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Original Article

Comparison of Post-Operative Analgesic Requirement in Patients undergoing Hemorrhoidectomy Under Caudal Epidural Anaesthesia Versus Saddle Anaesthesia

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ABSTRACT

***Objective*:** To compare post-operative analgesic requirements in patients undergoing hemorrhoidectomy under caudal epidural anaesthesia versus saddle anaesthesia.
***Study Design*:** Quasi Experimental Study.
***Place and Duration of Study*:** Combined Military Hospital, Rawalpindi Pakistan, Feb to Nov 2021.
***Methodology*:** The study was conducted on 200 patients who underwent hemorrhoidectomy during the study period. Patients were randomized into two groups. Group-A received caudal epidural anaesthesia, while Group-B received saddle anaesthesia. The pain at the surgical site was recorded on a visual analogue scale 04 hours and 08 hours after the surgical procedure. The difference in significant post-operative pain and the requirement of opioid analgesia was compared.
***Results*:** Out of 200 patients randomized into two groups, 96(48%) were categorized into Group-A, and 104(52%) were categorized into Group-B. The mean age of patients who were operated for hemorrhoids in our study was 41.56±6.98 years. Patients who received caudal epidural anaesthesia had more chances of not having significant post-operative pain at 04 and 08 hours after the surgery as compared to those who received saddle anaesthesia (p-value<0.05). The requirement of opioid analgesia at 02 hours was also statistically significantly less in these patients as well (p-value<0.05).
***Conclusion*:** The Use of caudal epidural anaesthesia during the haemorrhoidectomy emerged as better management for early post-operative pain as compared to the use of saddle anaesthesia. The requirement for opioid analgesia was higher in patients after two hours of surgery who received saddle block than those who were administered caudal epidural anaesthesia.

Keywords: Caudal epidural anaesthesia, Hemorrhoidectomy; pain; Saddle anaesthesia.

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INTRODUCTION

Anorectal surgeries make up a big chunk of surgeries performed by surgeons across the globe.[1] In Pakistan, anorectal surgery is not a separate specialty, and most of the cases are dealt with by general or laparoscopic surgeons.[2] Epidemiological data suggests that hemorrhoids are a common problem in our part of the world, and hemorrhoidectomy is a surgery performed in routine in secondary and tertiary care surgical units.[3]

Various specialties are evolving in a developing country like ours, and pain medicine is one of those specialties.[4] Physicians of various specialties have been getting advanced training in pain medicine and helping patients with acute and chronic pain due to various conditions.[5] Various anaesthesia techniques used for surgical procedures also alleviate post-operative pain and reduce the requirement of analgesic agents after the surgery, especially in the acute phase.[6]

Multiple anaesthesia techniques have been used for years to reduce post-operative pain among patients undergoing hemorrhoidectomy. Simsek *et al*. compared the effects of caudal block and saddle block techniques on post-operative analgesic consumption, the number of patients requiring analgesic agents, and initial analgesic requirement. They came up with the conclusion that caudal block was better in all the parameters they studied in both the groups for pain relief.[7] Bozkurt *et al*. compared levobupivacaine based caudal epidural anaesthesia and spinal anaesthesia in terms of Intraoperative hemodynamic changes and post-operative pain among patients undergoing perineal surgeries. They revealed that pain relief after the surgery was statistically significantly better in patients who received caudal anaesthesia than those who received spinal anaesthesia.[8] Shaw *et al*. recommended a multimodal approach for better

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results in these patients and preferred local blockade, preferably using longer-acting anesthetic agents for better post-operative pain relief.[9]

Pain has always been a worry for patients, especially those undergoing any surgical procedure. Pain has affective, mechanical, physical, and physiological components, and the threshold is different for each patient. Anesthetic modalities can be beneficial during the surgery and in the early post-operative period. A recent local study concluded that local anaesthesia infiltration was beneficial for several post-operative complications, including pain relief and the requirement of analgesic agents after the surgery.[10] Limited local data has been available regarding the use of various local anaesthesia techniques for this purpose. We, therefore, planned this study with the rationale of comparing post-operative analgesic requirements in patients undergoing hemorrhoidectomy under caudal epidural anaesthesia versus saddle anaesthesia.

