was 5.89+0.80 and in Group-B 3.60+0.77, p value was 0.0001. **Conclusion:** Topical Calcium Channel Blockers are effective in managing post hemorrhoidectomy pain.

Key words: Hemorrhoidectomy, Mean Postoperative Pain Score, Topical Calcium Channel Blocker.

INTRODUCTION

Hemorrhoidectomy is one of the common procedures performed daily in operation theater of a hospital. Post operative pain following this procedure significantly hampers the recovery of the patient which leads to prolong hospital stay. Therefore, effective management of pain is one of most important aspects of the peri-operative care. Pain following hemorrhoidectomy is ranked 23rd out of 529 surgical techniques.[1] Pain at the surgical site is a bothersome issue that causes anxiety, constipation, retention of urine and extended hospital stay. Spasm of anal sphincter is one of the key mechanisms of post operative pain in hemorrhoidectomy patients.[2] Enhanced recovery protocols laydown a number of key factors which if appropriately targeted can lead to a better outcome in the post operative period. One such factor is the post operative pain.[3] Various drugs can be utilized to control the pain such as NSAIDS and Opioids in the post operative period. However, all of these drugs have a number of side effects. NSAIDs are associated with dyspepsia, GI upset, bronchospasm and increase risk of bleeding.[4] On the other hand; Opioids are associated with nausea, vomiting, constipation, respiratory depression and abuse potential.[5] These drugs have to given systemically making a patient more liable to their adverse effects. On the other hand, side effects of calcium channel blockers are minimal and their incidence is further reduced if their topical form is utilized. They are being used for treatment in Angina and Hypertension due to their minimal side effects.[6,7]

1. MBBS, FCPS (General Surgery), Senior Registrar Surgery, Holy Family Hospital, Rawalpindi.
2. MBBS, FCPS (General Surgery), Senior Registrar Surgery, Holy Family Hospital, Rawalpindi.
3. MBBS, House Officer Surgery, Rawalpindi Medical University and Allied Hospitals, Rawalpindi.
4. MBBS, FCPS (General Surgery), FRCS, FACS, FICS, Dip. M.Ed, Head Surgical Unit 1, Holy Family Hospital, Rawalpindi.

Correspondence Address:
Dr. Haniyah Anwar
Department of Surgery
Rawalpindi Medical University and
Allied Hospitals, Rawalpindi.
haniyahanwar@yahoo.com

Article received on: 21/11/2022
Accepted for publication: 02/05/2023

They can provide analgesia by reducing the anal sphincter tone. Therefore, application of calcium channel blockers in the peri-anal area can provide adequate analgesia with minimal side effects; following hemorrhoidectomy. Our study will compare the effect of topical diltiazem to standard analgesic medications in providing post-operative analgesia among hemorrhoidectomy patients.

MATERIAL & METHODS

This randomized control trial was carried out surgical department of Holy Family Hospital after ethical approval (Letter number 163/IREFRMU 2022) during 6 months period. Patient fulfilling the inclusion criteria Patients of both genders and 25-60 years any age diagnosed as having third degree hemorrhoids on the basis of bleeding PR and something coming out of anus diagnosed on history and prolapsed hemorrhoids diagnosed at clinical examination were enrolled in the study.

The sample size calculated with the help of WHO calculator came out to be 70 (35 in each group). The patients were divided into two random groups using computer generated random numbers. Both groups underwent hemorrhoidectomy under saddle anesthesia and received same treatment post operatively which involved placing lignocaine gel-soaked pack in rectum at the end of surgery which was removed after 6 hours. Patients in both groups remained NPO for 6 hours and receive intravenous antibiotics (3rd generation cephalosporins and metronidazole) at scheduled intervals. Analgesia in the form of intramuscular diclofenac sodium was given at 8 hours intervals. Oral stool softeners were started after NPO duration. The patients were advised to start warm sitz bath and application of 2% lignocaine gel to perianal region 12 hourly after removal of pack. Patients in group B were also given 2% diltiazem ointment to apply to perianal region twice a day. Additional analgesics were given to patients if and when required. The patients in both groups were compared for the degree of pain experienced by them on the second post-operative day by me. This information was collected using visual analogue scale ranging from 0 to 10; 0 being no appreciable pain and 10 meaning worst possible pain.

