The Effect of Warm Compress and Proper Perineal Support Technique on Prevention of Severe Perineal Trauma

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Abstract
Introduction: Vaginal deliveries are frequently linked with genital tract damage, and rips affecting the anal sphincter or mucosa (third- and fourth-degree tears) can cause major complications. To prevent harm, several perineal methods are employed to slow down the delivery of the baby’s head and allow the perineum to extend gently. Midwives all across the globe employ massage, warm compresses, and various perineal care techniques. Objective: The aim of this study was to analyze the effect of warm compress and perineal support on prevention of severe perineal trauma among primiparous women. Design: This study was a quasi-experimental study. Settings: The study settings included tertiary care hospital settings affiliated with the academic center in the UAE. Patients and Methods: Around 192 females were consecutively divided into 2 age-matched groups. Group 1 had 99 patients in which warm perineal compresses were applied in addition to perineal support, and no episiotomy was performed. There were 93 control patients in group 2 who were just given perineal support, and prophylactic episiotomy was performed. Main Outcomes Measured: Maternal risk factors such as an unhealthy perineum and short perineum were noted. The fetal risk factors such as large for gestational age, shoulder dystocia, and occipito-posterior position were also noted. Peripartum data of instrumental delivery, long stage two of delivery, oxytocin augmentation, epidural use, pushing technique, delivery position, and degree of perineal tear were also evaluated. Result: Neither maternal risk factors nor fetal factors were significant between the two groups. However, in peripartum characteristics, instrumental deliveries (17 [18.3%] vs. 0 [0%] p value <0.001) and lithotomy position (53 [57%] vs. 0 [0%] p value <0.001) were significantly more common in the control group. Other risk factors such as oxytocin augmentation, prolonged second stage, and epidural use did not differ significantly between the two groups. Warm compresses prevented severe perineal tears in group 1. Group 1 showed statistically significant (p value <0.001) reduction in severe (grade 2 and 3 tear) form of perineal injury during the second stage of labor. Conclusion: Warm perineal compresses in primigravida females during the second stage of labor may help prevent severe perineal injuries and reduce the incidence of instrumental delivery as well as lithotomy position requirement.

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Introduction

Perineal trauma following vaginal delivery can occur in a wide range of women, with between 53 and 79 percent of women reporting some kind of perineal trauma [1]. Perineal trauma can happen accidentally or as a result of a surgical incision (episiotomy) [2]. The majority of rips are first and second degree, with 3.3 percent of women having a third-degree tear and 1.1 percent having a fourth-degree tear [3]. Even though severe perineal rips are uncommon, they can have a significant influence on a woman’s life since they have been linked to perineal discomfort, urine and fecal incontinence, and sexual dysfunction [4]. Perineal injuries, particularly third- and fourth-degree lacerations, must consequently be avoided. The number of reported cases of perineal trauma varies greatly between nations, owing to discrepancies in definitions and reporting systems, and studies reveal that the severity of perineal trauma is frequently underestimated [5–7]. Perineal injuries requiring suturing range from 4 to 79 percent in studies with restricted episiotomy usage, and a recent Cochrane Review revealed no evidence to support the usual use of episiotomy. Perineal damage occurs more frequently in first vaginal deliveries and with assisted births [8].

Many variables have been proposed as possible predictors of perineal trauma. Some factors that contribute to perineal trauma appear to exist before to pregnancy and may be unique to the pregnant lady. The significance of demographic variables and diet in the years leading up to and during pregnancy in the occurrence of perineal injuries is unknown. Perineal trauma is influenced by ethnicity, and a link has been shown between Asian ethnicity and severe perineal trauma. First pregnancy, maternal age of more than 30 years, a big infant (both in terms of weight and head size), a protracted second stage, and malposition all enhance the risk of perineal damage [9, 10].

