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The Efficacy of Pentazocine and Diclofenac Versus Paracetamol and Diclofenac for Post- Caesarean Section Analgesia

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ABSTRACT

Background: It is well acknowledged that a kind of multimodal analgesia may be achieved by combining parenteral opioid-like pentazocine or tramadol with nonsteroidal anti-inflammatory drugs (NSAIDs) as diclofenac. This combination offers the advantages of both pain reduction and additive anti-inflammatory activities.

Aim: To assess the effectiveness of diclofenac and pentazocine vs diclofenac and paracetamol for post-operative pain management after cesarean delivery.

Patients and methods: Five papers were examined after an automated search of Medline, PubMed, the Cochrane Library, Scopus, Science Direct, and Google Scholar. Research that look at the effectiveness of diclofenac and pentazocine for post-csection analgesia in comparison to diclofenac and paracetamol. quasi-randomized controlled trials or randomized controlled trials (RCTs). Studies conducted on human participants. Studies available in English language. Studies with interventions using pentazocine and diclofenac in one arm and paracetamol and diclofenac in another arm, with appropriate dosages and administration routes.

Results: Our findings showed that As in the included studies, the individuals' mean age was 29.8 ± 5.9 years, with a range of 20 to 34 years. five studies were discussed.

Conclusion: We concluded that Both analgesic combos might be sufficient to relieve pain within the first 24 hours after surgery. In the first 24 hours after CS, pentazocine and diclofenac produced greater analgesia than paracetamol and diclofenac, but they were also more likely to cause adverse effects.

Key words: Nonsteroidal anti-inflammatory drugs (NSAIDs), Pentazocine, Diclofenac, Paracetamol, Post- Caesarean.

INTRODUCTION

The most major obstetric operational intervention and one of the most frequently done obstetric procedures globally, the Caesarean section (CS) has shown a global increase of more than 30% in some areas. **(1)**. Because it impacts several systems and the body's physiological, psychological, and immunological alterations, post-operative pain is a serious problem. **(2)**. Compared to other surgical patients, women who underwent CS face particular difficulties. They are more susceptible to thromboembolism, which may be triggered by narcotic sedation or discomfort that renders them immobile. **(3)**. Effective post-operative analgesia after CS is especially crucial since the woman has to recuperate from a significant operation while also caring for her child. After CS, the perfect post-

operative analgesic would be easy to use, provide good pain relief, be reasonably priced, and have few side effects or consequences. **(4)**. Opioids have long been the cornerstone of perioperative pain treatment. A multimodal strategy has been used to enhance post-operative analgesia, reduce opioid-related adverse effects, and enhance the standard of care. **(5)**. Analgesic combinations that are both safe and effective may be used to relieve pain after CS. **(6)** Finding the ideal combination that is well-tolerated and has few side effects is the main problem. Studies that have contrasted pentazocine with diclofenac vs pentazocine alone have all shown that the combination of the two was superior to the former in terms of reducing postoperative pain after CS. **(7-10)**. Another set of research examined the effectiveness of paracetamol by itself and in conjunction with diclofenac, and found that the combination was more successful.

(11, 12) It is well acknowledged that NSAIDs like diclofenac, when combined with parenteral opioid-like pentazocine or tramadol, provide a kind of multimodal analgesia that has the advantages of both pain relief and additive anti-inflammatory activities. **(6)**.

This research compared the effectiveness of diclofenac and pentazocine to diclofenac and paracetamol for post-operative analgesia after cesarean delivery.

PATIENTS AND METHODS

Search strategy

Utilizing the following key: [Pentazocine and Diclofenac Versus Paracetamol and Diclofenac for Post-Cacerean Section Analgesia] AND [NSAIDs OR Non-Steroidal Anti-Inflammatory Drugs OR analgesics OR paracetamol] AND [post-operative pain], a computerized search of Medline, PubMed, Science Direct, Scopus, the Cochrane Library, and Google Scholar was conducted. Language or publishing data restrictions did not apply. Furthermore, a manual search was conducted through the trial's references to find other pertinent articles. Major thesis databases such as the Index to Thesis, Pro-Quest Digital Dissertation, and Networked Digital Library of Thesis and Dissertations were also screened in addition to the search.

Data extraction

The authors employed a data extraction form to abstract data for the following features: trial identifying information, patient demographic and clinical characteristics, study medication dosing regimens, and follow-up outcome assessments. When results from published publications were shown as a graph, data was extracted from the graph using Image J program version 1.41. Discussions were used to settle any disputes over data extraction.

