

Perineal Management Techniques to Reduce Perineal Trauma During The Second Stage of Labor

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ABSTRACT

Background: Perineal trauma is common among parturient women during vaginal delivery. Perineal trauma is mostly associated with pain and serious long life complications. Thus, prevention of perineal trauma becomes necessary. This study was conducted to assess the effect of perineal management techniques (warm compress and perineal massage) in reducing the incidence of perineal trauma during the second stage of labor. **Patients and method:** A randomized controlled clinical trial was carried out at Zagazig University Maternity Hospital during the period between February 2020 and November 2020. The study included 69 female patients divided into 3 groups; **Group 1:** including 23 women assigned to lubricated perineal massage, **Group 2:** including 23 women assigned to warm perineal compression, and **Group 3:** including 23 women assigned to routine care provided according to hospital protocol with neither perineal massage nor warm perineal compression (control group). **Result:** There was significant difference between the studied groups as regard the degree of perineal lacerations, as it was frequent in the control group (**Group 3**) especially 3rd- and 4th- degree perineal lacerations compared to the other two groups (P-value 0.0346). There was also significant difference between the studied groups as regard perineal suturing; it was more frequent in the control group (**Group 3**) compared to the other two groups (P-value 0.02635). **Conclusion:** The application of perineal warm compresses and lubricated perineal massage during the second stage of labor can reduce the occurrence and the degree of perineal laceration, and postpartum perineal pain.

Keywords: Perineal Trauma, Perineal massage, Warm compresses, Second stage of labor.

INTRODUCTION

Perineal trauma or genital tract injury occurs in more than 65% of vaginal births and is generally the result of spontaneous laceration or episiotomy. In the United States (U.S.), lacerations occur in approximately 43% of all vaginal births and episiotomy occurs in approximately 23% of all vaginal births ⁽¹⁾. Episiotomy rates in other countries range from 44% to 84% of all vaginal births ⁽²⁾.

Several risk factors have been established for the development of severe perineal injuries such as midline episiotomy, fundal pressure, upright delivery postures, prolonged second stage of labor, vaginal operative procedures, and fetal macrosomia. However, nulliparity has been identified as the main risk factor ⁽³⁾.

The extent of perineal trauma is related to parity and factors such as; birth weight of the infant, ethnicity and maternal body mass index (BMI) ^(4,5).

Trauma of the genital tract at birth can cause short term and long term problems. The degree of postnatal morbidity is directly related to the extent and complexity of the genital tract trauma. Short term problems (immediately after birth) include blood loss, need for suturing and pain. While long term problems include dyspareunia, weakness of the pelvic floor muscle as well as bowel, urinary or sexual problems ⁽⁵⁾. These problems are less likely in women whose perineum remains intact, the achievement of which has long been highly regarded ⁽⁶⁾.

Both childbearing women and health professionals place a high value on minimizing perineal trauma and reducing potential associated morbidity ⁽⁷⁾. Perineal trauma, particularly from routine episiotomy, is painful,

often considered unnecessary, and impacts on a woman's sexuality and self-esteem ⁽⁸⁾.

The aim of this study was to assess the effect of perineal management techniques (warm compress and perineal massage) in reducing the incidence of perineal trauma during the second stage of labor.

PATIENTS AND METHODS

A randomized controlled clinical trial was carried out on 69 healthy low risk parturient women at Zagazig University Maternity Hospital during the period between February 2020 and November 2020.

The participant females were divided into 3 groups:

Group 1 included 23 women assigned to lubricated perineal massage.

Group 2 included 23 women assigned to warm perineal compression.

Group 3 included 23 women with neither perineal massage nor warm perineal compression (control group).

Inclusion criteria: Age between 18-45 years. Single viable mature fetus 37weeks or more. Vertex presentation.

Exclusion criteria: Medical disorders either pre-existing or arising during pregnancy. Known fetal congenital malformations. Any evidence of active maternal infection (chorioamnionitis). History of any perineal or ano-rectal surgery.

All participated women in this study were subjected to full medical history, full clinical examination including vaginal examination to assess the onset of labor and to exclude any abnormality. Vaginal examination gave an idea about the condition

of the cervix “consistency, dilatation, effacement and position”. Also, it gave an idea about the condition of the membranes whether intact or ruptured and the condition of the presenting part “position, station, degree of moulding and caput” and the adequacy of the pelvis were assessed. Bishop score was estimated which includes; cervical dilatation, effacement, station of the fetal head, cervical consistency and position. The number of vaginal examinations was also recorded.

