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Comparison of Outcome of Perineal Massage and Perineal Lubrication in 2nd Stage of Labour in Terms of Perineal Trauma in Multiparous Women at Term

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ABSTRACT

Introduction: Perineal trauma during childbirth is a common concern, leading to complications such as pain, tears, and the need for episiotomy, which can impact postpartum recovery. This study evaluates the effectiveness of perineal lubricant and massage techniques in reducing perineal trauma during the second stage of labor. **Methodology:** The study, conducted at Gulab Devi Teaching Hospital, Lahore, from 01 September 2024, to 02 Feb 2025, included 384 multiparous women aged 25-45 years. Participants were randomized into two groups: Group-I received glycerin-based perineal lubricant massage, and Group-II underwent perineal massage techniques during the second stage of labor. Outcomes, including perineal tears, episiotomy, and pelvic pain, were assessed using standardized criteria. Data were analyzed using SPSS version 25.0, with results compared using the Chi-square test, and p-values ≤0.05 were considered significant. **Results:** The lubricant group had lower rates of pain (22.4% vs. 35.9%), perineal tears (6.8% vs. 21.4%), and need for episiotomy (26.6% vs. 39.1%), with all differences being statistically significant. **Conclusion:** The study highlights that perineal lubricant during the second stage of labor leads to significantly better maternal outcomes than perineal massage. Women in the lubricant group reported less pain (VAS ≥4), fewer perineal tears, and a lower need for episiotomy. These results indicate that perineal lubricant effectively enhances perineal health and minimizes labor-related trauma. Given these benefits, perineal lubricant emerges as a superior choice for improving maternal comfort and reducing childbirth complications. Its adoption in clinical practice could enhance perineal care, promoting safer and less painful deliveries for expectant mothers.

INTRODUCTION

Labour is a natural process that can lead to complications requiring medical intervention. Perineal trauma, a common outcome of vaginal birth, affects over 80% of women delivering this way.[1] It refers to harm to the perineum occurring either spontaneously or through an episiotomy. Even in a straightforward birth, perineal trauma is a common occurrence.[2-3] Rates of perineal tears range from 35.1% to 78.3% for second-degree tears and 1.8% to 8.3% for third- and fourth-degree tears in women. Risk factors like nulliparity, surgical vaginal birth, midline episiotomy, Asian race, and large fetal weight contribute to perineal lacerations.[4-5]

Malpresentations, such as occiput posterior position and advanced gestational age, cause these tears. The primary risk factors for OASIS injuries are forceps or vacuum-assisted deliveries, midline episiotomy, and larger fetal size.[4-5] Perineal pain, particularly common in multipara women, can result in various issues after childbirth, such as insomnia, anxiety, breastfeeding difficulties, bonding delays, and sexual intercourse problems. Studies indicate a 92% prevalence of perineal pain within one day postpartum.[6-7] Perineal tear and pain result from factors like age, multiparity, abnormal presentations, macrosomic fetus, instrumental delivery, fast labor, past median episiotomy, previous perineal trauma, and excessive fundal pressure in the second stage of labor.[8]

Perineal tears can lead to short and long-term issues, such as blood loss, suturing, pain, mobility challenges, and breastfeeding difficulties postnatally. Long-term effects may include persistent pain affecting urinary, intestinal, and sexual functions due to weakened pelvic floor muscles from trauma. Prevention is key. Trials show a link between perineal tissue elasticity, blood flow, lubrication, and reduced tear rates. Non-pharmacological methods like exercises, massage, and

support techniques during labor can help prevent perineal tears and pain.[9-10]

Comparing perineal massage and lubrication aims to prevent birth trauma. Massage is more effective but uncomfortable, while lubrication is simpler and more comfortable, reducing friction. Uncertainty surrounds lubrication's impact on severe trauma. Understanding their effectiveness can improve clinical practice, focusing on maternal well-being. Providing safe, comfortable, evidence-based options is vital for engaging women in birth planning. Healthcare providers can then personalize interventions based on preferences and needs.

METHODOLOGY

The study took place at the Obstetrics and Gynecology Department in Gulab Devi Teaching Hospital, Lahore from 01 September 2024, to 02 Feb 2025. With approval from the hospital's Ethical Review Committee, 384 subjects meeting the selection criteria (192 in each group) were enrolled in the study after obtaining written informed consent from the patients. A sample size of 384 patients (192 in each group) was calculated with 95% confidence interval, 80% power of test and expected percentage of episiotomy as 40%[12] with perineal massage and 28%[13] with perineal lubricant.