To prevent harm, several perineal methods are employed to slow down the delivery of the baby’s head and allow the perineum to extend gently. Midwives all across the globe employ massage, warm compresses, and various perineal care techniques [6]. There is an update to a Cochrane review that was released in 2017 which states that warm compresses and massage may minimize third- and fourth-degree tears, according to moderate-quality data, but the influence of these methods on other outcomes is unclear or inconsistent [8]. Hands-off approaches may minimize episiotomy, according to low-quality studies, but they had no discernible effect on other outcomes. There is not enough evidence to say if additional perineal treatments enhance outcomes. Manual protection of the perineum minimizes the incidence of obstetric anal sphincter ruptures, according to a Danish research. In this study, during the first year of the trial, the proportion of subjects having anal sphincter ruptures reduced considerably from 4.4% to 1.7% (p < 0.001). Primiparous women saw the biggest drop, dropping from 7.2% to 2.9% [11].

Latifa Women and Children Hospital is a tertiary government hospital in Dubai with accreditation since 2017. As a part of MFHI, we have developed a key performance indicator on reduction of the episiotomy rate. Along with this key performance indicator, we also conducted an audit on third-degree and fourth-degree perineal tear which revealed that there was a drastic increase for the same during the year 2018–2019 (0.6–0.84%). These data enlightened us to study the effect of different measures on perineal trauma for high-risk patients. The objective of this study was to assess the effect of perineal techniques during the second stage of labor on the incidence of perineal trauma. The assessment of warm compresses during the second stage of labor would help in updating the standard operating procedures of the labor room to prevent severe perineal injuries and thus morbidity.

Materials and Methods

This was a quasi-experimental research carried out at Dubai Health Authority’s Latifa Hospital (Dubai, United Arab Emirates). Prior Ethics Committee permission was acquired, and all interventions were carried out in accordance with established protocols. In all cases, written informed permission was obtained. The research included a total of 202 pregnant women. The sampling was done in a nonrandom, sequential manner. The trial covered all booked patients who refuse to be a part of the study were excluded. All the patients who reported in Obstetric OPD of Latifa Hospital, Dubai, were consecutively placed in two groups. Group 1 comprised of age-matched pregnant females who were provided with warm compresses along with perineal support and underwent episiotomy, whereas group 2 consisted of pregnant patients who were provided perineal support and did not undergo lateral episiotomy, but they were not given warm compresses. The technique of warm compresses is as follows.

For the purpose of warm compresses, a 400-mL CURAPAX® disposable gel pack was used. The pack was filled completely with cold/lukewarm water. Then it was turned upside-down to seal the intake valve. The water outside the pack was dried and then warmed in microwave for 30 s to be ready for use. The procedure was explained to the mother and consent obtained. Warm compress was used only in the second stage of labor, once presenting
was visible in the perineum. Warm compress was applied during each contraction while the mother was bearing down. The mother was asked whether she could bear with the heat during application. Episiotomy was avoided unless there was proper indication. However, in group 2, all patients received mediolateral episiotomy, and during delivery, there were additional lacerations/tears which were recorded. The perineum was supported with the same compress during delivery of head and shoulder [12]. Both group participants were instructed to avoid uncontrolled pushing. Moreover, midline episiotomy was also avoided in all cases.

Obstetric anal sphincter injury was classified described by Sultan adopted by International consultation on incontinence and the RCOG guideline [13]. Age, nationality, gestational age at diagnosis, and maternal risk factors such as an unhealthy perineum and a short perineum were all recorded on the data sheet. The fetal risk factors such as large for gestational age, shoulder dystocia, and occipito-posterior position were also noted. Peripartum data of instrumental delivery, prolonged second stage, oxytocin augmentation, epidural use, delivery position, and degree of perineal tear were also noted. Statistical Package for the Social Sciences version 21 was used to analyze the data. For gestational age, the mean and standard deviation were computed. An independent $t$ test was used to compare these quantitative variables. In the form of percentages, qualitative factors were represented. The estimated $p$ value was subjected to the $\chi^2$ or Fisher’s test, with a value of 0.05 considered significant.

