

Original Article

A Comparative Study of Pain Intensity After Episiotomy Repair Using Continuous and Interrupted Sutures

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Abstract

Objectives: To compare the pain intensity after episiotomy repair using continuous and interrupted sutures.

Methodology: This randomized controlled trial no. NCT07050615 was conducted at the Department of Obstetrics & Gynecology, Shahida Islam Teaching Hospital, Lodhran, Pakistan, from August 2024 to January 2025, included 86 women (43 in each group) aged 20 to 40 who underwent an episiotomy during delivery in the labor room. Group-A comprised women who received continuous sutures, while Group-B included those with interrupted sutures. Both groups had their episiotomy repairs performed with Vicryl 2/0 sutures. The researcher followed up with all patients 48 hours postoperatively to evaluate postoperative pain, using the visual analogue scale (VAS). A score of ≤ 3 on the VAS was considered no pain.

Results: In a total of 86 women, the mean age was 27.82 ± 4.60 years, and 62 (72.1%) women were aged between 20–30 years. Residential status of 49 (57.0%) women was rural. The mean duration of surgery was 29.24 ± 7.31 minutes. In patients who underwent continuous suturing, pain was noted in 7 (16.3%) patients, compared to 16 (37.2%) among those who underwent interrupted suturing ($p=0.028$). Stratified analysis demonstrated that, among women aged 20–30 years, continuous suturing was associated with a significantly lower rate of no post-operative pain (12.5% vs. 33.3%, $p=0.049$).

Conclusion: Continuous suturing for episiotomy repair significantly reduces post-operative pain compared to interrupted suturing in the early postpartum period.

Keywords: Episiotomy, Pain, Post-partum, Suturing, visual analog scale.

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Introduction

Perineal injury commonly occurs during childbirth if adequate perineal support is not provided during the delivery of the baby's head or if the shoulders are not delivered properly. Around 85% of women undergoing spontaneous vaginal delivery face some type of perineal trauma.¹ Postpartum pain is distressing and can make it challenging for a mother to take care of both herself and her child.² The perineal repair is an important part of childbirth that affects numerous women and has the potential to cause maternal morbidity.³

Effective wound closure methods are crucial from a clinical perspective for avoiding infection, reducing

discomfort, and encouraging healthy tissue repair.⁴ The ideal approach for repairing perineal tears or episiotomies is one that reduces time, materials, and pain in both the short and long term. This technique should enable a quicker return to intercourse and decrease the necessity for suture removal and re-suturing.⁵ The interrupted suturing technique is used when the ability to remove individual sutures is crucial or when there is a chance of infection or significant bleeding.⁶ In a study conducted by Jena et al⁷, it was found that 51.9% of participants in the interrupted group reported pain, while only 20% in the continuous group did ($p<0.001$). In a different study, it was documented

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that 36% of participants in the interrupted group experienced pain, while only 13.3% in the continuous group did.⁸ In one study, it was observed that 68.4% of participants in the interrupted group reported pain, compared to 76.5% in the continuous group.⁹

Post-operative pain is the most prevalent issue following an episiotomy, greatly affecting patients both physically and mentally, resulting in increased morbidity. Although previous studies exist on this topic, their results have been inconsistent,^{8,9} and there is a lack of recent local data. This study was done to compare the pain intensity after episiotomy repair using continuous and interrupted sutures. The findings would help in adopting a more effective technique, resulting in reducing the postoperative pain and lowering morbidity. Practical recommendations can be made to enhance routine practices and establish guidelines for these patients. Different results are to be expected locally, as most of the study population belonged to peripheral areas and had a racial background that differs from that of the Western population.

Methodology

This randomized controlled trial (RCT) was registered at ClinicalTrials.gov <https://clinicaltrials.gov/search?cond=NCT07050615> and conducted at the Department of Obstetrics & Gynecology, Shahida Islam Teaching Hospital, Lodhran, Pakistan, from August 2024 to January 2025. Approval from the ethical review committee was obtained before the study started (letter number: SIMC/ET.C/10014/23, dated: 02-06-2023). A sample size of 84 (42 in each group) was calculated using OpenEPI online sample size calculator considering the anticipated frequency of pain in the interrupted group as 51.9% and in the continuous group as 20.0%⁷, setting the power of the study at 80% and the significance level at 95%.

The inclusion criteria were pregnant females aged between 20 and 40 years who were undergoing an episiotomy to facilitate the delivery of the head in the labor room. Recruitment occurred in the advanced second stage of labor (when crowning or imminent delivery of the fetal head was evident). Only those having their 1st or 2nd pregnancy and with a gestational age of 37-41⁺⁶ weeks were selected for this study. The exclusion criteria were women who had undergone an instrumental vaginal delivery or had a history of previous perineal surgery or episiotomy.