Ultrasonography gave information about the number and viability of the fetus, gestational age, fetal weight, amniotic fluid index, gross fetal anomalies, site of the placenta, and the condition of the retro placental space. Cardiotocography was done for every parturient woman to assess the fetal heart rate and uterine contractions. Partogram it included data about the fetal condition, labor progress and maternal condition during the first stage of labor. Laboratory investigations; were carried out for women if indicated including CBC, RBS and urine analysis. Outcomes other than spontaneous genital tract trauma included mode of vaginal delivery, duration of second stage, neonatal birth weight, and Apgar scores were assessed and recorded.

After fulfillment of the above criteria and prerequisites, all the eligible participants were divided randomly into the three groups of the study:

Group 1 (lubricated massage group):

Women assigned to perineal massage with water soluble lubricant (K-Y gel). Women received massaging and stretching of the perineum with each contraction during the second stage of labour. The researcher inserted two fingers inside the vagina and using a sweeping motion, gently stretching the perineum with water soluble lubricating gel (K-Y gel), stopping if it was uncomfortable for the woman. Perineal massage with lubricant was gentle, slow massage, with 2 fingers moving from side to side just inside the patient’s vagina. Mild, downward pressure (towards the rectum) was applied with steady, lateral strokes, which lasted 1 second in each direction. This motion precluded rapid strokes or sustained pressure. A sterile water-soluble lubricant (K-Y gel) was used to reduce friction with massage. Massage was continued during and between pushes with maternal position in lithotomy or lateral position, and the amount of downward pressure was dictated by the woman’s response.

Group 2 (warm compresses group):

Warm compresses were applied on the perineal area and vulva using a sterile dressing that was soaked in a sterile metal jug filled with warmed tap water (between 45 and 59°C) and squeezed to release excess water before being placed gently on the perineum during contractions. The temperature of the perineal pad, ranged between 38 to 44°C during its application. The pad was re-soaked to maintain warmth between contractions. The water temperature was checked using a glass thermometer and was replaced every 15 minutes to assure suitable temperature until delivery (between

45 and 59°C). The compresses were used from the beginning of the 2nd stage until crowning. The perineal area was frequently checked regarding the erythema, and in the case of excessive erythema, the compress was removed. The perineum is supported using a warm towel during neonatal head expulsion.

Group 3 (control group):

The women received the routine care provided by the hospital with neither perineal massage nor warm perineal compression. In the routine care, the head flexion is maintained during its expulsion.

Outcome measures:

I. Primary outcomes: Intact perineum. Perineal trauma not requiring suturing. Perineal trauma requiring suturing. First-degree perineal tear. Second-degree perineal tear, and third- and fourth-degree perineal tears.

II. Secondary outcomes: Length of second stage of labor. Mode of vaginal delivery, and for the newborn; neonatal weight and Apgar scores.

Ethical consent:

An approval of the study was obtained from Zagazig University Academic and Ethical Committee. Every patient signed an informed written consent for acceptance of participation in the study. This work has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for studies involving humans.

Statistical analysis

Data collected throughout history, basic clinical examination, laboratory investigations and outcome measures were coded, entered and analyzed using Microsoft Excel software. Data were then imported into SPSS (Statistical Package for Social Sciences) version 20.0 for Windows® (IBM SPSS Inc, Chicago, IL, USA) and MedCalc 13 for windows (MedCalc Software bvba, Ostend, Belgium) softwares for analysis. Data were tested for normal distribution using the Shapiro Walk test. Qualitative data were represented as frequencies and relative percentages. Chi square test (χ^2) and Fisher's exact test to calculate difference between two or more groups of qualitative variables. Quantitative data were expressed as mean and standard deviation (SD). ANOVA was used to compare between more than two independent groups of normally distributed variables. All statistical comparisons were two tailed with significance. P-value ≤ 0.05 indicates significant difference, P-value ≤ 0.001 indicates highly significant difference, while P-value > 0.05 indicates Non-significant difference.

RESULT

Table 1 showed that there was no significant difference between the studied groups as regard demographic data and history as regard prior episiotomy or sutured laceration.

