Comparative Study between Two Perineal Management Techniques Used to Reduce Perineal Trauma during 2nd Stage of Labor

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Abstract: Perineal trauma or genital tract injury occurs in more than 65% of all vaginal birth and is generally the result of either spontaneous lacerations or episiotomy. The extent of perineal trauma is related to several factors such as parity, fetal birth weight, instrumental delivery, ethnicity and maternal body mass index. This study compares the two perineal management techniques used to reduce perineal trauma during the 2nd stage of labor also, to find out the various factors which increase prevalence of perineal trauma. This study randomized 200 healthy parturient women, 100 in each group in labor unit at Beni Suif and Zagazig University hospitals during the period from December 2010 to August 2011. The tools used for the study included a questionnaire sheet, maternal assessment sheet and newborn assessment sheet. The results show that the use of warm pack in the perineum during the expulsive period does reduce the occurrence of perineal laceration. These results support the use of perineal warm compresses techniques by trained birth attendants.

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1. Introduction

Perineal trauma is any damage to the genitalia during childbirth that occurs spontaneously or intentionally by surgical incision (episiotomy). Anterior perineal trauma is injury to the labia, anterior vagina, urethra, or clitoris, and is usually associated with little morbidity. Posterior perineal trauma is any injury to the posterior vaginal wall, perineal muscles, or anal sphincter [(1)].

Perineal trauma can cause short term and long term problems for the new mother. Short term problems (immediate after birth) include blood loss, need for suturing and pain. While long term problems include bowel, urinary or sexual problems [(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[(3)]. Both child-bearing women and health professionals place a high value for minimizing perineal trauma and reducing potential associated morbidity for mothers [(4)].

Midwives and other accoucheurs report the use of a variety of techniques in the second stage of labor in the belief that they may lower the rates of genital tract trauma and reduce pain [(5)].

Perineal warm compresses are widely used during childbirth in the belief that they reduce perineal trauma and increase comfort during late second stage of labor. Women in the warm pack group had significantly fewer third- and fourth-degree tears [(6)].

Perineal massage can be conducted in two main ways: as antenatal perineal massage carried out by the woman and/or her partner; or as intrapartum massage carried out by the midwife. Massaging the perineum increases circulation to the pelvic floor and makes it more supple and liable to stretch. It involves lubricating the thumbs and inserting them inside the bottom of the vagina, then exerting downward pressure toward the back of the spine [(7)].

Vaginal application of obstetric gel showed a significant reduction in the second stage of labor and a significant increase in perineal integrity [(8)].

Aim of the Study

This study compared the effect of two methods used to reduce perineal trauma in the 2nd stage of labor to determine which of these methods was more effective in reducing perineal trauma with vaginal birth and find out the relation between the prevalence of perineal trauma and the various factors.

Hypothesis

Women receiving warm compresses during the

2nd stage of labor have increased likelihood of an intact perineum compared with the group receiving massage with lubricant.

2. Subjects and methods

A randomized controlled trial was conducted in labor unit at Beni Suif and Zagazig University Hospitals during the period from December 2010 to August 2011.

The sampling population of this study consisted of 200 women who were 37 weeks gestation or more. They were admitted to delivery room. Inclusion criteria included; (1) Singleton pregnancy, (2) Vertex presentation (3) Completely intact genital tract (4) Efficient uterine contractions, (5) Cervical dilatation 4 cm or more and (6) Anticipated a normal birth. Exclusion criteria included; (1) Any medical or obstetrical disorders associated with pregnancy, (2) Contraindications for vaginal delivery and (3) Non-reassuring electrocardiography.

Women subdivided into two groups, group 1 (perineal warm compresses) which consisted of 100 pregnant ladies and group 2 (perineal massage with lubricant) which consisted of 100 pregnant ladies.

Group 1 (perineal warm compresses) received usual care during labor until the baby's head began to distend the perineum (Crowning). A sterile metal jug filled with heated tap water (between 45° and 59°C) was used to soak a sterile perineal pad, which was wrung out 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 in the jug was replaced every 15 minutes until delivery (between 45° and 59°C) [(6)].

Group 2 (perineal massage with lubricant) were done using gentle, slow massage with two fingers of the midwife's gloved hand, moving from side to side, just inside the patient's vagina. Mild, downward pressure (toward the rectum) was applied with steady, lateral strokes, which lasted one second in each direction. This motion precluded rapid strokes or sustained pressure. A sterile, water-soluble lubricant was used to reduce friction with massage. Massage was continued during and between pushes, regardless of maternal position, and the amount of downward pressure dictated by the woman's response. The midwife stopped if it was uncomfortable for the woman [(8)].