METHODOLOGY

The quasi-experimental study was conducted at the Anaesthesia/Surgical Department, Combined Military Hospital, Rawalpindi, Pakistan from February to November 2021 after approval from the Ethical Review Board Committee (Letter no: 225/12/21). The sample size was calculated using the WHO Sample Size Calculator taking the population proportion of pain after hemorrhoidectomy as 22.2%.[11]

Inclusion Criteria: All patients of either gender, aged 18 to 65 years who underwent hemorrhoidectomy for grade III/IV hemorrhoids were included.

Exclusion Criteria: Patients with uncontrolled diabetes, hypertension, or any other physical illness, patients with a known ano-rectal or any other malignant condition were excluded. Those undergoing redo surgeries or who had immediate signs of any surgical complications, including infection, patients suffering from any chronic pain disorder or any psychiatric condition or using any illicit substance were excluded from the study.

The written informed consent from potential participants, patients who were undergoing hemorrhoidectomy at the Surgical Unit of CMH RWP were recruited after the application of inclusion/exclusion criteria laid down for this study. Routine antibiotics and pre-anesthetic medication were given to all the patients according to the recommendation of the treating consultant based on hospital guidelines. Patients were randomly divided into two groups via a lottery method (Figure). Group-A received the caudal epidural anaesthesia, while Group-B received the saddle anaesthesia.

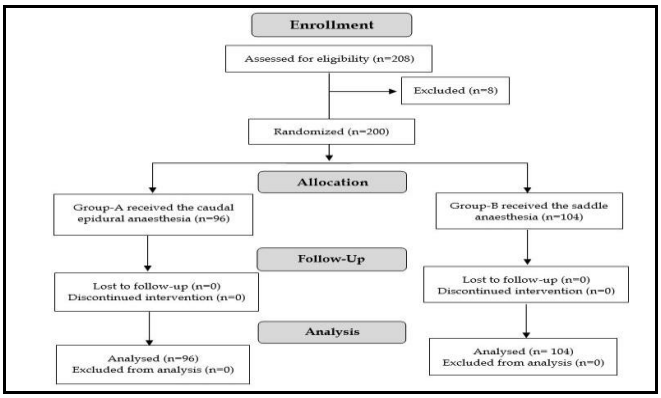

Figure: Patient Flow Diagram (n=200)

Surgical site pain was recorded on the visual analogue scale (VAS), 04 hours and 08 hours after the surgical procedure. For blinding, the health professional who assessed the pain and the person who evaluated the data did not know the group of the patient and details of which mode was used for the patient they have been assessing for the pain score. Patients also did not know about this information. A score of 6 on the visual analogue scale was taken as significant for pain. The requirement of opioid analgesia was also assessed on the same two points by the consultant surgeon or pain physician and recorded in the proforma especially designed for this study.

The consultant general surgeon did a Hemorrhoidectomy as per protocol.[12] Caudal anaesthesia was given by the consultant anesthetist by placing the patient in the lateral position and inserting a needle into the caudal space through the sacrococcygeal ligament.[13] Saddle block was also provided by the consultant anesthetist. Subarachnoid space was entered using a 25-gauge Quincke spinal needle at the L3–4 interspace with the patient sitting. The patient remained in the sitting position for 5 minutes after the local anesthetic injection.[14]

Statistical Package for Social Sciences (SPSS) version 24.0 was used for the data analysis. Quantitative variables with normal distribution were expressed as Mean±SD and qualitative variables were expressed as frequency and percentages. Chi-square test was applied to explore the inferential statistics. The association was considered significant if the *p*-value was ≤0.05 after applying the test.

RESULTS

Out of 200 patients randomized into two groups, 96(48%) were categorized into Group-A, and 104(52%) were classified into Group-B. 115(57.5%) were male, while 85(42.5%) were female. Table-I summarizes the general characteristics of study participants. The mean age of patients who were operated on for hemorrhoids in our study was 41.56±6.98 years. 131(65.5%) patients did not have significant pain at 04 hours, while 69(34.5%) patients had significant pain at 04 hours after the surgery. After 08 hours of surgery, 172(86%) patients did not experience significant pain, while 28(14%) had significant pain.