Data was transferred to SPSS version 26 and analysis was done in which quantitative variables were expressed as mean scores and standard deviation while qualitative variables were expressed as frequencies. Independent sample t-test was used to compare the pain scores in both groups. P-value less than 0.05 was taken as significant. Effect modifiers like age, gender, BMI, history of diabetes mellitus was controlled by stratification. Post stratification independent sample t test was applied. P value <0.05 was significant.

RESULTS

Both groups showed a male predominance 65.71% in group A vs 62.86% in group B. Age distribution of the patients is shown in table below:

Age (in years)	Group-A (n=35)		Group-B (n=35)	
	No. of Patients	%	No. of Patients	%
25-40	18	51.43	17	48.57
41-60	17	48.57	18	51.43
Total	35	100	35	100

Table-I. Age distribution (n=70)

Mean BMI were comparable among two groups with group A patients having a BMI of 29.45 ± 3.15 while group B patients had a mean BMI of 29.46 ± 3.21. Similarly prevalence of diabetes mellitus was comparable among two group with 40% of group A patients had diabetes while 45.71% of group B patient had diabetes.

Comparison of mean pain scores showed that intervention group i.e. Group B had significantly lower pain scores 3.60+0.77 while in Group-A mean pain score was 5.89+0.80. The difference was statistically significant with a p value was 0.0001. Effect modifiers like age, gender, BMI, history of diabetes mellitus was controlled by stratification. Post stratification independent sample t test was applied. P value <0.05 was significant. Statistical analysis which is depicted in following tables showed that these effect modifiers had no effect on efficacy of treatment with topical calcium channel blockers.

Age: 25-40 years

Pain Score	Group-A (n=35)		Group-B (n=35)	
	Mean	SD	Mean	SD
	5.67	0.77	3.53	0.87

P value=0.0001

Age: 41-60 years

Pain Score	Group-A (n=35)		Group-B (n=35)	
	Mean	SD	Mean	SD
	6.12	0.78	3.67	0.69

Table-II. Stratification for comparison of mean pain scores after haemorrhoidectomy in patients given topical calcium channel blocker and patients being given routine post-operative treatment only with regards to age (n=70)

P value=0.0001

MALE

Pain Score	Group-A (n=35)		Group-B (n=35)	
	Mean	SD	Mean	SD
	6.00	0.71	3.80	0.86

P value=0.0001

FEMALE

Pain Score	Group-A (n=35)		Group-B (n=35)	
	Mean	SD	Mean	SD
	5.82	0.85	3.45	0.69

Table-III. Stratification for comparison of mean pain scores after haemorrhoidectomy in patients given topical calcium channel blocker and patients being given routine post-operative treatment only with regards to gender (n=70)

P value=0.0001

H/o Diabetes Mellitus

Pain Score	Group-A (n=35)		Group-B (n=35)	
	Mean	SD	Mean	SD
	6.29	0.83	3.63	0.62

P value=0.0001

No H/o Diabetes Mellitus

Pain Score	Group-A (n=35)		Group-B (n=35)	
	Mean	SD	Mean	SD
	5.62	0.67	3.58	0.90

Table-IV. Stratification for comparison of mean pain scores after haemorrhoidectomy in patients given topical calcium channel blocker and patients being given routine post-operative treatment only with regards to history of diabetes mellitus (n=70)

P value=0.0001

<30

Pain Score	Group-A (n=35)		Group-B (n=35)	
	Mean	SD	Mean	SD
	5.82	0.73	3.65	0.81

P value=0.0001

>30

Pain Score	Group-A (n=35)		Group-B (n=35)	
	Mean	SD	Mean	SD
	6.00	0.91	3.53	0.74

Table-V. Stratification for comparison of mean pain scores after haemorrhoidectomy in patients given topical calcium channel blocker and patients being given routine post-operative treatment only with regards to BMI (n=70)