The study included women aged 25-45 years, multiparous with full-term singleton pregnancies (37-42 weeks) and fetal weights of 2000-4000 grams in vertex presentation, with previous normal vaginal deliveries. Excluded were those with a history of vaginal, perineal, or anal surgeries, multiple pregnancies, colorectal disorders, previous LSCS, or who did not provide consent. In the study, two groups were created randomly: Group-I with 192 women receiving lubricated perineal massage and Group-II with 192 women receiving perineal massage technique. Group-I participants had glycerine applied to fingers for massaging the perineum in a U shape, with vaginal massaging towards the rectum. This process was done continuously during the second stage, even during contractions and crowning, with 5-minute intervals between sessions.

In group-II, after using 5 ml glycerin at crowning, the researcher placed the left index and middle fingers on the fetal occiput for head flexion and the right hand on the perineum for controlled expulsion. Once the anterior shoulder emerged, gentle upward traction assisted the posterior shoulder delivery. Removing the right-hand post both shoulders, the researcher supported the fetal neck with one hand and the body with the other.

During the study, the obstetrician evaluated episiotomy necessity during crowning, conducted detailed perineal and rectal exams, and assessed outcomes based on perineal tears, episiotomy requirement, and pelvic pain post-delivery. The second labor stage spanned from complete cervical dilation to baby delivery. Perineal tears were classified into four grades: first-degree (skin injury), second-degree (muscle involvement), third-degree (anal sphincter involvement), and fourth-degree (anal epithelium extension). Pelvic pain was assessed post-delivery using a Visual Analogue Scale (VAS) with scores ≥4 indicating pain. Episiotomy need was decided at crowning by the obstetrician, who administered mediolateral episiotomies when necessary.

The data was analyzed using SPSS 25.0. Quantitative data (age, BMI) were shown as mean and standard deviation, while qualitative data (need for episiotomy, pain, perineal tear) were displayed as frequency and percentage. Parity was presented as frequency. Chi-square tests were used to compare perineal trauma frequency between groups. Data was stratified for age, gestational age, BMI, and parity to address effect modifiers. Post-stratification Chi-square test was applied, considering $p \leq 0.05$ as statistically significant.

RESULTS

In Group-A (Perineal lubricant), 53.6% of participants were aged 25-35 years, and 46.4% were 36-45 years, with a mean age of 34.63±5.78. In Group-B (Perineal massage), 52.1% were aged 25-35 years, and 47.9% were 36-45 years, with a mean age of 34.93±6.20. Gestational age averaged 39.51±1.42 weeks in Group-A and 39.48±1.45 weeks in Group-B, with most participants in the 37-39 weeks category. For BMI, 57.3% in Group-A and 57.8% in Group-B had normal BMI, with means of 24.01±3.30 and 24.24±3.31, respectively. Multiparous participants made up 78.1% of Group-A and 77.6% of Group-B **(Table-1)**.

Group-A (Perineal lubricant) had a lower prevalence of pain (VAS ≥4) at 22.4% compared to 35.9% in Group-B (Perineal massage), with a significant p-value of 0.004. The mean pain score was also lower in Group-A (3.09±2.27) than in Group-B (3.74±2.80), with a p-value of 0.036, indicating better pain outcomes in the lubricant group **(Table-2)**. Perineal tears were significantly less common in Group-A (Perineal lubricant) at 6.8% compared to 21.4% in Group-B (Perineal massage), with a p-value of 0.001, highlighting a lower tear risk in the lubricant group **(Table-3)**.

The need for episiotomy was significantly lower in Group-A (Perineal lubricant), with 26.6% (51 participants) requiring it, compared to 39.1% (75 participants) in Group-B (Perineal massage), with a p-value of 0.009. This indicates a reduced need for episiotomy in the lubricant group **(Table-4)**. Stratification of presence of pain (VAS ≥4), perineal tear and need for episiotomy between groups with respect to

different variables was done and shown in tables **(Table-5 to 7)**.

