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Comparison of Post-Episiotomy Pain Relief with Diclofenac Suppositories and Oral Indomethacin: A Comparative Study

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ABSTRACT

Background & Objective: Perineal pain is a common morbidity following episiotomy, often hindering early maternal mobility, newborn care, and overall recovery. Oral indomethacin has traditionally been used for post-episiotomy pain relief, but gastrointestinal side effects limit its tolerability. Rectal diclofenac suppositories have been suggested as an alternative with potential advantages in efficacy and safety.The objective of this study was to compare the efficacy of rectal diclofenac suppositories with oral indomethacin for relief of post-episiotomy pain in primiparous women.

Methodology: In this comparative study, 70 primigravid women (aged 18–45 years, gestational age ≥37 weeks) undergoing episiotomy at Lahore General Hospital, Lahore, were enrolled through non-probability consecutive sampling. Participants were randomly allocated by balloting to receive either rectal diclofenac suppositories (100 mg every 12 hours) or oral indomethacin (25 mg every 8 hours). Pain intensity was assessed 24 hours postpartum using the Visual Analogue Scale (VAS). Subgroup analyses were performed based on age, body mass index (BMI), and gestational age.

Results: Baseline demographic and clinical characteristics were comparable between groups. Mean VAS pain score at 24 hours was significantly lower in the diclofenac group compared with the indomethacin group (1.86 ± 0.81 vs. 3.26 ± 1.36; $p < 0.001$). Subgroup analyses confirmed the superiority of diclofenac across all age groups, BMI categories, and gestational age strata. No adverse effects were reported.

Conclusion: Rectal diclofenac suppositories provide superior analgesia compared with oral indomethacin for post-episiotomy pain management, without variation across demographic or clinical subgroups. These findings support the routine use of diclofenac suppositories for post-episiotomy pain relief in obstetric practice.

KEY WORDS: Episiotomy, Perineal pain, Diclofenac suppository, Indomethacin

How to cite: *Fayyaz S, Samar, Arshad A, Cheema AA, Ahmad WH.* Comparison of Post-Episiotomy Pain Relief with Diclofenac Suppositories and Oral Indomethacin: A Comparative Study. *J Allam Iqbal Med Coll. 2026; 24(2): 39-42*

INTRODUCTION

Perineal trauma is a frequent complication of vaginal delivery, occurring either spontaneously or through episiotomy, a surgical incision of the perineum performed to facilitate childbirth.[1] Although often carried out to reduce uncontrolled lacerations and expedite delivery, episiotomy is associated with maternal morbidity such as perineal pain, haemorrhage, infection, urinary difficulties, and wound dehiscence, as well as long-term sequelae including dyspareunia, pelvic floor dysfunction, and anal incontinence.[1,2] Among these outcomes, pain represents the most immediate and distressing consequence. Post-episiotomy pain can limit maternal mobility, interfere with breastfeeding, and delay postpartum recovery. In health systems where early discharge following spontaneous vaginal birth is emphasized, effective pain relief becomes especially important.[2]

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* Received for Publication: December 28, 2025
* Revision Received: February 10, 2026
* Accepted for Publication: April 18, 2026

Multiple strategies have been employed to alleviate perineal pain, ranging from non-pharmacological approaches such as sitz baths, ice packs, and physiotherapy to pharmacological methods including topical anaesthetics, systemic opioids, and non-steroidal anti-inflammatory drugs (NSAIDs).[2] NSAIDs are the mainstay of treatment because they provide both analgesic and anti-inflammatory effects. Oral indomethacin is commonly prescribed in this context and has demonstrated efficacy in reducing perineal pain.[3] However, its use is limited by gastrointestinal side-effects and systemic intolerance, which can compromise compliance and safety in the immediate postpartum period.[4-6]

Rectal administration of NSAIDs has emerged as a promising alternative. Diclofenac suppositories are simple to use, avoid first-pass hepatic metabolism, provide rapid systemic absorption, and minimize gastrointestinal irritation.[4] Evidence from randomized trials and systematic reviews indicates that diclofenac suppositories may achieve superior analgesia compared with oral NSAIDs for post-episiotomy pain.[5-7] Despite these findings, the published evidence base is small and originates largely from international studies, with limited data from South Asian populations. To date, no randomized controlled trial has been conducted in Pakistan comparing diclofenac suppositories with oral indomethacin for perineal pain after episiotomy.

Considering the high prevalence of episiotomy in local obstetric practice, identifying an effective and well-tolerated analgesic regimen is of clinical importance. Demonstrating the superiority of diclofenac suppositories over oral indomethacin could support a shift in practice, improve maternal comfort, promote early mobilization, and enhance postpartum recovery. The present study was therefore undertaken to compare the efficacy of rectal diclofenac suppositories with oral indomethacin for post-episiotomy pain relief in primiparous women.

