International Journal of Current Research and Review
DOI: https://doi.org/10.31782/IJCRR.2022.141405

Research Article

IJCRR
Section: Healthcare

Comparison of First Analgesic Demand after Major Surgeries of Obstetrics and Gynecology between Pre-Emptive Versus Intra-Operative Groups by Using Intravenous Paracetamol: A Cross-Sectional Study

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ABSTRACT

Introduction: Aim/Objective: To compare first analgesic demand in minutes after obstetrics & gynecological operative procedures between pre-emptive versus intra-operative groups by using intravenous paracetamol.

Study Design: A cross-sectional study

Place and Duration: Department of Obstetrics & Gynecology, Social Security Landhi Hospital, Karachi, and the total duration was 18 months i.e. 1st January 2019 till 30th June 2020.

Methodology: Total number of patients were 120 and the age range was between 22- 50 years. Randomly patients were divided into two equal groups, group 1 and group 2. A total of 60 patients were in each group. In group 1, 1gram intravenous paracetamol was given 15 minutes before anesthesia either spinal or general. While in group 2, the same dose of intravenous paracetamol was given during operative procedures. Mean time for the first analgesic demand was observed and recorded.

Result: Mean age of the patients was 40.53 ± 9.10 years in group 1 and 39.25 + 10.70 years in group 2 and the p-value was 0.820. The mean weight of patients was 62.25 ± 9.24 kg in group 1 and in group 2, it was 57.21 ± 11.48 kg and the p-value was 0.689. American society of anesthesiology-I status was found in 56 patients and American society of anesthesiology-II status was found in 64 patients. The mean time required for the first analgesic demand in group 1 was 188.75 ± 7.75 minutes and in group 2, it was 158.90 ± 12.50 minutes and the p-value was found <0.001 (significant)

Conclusion: Time required for the first analgesic demand is prolonged (188.75 ± 7.75 minutes) in the pre-emptive paracetamol group as compared with the intra-operative group (158.90 ± 12.50 minutes).

Key Words: American society of anesthesiology, First analgesic demand, Intra-operative paracetamol, Pre-emptive paracetamol, Standard monitoring, Intravenous paracetamol

INTRODUCTION

Post-operative pain is a common issue after major surgeries and its incidence is 80%, among this 39% of patients have faced extreme pain. Opioids are very effective for post-operative pain management but have some side effects like somnolence, hypotension, respiratory depression, and nausea and vomiting.[1]

Post-operative pain and its complications are a major concern to the surgeons and as well for the anesthesiologist. For perioperative pain management, various methods are em-

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ISSN: 2231-2196 (Print) **ISSN:** 0975-5241 (Online)

Received: 06.06.2022 **Revised:** 20.06.2022 **Accepted:** 05.07.2022 **Published:** 20.07.2022

ployed. Optimal pain management can reduce postoperative complications, enhances recovery, and reduces the length of stay in the hospital.[2] Inappropriate post-operative pain management is associated with impaired wound healing, delayed gastrointestinal motility, and a higher risk of thromboembolism.[3]

Acetaminophen (paracetamol) is recommended for perioperative multimodal analgesic according to current guidelines. Acetaminophen is being used as an adjuvant analgesic and reduces opioid related-related side effects. Intravenous acetaminophen has been used for pain management due to its pharmacokinetic property and higher bioavailability.[4] Production of mediators which are causing nerve stimulation is reduced by pre-emptive analgesia. Different methods are existing for pre-emptive analgesia i.e. epidural block, local anesthesia, nerve block, etc.[5] Paracetamol acts on the central nervous system and belongs to a group of drugs which is called non-opioid.[6] Pre-emptive analgesia should be given before starting surgical procedures to avoid the painful stimulus and to prevent post-operative pain as well as pre-emptive analgesia inhibit the central sensitization which is caused by incisional injuries.[7]

A society of anesthesiologists (ASA) recommended reducing or avoiding opioid drugs in intra-operative procedures and post-operative pain management.[8] Still management of post-operative pain is challenging for clinicians, although very rousing techniques and drugs are accessible.[9] Paracetamol with NSAIDs (a combination) for postoperative pain are being used for many years but remains controversial.[10]

Paracetamol is a safe analgesic drug among children for postoperative pain management.[11] Intravenous paracetamol has been found to be more novel and has an antipyretic effect through the hypothalamus. It is very safe, cost-effective, easily available and beneficial for the management of pain[12]. Although oral paracetamol is effective, and well-tolerated but patients require fast starting elimination of pain after surgery. Parenteral paracetamol has additional fast onset of action and also has a lengthier duration than oral paracetamol.[13]

METHODOLOGY

This study was held after approval from ethical committee for research. A total of 120 patients were selected. Non-probability sampling technique was used. Patients were included in the study according to ASA-I status (American society of anesthesiology) and ASA-II status. Age ranges from 22 -50 years.