Table 1

Comparison of distribution of different variables between groups

Variables		Groups	
		Group-A (Perineal lubricant)	Group-B (Perineal massage)
Age groups	25-35 years	103(53.6%)	100(52.1%)
	36-45 years	89(46.4%)	92(47.9%)
	Mean±S.D	34.63±5.78	34.93±6.20
Gestational age	37-39 weeks	80(59.2%)	77(57.1%)
	40-42 weeks	55(40.8%)	58(42.9%)
	Mean±S.D	39.51±1.42	39.48±1.45
BMI	Normal	110(57.3%)	111(57.8%)
	Overweight	81(42.2%)	80(41.7%)
	Obese	1(0.5%)	1(0.5%)
	Mean±S.D	24.01±3.30	24.24±3.31
Parity	Primiparous	42(21.9%)	43(22.4%)
	Multiparous	150(78.1%)	149(77.6%)

Figure 1

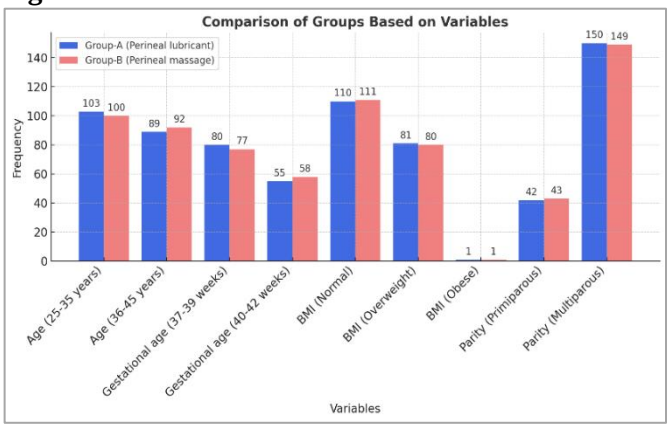


Table 2

Comparison of presence of pain (VAS ≥4) distribution between groups

Presence of pain (VAS ≥4)	Groups		p-value
	Group-A (Perineal lubricant)	Group-B (Perineal massage)	
Yes	43(22.4%)	69(35.9%)	0.004
No	149(77.6%)	123(64.1%)	
Total	192(100.0%)	192(100.0%)	
Mean pain score on VAS	3.09±2.27	3.74±2.80	0.036

Table 3

Comparison of perineal tear distribution between groups

Perineal tear	Groups		p-value
	Group-A (Perineal lubricant)	Group-B (Perineal massage)	
Yes	13(6.8%)	41(21.4%)	0.001
No	179(93.2%)	151(78.6%)	
Total	192(100.0%)	192(100.0%)	

Table 4

Comparison of need for episiotomy distribution between groups

Need for episiotomy	Groups		p-value
	Group-A (Perineal lubricant)	Group-B (Perineal massage)	
Yes	51(26.6%)	75(39.1%)	0.009
No	141(73.4%)	117(60.9%)	
Total	192(100.0%)	192(100.0%)	

Table 5

Stratification of presence of pain (VAS ≥4) between groups with respect to different variables

Variables	Presence of pain (VAS ≥4)	Group-A n=192	Group-B n=192	p-value
Age groups				
25-35 years	Yes	22(21.4%)	33(33.0%)	0.062
	No	81(78.6%)	67(67.0%)	
36-45 years	Yes	21(23.6%)	36(39.1%)	0.024
	No	68(76.4%)	56(60.9%)	
Gestational age				
37-39 weeks	Yes	26(23.4%)	38(33.6%)	0.091
	No	85(76.6%)	75(66.4%)	
40-42 weeks	Yes	17(21.0%)	31(39.2%)	0.012
	No	64(79.0%)	48(60.8%)	
Body mass index				
Normal	Yes	23(20.9%)	41(36.9%)	0.009
	No	87(79.1%)	70(63.1%)	
Overweight	Yes	19(23.5%)	27(33.8%)	0.148
	No	62(76.5%)	53(66.3%)	
Obese	Yes	1(100.0%)	1(100.0%)	N/A
	No	0(0.0%)	0(0.0%)	
Parity				
Primiparous	Yes	11(26.2%)	14(32.6%)	0.519
	No	31(73.8%)	29(67.4%)	
Multiparous	Yes	32(21.3%)	55(36.9%)	0.003
	No	118(78.7%)	94(63.1%)	