Tools of Data Collection

Data collection was done through the following tools:

Interview questionnaire sheet:

A structured interview schedule was developed, validated and used for data collection. It entails the following:

History:

It included; General characteristics such as; age, education, residence, occupation and social class. Obstetrical data such as; gravidity, parity, and abortion. The place, mode of previous delivery, history of perineal management techniques was recorded. Birth interval was also recorded.

Present pregnancy history included data about any medical or obstetrical complications that may occur during pregnancy to exclude these cases. The antenatal exercises and antepartum perineal massage performed by the women were recorded.

Clinical examination on admission:

General examination with recording of the body temperature (^{o}C), blood pressure (mmHg), pulse rate (bpm), height (m) and weight (kg) were also performed to estimate body mass index. Also careful cardiac and chest examination were carried out.

Abdominal examination was done to determine the fundal height, auscultation of fetal heart rate. Evaluation of uterine contractions was made (frequency, intensity, duration).

Local examination was performed to determine cervical conditions such as degree of cervical dilatation and effacement, station of presenting part, fetal presentation and position, membranes condition (intact or ruptured); perineal condition at admission (intact or abnormalities), pelvic adequacy and other abnormal findings.

Two dimensional ultrasound was done for every parturient women to give information about viability of the fetus, gestational age, presentation, number of fetuses, amniotic fluid index, fetal weight and position of the placenta.

Electrocardiography was done to estimate fetal heart rate, uterine contractions and to exclude intrapartum fetal distress.

Laboratory investigations were carried out for women if indicated.

Partogram:

It includes data about the progress of labor during the first stage of labor.

Two perineal management techniques performed during the second stage of labor as well as the time of transition of the mother to delivery room were all recorded.

Summary of labor sheet included data about the mode of delivery of the fetus, placenta and the duration of labor. It also included data about the condition of the woman, the uterus and perineum.

3. Results

Table (1) shows the maternal age, body mass index and history of perineal trauma. There were no statistically significant differences between the studied groups.

Table 1. Characteristics of the studied groups.

Characteristics of the studied groups	Perineal warm compresses (N=100)	Perineal massage with lubricant (N=100)	P*
Maternal Age (yrs)			
(Mean ± SD)	25.5 ±7.5	26.6 ±6.2	0.25
BMI (kg/m2)			
(Mean ± SD)	27.15±4.1	26.25±4.9	0.16
Previous perineal trauma			
(%)	35.0%	34.0%	0.88

As shown in table 2, an intact perineum and tears were observed in 68.0% and 10.0% respectively among perineal warm compresses group and in 47.0% and 23.0% respectively among perineal massage with lubricant group. There were no significant differences between the studied groups as regards episiotomy (P= 0.19).

Table 2. Comparison of perineal outcomes after labor between the studied groups

Perineal condition after labor	Perineal warm compresses (n = 100)	Perineal massage with lubricant (n = 100)	P*
Intact n (%)	68(68.0%)	47(47.0%)	0.00**
Episiotomy n (%)	22(22.0%)	30(30.0%)	0.19
Tears n (%)	10(10.0%)	23 (23.0%)	0.01*

* P < 0.05 is statistically significant **P<0.001 is statistically highly significant

According to parity, perineal trauma in warm compresses group was 62.9% compared to 85.7% in perineal massage with lubricant group in primiparous women. While perineal trauma occurred in 15.4% in warm compresses group compared to 35.4% in the perineal massage with lubricant group of multiparous women. This difference was statistically significant between both groups.

Uterine fundal pressure maneouver during the second stage of labor and the incidence of perineal trauma is shown in table 3. It is obvious that women who were exposed to fundal pressure were less likely to have perineal trauma in warm compresses group (31.25 %) than in the perineal massage with lubricant group (43.4%).

In addition, women who received perineal warm compresses were less likely to perineal lacerations when baby's head was born during uterine contractions than in perineal massage with lubricant group.

There was no statistically significant difference between the two groups when considering mode of vaginal delivery, the duration of the expulsive period, the fetal expulsion was on average, a little longer in the perineal massage with lubricant group (16.5 minutes versus 13.6 minutes in the perineal warm compresses group) and birth weight between the groups (Table 3).

