



Original Article



Comparison of Polyfilament Suture (Vicryl Rapide-0) & Monofilament Suture (Monocryl 3-0) in the Repair of Mediolateral Episiotomies

Mahrukh Fatima Zaidi¹, Irum Sohail¹, Hasina Sadiq^{2,3}, Marium Riaz¹ and Shafaq Fatima¹¹Department of Obstetrics and Gynecology, Khan Research Laboratories Hospital, Islamabad, Pakistan²Department of Obstetrics and Gynecology, Shifa International Hospital, Islamabad, Pakistan³University Hospital Birmingham National Health Service Foundation Trust, Birmingham, United Kingdom

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*Corresponding Author:

Mahrukh Fatima Zaidi
Department of Obstetrics and Gynecology, Khan Research Laboratories Hospital, Islamabad, Pakistan
mahrukhzaidi18@gmail.comReceived Date: 15th September, 2025Revised Date: 25th November, 2025Acceptance Date: 29th November, 2025Published Date: 30th November, 2025

ABSTRACT

Episiotomy remains a common obstetric procedure, and the choice of suture material can influence postoperative pain, wound healing, and maternal satisfaction. **Objectives:** To compare Monocryl and Vicryl Rapide for mediolateral episiotomy repair in terms of pain, wound healing, complications, and patient satisfaction. **Methods:** A quasi-experimental study was conducted at the Gynecology Department, KRL General Hospital, Islamabad, from August 2022 to October 2023. Sixty women (18–45 years) undergoing spontaneous vaginal delivery were randomized into two groups (n = 30 each). Skin closure was done with Monocryl 3-0 (study group) or Vicryl Rapide 3-0 (control group), while deeper layers were closed with Vicryl Rapide 0 in both groups. Pain was assessed using the Visual Analog Scale (VAS). **Results:** Baseline demographics were comparable between groups (p > 0.05). The study group reported significantly lower pain at 1 hour (p = 0.001), 3 hours (1.53 ± 1.41 vs. 3.30 ± 2.38, p = 0.001), 6 hours (0.97 ± 1.59 vs. 2.63 ± 2.01, p = 0.001), after defecation (0.63 ± 0.93 vs. 2.00 ± 1.46, p < 0.001), after urination (0.53 ± 0.82 vs. 1.63 ± 1.35, p < 0.001), and on day 7 (p < 0.001). Wound healing was significantly better with Monocryl (p = 0.005), and patient satisfaction was higher (p = 0.001). No infections occurred in the Monocryl group, compared to 6.7% in the control. **Conclusions:** Monocryl demonstrated clear superiority over Vicryl Rapide for episiotomy repair, offering reduced pain, improved wound healing, and higher maternal satisfaction.

INTRODUCTION

Episiotomy is a surgical incision performed during the second stage of labor to enlarge the vaginal opening and facilitate delivery. Although once routinely practiced, its role has become increasingly debated, as clinical evidence suggests that routine use may not be justified and should instead be based on clear clinical indications [1, 2]. Perineal trauma remains a significant maternal health concern, with approximately 85% of women experiencing some form of perineal injury during spontaneous vaginal delivery, and over two-thirds requiring suturing [2]. Such trauma is

associated with considerable maternal morbidity, contributing to physical, psychological, and social challenges [3, 4]. Consequences may include urinary or fecal incontinence, dyspareunia, impaired mobility, and a disrupted maternal-infant bond [5]. Furthermore, perinatal events such as delivery mode, perineal injuries, and postpartum pain are closely linked with postpartum depression (PPD), while post-traumatic stress disorder (PTSD) affects 3–4% of women after childbirth [6, 7]. The quality of perineal repair plays a crucial role in reducing



morbidity. Prolonged second-stage labor increases the risk of severe perineal injuries, but appropriate repair techniques can minimize complications [8]. Continuous suturing has demonstrated advantages over interrupted methods, including reduced perineal pain, decreased analgesic use, improved wound healing, shorter repair duration, and lower material consumption [9]. However, outcomes are also influenced by the choice of suture material, suturing technique, and the skill of the operator [10]. Suture selection is particularly important [11]. The role of suture materials in wound repair is pivotal, as they provide a supportive framework that facilitates tissue healing [12]. Monocryl induces minimal tissue reaction due to its monofilament structure and maintains about 25% tensile strength by the 14th day [8]. Poliglecaprone-25 is an absorbable suture, completely absorbed within 91-119 days of application, with minimal inflammatory reaction [13]. Evidence therefore suggests that the choice between Monocryl and Vicryl Rapide should be guided by clinical priorities, including pain management, healing time, and risk of wound breakdown [13, 14].