Patients were excluded from the study who were not willing, were less than 22 years and more than 50 years, had known paracetamol hypersensitivity, chronic liver issues, renal diseases, and who had been taking different pain killer drugs for many years. Patients were registered for major surgeries of Obstetrics & Gynecology like Abdominal Hysterectomy, vaginal hysterectomy, ovarian masses, Ectopic pregnancies, and masses of the uterus. Patients were divided into two different groups, group-1, and group-2, and were equal in numbers. A total of 60 patients were enrolled for group 1, and sixty patients for group 2. In the pre-emptive paracetamol group, 1 gram paracetamol via intravenous was given 15 minutes prior to induction of anesthesia either spinal or general. In the intra-operative paracetamol (group 2) 1 gram I/V paracetamol was given during operative procedures. Standard monitoring was established in the operating room like an electrocardiogram, blood pressure, oxygen saturation by a pulse oximeter, and capnography were recorded. After performing surgeries, patients were shifted to the post-anesthesia care unit (post anesthesia care unit) for further post-operative care. The mean time required for the first request for analgesic demand in minutes was recorded. On duty, resident doctors collected data. Variables used for data were the meantime for 1st request for analgesia, mean age of patients, ASA-I status, and ASA-II status. SPSS. 20 versions were used for data analysis. Chi-square test and t-test were applied for analysis.

RESULTS

Total patients were 120 and among them 56 were ASA –I status and 64 were ASA-II. The mean time was 188.75 ± 7.75 minutes for first analgesic demand in group 1 and in group 2, it was 158.90 ± 12.50 minutes showing the better analgesic effect in the pre-emptive paracetamol group.

Figure 1: showing ASA Status in both groups. ASA-I patients were 34 (56.67%) in the pre-emptive paracetamol group and 22 (36.67 %) in the intraoperative paracetamol group. While 26 (43.33%) patients having ASA-II status in pre-emptive group and 38 (63.33%) patients in intra-operative group.

Table I: Represent the ages of the patients in both groups. Mean age was 40.53 ± 9.10 years in the pre-emptive paracetamol group (group 1) and 39.25 ±10.70 years in intra-operative paracetamol group (group 2). p-value was insignificant i.e. 0.820 and (C.I.) Confidence Interval was -8.1 to 10.59.

Table II: Explain the mean time for first analgesic demand in the pre-emptive and intra-operative paracetamol groups. The mean time for first analgesic demand in group 1 was 188.75 ± 7.75 minutes while in group 2, it was 158.90 ± 12.50 minutes. P-value was very significant i.e. 0.001 and (C.I.) confidence interval was 23.26 to 34.66.

Table III: Represent ASA-I Status and mean time required for first analgesic demand in both groups. Total patients were 56 and 34 patients were in pre-emptive group (group-1) and

in 22 patients were in intra-operative group. The mean time for first analgesia was 189.75 ± 6.70 minutes in the pre-emptive paracetamol group and 159.91 ± 14.40 minutes in the intra-operative paracetamol group. P-value was less than 0.001 (significant) and confidence interval (C.I.) was between 19.63- 37.11.

Table I: Age of patients with respect to groups. (n=120)

Age (in years)	Grouping	n	Mean ± S.D	p-value	C.I. (95%)
	preemptive paracetamol group-1	60	40.53 ± 9.10	0.820	-8.1 to 10.59
	Intra-operative paracetamol group-2	60	39.25 ± 10.70		

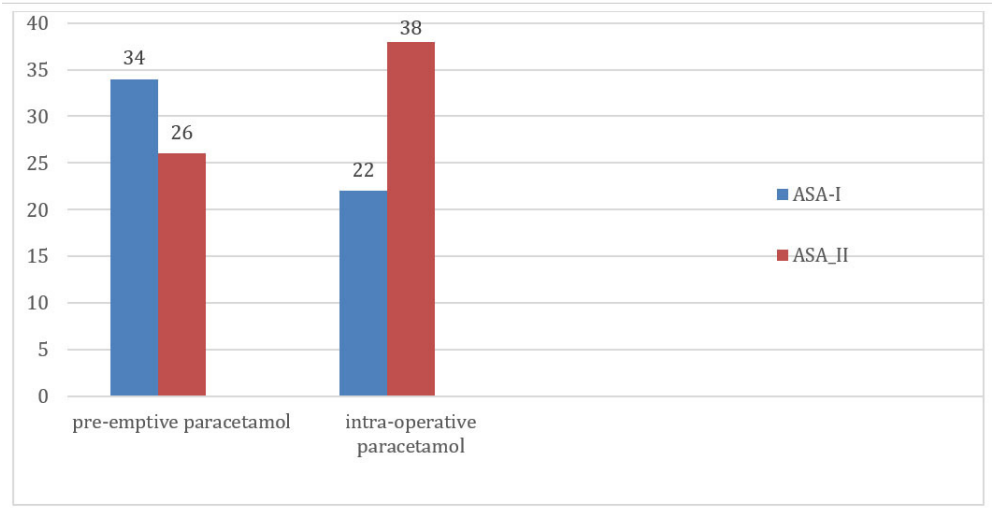

Figure 1: ASA Status with respect to both groups.

