

**Research Article****Comparison Intravenous Patient-Controlled Analgesia (PCA) with (Paracetamol + Morphine) and (Paracetamol + Tramadol) for Postoperative Pain Management in Orthopedic Surgeries****Kaveh Behaeen<sup>\*1</sup>, Naser Sarrafan<sup>2</sup>, Sholeh Nesioonpour<sup>3</sup>, Tahmineh Ghalami<sup>4</sup>, Mansoor Soltanzadeh<sup>5</sup>**<sup>1,3</sup>Assistant Professor, Anesthesia Department, Ahwaz Jundishapur University of Medical Sciences, Iran<sup>2</sup>Associate Professor, Orthopedic Department, Ahwaz Jundishapur University of Medical Sciences, Iran<sup>4</sup>Assistant Professor, Orthopedic Department, Ahwaz Jundishapur University of Medical Sciences, Iran<sup>5</sup>Associate Professor, Anesthesia Department, Ahwaz Jundishapur University of Medical Sciences, Iran**\*Corresponding author**

Kaveh Behaeen

Email: [drbehaeen@yahoo.com](mailto:drbehaeen@yahoo.com)

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**Abstract:** The purpose of this study is evaluation effectiveness of Intravenous patient-controlled analgesia (PCA) with paracetamol and opioids drugs for postoperative pain management in orthopedic surgeries. Thirty patients were randomized in three equal groups: group A (Control group) received intramuscular NSAID drugs, group B received patient controlled analgesia with (paracetamol 2gr + Morphine sulfate 10 mg) and group C received patient controlled analgesia with (paracetamol 2gr + Tramadol 100 mg) for postoperative pain management. The mean pain perception according to visual analogue scale (VAS) was 6.1 in the control group (A), 5.1 in the group (B) and 5.3 in the group (C). There was significant difference between group A with groups B and C (Pvalue< 0.05) for pain perception. The mean early hip joint movement time after operation were 30±6.2 hours in the control group A, 24±3.50 hours in the group (B) and 24±3.00 hours in the group (C). Patient controlled analgesia (PCA) device with (paracetamol + tramadol) and (Paracetamol + morphine) can be useful for pain management and early hip joint movement after orthopedic surgeries.**Keywords:** Morphine sulfate, Pain, Paracetamol, PCA, Tramadol

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**INTRODUCTION**

Management of postoperative pain leads to earlier mobilization, shortened hospital stay, reduced hospital costs, and increased patient satisfaction [1-3].

The major goal in the management of postoperative pain is minimizing the dose of medications to lessen side effects while still providing adequate analgesia. Despite constantly increasing understanding of pain mechanisms and improved technology in pain therapy for the anesthetist, the provision of adequate postoperative pain relief is still a challenge. Various methods including alternative medicine, Transcutaneous electrical nerve stimulation (TENS), multidisciplinary team approach and Multimodal (or balanced) analgesia have been used for acute postoperative pain management [4-7].

Intravenous patient-controlled analgesia (PCA) is a method for postoperative analgesia which allows patients to titrate analgesics in amounts proportional to perceived pain stimulus [8].

On the other multimodal approaches to pain management involves the use of adjunctive pain control

methods and less dependence on opioids to avoid their adverse effects [9].

Opioids such as morphine and tramadol hydrochloride when used in PCA provide effective analgesia after major orthopedic surgery but they have a high risk of side-effects for example nausea, vomiting, pruritus, urinary retention and respiratory depression [10-11].

Intravenous paracetamol is an effective analgesic drug for postoperative pain control and when added to PCA opioids reduce their adverse effects [12-14].

For these reasons in this study we evaluated use of patient controlled analgesia (PCA) device with (paracetamol + tramadol) and (Paracetamol + morphine) for postoperative pain management in orthopedic surgeries.

**MATERIALS AND METHODS**

This study was approved with the institutional ethics committee. In a randomized, double-blind, prospective study, 36 patients with intertrochanteric femoral and

femoral neck Fractures were selected for orthopedic surgeries.

The patients were randomized in three equal groups (each group: n = 12 patients). We used in the group A (Control group) of intramuscular NSAID drugs as needed ( PRN), in the group B patient controlled analgesia device (PCA) with ( paracetamol 2gr + Morphine sulfate 10 mg) and in the group C patient controlled analgesia device ( PCA) with ( paracetamol 2gr + Tramadol 100 mg) for patients pain relief after operations.

Pain was measured by visual analogue scale (VAS) from zero as no pain to ten as the worst pain for patients. Patients evaluated 48 hours after operations for pain management. The patients also evaluated 48 hours after operations for early hip joint movement time.

After collecting the data from three groups, they were analyzed by SPSS static software (version 11.5). The study data were expressed as mean ± standard deviation for the quantitative variables and percentages for the categorical variables. The parametric data of the patients were compared using the student t-test and chi-squared test for categorical variables. In this study a p value < 0.05 was considered significant.

**RESULTS AND DISCUSSION**

No significant difference was found between the three groups in terms of age, weight, height, gender (Table 1, 2). The mean ages were 65.3±4.6 years in the control group (A), 68.6±3.9 years in the group (B) and 67.3±4.2 in the group (C). The age difference in three groups was not statistically significant (p value > 0.05).

The mean pain perception according to visual analogue scale (VAS) was 6.1 in the control group (A), 5.1 in the group (B) and 5.3 in the group (C). No significant difference was found between B and C groups for mean pain perception (p value > 0.05) but there were statistically significant difference between group A with groups B and C (p value < 0.05).

The mean early hip joint movement time after operation were 30±6.2 hours in the control group A, 24±3.50 hours in the group (B) and 24±3.00 hours in the group (C).

No significant difference was found between B and C groups for mean early hip joint movement time after operation but there were statistically significant difference between group A with groups B and C (Table 3).

**Table 1: Demographic Characteristics in the two groups**

	Group A (n=12)	Group B (n=12)	Group C(n=12)	P-value
Age (years old)	65.3±4.6	68.6±3.9	67.3±4.2	p>0.05
Body weight (kg)	63.65 ± 6.10	65.57 ± 8.20	64.58±60	p>0.05
Height (centimeter)	176 ± 15	170 ± 10	173±16	p>0.05

Data are presented as mean ± standard deviation (SD). n: number of patients

**Table 2: Distribution of sex in the three groups**

	Group A (n=12)	Group B (n=12)	Group C(n=12)
Male (n=17) 47.2%	6	5	6
Female(n=19)52.8%	7	6	6

n: number of patients, p-value>0.05

**Table 3: The mean early hip joint movement time after operation in the three groups**

Group A (n=12)	30±6.20 ( hours)	p value= 0.004
Group B (n=12)	24±3.50 ( hours)	p value= 0.006
Group C (n=12)	24±3.00 ( hours)	p value= 0.006

n: number of patients

**CONCLUSION**

The study suggests use of patient controlled analgesia (PCA) device with (paracetamol + tramadol) and (Paracetamol + morphine) can be useful for pain management and early hip joint movement after orthopedic surgeries.

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