The women with high-risk pregnancies, (hypertension, anemia or bleeding tendency, diabetes mellitus, a suspected genital infection, or those with impaired immunity, etc.), or those taking corticosteroids, were also excluded. Simple random sampling technique was adopted. Informed and written consent from patient/guardian was obtained.

Eligible patients went through documentation of their demographics, like age, gestational age, parity, body mass index (BMI), and residential status (urban/rural). Randomization was performed using a sealed opaque envelope (lottery) method. For each eligible participant, a sealed envelope was drawn immediately prior to episiotomy repair, indicating allocation to Group-A or Group-B. The Group-A patients (n=43) went through continuous suturing and in the Group-B, interrupted suturing was performed. In both groups' episiotomy repair was done by the vicryl 2/0 suture. The type of episiotomy (midline or mediolateral), stage of labor at which episiotomy was performed, and duration of repair were documented. All repairs were conducted under local perineal infiltration anesthesia with 5 mL of 2% lignocaine at the episiotomy site. No saddle block or other regional anesthesia techniques were used. In both suturing groups, all layers of the episiotomy wound were sutured together in a single procedure according to standard practice. The same approach was applied for both continuous and interrupted suturing techniques. After the procedure, all patients received oral paracetamol 500 mg every 8 hours for 48 hours for pain management. The administration of anesthesia and post-operative analgesia was standardized across both groups.

Following the procedure, all patients were monitored in the hospital for at least 48 hours. For patients discharged before 48 hours, a standardized telephone follow-up or outpatient visit at the 48-hour mark was conducted to assess post-operative pain. Pain was evaluated at 48 hours post-repair using the Visual Analogue Scale (VAS) for pain (yes/no). The outcome assessor who evaluated pain at 48 hours was blinded to the group allocation to reduce bias in outcome assessment. A special proforma was used to collect all data.

The statistical analysis was performed using "IBM-SPSS Statistics" version 26.0. The qualitative data was expressed as frequency and percentage. For

the quantitative data, means and standard deviations (SD) were computed. Comparison between both groups was done by using the chi-square test, Fisher's exact test (for categorical data), independent sample t-test (for continuous data), considering a p-value <0.05 as significant.

Results

In a total of 86 women, the mean age was 27.82 ± 4.60 years, and 62 (72.1%) women were aged between 20–30 years. The mean gestational age was 39.92 ± 1.10 weeks. Residential status of 49 (57.0%) women was rural. Type of episiotomy was midline, noted in 57 (66.3%) women. The mean duration of surgery was 29.24 ± 7.31 minutes. Baseline demographic and obstetric characteristics were compared between the two groups (Table I), and there were no statistically significant differences with respect to age distribution, gestational age, parity, BMI, residential status, type of episiotomy, or procedure duration between the two groups.

In patients who underwent continuous suturing, pain was noted in 7 (16.3%) patients, compared to 16 (37.2%) among those who underwent interrupted suturing ($p=0.028$), and the details are shown in figure 1.

Stratified analysis demonstrated that, among women aged 20–30 years, continuous suturing was associated with a significantly lower rate of no post-operative pain (12.5% vs. 33.3%, $p=0.049$). Among women who underwent midline episiotomy, the incidence of no pain was significantly lower in

Group-A (7.1% vs. 34.5%, $p=0.011$). Although differences in post-operative pain were observed across other strata, including BMI >25, rural residence, and parity of 2, these did not reach statistical significance. A consistent trend favoring continuous suturing over interrupted suturing was noted across most subgroups (Table II).

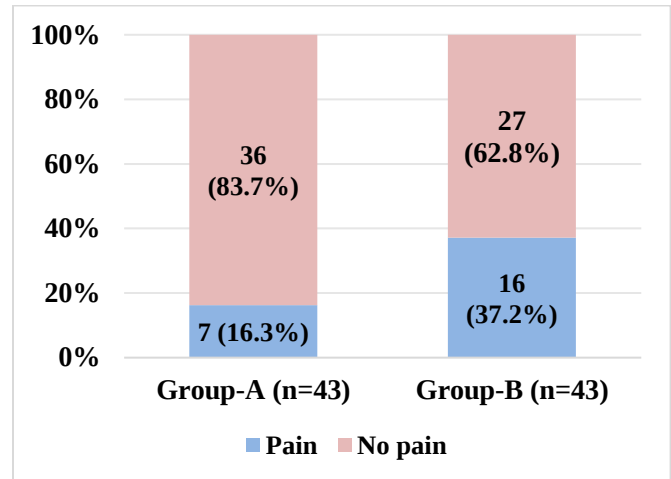


Figure 1. Frequency of post-operative pain in two groups. (n=86)