Selection criteria for studies:

Inclusion Criteria:

1. Research examining the relative effectiveness of diclofenac and pentazocine vs diclofenac and paracetamol for analgesic after cesarean delivery.
2. Randomized controlled trials (RCTs) or quasi-randomized controlled trials.
3. Studies conducted on human participants.
4. Studies available in English language.
5. Studies with clear reporting of outcomes related to analgesic efficacy, such as pain scores, duration of analgesia, opioid consumption, or adverse effects.
6. Studies with participants who underwent caesarean section delivery, regardless of the indication for the surgery (e.g., elective or emergency).
7. Studies with participants of any age group and any parity.
8. Studies with interventions using pentazocine and diclofenac in one arm and paracetamol and diclofenac in another arm, with appropriate dosages and administration routes.

Exclusion Criteria:

1. Non-randomized research, including qualitative investigations, cross-sectional investigations, cohort investigations, case reports, and case series.
2. Studies involving animal models.
3. Studies with interventions other than pentazocine and diclofenac versus paracetamol and diclofenac.
4. Studies with incomplete or insufficient data for analysis.

5. Studies assessing combinations of analgesics other than pentazocine, diclofenac, and paracetamol.
6. Studies focusing solely on non-pharmacological interventions for post-caesarean section analgesia.
7. Duplicate publications or redundant data from the same study population.
8. Studies not relevant to the specific research question regarding post-caesarean section analgesia efficacy.

Risk of bias assessment

The Cochrane Collaboration's "Risk of Bias" tool was used to evaluate the risk of bias in the following domains: (i) randomization process (creation and concealment of randomization), (ii) blinding both the result assessors and the participants, (iii) insufficient results information, (iv) selective reporting of results and (v) additional sources of bias pertaining to timing of outcome evaluation, co-intervention, and group comparability at baseline. A bias risk score of "Low" (low), "High" (high), or "Unclear" (unclear or uncertain) was assigned to each domain. The two writers separately assessed each other, and differences were settled by consensus.

Data analysis

By dividing the variation in mean changes at the end of follow-up (shortly after the procedure, 6−, 12−, and 48 h post-operatively) by the pooled SD of changes, the result measure was reported as standardized median difference (SMD). We choose SMD because it enables compare pain intensity ratings consistently and because several scales in trials indicated variations in pain intensity scores. When variance data were not provided as standard deviation, other approximation techniques or algebraic recalculations were used to approximate the variance. All non-narcotic analgesic kinds and doses were included as independent comparisons if relevant studies compared them to placebo. For example, a 3-arm study with two active treatments will provide two randomized comparisons with placebo. In this instance, duplicate counting of participants was avoided and more conservative estimates were produced by dividing the number of participants in the placebo arms by the number of active treatment arms. The random-effect inverse variation approach ($P < 0{\cdot}05$) was used to pool the data. A Q statistic test was used to ascertain the degree of heterogeneity present in the trials.

RESULTS

Table (1): characteristic details of the included studies.

	Country	Year	Type of study	Sample size	The studied groups	Age
Garba et al. (13)	Nigeria	2021	a single-blind, randomized trial	193 Pregnant women	Two groups of pregnant women with CS were randomly assigned. Following surgery, Group A was given intramuscular pentazocine along with rectal diclofenac. Following surgery, Group B was given intramuscular paracetamol and rectal diclofenac.	29.8 ± 5.9
Olateju et al. (14)	Nigeria	2016	double blind clinical trial	130 Pregnant women	Two groups of pregnant patients scheduled for spinal anesthesia-assisted cesarean sections were randomly	31.4 ± 4.5

					allocated. Following surgery, 12 and 24 hours later, group B got a placebo suppository and group A received a 100 mg diclofenac suppository.	
Ofor et al. (15)	Nigeria	2022	single-blind randomized controlled trial	200 participants	Equal numbers of participants were assigned to each of the two groups. Compared to group B, participants in group A had much improved pain management and satisfaction 48 hours after surgery.	26–32 years
Eleje et al. (16)	Nigeria	2016	an open-label, quasi-randomized clinical trial	78 participants	Diclofenac&Pentazocine (n=34) Pentazocine (n=33)	27.7±5.1
Obi et al. (17)	Nigeria	2020	a prospective single-blind, randomized controlled trial.	120 booked women planned for cesarean section	120 booked women who were scheduled for a cesarean section were chosen at random to be either the control group or the research group.	28.4±6.35

Table (2): the main findings of the included studies.