This study aims to compare monofilament and polyfilament sutures in mediolateral episiotomy repair following spontaneous vaginal delivery, focusing specifically on maternal outcomes of perineal pain, infection, and wound dehiscence.

METHODS

This study utilized a quasi-experimental design and was conducted among 60 pregnant patients visiting KRL Hospital in Islamabad, during the time period of October 2022 to April 2023. The study was duly approved by the ethical committee of the hospital. Ethical approval was obtained from the KRL Hospital Institutional Review Board (IRB) (Ref ERC: KRL-HI-PUB-ERC/Oct22/18). Women who had lived singleton pregnancies of 37 to 40+6 weeks' gestation were considered as part of this research. Among those who resulted in SVD with episiotomy, 75 women were selected as candidates for the study, and they were asked to participate. 15 women refused to participate in the study due to personal reasons in the beginning. The patients who had undergone an uncomplicated episiotomy after a vaginal delivery, either spontaneously or by the instrument, were included in the study. All the deliveries were conducted by 3rd and 4th-year resident obstetricians. An uncomplicated episiotomy was defined as one that was not associated with additional perineal tears and that did not involve the anal sphincter. The patients having known coagulopathy, vulval or vaginal varicose veins, and 1st, 3rd, or 4th degree perineal tears were not made a part of this research. All participants gave verbal and written consent. Women were assigned to either the study (Monocryl) or control (Vicryl Rapide) group using convenience sampling,

alternating enrollment to reduce bias. This single-blinded study ensured patients were unaware of their group. Episiotomies were performed under aseptic conditions by obstetricians following a standard protocol. Vaginal walls were sutured continuously with Vicryl Rapide '0', muscles with interrupted Vicryl Rapide '0', and skin with either interrupted Vicryl Rapide '0' or continuous subcuticular Monocryl 3-0, based on group. Monocryl used a 19mm curved needle; Vicryl Rapide used a 40mm taper point needle. Analgesia: 5-10 ml of 2% xylocaine. After perineal repair, participants received a questionnaire to record outcomes, preventing care provider influence. Demographic data (admission number, age, BMI, parity, gestational age) were collected from hospital records. Pain presence and severity were assessed at 1, 3, and 6 hours using the Visual Analog Scale (VAS), ranging from 0 ("no pain") to 10 ("unimaginable pain"), as proposed by the National Comprehensive Cancer Network, USA [15]. Pain after urination and defecation was also recorded as a primary outcome. Secondary outcomes included pain on day 7, dehiscence, infection, wound healing, and patient satisfaction. Wound healing was assessed on the 7th postpartum day using the Wound Healing Index, a validated scale evaluating erythema, edema, ecchymosis, discharge, and approximation of wound edges [16]. Patient satisfaction was measured using the Patient Satisfaction Questionnaire (PSQ) developed by Ware *et al.* which uses a Likert-scale format to assess satisfaction regarding pain, comfort, and overall experience [17]. All data were analyzed using SPSS version 22.0. Chi-square test was used to compare the qualitative data, whereas the independent t-test analysis was used to compare the quantitative data between the two groups. The p-value < 0.05 was considered significant.

RESULTS

In this research, 60 women were enrolled and were divided into two groups, consisting of 30 women in each group (study and control). The distribution of the demographic characteristics showed that the mean age of the study group (25.63 ± 4.08 years) was not significantly (p -value > 0.05) different from that of the (26.87 ± 3.78 years) control group. The mean parity (1.27 ± 1.23 vs. 1.77 ± 1.46 , p -value = 0.156) and the gestational age (38.58 ± 0.94 vs. 38.16 ± 1.20 , p -value = 0.132) were also similar in both the study and the control groups (Table 1).

Table 1: Baseline Characteristics of Study and Control Groups

Variables	Study Group (n=30)	Control Group (n=30)	p-value
Age of Patient (Years)	25.63 ± 4.08	26.87 ± 3.78	0.229
Parity of the Patient	1.27 ± 1.23	1.77 ± 1.46	0.156
Gestational Age (Weeks)	38.58 ± 0.94	38.16 ± 1.20	0.132

The distribution of body mass index (BMI) was also similar in both groups (Table 2).