Discussion

This study indicated that continuous suturing was associated with significantly less frequency of no post-operative pain at 48 hours than interrupted suturing (16.3% vs. 37.2%, $p=0.028$). The present study's findings align with those of Khatri et al.,¹⁰ who also reported better healing and pain outcomes in the continuous suturing group. Their recommendation to

Table I: Demographic characteristics of study participants. (N=86)

Characteristics		Total	Group-A (n=43)	Group-B (n=43)	P-value
Age (years)	20-30	62 (72.1%)	32 (74.4%)	30 (69.8%)	0.631*
	31-40	24 (27.9%)	11 (25.6%)	13 (30.2%)	
	Mean±SD	27.82±4.60	27.88±4.26	27.81±4.82	
Gestational age (weeks)	37-39	53 (61.6%)	26 (60.5%)	27 (62.8%)	0.825*
	40-41	33 (36.4%)	17 (39.5%)	16 (37.2%)	
	Mean±SD	39.92±1.10	39.0±1.11	38.93±1.10	
Parity	1	28 (32.6%)	13 (30.2%)	15 (34.9%)	0.645*
	2	58 (67.4%)	30 (69.8%)	28 (65.1%)	
BMI (kg/m ²)	≤25	19 (22.1%)	12 (27.9%)	7 (16.3%)	0.194*
	>25	67 (77.9%)	31 (72.1%)	36 (83.7%)	
	Mean±SD	28.25±3.31	27.77±3.72	28.74±3.04	
Residential status	Rural	49 (57.0%)	24 (55.8%)	25 (58.1%)	0.828*
	Urban	37 (43.0%)	19 (44.2%)	18 (71.9%)	
Type of episiotomy	Midline	57 (66.3%)	28 (65.1%)	29 (67.4%)	0.820*
	Mediolateral	29 (33.7%)	15 (34.9%)	14 (32.6%)	
Procedure Duration (minutes)	≤30	51 (59.3%)	26 (60.5%)	25 (58.1%)	0.826*
	>30	35 (40.7%)	17 (39.5%)	18 (41.9%)	
	Mean±SD	29.24±7.31	29.00±7.26	29.47±7.36	

*Chi-square applied; #Independent sample t-test applied

Table II: Stratification of study variables with respect to pain in both study groups. (N=86)					
Characteristics		Groups (N)	Post-Operative Pain		P-value
			Yes (n=23)	No (n=63)	
Age (years)	20-30	A (32)	4 (12.5%)	28 (87.5%)	0.049
		B (30)	10 (33.3%)	20 (66.7%)	
	31-40	A (11)	3 (27.3%)	8 (72.7%)	0.341
		B (13)	6 (46.2%)	7 (53.8%)	
Gestational age (weeks)	37-39	A (26)	3 (11.5%)	23 (88.5%)	0.058
		B (27)	9 (33.3%)	18 (66.7%)	
	40-41	A (17)	4 (23.5%)	13 (76.5%)	0.218
		B (16)	7 (43.8%)	9 (56.2%)	
Parity	1	A (13)	2 (15.4%)	11 (84.6%)	0.274
		B (15)	5 (33.3%)	10 (66.7%)	
	2	A (30)	5 (16.7%)	25 (83.3%)	0.054
		B (28)	11 (39.3%)	17 (60.7%)	
BMI (kg/m ²)	≤25	A (12)	1 (8.3%)	11 (91.7%)	0.075
		B (7)	3 (42.9%)	4 (57.1%)	
	>25	A (31)	6 (19.4%)	25 (80.6%)	0.129
		B (36)	13 (36.1%)	23 (63.9%)	
Residential status	Rural	A (24)	4 (16.7%)	20 (83.3%)	0.071
		B (25)	10 (40.0%)	15 (60.0%)	
	Urban	A (19)	3 (15.8%)	16 (84.2%)	0.214
		B (18)	6 (33.3%)	12 (66.7%)	
Type of episiotomy	Midline	A (28)	2 (7.1%)	26 (92.9%)	0.011
		B (29)	10 (34.5%)	19 (65.5%)	
	Mediolateral	A (15)	5 (33.3%)	10 (66.7%)	0.597
		B (14)	6 (42.9%)	8 (57.1%)	
Procedure Duration (minutes)	≤30	A (26)	3 (11.5%)	23 (88.5%)	0.139
		B (25)	7 (28.0%)	18 (72.0%)	
	>30	A (17)	4 (23.5%)	13 (76.5%)	0.105
		B (18)	9 (50.0%)	9 (50.0%)	