Table II: Mean time for first analgesic demand in group 1 and in group 2. (n=120)

Mean time for first analgesia (in minutes)	Grouping	(n)	Mean ± S. D.	p value	C.I. 95%
	Pre-emptive paracetamol group-1	60	188.75 ± 7.75	0.001	23.26 to 34.66
	Intra-operative paracetamol group-2	60	158.90 ± 12.50		

Table III: ASA-I status and mean time for first analgesic demand in group 1 and in group 2. (n=56)

Mean time required for first analgesia (in minutes)	Grouping	n	Mean ± S. D.	p-value	C.I. 95%
	group-1 Pre-emptive paracetamol	34	189.75 ± 6.70	0.001	19.63 to 37.11
	group-2 Intra-operative paracetamol	22	159.91 ± 14.40		

DISCUSSION

In a study, the mean time of first analgesic demand after surgery was significantly higher as compared with the control group i.e. 3.6 ± 3.6 versus 2.3 ± 3.1 correspondingly, and the p-value was significant i.e. 0.030.[14] In another study intravenous paracetamol (preemptive) group required a long time in minutes for the first request for analgesic requirement and have minimum post-operative side effects. There were no significant differences noted in both groups regarding their age, weight, and ASA physical status, this is correlating with our study. [15]

According to Arsalan M et al. Insignificant findings were noted between two groups regarding the demographic variable like

age, weight, and as well as ASA physical status.The time required for the first request for analgesia was lengthier in the paracetamol (preemptive group) compared with the intraoperative paracetamol group and placebo group, this is also correlating with our study.[13]

A study demonstrated that in head and neck cancer surgeries pre-emptive intravenous paracetamol is very effective for post-operative pain management and due to its usage patient can discharge earlier from the hospital. Both groups were found to be similar regarding their age, weightand ASA physical status[16]

Data of both groups were similar in age, weight, BMI, and gender. The mean VAS pain score in the intravenous paracetamol group was found 6.3 ± 0.99 as compared with 6.20 ± 1.30 in the intravenous tramadol group, showing no significant difference between both groups.[17]

Patients had more pain in the recovery room (VAS score for pain 7.0 ±1.24 versus 6.15±2.27) in the saline group and the p-value was significant i.e.0.041 and needed further fentanyl intra-operatively (150 micrograms versus 87.7 ± 7.5) and p-value was less than 0.01 [18]

Patients had higher and more significant VAS pain scores in the pre-emptive group than patients in the intra-operative group (3.9 =+0.3, 3.3+ 0.4 versus 2.8+0.2 and 2.6+0.3) immediately and after 6 hours of surgery and p-value were <0.001 and < 0.01.[19] this is not correlated with our study. In a study mean pain scores (VAS) were recorded at 15 minutes, 30 minutes, 1 hour, 2 hours, and 6 hours and they were found greater in the intra-operative group compared to a pre-emptive group, and the p-value <0.05. Time to first request for the analgesic drug was significantly lengthier in the pre-emptive group compared to the intra-operative paracetamol (group 1) and the p-value was <0.0329.[20] this is correlating with our study. In the pre-emptive group, hydromorphone consumption was significantly lower as compared with the placebo group at all times and the p-value was 0.013. In the pre-emptive group, consumption of morphine drugs was also reduced up to 30%.[21] Post-thoracotomy ipsilateral shoulder pain was decreased when paracetamol was given pre-emptively.[22]

CONCLUSION

The time required for the first analgesic demand was prolonged (188.75 ± 7.75 minutes) in the pre-emptive paracetamol group (group 1) as compared with the intra-operative paracetamol group (group 2) i.e. 158.90 ± 12.50 minutes.

Funding source: Sindh Employee's Social Security institution, ministry of labor Sindh

Permission

The ethical review committee gave the permission

Conflict of interest

None

Authors' Contribution:

Dr Humaira Tahir : Concept, study designed. And supervised the study

Dr Pari Gul Baloch : Helped in article writing

Dr Mubushra Samina : Data Collection

Dr Ifat Balouch : Drafting

Dr Sundas Ahmad : Helped data analysis

Dr ZakiaBano : Final editing

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