P value=0.0001

DISCUSSION

Hemorrhoids is a common surgical condition effecting millions of people worldwide. It commonly effects people of middle age group with higher incidence found between 45-65 years of age.[8] Hemorrhoids can be classified on the basis of their anatomical location whether they are present above or below the dentate line. Those present above are known as Internal hemorrhoids while the ones present below the dentate line are external hemorrhoids.[9] However, this relatively simple condition can be difficult to diagnose.[10] Accurate diagnose leads to prompt treatment and thus better patient outcomes. There are a number of treatment modalities for hemorrhoids including both medical and surgical.[9] Type of treatment employed depends upon the degree of prolapse. On the basis of degree of prolapse hemorrhoids are classified into four groups.[11] Surgical treatment

(Hemorrhoidectomy) is usually required for third and fourth degree hemorrhoids.[11] However, it is associated with significant post-operative pain.[11]

Kheng-Seong have stated in a critical review that even though new surgical approaches have promised to be less painful but recurrence is still an issue and proper post op management are still being sought.[12] Hemorrhoidectomy is carried out as a day care procedure and post operative pain can delay the hospital discharge thus adversely affecting the enhance recovery protocols. Therefore, effectively managing the post operative pain following hemorrhoidectomy is the key to better outcome. It was proposed long ago that post operative pain following hemorrhoidectomy could be due to spasm of anal sphincter.[13] Therefore, medicines which can relieve spasm of anal sphincter in the post operative period can lead to decrease pain and hence early hospital discharge. There are number of medicines for this such Glyceryl trinitrate and Calcium channel blockers which can be applied topically to the anal area.[9]

In a Meta-Analysis, 7 studies were analyzed which, out of which 5 presented analgesia amount after the application of diltiazem but due to heterogeneity of methods of measurement, the exact analgesia amount could not be synthesized.[14] Our study demonstrates the effect of topical diltiazem applied to anal area in relieving the post operative pain. When diltiazem group was compared to the control group; diltiazem was found to be effective in reducing the post operative pain with a p value of less than 0.05. The difference was again statistically significant when stratification was done for factors such as age, gender, BMI and Diabetes mellitus. Mean pain score in the diltiazem group was 3.60 ± 0.77 while in the control group was 5.89 ± 0.80. Our findings are similar with a number of studies.[11-14,17] In a study conducted it was found that diltiazem ointment significantly reduced post operative pain up to 6h following hemorrhoidectomy.[12] However in our study the calcium channel blockers were effective in providing analgesia up to 2 days. In another study conducted it was found that calcium channel blockers effectively provided analgesia upto 96th hour following hemorrhoidectomy.[13] Furthermore, Yue Yang, in his systematic review and a network Meta – Analysis stated that the diltiazem can effectively cause pain reduction post operatively after 1 week of hemorrhoidectomy.[18]

On the basis of comparison with other studies, one thing has been confirmed that the diltiazem is very effective in causing post-operative analgesia. However, the time it takes for the effective results has shown variation. We suggest further Randomized Control Trials for the proper determination of this time and to determine what might have caused this variation.

CONCLUSION

Topical application of diltiazem; a calcium channel blocker effectively provides analgesia following hemorrhoidectomy leading to better outcomes.

REFERENCES

1. Gerbershagen HJ, Aduckathil S, vanWijck AJ,PeelenLM, Kalkman CJ, Meissner W. **Pain intensity on the first day after surgery: A prospective cohort study comparing 179 surgical procedures.** Anesthesiology. 2013; 118:934-944.

2. Hiltunen KM, Matikainen M. **Anal manometric findings in symptomatic hemorrhoids.** Dis Colon Rectum. 1985; 28:807-809.

3. Tippireddy S, Ghatol D. **Anesthetic management for Enhanced Recovery after Major Surgery (ERAS).** InStatPearls [Internet] 2022 Sep 12. StatPearls Publishing.