Figure 2

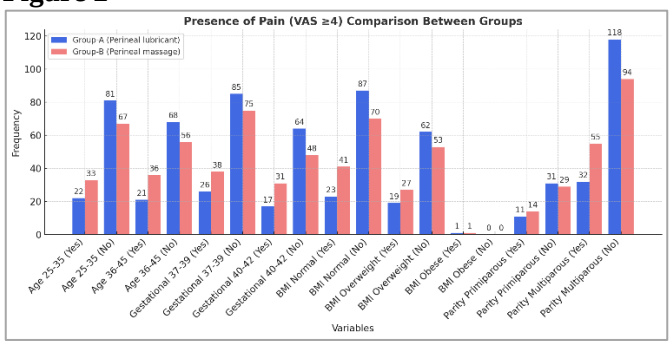


Table 6

Stratification of perineal tear between groups with respect to different variables

Variables	Perineal tear	Group-A n=192	Group-B n=192	p-value
Age groups				
25-35 years	Yes	5(4.9%)	20(20.0%)	0.001
	No	98(95.1%)	80(80.0%)	
36-45 years	Yes	8(9.0%)	21(22.8%)	0.011
	No	81(91.0%)	71(77.2%)	
Gestational age				
37-39 weeks	Yes	8(7.2%)	20(17.7%)	0.018
	No	103(92.8%)	93(82.3%)	
40-42 weeks	Yes	5(6.2%)	21(26.6%)	0.001

	No	76(93.8%)	58(73.4%)	
Body mass index				
Normal	Yes	8(7.3%)	28(25.2%)	0.001
	No	102(92.7%)	83(74.8%)	
Overweight	Yes	5(6.2%)	12(15.0%)	0.068
	No	76(93.8%)	68(85.0%)	
Obese	Yes	0(0.0%)	1(100.0%)	0.157
	No	1(100.0%)	0(0.0%)	
Parity				
Primiparous	Yes	2(4.8%)	6(14.0%)	0.147
	No	40(95.2%)	37(86.0%)	
Multiparous	Yes	11(7.3%)	35(23.5%)	0.001
	No	139(92.7%)	114(76.5%)	

Figure 3

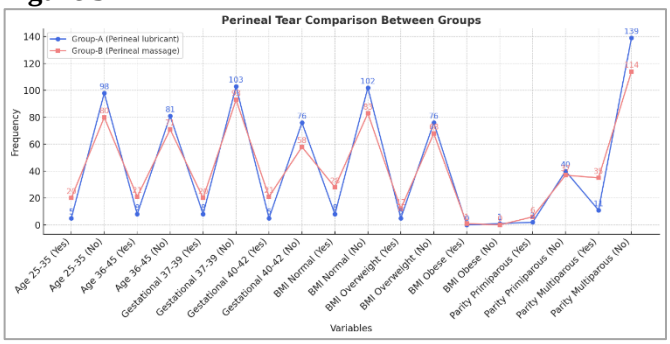
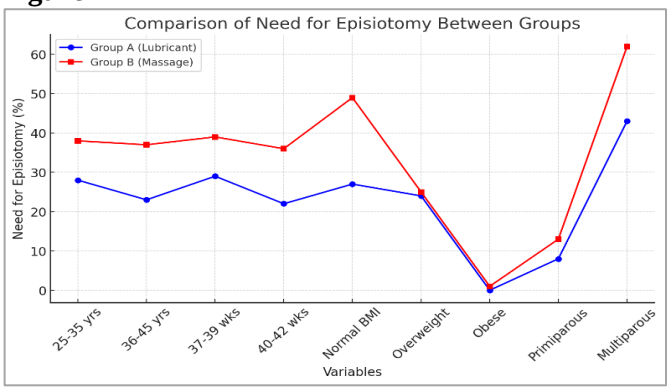


Table 7

Stratification of need for episiotomy between groups with respect to different variables

Variables	Need for episiotomy	Group-A n=192	Group-B n=192	p-value
Age groups				
25-35 years	Yes	28(27.2%)	38(38.0%)	0.100
	No	75(72.8%)	62(62.0%)	
36-45 years	Yes	23(25.8%)	37(40.2%)	0.040
	No	66(74.2%)	55(59.8%)	
Gestational age				
37-39 weeks	Yes	29(26.1%)	39(34.5%)	0.172
	No	82(73.9%)	74(65.5%)	
40-42 weeks	Yes	22(27.2%)	36(45.6%)	0.015
	No	59(72.8%)	43(54.4%)	
Body mass index				
Normal	Yes	27(24.5%)	49(44.1%)	0.002
	No	83(75.5%)	62(55.9%)	
Overweight	Yes	24(29.6%)	25(31.3%)	0.823
	No	57(70.4%)	55(68.8%)	
Obese	Yes	0(0.0%)	1(100.0%)	0.157
	No	1(100.0%)	0(0.0%)	
Parity				
Primiparous	Yes	8(19.0%)	13(30.2%)	0.232
	No	34(81.0%)	30(69.8%)	
Multiparous	Yes	43(28.7%)	62(41.6%)	0.019
	No	107(71.3%)	87(58.4%)	

