

ASSESSMENT OF POST-OPERATIVE PAIN CONTROL AFTER MAJOR ORTHOPAEDIC SURGERIES IN A TERTIARY CARE HOSPITAL: AN OBSERVATIONAL STUDY

Chhavi Goel¹, Preeti Sharma¹, Shashank Agarwal², Rajat Garg³, Fauzia R. Khan⁴, J. C. Dureja⁴

Received : 16/07/2023
Received in revised form : 27/08/2023
Accepted : 08/09/2023

Keywords:
Estimation, orthopaedic surgery, postoperative pain.

Corresponding Author:
Dr. Rajat Garg,
Email: dr.rajat@yahoo.co.in

DOI: 10.47009/jamp.2023.5.5.64

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2023; 5(5); 321-324



¹Assistant Professor, Department of Anaesthesia, Kalpana Chawla Government Medical College, Karnal, Haryana, India

²Assistant Professor, Department of Orthopaedics, Kalpana Chawla Government Medical College, Karnal, Haryana, India

³Assistant Professor, Department of Anaesthesia, N.C Medical College and Hospital, Israna, Panipat, Haryana, India.

⁴Professor, Department of Anaesthesia, Kalpana Chawla Government Medical College, Karnal, Haryana, India

Abstract

Background: The alleviation of postoperative pain results in earlier discharge from the hospital and a shorter hospital stay. The present research is done to estimate the quality of post-operative pain control after major orthopaedic surgeries in a tertiary care hospital. **Materials and Methods:** This prospective observational cross-sectional study was done in Kalpana Chawla Govt. Medical College and hospital, Karnal, over a period of six months. Total 365 patients at different age group of both genders were included. The pain score was estimated at different time interval for orthopaedic surgery using Visual Analogue Scale (VAS). **Result:** The median age of patients was 42 years. Majority of patients were males (72.6%). Subarachnoid block type of anaesthesia was given among majority of patients (71.8%) followed by Brachial plexus block (27.7%) and General anaesthesia (0.5%). VAS was significantly ($p < 0.0001$) lower among patients of Brachial plexus block than General anaesthesia. Pain severity was higher after 12 hours and 24 hours postoperatively. **Conclusion:** It was concluded that; pain score was significantly lower among patients of Brachial plexus block than General anaesthesia. Pain severity was higher after 12 hours and 24 hours postoperatively. Hence, better postoperative pain control medications should be provided for adequate pain relief and better patient satisfaction.

INTRODUCTION

A common reason people seek medical attention is pain. Acute postoperative pain that is poorly managed is linked to increased morbidity, functional impairment, and recovery times that are prolonged. According to reports from around the world, orthopaedic surgery often results in moderate to severe levels of postoperative pain. By reporting high levels of emotional stress and interference with daily activities, patients whose pain is brought on by a specific orthopaedic trauma can be distinguished from those whose pain is brought on by other causes.^[1] Pain is the most feared form of suffering after any major surgery. It is fairly common in post operative patients. Pain is described as "an unpleasant sensory and emotional experience resulting from actual or potential tissue damage" by the international association for the study of pain.^[2]

Postoperative pain management has made significant strides in recent years thanks to the extensive research that has gone into understanding and treating this condition. Ineffective postoperative pain management is still a widespread issue in healthcare. Patient's ignorance of the options available for pain management and their potential side effects has been identified as one of the obstacles to achieving optimal pain relief.^[3]

Following surgery, persistent postoperative pain is an unpleasant sensory and emotional experience.^[4] For surgical patients, postoperative pain management is a top priority. Numerous pathophysiological and psychological problems are brought on by insufficient pain relief.^[3] Any surgery can cause acute post operative pain, which develops suddenly. It is anticipated to be resolved quickly. It is directly connected to a particular mishap, injury, or disease. However, it frequently has multiple

dimensions. Sensation, emotion, and cognition are all involved in this acute postoperative pain.^[5] Despite the administration of an established standard dose of opioids, patients in the post-anaesthesia care unit (PACU) occasionally experience prolonged, severe postoperative pain.^[6] With the help of a 100 mm ruler and a linear array of alternatives ranging from no pain to the worst pain imaginable, the visual analogue scale is a tool for measuring subjective or behavioral phenomena. It is validated as Visual Analogue Score (VAS) scale (0=no pain, 1-3=mild pain, 4-6=moderate pain, 7-10=severe pain).^[1] The surgical team's top priority should be postoperative pain management because ineffective pain management is linked to postoperative complications and subpar results.^[1] Post-operative pain that is not adequately managed is not covered by our national guidelines for pain management. A key determinant of how well patients recover is post-operative pain control. Pain that is not properly managed after surgery can become chronic. The present study was done to estimate the quality of post-operative pain control after major orthopaedic surgeries in a tertiary care hospital using Visual Analogue Scale (VAS).

