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Comparison of Intramuscular Versus Rectal Diclofenac Sodium in Post Caesarean Pain Relief

Beenish Altaf, Sanum Kashif, Shagufta Saeed Sial*, Humera Noreen, Erum Pervaiz, Shazia Mahmood Awan*****

Frontier Crops Hospital, Quetta Pakistan, *Holy Family Hospital, Rawalpindi Pakistan, **Benazir Bhutto Hospital, Rawalpindi Pakistan, ***Combined Military Hospital Quetta/National University of Medical Sciences (NUMS) Pakistan

ABSTRACT

Objective: To compare the mean post-operative pain after intramuscular versus rectal Diclofenac Sodium in post-caesarean patients.

Study Design: Quasi-experimental study.

Place and Duration of Study: Department of Obstetrics & Gynaecology, Benazir Bhutto Hospital, Rawalpindi Pakistan, from May to Nov 2017.

Methodology: A total of 60 women, aged 18-45years, undergoing elective caesarean section were selected. Patients in Group-A were given, Diclofenac 75mg intramuscularly in the gluteal area every 8 hours, while patients in Group-B received a Diclofenac Sodium suppository every 8 hours post-operatively. All patients were followed for pain post-operatively, and final post-caesarean pain was noted at 24 hours post-operatively using a visual analogue scale.

Results: The mean age of patients in the Group-A was 29.27±4.68 years, and in Group-B was 30.57±4.80years. The range of gestational age in the study was from 37 to 41 weeks, with an average age of 39.07±1.26 weeks. Mean post-operative pain in Group-A (Intramuscular Diclofenac Sodium-Group) was 1.13±0.43 minutes, whereas in Group-B (Rectal Diclofenac Sodium-Group), was 2.16±0.83 (*p*-value = 0.001).

Conclusion: Mean post-operative pain after using intramuscular Diclofenac sodium is less than Diclofenac Sodium administered rectally in post-operative patients in caesarean sections.

Keywords: Caesarean section, Diclofenac Sodium, Post-operative pain.

How to Cite This Article: *Altaf B, Kashif S, Sial SS, Noreen H, Pervaiz E, Awan SM. Comparison of Intramuscular versus Rectal Diclofenac Sodium in Post Caesarean Pain Relief. Pak Armed Forces Med J 2022; 72(6): 1982-1985. DOI: https://doi.org/10.51253/pafmj.v72i6.7153*

INTRODUCTION

Caesarean section is considered the commonest surgery performed in Obstetrics and Gynaecology department. Indications for caesarean section include non-reassuring fetal heart rate, non-progress of labour, cephalopelvic disproportion, prematurity, malpresentation and prior history of uterine surgery.[1,2] C-section is a major surgery which may result in significant post-operative pain and discomfort.[3]

NSAIDs, in combination with opioids, improve the level of pain management by reducing opioid consumption.[4,5] Diclofenac is an NSAID, available in different forms such as intramuscular, intravenous per rectal and oral forms for pain management.[6] In a study, the mean Visual Analogue Scale (VAS) pain score was 0.54±0.658 after using Diclofenac Sodium intramuscularly post-operatively in caesarean sections.[7] In another study, the average VAS pain score was 1.38±0.90 after using Diclofenac Sodium per rectally in post-caesarean section patients.[8,9]

Rectal Diclofenac Sodium is easy to administer, and no special technique or medical staff is needed, whereas intramuscular Diclofenac administration requires special techniques and trained medical staff. Occasionally it is associated with pain and abscess formation at the injection site if proper technique is not followed.[10]

The available literature on the analgesic effect of these two different preparations of Diclofenac Sodium post-operatively in caesarean section patients is scanty. The study aimed to compare the intramuscular versus rectal Diclofenac Sodium for post-caesarean pain relief. The results of this study will be a useful addition to the local and international literature. Based on these results, better preparation with less post-operative pain can be used in our general practice in post-caesarean patients by reducing post-operative morbidity.