Table 3. Risk factors associated with perineal trauma among the studied groups

Factors associated with perineal trauma	Perineal warm compresses (No = 32)	Perineal massage with lubricant (No = 53)	P*
Parity			
Primipara n (%) (No =70)	22/35 (62.9)	30/35 (85.7)	0.02*
Multipara n (%) (No =130)	10/65(15.4)	23/65 (35.4)	0.00*
Mode of vaginal delivery			
Spontaneous n (%)	19(59.4)	36(67.9)	0.42
Induced n (%)	13(40.6)	17(32.1)	
Uterine fundal pressure in 2nd stage			
n (%)	10(31. 25)	23(43.4)	0.32

Baby's head born during uterine contractions			0.02*
n (%)	12(37. 5)	33(62.3)	
Duration of 2nd stage (minutes)			
Mean ± SD	13.6 ± 19.3	16.5 ± 16.6	0.23
Birth weight (Kg)			
Mean ± SD	3.240 ± 440	3.130± 310	0.30

*p < 0.05 is statistically significant.

4. Discussion

Perineal trauma or genital tract injury occurs in more than 65% of all vaginal births and is generally the result of either spontaneous laceration or episiotomy **(Kozak et al., 2006)**[10].

Midwives and other accoucheurs report the use of a variety of techniques in the second stage of labor in the belief that they may lower rates of genital tract trauma and reduce pain **(Albers et al., 2005)**[5].

In this study we observed no significant differences between studied groups according to their characteristics in terms of age, body mass index and history of perineal trauma. In the same line, **Araújo and Junqueira, (2008)** [11] showed that women in the two study groups were homogenous with regard to age (experiment 21.6±3.8 year and control 20.5±3.9). This was beneficial to the present study as it ensured generalization of the study results as well as avoiding the effect of other confounding variables.

Concerning perineal condition after labor, the current study indicated that, the use of warm perineal compresses in late second-stage of labor reduces the risk of perineal trauma. This finding is consistent with **Hastings-Tolsma et al., (2007)** [12] who found that warm moist compresses applied during second stage of labor were protective of the perineum. In addition, the presence of the warm pack on the perineum made touching the perineum less harming leading to less bruising.

The various risk factors analyzed and their associations with perineal tears are summarized in Table 3. Primiparity was found to be significantly associated with an increased risk of perineal trauma. Higher parity appeared to be a protecting factor for perineal trauma. The current study findings demonstrated that perineal warm compresses significantly reducing the frequency of perineal trauma in regarding to parity. However, this finding was disagreed with **Matsuo et al., (2009)** [13] who found that nulliparous women were more likely to have a laceration if compresses and manual support techniques were used. Multiparous women were less likely to experience a tear than nulliparous women, and even when a tear occurred, the tear was less severe.

The results of the current study showed that uterine fundal pressure maneuvers during the second stage of labor increase the likelihood of traumatized perineum. Our findings are consistent with **Hastings-Tolsma et al., (2007)** [12] who claimed that the uterine fundal pressure maneuver during the second stage of labor increased the risk of severe perineal laceration. This could be attributed to the fact that the use of warm compresses relaxes the perineum and promotes smooth descent of the presenting part with the result of less using of fundal pressure.

The current study demonstrated that birth of baby's head during second stage of labor was an important contributor to perineal trauma. According to the present results, the delivery of the baby's head in between uterine contractions was more likely to end with intact perineum. In the same line, **Albers et al., (2006)** [14] reported that delivery of the baby's head in between contractions protects the perineum from trauma in both primiparous and multiparous women.

A study of the risk factors related to perineal laceration during birth found a significant increase when the expulsive period was longer than 15 minutes. Another study by **Araújo and Junqueira, (2008)** [11] demonstrated higher rates of intact perineum in the women who had longer expulsive periods (P = 0.001). The authors concluded that the stretching of perineal muscles for an extended period of time can lead to local ischemia, which can increase perineal ruptures.

In the present study, no relation between perineal condition and newborn weight was found. In contrast with **Gelle'n et al., (2005)** [15], women who are vaginally delivered of a large infant are at a high risk for sphincter damage.

Conclusions

Perineal trauma is a common occurrence during vaginal delivery, with relation to the parity, and birth of baby's head. This study has focused on the efficacy of two perineal techniques in perineum protection during delivery. The results show that the use of warm pack in the perineum during the expulsive period does reduce the occurrence of perineal laceration.

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