MATERIALS AND METHODS

This Prospective observational cross sectional study was done in Kalpana Chawla Govt. Medical College and hospital, Karnal, over a period of 6 months, i.e. from September 2022 to February 2023, after obtaining the approval from institutional ethics committee. Written and informed consent was obtained from all the patients. The study was conducted by trained investigator. A total of 365 participants were included in the study. The demographic details about each participant were recorded. The preoperative to 24 hours postoperative pain after the orthopedic surgery was evaluated using visual analogue pain scale.

Inclusion Criteria

- Patients aged 18 years or older.
- Patients who underwent major surgeries in elective OT and required hospital stay.
- Patients who could understand and sign the informed consent form and fill out the VAS scale form.

Exclusion Criteria

- Refusal for participation in the study.
- Patients under 18 years of age.
- Patients admitted to the ICU (intensive care unit) after surgery.
- Patients who could not fill the VAS scale form.
- Surgeries performed on patients under local anaesthesia.

Sample Size Estimation

Sample size is calculated for p=39% and at 95% confidence interval for precision 5% using the formula

$$n = Z_{\alpha/2}^2 p(1-p)/d^2 \\ = (1.96)^2 (39)(61)/5^2 \\ = 365$$

With $Z_{\alpha/2}$ is standard normal variate for 95% CI at 5% level of significance is =1.96.

Method

Before undergoing surgery, all patients were instructed on how to assess their level of pain using the Visual Analogue Score (VAS) scale (0 = no pain, 1-3 = mild pain, 4-6 = moderate pain, and 7-10 = severe pain). When they returned to the recovery ward at 4, 8, 12, and 24 hours, they were then again asked to rate their level of pain.

After completion of surgery, vital signs were taken and postoperative pain was managed according to the departmental pain management protocol.

Statistical Analysis

The obtained data was statistically assessed using the Kruskal-Wallis/Mann-Whitney test. For comparing VAS, the U test was used, then Tukey's pair wise comparison tests. A 0.05 p-value was deemed significant. SPSS 21.0 (Chicago, Inc., USA) was used for the entire analysis.

RESULTS

The distribution of patients by age is shown in Table 1 below. About one third of patients were <30 years of age (29.9%) followed by >60 (25.2%), 30-40 (18.6%), 41-50 (16.4%) and 51-60 (9.9%) years. The median age of patients was 42 years. Based on findings of our study, about one third of patients were <30 years of age (29.9%) followed by >60 (25.2%), 30-40 (18.6%), 41-50 (16.4%) and 51-60 (9.9%) years. The median age of patients was 42 years.

Table 1: Allocation of patients according to age

Age in years	No.(n=365)	%
<30	109	29.9
30-40	68	18.6
41-50	60	16.4
51-60	36	9.9
>60	92	25.2
Median	42.0	

Table 2: Allocation of subjects according to gender

Gender	No.(n=365)	%
Male	265	72.6
Female	100	27.4

The gender distribution of patients is shown in Table 2 below. The majority of patients (72.6%) were men.

Table3: Allocation of subjects according to Type of anesthesia

Type of anesthesia	No. (n=365)	%
General anaesthesia	2	0.5
Subarachnoid block	262	71.8
Brachial plexus block	101	27.7

[Table 3] shows the allocation of subjects according to type of anaesthesia. Subarachnoid block type of anaesthesia was given among majority of patients (71.8%) followed by Brachial plexus block (27.7%) and General anaesthesia (0.5%).