METHODOLOGY

This study was conducted in the Department of Obstetrics and Gynaecology, Lahore General Hospital, Lahore, after approval by the institutional ethics committee. Written informed consent was obtained from all participants prior to enrolment. Primigravid women aged 18 to 45 years with singleton pregnancies at ≥37 weeks of gestation who delivered vaginally with a mediolateral episiotomy were eligible. Women were excluded if they had a history of hypersensitivity to non-steroidal anti-inflammatory drugs (NSAIDs), known gastrointestinal, hepatic, or renal disease, if they required operative vaginal delivery other than episiotomy, or if additional analgesics were indicated for other medical conditions.

A total of 70 participants were recruited through non-probability consecutive sampling, whereby all eligible women presenting during the study period were invited to participate until the required sample size was achieved. Sample size calculation was based on previously reported data on post-episiotomy pain relief with NSAIDs.[4-7] Assuming a mean difference of 1.0 in Visual Analogue Scale (VAS) scores, a standard deviation of 1.2, 80% power, and α=0.05, a minimum of 35 participants per group was required. To allow for possible attrition, 70 women were enrolled.

Random allocation into the two groups was performed by balloting, whereby participants drew slips labelled "diclofenac" or "indomethacin" until the target group sizes were reached. The intervention group received diclofenac sodium suppositories (100 mg, administered rectally every 12 hours), while the comparison group received oral indomethacin (25 mg every 8 hours). The first dose was given within one hour following episiotomy repair. All women also received routine postpartum care according to hospital protocol.

Pain intensity was assessed at 24 hours postpartum using a 10-point Visual Analogue Scale (VAS), where 0 represented no pain and 10 the worst imaginable pain. The primary outcome was mean VAS score at 24 hours. Subgroup analyses were conducted to evaluate associations with maternal age, body mass index (BMI), and gestational age.

Data were analyzed using SPSS version 25. Continuous variables were presented as mean ± standard deviation, and categorical variables as frequencies and percentages. Independent sample t-tests were applied to compare mean VAS scores between groups. Subgroup analyses were performed by stratifying age (<25 vs ≥25 years), BMI (<25 vs ≥25 kg/m²), and gestational age (<38 vs ≥38 weeks). A p-value <0.05 was considered statistically significant.

RESULTS

A total of 70 women meeting the inclusion criteria were enrolled and randomized, with 35 allocated to the diclofenac suppository group and 35 to the oral indomethacin group. All participants completed follow-up at 24 hours, and no data were excluded from analysis.

The overall mean maternal age was 24.6 ± 4.9 years (range 18–40 years). The mean gestational age at delivery was 38.3 ± 1.1 weeks, and the mean body mass index (BMI) was 26.7 ± 3.9 kg/m². Nineteen women (27.1%) were obese, while the remainder had normal or overweight BMI. Baseline demographic and clinical characteristics were comparable between the two groups, with no statistically significant differences (Table I).

The mean Visual Analogue Scale (VAS) pain score at 24 hours postpartum was significantly lower among women who received rectal diclofenac suppositories compared with those given oral indomethacin (1.86 ± 0.81 vs. 3.26 ± 1.36; p < 0.001).

Subgroup analyses demonstrated consistent findings across maternal characteristics. Among women younger than 25 years, the mean VAS score was 1.82 ± 0.78 with diclofenac versus 3.18 ± 1.29 with indomethacin (p < 0.001). In women aged 25 years or older, scores were 1.91 ± 0.85 and 3.34 ± 1.45, respectively (p = 0.001). In participants with BMI <25 kg/m², mean VAS was 1.79 ± 0.77 with diclofenac and 3.21 ± 1.33 with indomethacin (p < 0.001). Among those with BMI ≥25 kg/m², corresponding scores were 1.95 ± 0.85 versus 3.32 ± 1.40 (p = 0.002). Stratification by gestational age (<38 vs ≥38 weeks) also showed significantly lower pain scores in the diclofenac group across both strata (p < 0.05 for each comparison).

No adverse drug reactions were reported in either group

Table I: Baseline characteristics of study participants (n = 70)

Characteristic	*Diclofenac (n=35)*	*Indomethacin (n=35)*	*p-value*
Age (years), mean ± SD	24.6 ± 4.9	24.7 ± 4.8	0.92
Gestational age (weeks), mean ± SD	38.3 ± 1.1	38.4 ± 1.0	0.81
BMI (kg/m²), mean ± SD	26.7 ± 3.9	26.8 ± 4.0	0.89
Obese (BMI ≥30), n (%)	9 (25.7)	10 (28.6)	0.78