Table 2: Distribution of Body Mass Index (BMI) in Study and Control Groups

BMI Category (kg/m ²)	Study Group (n=30)	Control Group (n=30)	p-value
Below 18.5	1 (3.33%)	1 (3.33%)	1.00
18.5–25.9	26 (86.67%)	26 (86.67%)	
25–29.9	3 (10.00%)	3 (10.00%)	
Total	30 (100%)	30 (100%)	

The majority, 28 (93.33%) of the patients in both groups delivered through spontaneous vaginal delivery (SVD). In our sample most common complication associated with delivery was perineal tear other than episiotomy in both the study group 3 (10.0%) and the control group 2 (6.67%), along with one case of cervical tear and PPH in both groups. Almost all the patients in both groups (83.3% vs. 96.67%) complained of pain in both the study and control groups. On the 7th day after the procedure, no case of infection was found among the participants in the study group. In the control group, 2 women (6.67%) presented with an infection on the 7th day, post-delivery. The comparison of wound healing shows that the rate of wound healing was significantly (p -value<0.05) better in a study group in which almost all the patients 30 (100%) showed good wound healing after 7 days, as compared to the control group in which 25 (83.33%) patients showed good healing at the 7th day. The comparison of patient satisfaction showed that 28 (93.33%) of patients in the study group were satisfied on the 7th day, in contrast with the control group, i.e., 17 (56.67%) of patients were satisfied on the 7th day. It specified that patients in the study group were significantly (p -value<0.05) more satisfied as compared to the control group, as shown in detail (Table 3).

Table 3: Comparison of Delivery and Postpartum Characteristics Between Study and Control Groups

Characteristics	Study Group (n=30)	Control Group (n=30)	p-value
Mode of Delivery			
SVD	28 (93.33%)	28 (93.33%)	1.00
Instrumental	2 (6.67%)	2 (6.67%)	
Delivery Complications			
Perineal tear	3 (10.00%)	2 (6.67%)	0.974
Cervical tear	1 (3.33%)	1 (3.33%)	
PPH	1 (3.33%)	1 (3.33%)	
No complications	25 (83.33%)	26 (86.67%)	
Pain Complaint			
Yes	25 (83.33%)	29 (96.67%)	0.085
No	5 (16.67%)	1 (3.33%)	
Infection on 7 th Day			
Yes	0 (0.00%)	2 (6.67%)	0.150
No	30 (100.00%)	28 (93.33%)	

Wound Healing on 7 th Day			
Very Poor	0 (0.00%)	2 (6.67%)	0.005
Poor	0 (0.00%)	3 (10.00%)	
Good	4 (13.33%)	11 (36.67%)	
Very Good	15 (50.00%)	12 (40.00%)	
Excellent	11 (36.67%)	2 (6.67%)	
Patient Satisfaction on 7 th Day			
Very Satisfied	17 (56.67%)	4 (13.33%)	0.001
Somewhat Satisfied	11 (36.67%)	13 (43.33%)	
Somewhat Dissatisfied	2 (6.67%)	8 (26.67%)	
Very Dissatisfied	0 (0.00%)	5 (16.67%)	

The comparison of pain showed that after 1 hour, the mean pain among study group patients (2.57 ± 1.55) was significantly less (p -value<0.05) than compared of the (4.30 ± 2.10) control group. Similarly, the pain was significantly (p -value<0.05) less in the study group after 3 hours post-delivery and was recorded to lessen after 6 hours in the control group. Similarly, after defecation, the pain was significantly (p -value<0.05) less in the study group (0.63 ± 0.93) as compared to the (2.00 ± 1.46) control group. The pain was also significantly less after urination among the study group patients (0.53 ± 0.82), in contrast to the (1.63 ± 1.35) control group patients. On the 7th post-partum day, the pain was also noted to be significantly (p -value<0.05) less in the study group (0.13 ± 0.43) as compared to the (1.70 ± 1.68) control group (Table 4).