Table (1): Demographic data between the studied groups:

Variable	Group 1 (n=23)	Group 2 (n=23)	Group 3 (n=23)	P-value			
Age (Years)							
< 20	3 (13)	4 (17.4)	5 (21.7)	0.858 (NS)			
20-30	9 (39.1)	8 (34.8)	10 (43.5)				
> 30	11 (47.8)	11 (47.8)	8 (34.8)				
Mean ± SD	28.7 ± 8.1	29.17 ± 8.19	26.83 ± 7.49				
Gestational age (weeks)							
Mean ± SD	38.35 ± 0.93	38.30 ± 0.97	38.6 ± 1.1	0.602			
Range	(37-40)	(37-40)	(37-40)	(NS)			
BMI (kg/m2)							
Mean ± SD	26.9 ± 2.7	27.1 ± 2.5	27.2 ± 2.9	0.929			
Range	(22-33)	(23-34)	(22-34)	(NS)			
Gravidity							
Median	2	2	2	0.534 (NS)			
Range	(1-4)	(1-5)	(1-5)				
Parity							
Primipara	7 (30.4)	8 (34.8)	5 (21.7)	0.611 (NS)			
Multipara	16 (69.6)	15 (65.2)	18 (78.3)				
Number of previous abortions							
Median	1	0	1	0.498 (NS)			
Range	(0-3)	(1-3)	(0-3)				
Prior episiotomy or sutured laceration							
	No.	%	No.	%	No.	%	P-value
Yes	9	39.1	8	34.8	7	30.4	0.825
No	14	60.9	15	65.2	16	69.6	(NS)

BMI: body mass index. P-value is significant if ≤ 0.05 .

Table 2 showed that there was significant difference between the studied groups as regard the degree of perineal lacerations (P-value 0.0346) and perineal suturing (P-value 0.02635) with higher incidence in group 3.

Table (2): Comparison between the studied groups as regard the degree of perineal lacerations:

Variable	Group 1 (n=23)		Group 2 (n=23)		Group 3 (n=23)		P-value
	No.	%	No.	%	No.	%	
Degree of perineal lacerations							
1 st degree	5	21.7	5	21.7	5	21.7	0.03468
2 nd degree	2	8.6	3	13.4	6	26.0	
3 rd degree	0	0	0	0	3	13.4	
4 th degree	0	0.0	0	0.0	1	4.3	
Perineal suturing							
Yes	4	13.3	5	21.7	12	52.2	0.02635
No	19	82.7	18	78.3	11	47.8	

Table 3 showed that there was no significant difference between group 1 and group 2 as regard the degree of perineal lacerations (P-value 0.7531) and perineal suturing (P-value 0.7101).

Table (3): Comparison between Group 1 and group 2 as regard the degree of perineal lacerations:

Variable	Group 1 (n=23)		Group 2 (n=23)		P-value
	No.	%	No.	%	
Degree of perineal lacerations					
1 st degree	5	21.7	5	21.7	0.7531 (NS)
2 nd degree	2	8.6	3	13.4	
3 rd degree	0	0	0	0	
4 th degree	0	0.0	0	0.0	
Perineal suturing					
Yes	4	13.3	5	21.7	0.7101 (NS)
No	19	82.7	18	78.3	

Table 4; showed that there was no significant difference between the studied groups as regard as regard the neonatal birth weight and there was no significant difference between the studied groups as regard neonatal APGAR score at 1 minute and 5 minutes.

Table (4): Comparison between the studied groups as regard neonatal outcome:

Variable	Group 1 (n=23)	Group 2 (n=23)	Group 3 (n=23)	P-value
Birth weight(kg)				
Mean ± SD	3.36 ± 0.64	3.31 ± 0.61	3.33 ± 0.69	0.965
Range	(2.7-4.5)	(2.8-4.5)	(2.6-4.5)	(NS)
APGAR score 1 minute				
Mean ± SD	8.93 ± 0.99	8.9 ± 0.87	8.7 ± 0.81	0.639
Range	(7-10)	(7-10)	(7-10)	(NS)
APGAR score 5 minutes				
Mean ± SD	9.01 ± 0.71	9.02 ± 0.77	9.0 ± 0.73	0.995
Range	(8-10)	(8-10)	(8-10)	(NS)

Table 5; showed that there was no significant difference between the studied groups as regard the duration of second stage of labor (P value 0.513).