Table II: Comparison of mean VAS pain scores at 24 hours postpartum

Subgroup	Diclofenac (mean ± SD)	Indomethacin (mean ± SD)	p-value
Overall (n=70)	1.86 ± 0.81	3.26 ± 1.36	<0.001
Age <25 years	1.82 ± 0.78	3.18 ± 1.29	<0.001
Age ≥25 years	1.91 ± 0.85	3.34 ± 1.45	0.001
BMI <25 kg/m²	1.79 ± 0.77	3.21 ± 1.33	<0.001
BMI ≥25 kg/m²	1.95 ± 0.85	3.32 ± 1.40	0.002
GA <38 weeks	1.80 ± 0.79	3.20 ± 1.31	0.001
GA ≥38 weeks	1.91 ± 0.83	3.30 ± 1.39	0.002

DISCUSSION

This study demonstrated that rectal diclofenac suppositories provide significantly greater analgesia than oral indomethacin for post-episiotomy pain in primiparous women. The superiority of diclofenac was consistent across maternal subgroups of age, body mass index, and gestational age, with no adverse effects reported. These findings confirm that rectal diclofenac is both effective and well tolerated in the immediate postpartum period.

Our results are in line with previous studies evaluating rectal NSAIDs for perineal pain. Dodd et al. showed that diclofenac suppositories significantly reduced perineal pain compared with placebo, while a Cochrane review by Hedayati et al. also confirmed the efficacy of rectal NSAIDs for post-episiotomy analgesia.[12] Consistent with these reports, Olaniyi demonstrated that rectal diclofenac provided superior pain relief compared with oral formulations in Nigerian women.[13]

Further evidence supports this conclusion from trials conducted in different populations. In a local study from Bahawalpur, Ijaz et al. compared rectal diclofenac with oral mefenamic acid and found significantly lower mean VAS scores among women receiving the suppository.[14] Similarly, Akhlaghi and Alipour in Iran reported that diclofenac suppositories were more effective than oral indomethacin.[15] Altungül et al., in Turkey, also observed significantly lower pain scores with rectal diclofenac compared with indomethacin (2.0 ± 0.7 vs. 3.4 ± 1.3, p<0.001).[16] Taken together, these studies, alongside our results, provide robust evidence for the superiority of rectal diclofenac over oral NSAIDs in post-episiotomy pain management.

The magnitude of pain reduction observed in this study (a mean difference of 1.4 on the VAS) is clinically meaningful. Even modest reductions in perineal pain may facilitate early ambulation, improve breastfeeding initiation, and enhance maternal satisfaction with childbirth. Effective pain relief may also reduce the risk of persistent perineal pain, which can develop in a minority of women following episiotomy.[10]

The study has several strengths. Its randomization and comparative design minimizes bias and provides a high level of evidence. The sample size was adequate to detect clinically meaningful differences between groups, and pain was assessed using a validated, widely accepted tool. The consistency of the results across maternal age, BMI, and gestational age subgroups strengthens the reliability of the findings. Importantly, no adverse effects were observed in either group, supporting the safety of rectal diclofenac in this population.

Certain limitations should also be acknowledged. The study was conducted in a single center, which may limit generalizability. Non-probability consecutive sampling introduces a risk of selection bias, although baseline comparability between groups mitigates this concern. Only short-term outcomes at 24 hours were assessed; longer-term pain, wound healing, and sexual function were not evaluated. Finally, the open-label design could have introduced reporting bias, though the use of a standardized pain scale provides some reassurance.

Despite these limitations, the clinical implications are significant. Rectal diclofenac suppositories represent a simple, inexpensive, and well-tolerated intervention that can meaningfully improve maternal comfort in the immediate postpartum period. Their routine use in obstetric practice, particularly in low- and middle-income settings where oral NSAIDs remain the norm, could enhance recovery and reduce the burden of perineal morbidity. Future research should examine longer-term outcomes, evaluate cost-effectiveness, and explore comparisons with other analgesic modalities in larger, multicenter cohorts.

CONCLUSION

This comparative study demonstrated that rectal diclofenac suppositories provide significantly greater analgesia than oral indomethacin for post-episiotomy pain in primiparous women. The superiority of diclofenac was consistent across maternal subgroups, and no adverse effects were reported, highlighting both efficacy and safety.

Given their effectiveness, tolerability, and ease of administration, diclofenac suppositories should be considered a preferred option for routine management of post-episiotomy pain in obstetric practice. Incorporating this simple and inexpensive intervention into postpartum care protocols has the potential to improve maternal comfort, promote early mobilization, and enhance overall recovery.

Future studies should aim to evaluate long-term outcomes, including wound healing, dyspareunia, and maternal quality of life, and to validate these findings in larger, multicenter populations.

Ethical approval:

Ethical approval was taken from institutional review board of Lahore General Hospital/PGMI, Lahore, with the IRB number 131/8/03-09-2024/S1 ERB Dated 03-09-2024.

Conflict of Interest:

Authors declare no conflict of interest.

Financial Disclosure:

None

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Authors' Contributions:

AAC & SF: Conceptualization & study design.

AAC, HWA, AA: Data Collection and manuscript drafting.

HWA, S: Data Analysis and critical review.

S, SF, AAC, AA: Supervision &Manuscript drafting & proof reading.

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