Figure 4



DISCUSSION

This study aimed to compare the effectiveness of perineal lubricant and massage in minimizing perineal trauma during the second stage of labor, focusing on key outcomes: pain (VAS ≥4), perineal tears, and the need for episiotomy. The findings provide valuable insights when compared with existing literature.

The results indicate that pain (VAS ≥4) was significantly lower in the lubricant group (22.4%) compared to the massage group (35.9%), with a mean VAS score of 3.09±2.27 versus 3.74±2.80, respectively (p=0.036). These findings align with Gaheen and Abo-Hatab, who demonstrated that perineal lubricant and warm compresses reduced pain intensity during the second stage of labor.[11] Similarly, Stamp et al. reported that lubricants were effective in minimizing perineal discomfort compared to other techniques, including massage.[14] The results highlight that the continuous application of lubricant not only prevents excessive friction but also aids in smoother delivery, thereby reducing pain perception.

The incidence of perineal tears was markedly lower in the lubricant group (6.8%) compared to the massage group (21.4%), with a significant p-value of 0.001. These findings corroborate the work of Foroughipour et al., who observed that the use of controlled perineal techniques, including lubricant, significantly decreased the risk of perineal tears.[12] By contrast, Oglak and Obut found a higher incidence of perineal trauma (71.2%) with massage, which included both tears (42.5%) and episiotomies (28.7%).[13] This study's results suggest that lubricant creates a protective barrier, reducing perineal stretching and the risk of tearing, whereas massage techniques may inadvertently exert additional pressure on the perineum, increasing tear risk.

The need for episiotomy was significantly reduced in the lubricant group (26.6%) compared to the massage group (39.1%) (p=0.009). Gaheen and Abo-Hatab similarly reported a lower episiotomy rate with lubricant application.[11] In contrast, Oglak and Obut noted a higher episiotomy rate with massage techniques, indicating that massage may be less effective in achieving controlled perineal expansion during delivery.[13] The use of lubricant likely facilitates better tissue pliability and flexibility, reducing the need for surgical intervention. This finding is clinically significant, as episiotomies are associated with increased postpartum pain, delayed recovery, and a higher risk of infection.

The results consistently favor the use of perineal lubricant over massage in all measured outcomes. While both methods aim to reduce perineal trauma, the lubricant group consistently demonstrated better results in minimizing pain, reducing tears, and decreasing the need for episiotomy. These findings highlight the limitations of massage techniques, particularly when not

performed with precise expertise, as suggested by previous studies.[13-14] Additionally, the intermittent and continuous application of lubricant throughout the second stage of labor ensures consistent protection and reduces friction, contributing to the observed benefits.

The study's strengths include its randomized design, strict adherence to inclusion/exclusion criteria, and the use of standardized evaluation methods based on the Royal College of Obstetricians and Gynecologists criteria. The large sample size (384 participants) and stratification of data by age, gestational age, BMI, and parity further enhance the robustness of the findings. However, certain limitations must be acknowledged. Variations in skill levels among attending obstetricians and subjective variations in pain reporting could have influenced the results. Additionally, the study was conducted in a single center, which may limit the generalizability of the findings to broader populations.

The results underscore the clinical advantages of using perineal lubricant during the second stage of labor. Its ability to reduce pain, tears, and episiotomy rates can improve maternal outcomes and enhance the childbirth experience. These findings advocate for the integration of lubricant application into standard obstetric practices, particularly in settings where minimizing perineal trauma is a priority.

CONCLUSION

The study demonstrates that the use of perineal lubricant during the second stage of labor results in significantly better outcomes compared to perineal massage. Participants in the lubricant group experienced a lower prevalence of pain (VAS ≥4), reduced incidence of perineal tears, and a decreased need for episiotomy. These findings suggest that perineal lubricant is more effective in improving maternal perineal outcomes and reducing labor-associated trauma, making it a favorable option for perineal care during childbirth.

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