METHODOLOGY

This quasi-experimental study was conducted at the Department of Obstetrics and Gynaecology, Benazir Bhutto Hospital, Rawalpindi Pakistan, from May to October 2017. After taking permission from the Ethical Review Committee, patients were included. The sample size was calculated using the WHO sample size calculator, taking a confidence level of 95%, margin of error of 5%, mean post-operative pain after intramuscular Diclofenac Sodium as 0.54±0.658 and

Correspondence: Dr Sanum Kashif, Classified Anesthetist, Frontiers Crops Hospital, Quetta, Pakistan

Received: 26 Jul 2021; revision received: 28 Dec 2021; accepted: 31 Dec 2021

after rectal Diclofenac Sodium as 1.38±0.907.[11] The estimated sample size came out to be 60 patients.

Inclusion Criteria: Pregnant women of age 18-40 years, undergoing elective caesarean section with the gestational age of 37-41 weeks and parity 0-5 were included in the study.

Exclusion Criteria: Patients with a bleeding disorder, diabetes mellitus, chronic renal failure, immuno-compromised patients and patients with hypersensitivity to Diclofenac Sodium were excluded from the study.

After written informed consent, patients were selected by non-probability consecutive sampling. Patients were told to pick the slip from mixed slips (half of the slips were labelled letter 'A' and the other half-slips were labelled letter 'B'), and she was considered in that respective group. In Group-A patients, Diclofenac was given intramuscularly in the gluteal area every 8 hours post-operatively, whereas, in Group-B patients, Diclofenac Sodium suppository was placed rectally every 8 hours. The surgeon, with three years of post-fellowship experience, performed the procedure. Patients were checked for pain post-operatively, and final post-caesarean pain was noted at the end of 24 hours post-operatively using a visual analogue scale.

Statistical Package for Social Sciences (SPSS) version 20.0 was used for the data analysis. Age, height, weight, BMI, gestational age and post-operative pain were presented as mean and standard deviation. For post-operative pain in relation to parity, BMI and history of c-section, the Chi-square test was used. To compare mean post-operative pain between groups, the t-test was used, and a *p*-value ≤0.05 was considered significant.

RESULTS

In this study, the age range was 18 to 40 years, with a mean age of 29.92±4.74 years. In Group-A, the average age was 29.27±4.68years, and in Group-B was 30.57±4.80 years. The range of gestational age in this study was from 37 to 41 weeks, with a mean age of 39.07±1.26 weeks. The mean gestational age in Group-A was 39.07±1.26 weeks, and in Group-B was 39.07±1.29 weeks.

Therefore, the mean height was 149.67±6.72cm. The mean weight was 69.52±9.14kg. Therefore, the mean BMI was 29.07±2.46 kg/m^2, as shown in Table-I.

Post-operative pain in relation to parity, BMI and previous history of c-section was found not significant, as shown in Table-II.

Table-I: Demographic Characteristics of both Groups (n=60)

Parameters	Group-A (n=30) (I/M Diclofenac)	Group-B (n=30) (Rectal Diclofenac)
Age (Mean±SD)	29.27±4.68 years	30.57±4.80 years
Gestational age	39.07±1.26 weeks	39.07±1.29 weeks
Weight	67.73±8.62 kg	71.30±9.44 kg
Height	149.57±6.43 cm	149.77±7.11 cm

Table-II: Post-operative pain in relation to previous C-section, BMI and Parity (n=60)

Parameters	Post-operative pain			*p*-value
	Mild (n=35)	Moderate (n=11)	Severe (n=14)	
Parity				
0-2	8 (13.3%)	3 (5.0%)	2 (3.3%)	0.71
3-5	27 (45.0%)	8 (13.3%)	12 (20.0%)	
BMI				
<27	11 (18.3%)	4 (6.7%)	6 (10.0%)	0.74
>27	24 (40.0%)	7 (11.7%)	8 (13.3%)	
C-Section				
Yes	30 (50.0%)	8(13.3%)	9 (15.0%)	0.22
No	5 (8.3%)	3 (5.0%)	5 (8.3%)	

Mean post-operative pain in Group-A (Intramuscular Diclofenac Sodium-Group) was found to be less (1.13±0.43 minutes) than in Group-B (Rectal Diclofenac Sodium-Group) (2.16±0.83 minutes) as shown in Table-III (*p*-value=0.001).