	The main findings
Garba et al. (13)	Both analgesic combinations produced sufficient analgesia; however, the combination of pentazocine and diclofenac produced more pain reduction but was more likely to cause adverse effects.
Olateju et al. (14)	After a cesarean section, the combination of injectable pentazocine and diclofenac suppository results in improved pain management and higher patient satisfaction.
Ofor et al. (15)	In the first 48 hours after a cesarean section, rectal diclofenac and injectable pentazocine considerably reduced pain compared to pentazocine alone.
Eleje et al. (16)	When compared to pentazocine alone, diclofenac with pentazocine substantially decreased pain, improved patient satisfaction, and allowed for earlier mobility throughout the post-cesarean period.
Obi et al. (17)	The analgesic effectiveness and mother satisfaction after cesarean section were shown to be higher with rectal diclofenac sodium and intramuscular pentazocine compared to intramuscular pentazocine, diclofenac, and paracetamol.

DISCUSSION

The number of caesarean sections (CS), a major obstetric surgical intervention, is increasing worldwide. An important worry that affects immunological, psychological, and physiological alterations is post-operative discomfort. Women with CS have particular difficulties, such as an increased risk of thrombosis and the need for strong analgesics in order to heal and tend to their infant. **(18)**.

Opioids have been the basis of traditional analgesics, however novel medications with adverse effects that spare opiates have been developed. A multimodal strategy has been used to raise the standard of treatment and reduce discomfort. After CS, there is no universally accepted gold standard for pain management; the main difficulty is determining the best combination with the fewest possible adverse effects. **(19)**.

Postoperative pain increases the chance of developing chronic persistent pain, prolongs recovery and hospital stays, increases patient discomfort and suffering, and lowers satisfaction. It also raises health care expenses. **(20)**.

Reducing the quantity of opioid utilized and ensuring a pleasant post-operative recovery time may be achieved by using diclofenac for post-operative analgesia and restricting the use of opioids as rescue analgesics only when necessary. An effective NSAID for pain relief is diclofenac. In cases when using opioids as a post-operative analgesic is contraindicated, it may be the only medication utilized. **(21)**.

The choice of delivery method, taking into account the patient's comfort and pleasure as well as the available medical competence, remains a difficulty, even though the multimodal strategy of employing an opioid and an NSAID has been recommended to offer more efficient pain management and fewer adverse reactions. **(22)**.

Our findings showed that as in the included studies, the individuals' mean age was 29.8 ± 5.9 years, with a range of 20 to 34 years. **(13-17).**

Also, the present study showed that **Garba et al., (13)** demonstrated that In all groups, the median pain ratings varied from 2 to 3 for the whole evaluation period. The interquartile range's top limit, 4, and 5, shows that both groups' pain levels were significantly reduced. Particularly after 12 hours after surgery, the pentazocine + diclofenac group had somewhat superior pain alleviation. According to their report, the participants' satisfaction levels in the pentazocine + diclofenac and paracetamol + diclofenac groups were 66.3% and 69.5%, respectively, and there was no statistically significant difference in satisfaction between the two groups. They discovered that there was no discernible difference in the participants' desires for comparable analgesia between the two groups, with the majority of participants in both groups desiring similar analgesia in the future.

The satisfaction level reported in two studies lower than the range of 80%–87% that compared pentazocine alone versus pentazocine + diclofenac **(16, 23).**

Similarly, Our results showed that the paracetamol + diclofenac group's satisfaction with pain alleviation was lower than that indicated by **Munishankar et al., (23)** in the UK who expressed complete contentment. The larger percentage of participants in my study who had pharmacological side effects was probably the reason for the difference in satisfaction between my study and the earlier research. Furthermore, the degree to which a patient is satisfied is a subjective measure that may be influenced by other variables that I did not examine, such as the healthcare providers' attitudes and how quickly acute pain is treated.

The effectiveness of pentazocine and diclofenac as analgesics following CS has been documented in prior research as **Kano (**2**), Rivers (**18**), Abakaliki (**9**), and Ile Ife.(** 16**)** These trials contrasted the effects of pentazocine alone with pentazocine plus diclofenac, and they all demonstrated that the combination of the two was more effective than pentazocine alone in delivering sufficient pain relief after a caesarian section.

Mitra et al. (6) Both the diclofenac + tramadol and the diclofenac + paracetamol combo relieve pain similarly in India. The closeness might be attributed to the identical medicine combinations we utilized, with the exception that I used pentazocine as my opioid.

Conclusion

The effectiveness of pentazocine and diclofenac against paracetamol and diclofenac for post-operative analgesia after cesarean section was examined in the current research. We came to the conclusion that both analgesic combos might effectively relieve pain within the first 24 hours after surgery. In the first 24 hours after CS, pentazocine and diclofenac produced greater analgesia than paracetamol and diclofenac, but they were also more likely to cause adverse effects.

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