### Table 1. Maternal, fetal, and peripartum characteristics of both groups ($n = 192$)

| S. no | Variable                          | Perineal warm compress group ($n = 99$) | Control group ($n = 93$) | $p$ value |
|-------|-----------------------------------|----------------------------------------|--------------------------|-----------|
| 1     | Gestational age, SD               | 38.97±1.265                            | 39.24±1.255              | 0.144     |
| 2     | Nationality, $n$ (%)              |                                        |                          |           |
|       | Asian                             | 19 (19.2)                              | 12 (12.9)                | 0.247     |
|       | Non-Asian                         | 80 (80.8)                              | 81 (87.1)                |           |
| 3     | Unhealthy perineum, $n$ (%)       |                                        |                          |           |
|       | Yes                               | 2 (2)                                  | 2 (2.2)                  | 1.000     |
|       | No                                | 97 (98)                                | 91 (97.8)                |           |
| 4     | Short perineum, $n$ (%)           |                                        |                          |           |
|       | Yes                               | 1 (1)                                  | 0                        | 1.000     |
|       | No                                | 98 (99)                                | 93 (100)                 |           |
|       | **Fetal characteristics**         |                                        |                          |           |
| 5     | LGA, $n$ (%)                      |                                        |                          |           |
|       | Yes                               | 4 (4)                                  | 3 (3.2)                  | 1.000     |
|       | No                                | 95 (96)                                | 90 (96.8)                |           |
| 6     | Shoulder dystocia, $n$ (%)        |                                        |                          |           |
|       | Yes                               | –                                      | –                        |           |
|       | No                                | 95 (100)                               | 93 (100)                 |           |
| 7     | OP position, $n$ (%)              |                                        |                          |           |
|       | Yes                               | 11 (11.1)                              | 10 (10.8)                | 0.937     |
|       | No                                | 88 (88.9)                              | 83 (89.2)                |           |
|       | **Peripartum characteristics**    |                                        |                          |           |
| 8     | Instrumental deliver, $n$ (%)     |                                        |                          |           |
|       | Yes                               | –                                      | 17 (18.3)                | <0.001    |
|       | No                                | 99 (100)                               | 76 (81.7)                |           |
| 9     | Prolong stage 2, $n$ (%)          |                                        |                          |           |
|       | Yes                               | 6 (6.1)                                | 7 (7.5)                  | 0.686     |
|       | No                                | 93 (93.9)                              | 86 (92.5)                |           |
| 10    | Oxytocin augmentation, $n$ (%)    |                                        |                          |           |
|       | Yes                               | 15 (15.2)                              | 24 (25.8)                | 0.067     |
|       | No                                | 84 (84.8)                              | 69 (74.2)                |           |
| 11    | Lithotomy position, $n$ (%)       |                                        |                          |           |
|       | Yes                               | –                                      | 53 (57)                  | <0.001    |
|       | No                                | 99 (100)                               | 40 (43)                  |           |
| 12    | Epidural use                      |                                        |                          |           |
|       | Yes                               | 24 (24.2)                              | 25 (26.9)                | 0.675     |
|       | No                                | 75 (75.8)                              | 68 (73.1)                |           |
Results

A total of 202 females were included in the present study. The cases were consecutively divided into two groups depending on whether warm perineal compresses were done or not. Since only primigravida were included in the study, 4 cases in group 1 and 6 cases in group two were excluded from the study, and there were no dropouts. A total of 99 (51.6%) patients were present in the group applying warm perineal compresses and 93 (48.4%) patients in the other group. Both the groups were age-matched. The maternal, fetal, and peripartum risk factors of both groups are shown in Table 1.

Perineal injuries incurred during the labor in two groups are shown in Figure 1. Group 1 showed statistically significant (p value <0.001) reduction in severe (grade 2 and 3 tear) form of perineal injury during the second stage of labor.

Discussion

During vaginal birth, many parturient women have perineal trauma. Severe perineal trauma is frequently associated with poor outcome, defecatory symptoms, and anal incontinence. As a result, preventing perineal injuries has become a top priority. Perineal management treatments like perineal massage, warm compresses, and the hands-off approach after the delivery of the neonate’s head may all help to reduce perineal trauma during the second stage of labor. Many researchers have studied various timings, postures, and strategies during the second stage of labor for years in attempt to give the best care and improve results for both moms and newborns [14].

Our study showed that neither maternal risk factors such as nationality, poor perineal hygiene, or short perineum nor fetal factors such as large for gestational age, shoulder dystocia, and occipito-posterior position were significant between the two groups. However, in peripartum characteristics, instrumental deliveries were significantly more common in the control group (17 [18.3%] vs. 0 [0%] p value <0.001). Similarly, the lithotomy position during active labor was more common in the control group (53 [57%] vs. 0 [0%] p value <0.001). Other risk factors such as oxytocin augmentation, prolonged second stage, and epidural use did not differ significantly between the two groups.