4. Ghlichloo I, Gerriets V. **Nonsteroidal anti-inflammatory drugs (NSAIDs).** 2023 May.

5. Cohen B, Ruth LJ, Preuss CV. **Opioid analgesics.** InStatPearls [Internet] 2021 Oct 18. StatPearls Publishing.

6. Balla C, Pavasini R, Ferrari R. **Treatment of angina: where are we?.** Cardiology. 2018; 140(1):52-67.

7. Wright JM, Musini VM, Gill R. **First□line drugs for hypertension.** Cochrane Database of systematic reviews. 2018(4).

8. Lawrence A, McLaren ER. **External hemorrhoid.**

9. R Perry, K., 2022. **Hemorrhoids: Background, Anatomy, Etiology and Pathophysiology.** [online] Emedicine. medscape.com. Available at: <https://emedicine.medscape.com/article/775407-overview#a5> [Accessed 16 September 2022].

10. Idrees JJ, Clapp M, Brady JT, Stein SL, Reynolds HL, Steinhagen E. **Evaluating the accuracy of hemorrhoids: comparison among specialties and symptoms.** Diseases of the Colon & Rectum. 2019 1; 62(7):867-71.

11. Cristea C, Lewis CR. **Hemorrhoidectomy.** InStatPearls [Internet] 2022 Jul 4. StatPearls Publishing.

12. Ng KS, Holzgang M, Young C. **Still a case of "no pain, no gain"? An updated and critical review of the pathogenesis, diagnosis, and management options for hemorrhoids in 2020.** Annals of Coloproctology. 2020 Jun; 36(3):133.

13. Sugimoto T, Tsunoda A, Kano N, Kashiqagura Y, Hirose K, Sasaki T. **A randomized, prospective, double-blind, placebo-controlled trial of the effect of diltiazem gel on pain after hemorrhoidectomy.** World J Surg. 2013; 37:2454-7

14. Jin J, Unasa H, Bahl P, Mauiliu-Wallis M, Svirskis D, Hill A. **Can targeting sphincter spasm reduce post-haemorrhoidectomy pain? A systematic review and meta-analysis.** World Journal of Surgery. 2023 Feb; 47(2):520-33.

15. Lohsiriwat V, Jitmungngan R. **Strategies to reduce post-hemorrhoidectomy pain: A Systematic Review.** Medicina. 2022 12; 58(3):418.

16. Yadav S, Khandelwal RG, Om P, Ravindra K, Choudhary KL. **A prospective randomized double-blind study of pain control by topical calcium channel blockers versus placebo after Milligan–Morgan hemorrhoidectomy.** International Journal of Colorectal Disease. 2018; 33(7):895-9.

17. Huang YJ, Chen CY, Chen RJ, Kang YN, Wei PL. **Topical diltiazem ointment in post-hemorrhoidectomy pain relief: A meta-analysis of randomized controlled trials.** Asian journal of surgery. 2018 1; 41(5):431-7.

18. Sayadinia M, Hadavand A, Sayadinia M. **The effect of topical diltiazem on post-hemorrhoidectomy pain: A cohort study.** Hormozgan Med J. 2023; 27(2):89-92

19. Abidi SS, Bakhtiar N, Kerawala AA, Awan S. **Topical diltiazem ointment for post-hemorrhoidectomy pain. Journal of Ayub Medical College, Abbottabad: JAMC.** 2021 Jan 1; 33(1):125-8.

20. Yang Y, Feng K, Lei Y, Qiu L, Liu C, Li G. **Comparing the efficacy and safety of different analgesic strategies after open hemorrhoidectomy: A systematic review and network meta-analysis.** International Journal of Colorectal Disease. 2023 Jan 7; 38(1):4.

AUTHORSHIP AND CONTRIBUTION DECLARATION

No.	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	Rubina Shahzad	Contributed to discussion and resutls.	
2	Sehrish Siddique	Contributed to Data analysis.	
3	Haniyah Anwar	Contributed to Data Collection and data compiling.	
4	Jahangir Sarwar Khan	Final review of the article.	