Table 4: Comparison of Pain Based on Visual Analog Scale (VAS) Between Study and Control Groups (n=60)

Time Point / Activity	Group	Mean \pm SD	p-value
After 1 Hour of Delivery	Study Group	2.57 ± 1.55	0.001
	Control Group	4.30 ± 2.10	
After 3 Hours of Delivery	Study Group	1.53 ± 1.41	0.001
	Control Group	3.30 ± 2.38	
After 6 Hours of Delivery	Study Group	0.97 ± 1.59	0.001
	Control Group	2.63 ± 2.01	
After Defecation	Study Group	0.63 ± 0.93	0.000
	Control Group	2.00 ± 1.46	
After Urination	Study Group	0.53 ± 0.82	0.000
	Control Group	1.63 ± 1.35	
On 7 th Postpartum Day	Study Group	0.13 ± 0.43	0.000
	Control Group	1.70 ± 1.68	

DISCUSSION

Our study demonstrated significant differences in pain scores when comparing Monocryl (monofilament) and Vicryl Rapide (polyfilament) for intracutaneous closure of mediolateral episiotomies. Kokanali et al. previously compared polyglycolide-co-caprolactone monofilament with Vicryl Rapide and found no difference in VAS pain scores at 24 hours or 10 days [18]. Similarly, the MOVE trial, conducted in primiparas, also reported no significant difference in pain between monofilament and Vicryl

Rapide, although it did show a higher rate of dehiscence with Vicryl Rapide, consistent with our findings [5]. Importantly, the MOVE trial highlighted that analgesia use did not correlate with VAS pain scores ($r=1.10$, $p=0.22$), suggesting that analgesia can confound pain assessment [19]. To minimize this limitation, our study assessed VAS pain without perioperative analgesia, ensuring a more accurate evaluation of pain differences. These findings align with NICE guidelines, which recommend monofilament synthetic sutures for perineal repair [20]. In current study, while most women in both groups reported pain, its intensity was significantly lower in the monofilament group (83.3% vs 96.6%). By day 7, no infections were reported in the monofilament group, compared to 6.7% in the Vicryl Rapide group. Wound healing outcomes were also superior with Monocryl, with 36.7% of patients demonstrating "excellent" healing compared to only 6.7% in the control group ($p=0.005$). Dencker et al. compared monofilament (Biosyn) with multifilament (Dexon II) for perineal repair and reported no early differences in healing; however, at 8–12 weeks, complications were more common, and VAS scores were higher in the monofilament group [21]. Their results may have been biased by the use of different suturing techniques in the two groups. In contrast, we standardized the technique across both groups, thereby removing this source of bias and strengthening the validity of our findings. Overall, current results demonstrate that Monocryl was associated with reduced pain, improved early wound healing, and greater patient satisfaction at 7 days. However, larger randomized trials such as the MOVE trial and studies using standardized techniques have sometimes shown no long-term differences in pain, underscoring that outcomes are influenced by suture material, technique, operator skill, follow-up timing, and sample size [19]. Some studies compared vicryl Rapide and chromic catgut and found that vicryl Rapide has a better outcome as compared with chromic catgut in the repair of episiotomy in terms of pain and analgesic requirements [22, 23]. Despite historical data indicating potential advantages of Monocryl over Vicryl Rapide, contemporary research validating these findings is scarce, highlighting the need for updated trials. Therefore, our findings should be interpreted as evidence of early clinical advantages of Monocryl in this specific procedural context, rather than as definitive proof of superiority in all settings. A major strength of our study lies in the evaluation of an under-researched monofilament material for perineal repair, with promising results that may reduce pain, discomfort, and dyspareunia in the long term. Nonetheless, the use of VAS to assess pain remains a limitation, as pain perception is subjective and can vary considerably between individuals.

The limitation of the study was the pain measurement, as it was assessed using the VAS, which is subjective and varies between individuals, potentially affecting comparisons between the sutures.

CONCLUSIONS

Our research suggests that it is better to use Monocryl, i.e., monofilament suture, for perineal trauma, especially in cases of episiotomies. Monocryl causes less pain after episiotomy repair, even in the presence of complications, e.g., perineal tears other than episiotomy and cervical tears. Patients showed much more satisfaction with the use of Monocryl, and this suture helped in decreasing the rate of infection and dehiscence. Therefore, Monocryl is superior to Vicryl Rapide for the intracutaneous skin closure of the mediolateral episiotomies. However, further trials and research are needed to support these results.

Authors Contribution

Conceptualization: MFZ

Methodology: MFZ, IS, HS, MR, SF

Formal analysis: MFZ, IS, HS, MR

Writing review and editing: MFZ

All authors have read and agreed to the published version of the manuscript

Conflicts of Interest

All the authors declare no conflict of interest.

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