Table-I: Characteristics of Study Participants (n=200)

Characteristics	n(%)
Age (years)	
Mean±SD	41.56±6.98 years
Range (min-max)	21 years-60 years
Gender	
Male	115(57.5%)
Female	85(42.5%)
Type of Anaesthesia Technique	
Caudal epidural	96(48%)
Saddle	104(52%)
Significant Pain at 04 Hours	
No	131(65.5%)
Yes	69(34.5%)
Significant Pain at 08 Hours	
No	172(86%)
Yes	28(14%)

Table-II: Difference in the Significant Postoperative Pain and Requirement of Opioid Analgesia in Both the Groups (n=200)

Time Interval	Caudal Anaesthesia	Spinal Anaesthesia	*p*-value
Significant Pain at 04 hours			
No	72(75%)	59(51.7%)	0.006
Yes	24(25%)	45(48.3%)	
Significant Pain at 08 hours			
No	89(92.7%)	83(72.8%)	0.007
Yes	07(7.3%)	21(27.2%)	
Requirement of Opiate Analgesia within 4 hours			
No	90(93.75%)	85(74.5%)	0.008
Yes	06(6.25%)	19(25.5%)	
Requirement of Opiate Analgesia within 8 hours			
No	84(87.5%)	95(83.3%)	0.375
Yes	12(12.5%)	09(16.7%)	

Table-II shows Patients who received caudal epidural anaesthesia had more chances of not having significant post-operative pain at 04 hours (*p*-value-0.006) and 08 hours (*p*-value-0.007) after the surgery than those who received saddle anaesthesia. The requirement of opioid analgesia at 04 hours (*p*-value-0.008) was also statistically significantly less in these patients as well, while the provision of opiate analgesia was not statistically different after 08 hours of surgical procedure (*p*-value-0.375).

DISCUSSION

Post-operative pain relief in patients undergoing various types of surgeries has always been a challenge for the treating team. It becomes more complicated when the anorectal region is involved due to the complex anatomy and physiology of this region. Much emphasis has been laid on the type of anaesthesia technique and post-operative complications associated with the method used. Techniques may be more beneficial for early post-operative complications, including pain. We, therefore, conducted this study intending to compare post-operative analgesic requirements in patients undergoing hemorrhoidectomy under caudal epidural anaesthesia versus saddle anaesthesia.

Shon *et al*., compared the impact of various anaesthesia techniques on anal sphincter tone among patients undergoing multiple types of anorectal surgeries. In this regard, they concluded that saddle block was superior to both caudal block and lumbar epidural block.[15] Our study was different, and we compared the impact of the saddle and caudal block on early post-operative pain and found that the caudal epidural block was more effective. Still, both studies are relevant in the sense that

There are several differences between different types of regional anaesthesia techniques, and the treating team should evaluate each patient in light of these differences. Vadhanan *et al*. assessed the feasibility of ultrasound-guided caudal epidurals as a sole anaesthesia technique in adult patients undergoing minor anorectal procedures.[16] They revealed that this technique was very successful, and the target population had remarkable pain results. We did a comparative study and found out that caudal epidural technique is better than saddle technique for early post-operative pain relief in patients undergoing hemorrhoidectomy.

A systematic review was published in 2021 regarding the combination of lower extremity nerve blocks and their effect on post-operative pain and opioid consumption. [17] It concluded that these nerve blocks were an effective modality for post-operative pain relief and lowering the requirement for opioid analgesia. In our study, caudal epidural anaesthesia

emerged as better management for early post-operative pain than saddle anaesthesia.

Siddiqui *et al*. conducted an RCT on local anesthetic infiltration versus caudal epidural block for anorectal surgery.[18] They found that caudal epidural block provided better and longer-lasting analgesia than local anesthetic infiltration in their study participants. Our results supported the findings generated by Siddiqui *et al*., as the caudal epidural block was more effective in post-operative pain relief at 4 and 8 hours after the surgery.

LIMITATIONS OF STUDY

There were several limitations in this study. Pain threshold may be different in each patient included in the study; therefore, results could not be generalized. The treating physician assessed the need for opioid analgesia based entirely on his assessment. Randomized controlled trials can generate better results in this regard.

CONCLUSION

The use of caudal epidural anaesthesia during the hemorrhoidectomy emerged as better management for early post-operative pain as compared to the use of saddle anaesthesia. The requirement for opiate analgesia was higher in patients after two hours of surgery who received saddle block than those who were administered caudal anaesthesia.

Conflict of Interest: None.

Authors Contribution

Following authors have made substantial contributions to the manuscript as under:

WT, AS: Data acquisition, data analysis, drafting the manuscript, critical review, approval of the final version to be published.

HT, MASK: Study design, data interpretation, drafting the manuscript, critical review, approval of the final version to be published.

MASN, KB: Conception, data acquisition, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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