Table 4: Comparison of VAS at time periods among type of anesthesia

Time periods	GA(n=2)	SAB(n=262)	Block (n=101)	p-value ¹
Pain at 0 hrs	6.50±2.12a	4.96±1.19	3.37±1.23a	0.0001*
Pain at 4 hrs	5.00±1.41b	4.18±1.01	2.84±1.05b	0.0001*
Pain at 8 hrs	5.00±1.41c	3.44±0.98	2.62±1.19c	0.0001*
Pain at 12 hrs	4.50±0.70d	2.56±0.80	2.02±0.95d	0.0001*
Pain at 24 hrs	3.00±0.00	2.04±0.79	1.58±0.88	-

¹Kruskal-Wallis test, *Significant, ^{a,b,c,d}p<0.01 (Pair-wise comparisons)

[Table 4] indicated the association of VAS at time periods among type of anesthesia. The Kruskal-Wallis test showed that there was considerable (p=0.0001) difference in VAS at all the time periods except at 24 hours. The pair-wise comparisons showed that VAS was significantly (p<0.0001) lower among patients of Brachial plexus block than GA.

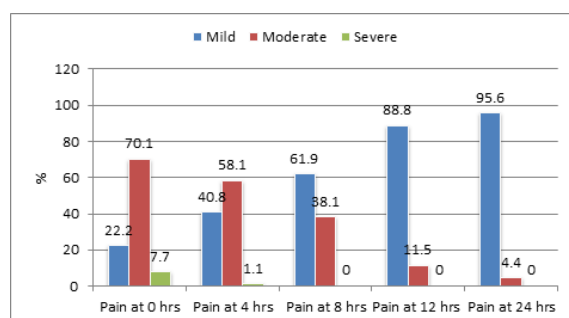


Figure 1: Distribution of severity of VAS at time periods

[Figure 1] indicated the distribution of pain severity at various time periods. Pain severity was higher after 12 hours and 24 hours postoperatively. The overall incidence of moderate pain was 58.1% at 4 hours. It was 38.1% at 12 hours, 11.5% at 12 hours and 4.4% at 24 hours. Based on these findings, we can suggest that postoperative pain was undermanaged after the surgeries in the hospital.

DISCUSSION

Pain is a predictable reaction to surgical intervention, and it can affect how long you stay in the hospital overall. Pain is still not adequately managed despite recent improvements in this area.^[7] The current study was done to estimate the incidence of post operative pain. This study was performed to see if postoperative pain is associated with socio demographic factors, preoperative and intra-operative factors. In present study, the pair-wise comparisons showed that VAS was

significantly (p<0.01) lower among patients of Brachial plexus block than General anaesthesia. 58% patients complained of moderate pain at 4 hrs also, 38% patients complained of moderate pain at 8 hours

The prevalence and contributing factors of postoperative pain following emergency orthopaedic surgery were identified by Arefayne et al. They came to the conclusion that there was a moderately high overall incidence of moderate to severe postoperative pain within the first 24 hours following emergency orthopaedic surgery.^[1] These findings are in association with our result.

Orthopaedic and general surgery patients' immediate postoperative pain levels were compared by Ekstein et al., along with the severity of severe pain in each group. They came to the conclusion that orthopaedic IOP pain was greater than laparotomy cases.^[6]

In a tertiary care hospital, Nasir and Ahmed assessed surgical patients' knowledge of postoperative pain and its management in patients undergoing major upper abdominal surgeries. They came to the conclusion that patients don't know enough about how to manage their postoperative pain.^[3]

To ascertain the severity/intensity of postoperative pain following day case surgery, Mwaka et al looked into the prevalence of postoperative pain following day surgery. But they discovered that the prevalence of moderate and severe pain is lower than what the literature claims.^[4]

Post-operative pain can be managed with variety of medicaments. The assortment of analgesics used to treat postoperative pain is known as multimodal analgesia. NSAIDs have significant opioid dose-sparing effects when combined with opioids, which allows for greater pain relief at lower doses of each analgesic than would be possible with any one analgesic alone.^[1] Minimising or eliminating discomfort, speeding up the healing process, preventing complications, and preventing the progression of acute pain into chronic pain are

important objectives in the management of postoperative pain.^[8]

Limitations of our research were that the research restricted to particular hospital and geographical area. Further studies are needed to validate the result.

CONCLUSION

It can be concluded from the present study that, pain score was significantly lower among patients of BLOCK than GA. Pain severity was higher after 12 hours and 24 hours postoperatively. Based on these findings, we can suggest that postoperative pain was undermanaged after the surgeries in the hospital. Careful management of postoperative pain management is necessary.

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