adopt continuous suturing using vicryl rapid as a routine technique resonates with the results observed in this

study. Siakkal et al.¹¹ conducted a robust RCT involving 300 women in Iran and reported that the continuous non-locking suture technique led to significantly better wound healing ($p<0.0001$) and reduced pain ($p<0.0001$), along with decreased analgesic requirements and shorter repair duration. These findings are highly consistent with the current study, reinforcing that the continuous method not only mitigates pain but also contributes to better wound healing and resource optimization. Sadaf-un-Nisa et al.¹² conducted a randomized controlled trial, where 58% of women in the continuous group reported no pain compared to only 24% in the interrupted group ($p<0.001$). Nayyer et al.¹³ revealed that the continuous suturing had a mean VAS score of 3.64 ± 0.94 , while for the interrupted suturing technique, the mean VAS score was 5.46 ± 0.75 , showing a significantly lesser association of pain with the continuous suturing method ($p\text{-value}=0.001$), although the scores were measured after 24 hours of birth. Amin et al.¹⁴ demonstrated that continuous suturing resulted in significantly shorter procedure duration and fewer vicryl sutures, with

improved post-procedural pain recovery. These findings reinforce the analgesic benefit of the continuous suturing technique. In contrast, Valenzuela et al.,¹⁵ in a trial conducted in Madrid, found no statistically significant difference in pain between the continuous and interrupted groups on the second day (RR 1.08, 95% CI: 0.74–1.57), tenth day, and three months postpartum.

However, they did report a significant reduction in repair time and suture material usage in the continuous group. Sohail and Shehnaz¹⁶ similarly found no significant difference in pain scores between the two techniques across multiple follow-up intervals, despite documenting a shorter repair time and lower suture consumption in the continuous group. Aslam et al.,¹⁷ in their trial at Benazir Bhutto Hospital Rawalpindi, concluded that there was no statistically significant difference in the severity of pain between the two techniques. While their study included both primigravidas and multigravidas and used a slightly different categorization for pain (slight/severe), their findings underscore the heterogeneity in pain outcomes associated with suturing techniques. Population differences in pain perception, pain management protocols, and perineal care might have influenced outcomes. The 48-hour cut-off was

selected as it represents a standard time point for early assessment of post-episiotomy pain and complications, widely used in similar studies. This period captures acute outcomes while aligning with typical postpartum observation practices, ensuring consistency in data collection.

Tayyba et al.,¹⁸ reported that continuous subcuticular sutures using vicryl were associated with fewer post-operative complications such as wound discharge, dehiscence, and a feeling of stretch. Although their primary focus was on complications rather than pain alone, their results indirectly support the advantages of continuous suturing, which is also evident in this study's findings. Elboghdady et al.¹⁹ found that the VAS score at 6 and 12 hours was significantly higher in the interrupted group than in the continuous group ($p < 0.001$), which closely mirrors the present findings. Their results further strengthen the evidence base supporting continuous suturing in the early postpartum period. Ahmed et al.,²⁰ from Egypt demonstrated that continuous suturing led to significantly lower pain at 12 and 48 hours, less analgesia requirement, shorter suturing time, and better wound healing. These outcomes are consistent with the current study and highlight the cross-cultural applicability of continuous suturing. Samal and Rathod²¹ also reported less pain with continuous suturing during various postpartum activities and noted a lower consumption of suture material. Their findings corroborate the present study and demonstrate the method's applicability in both short-term and long-term maternal recovery.

The clinical implications of these findings are significant. Reducing post-episiotomy pain can improve maternal satisfaction, encourage early mobilization, enhance breastfeeding initiation, and reduce the need for analgesics, thereby minimizing potential side effects and healthcare costs.^{22,23} Continuous suturing, being simpler, quicker, and more resource-efficient, is particularly suitable for high-volume, resource-limited settings.²⁴ The findings of this study may differ slightly from others due to variations in population demographics, pain thresholds, analgesic administration, and the skill level of attending staff. However, the consistency in the direction of benefit across many studies strengthens the validity of the findings.

Limitations of the current study include its single-center design and relatively small sample size. Pain was assessed only at 48 hours, and long-term outcomes

such as wound dehiscence, dyspareunia, and satisfaction were not evaluated. The study used a subjective pain scale (VAS), which, although widely accepted, can introduce reporting bias.

Conclusion

Continuous suturing for episiotomy repair significantly reduces post-operative pain compared to interrupted suturing in the early postpartum period. These findings support the adoption of continuous suturing as the preferred method, particularly in resource-limited healthcare settings.

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