The current study clearly demonstrated benefit of warm compresses in preventing severe perineal tears. There was no third-degree tear in group 1 as compared to the control group which had 4 patients of grade 3a tear (p value <0.001). The injuries were promptly repaired, and continence was intact in all cases. Moreover, compresses avoided minor tears as well. There was no injury in 8 (8.1%) cases as compared to 2 (2.2%) controls. Moreover, 58 (58.6%) had grade 2 injury in the 1st group compared to 76 (81.7%) in the control group. It clearly shows that perineal compresses are effective in preventing severe
perineal injuries. Similar results have been reported in various studies. Mohamed et al. examined two perineal management strategies to reduce perineal injuries during the second stage of labor [15]. Warm perineal compresses, rather than perineal massage, were found to prevent the occurrence of perineal laceration and promote perineal integrity in the second stage of labor. Gerammayeh et al. [16] did another research in Tehran on eighty primiparous women aged 18–30 years. They wanted to see if perineal massage with Vaseline may help with perineal injuries. Compared to the control group, the massage with the Vaseline group had a considerably more intact perineum and a decreased episiotomy rate ($p = 0.004$). Similarly, Karaçam et al. [17] used 396 laboring primiparous women in Turkey to study “the application of perineal massage during the second stage of labor and its influence on postpartum perineal outcomes.” They discovered that perineal massage reduces episiotomy size, lowering the amount of suturing material required for episiotomy repair [17]. Aasheim and colleagues [8] examined eight trials including 11,651 women in their literature review research titled “the effectiveness of several treatments at the 2nd stage of labour for minimising perineal tears.” Warm compresses and massage were shown to be particularly efficient in reducing 3rd and 4th degree tears, according to the researchers [8].

On the contrary, Zare et al. [18] investigated “the effects of perineal massage on perineal tears and episiotomy rate.” They found that perineal massage had no discernible influence on the rate of perineal integrity, with participants in both the perineal massage and control groups requiring the same episiotomy and tears healing [18]. Albers et al. [5] studied 1,211 working women in their research. During the second stage of labor, they employed three midwifery care measures: (1) warm compresses on the perineum to see if either of these treatments were associated with a decreased incidence of genital tract injuries; researchers looked at (2) lubricated massage and (3) hands-off technique until the baby’s head was crowning. According to the researchers, the frequency of genital tract injuries was the same in the warm compresses, perineal massage, and control groups, with no differences between them [5].

The decreased trauma to the perineum might be attributed to what has been said about the therapeutic and relaxing benefits of warm compresses in the literature. Warm compresses can help with relaxation, muscular spasms, and blood vessel dilation, which can help with blood flow in the tissue around the compressed region. As a result, the ischemia of the tissue is reduced, and the pain level is reduced.

**Conclusion**

Warm perineal compresses in primigravida females during the second stage of labor may help prevent severe perineal injuries and reduce the incidence of instrumental delivery as well as lithotomy position requirement.

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**Statement of Ethics**

All procedures followed were in accordance with the ethical standards of the responsible committee and with the Helsinki Declaration of 1975, as revised in 2000. Informed written consent was obtained from all patients for being included in the study. The study protocol was approved by Dubai Scientific Research Ethics Committee (DSREC), Dubai Health Authority DSREC-08/2018_04 dated 8 September 2018.

**Conflict of Interest Statement**

The authors have no conflicts of interest to disclose.

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**Author Contributions**

Saima Faraz conceived and designed the research. Huda Manea Ali Ahmed and Abeer Ammar performed data analysis and manuscript writing. Saima Faraz and Nighat Aftab supervised the whole study and edited the manuscript. Vandana Vasudevan, Daisy Varghese, Nancy Augustine, and Ushakumari V. Pillai performed data collection and compiled international research.

**Data Availability Statement**

As per the policy of Latifa Women and Children Hospital, strict confidentiality of patient data is to be maintained. However, the data are available on demand to reviewers and readers and has been saved in an SPSS format after concealing the true identity of patients.
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