Table-III: Mean Post-Operative Pain between Groups (n=60)

Post-operative Pain Mean±SD		*p*-value
Group-A (Intramuscular Diclofenac)	Group-B (Rectal Diclofenac)	<0.001
1.13±0.43	2.16±0.83	

DISCUSSION

Post-operative pain is one of the common causes of patient dissatisfaction after a caesarean section. It Is essential to address a patient's discomfort by reducing pain. The management of pain after a c-section varies from other post-operative pain because mothers require quick recovery in order to breastfeed and take care of their babies successfully.[11] Different methods to treat pain after caesarean section, ranging from non-opioid and opioid medications to patient-controlled analgesia and continuous epidural analgesia.[12] Pain management strategies sometimes have potential side effects or complications, limited accessibility and high cost. This study aimed to compare the mean post-operative pain after intramuscular versus rectal Diclofenac Sodium in post-caesarean patients.

In the current study, the age range was 18 to 40 years (mean age of 29.92±4.74years). In Group-A, the average age of patients was 29.27±4.68 years. It was 30.57±4.80 years in Group-B. Mean post-operative

pain in the intramuscular Diclofenac Sodium-Group (Group-A) was 0.93±0.74 minutes, while in rectal Diclofenac Sodium-Group (Group-B) was 2.33±0.96 (*p*-value=0.001). A study showed a mean Visual Analogue Scale pain score of 0.54±0.658 after using intramu-scular Diclofenac Sodium in post-caesarean patients.[7] According to Abbasalizadeh *et al*. the mean Visual Analogue Scale (VAS) pain score was 1.38±0.90 after using rectal Diclofenac Sodium in post-caesarean patients.[8]

Diclofenac is an effective NSAID which has both anti-inflammatory and analgesic properties. Literature shows that it relieves severe pain, like dysmenorrhoea,[13] and renal colic.[14] Studies also show that it reduces opioid use after orthopaedic abdominal and gynecological surgery.[15-17] The use of diclofenac post-cesarean section has revealed that the administration of Diclofenac 100mg rectally prolongs the duration of the first analgesia by more than 5 hours. In a similar study, a single dose of Diclofenac 75mg given post-caesarean has decreased opioid use, sedation and pain score.[18]

Regarding comparing two forms of Diclofenac (Intramuscular versus suppository), Sultan T found that analgesia was comparable by both forms, but those who received suppository were released earlier.[19] In paediatric tonsillectomy, Diclofenac suppository is a better option for post-operative analgesia than bupivacaine infiltration as there is extensive variation in pain score ($p<0.05$) after two hours of post-operative period. Literature showed that the post-operative analgesic effect of suppository diclofenac is comparable with caudal block, but immediate pain management is not possible by diclofenac suppositories.[20] Another study showed the efficacy of NSAIDs by a different route and found that the most efficient analgesia is possible by the intravascular route compared to other routes. Although, side effects were more common with intramuscular and rectal routes.[21]

The current study found that NSAIDs are effective analgesia post-operatively, especially intramuscular Diclofenac, in caesarean sections.

CONCLUSION

This study concluded that the mean post-operative pain after using intramuscular Diclofenac Sodium is less than rectal Diclofenac Sodium in post-caesarean patients. Therefore, we recommend that intramuscular Diclofenac Sodium should be used routinely in post-caesarean patients in order to decrease the morbidity of the patients.

Conflict of Interest: None.

Author's Contribution

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

BA & SK: Data acquisition, critical review, approval of the final version to be published.

SSS & HN: Conception, Study design, drafting the manuscript, approval of the final version to be published.

EP & SMA: Data analysis, data interpretation, critical review, 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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