Table (5): Comparison between the studied groups as regard the duration of second stage of labor:

Variable	Group 1 (n=23)	Group 2 (n=23)	Group 3 (n=23)	P-value
Duration of second stage (min)				
Mean \pm SD	20.6 \pm 4.91	20 \pm 5.00	21.74 \pm 5.53	0.513

DISCUSSION

This study showed that there was no significant difference between the studied groups as regard demographic data including age, BMI, gravidity, parity, gestational age, and number of previous abortions, and history of the studied groups as regard prior episiotomy or sutured laceration.

Our results are in agreement with the study of Stamp *et al.* ⁽⁹⁾ as they reported that the groups at trial entry were similar in age, parity, previous perineal trauma, and previous operative vaginal delivery.

After analyzing our data, we concluded that there was significant difference between Group 1 (perineal massage), Group 2 (warm compression) and Group 3 (control group) as regard the incidence of perineal lacerations as it was slightly increased in the control group especially 3rd and 4th degree perineal lacerations compared to the other two groups (P-value 0.0346), and there was significant difference between the three groups as regards the need for perineal suturing (P-value 0.02635). Also, there was no significant difference between perineal massage group and warm compression group as regard the degree of

perineal lacerations (P-value 0.7531) and perineal suturing (P-value 0.7101). These results are in line with the results of Karaçam *et al.* ⁽¹⁰⁾ who had studied “the utilization of perineal massage during the 2nd stage of labor and its impact on postpartum perineal outcomes”, their sample was 396 laboring primiparous women in Turkey. They had established that perineal massage decreases the episiotomy size and thus decreases the quantity of suturing material used for episiotomy repair. Also, Aasheim *et al.* ⁽¹¹⁾ in their literature review study entitled “the effectiveness of different techniques at the 2nd stage of labor for decreasing perineal tears”, surveyed eight trials involving 11651 women. They had stated that there was a noteworthy effectiveness of warm compresses and favoring massage on decreasing 3rd- and 4th- degree tears. On the other hand, these findings disagree with the findings of Zare *et al.* ⁽¹²⁾ who studied “the effectiveness of perineal massage on perineal tears and rate of episiotomy”. They had documented that perineal massage had no apparent significant effect on the rate of perineal integrity, where the studied participant in both perineal massage and control groups needed an identical episiotomy and tears

repair. Furthermore, our results disagree with **Albers *et al.*** ⁽¹³⁾ who had conducted their study on 1211 laboring women. They used three midwifery care measures during 2nd stage of labor; perineal warm compresses, lubricated massage and hand-off technique until crowning of the baby's head, to evaluate whether any of these procedures were accompanying with lower incidence of genital tract trauma. The researchers reported that the frequency of genital tract trauma was identical in warm compresses, perineal massage and control groups, without any difference between the three groups.

The present study showed that there was no significant difference between the studied groups as regard the duration of second stage of labor (P-value 0.249) and the mode of vaginal delivery (P-value 0.99). This result is in accordance with the findings of **Dahlen *et al.*** ⁽¹⁴⁾. Their results had revealed that there was no significant difference between the groups in relation to the duration of second stage and mode of birth.

The findings of our study showed that neither perineal warm compresses nor perineal lubricated massage during the 2nd stage of labor had reduced the length of the 2nd stage, compared with the control group. This result is consistent with the result of **Ashwal *et al.*** ⁽¹⁵⁾ who conducted "a randomized controlled clinical trial to evaluate the effectiveness of obstetric gel on the length of 2nd stage of labor and perineal integrity". They had reported that the mean length of the 2nd stage of labor was similar between the study and control groups. In the study in our hands, there was no significant difference between the studied groups as regard neonatal birth weight (P-value 0.965), and there was no significant difference between the studied groups as regard neonatal APGAR scores at 1 minute (P-value 0.639) and 5 minutes after delivery (P-value 0.995). The results of this study are in agreement with the study of **Dahlen *et al.*** ⁽¹⁴⁾ as they reported that infant birth weight was not significantly different between the studied groups. Also, **McCandlish *et al.*** ⁽¹⁶⁾ found that there was no significant difference in baby outcomes among the studied groups.

CONCLUSION

The application of perineal warm compresses and lubricated perineal massage during the second stage of labor can reduce the occurrence and the degree of perineal laceration, and postpartum perineal pain. Women's age, body mass index and history of previous perineal trauma influence the occurrence of perineal trauma.

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Author contribution: Authors contributed equally in the study.

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