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The impact of perineal massage during pregnancy on perineal laceration during childbirth and postpartum: A randomized clinical trial study

Roonak Shahoei[1], Lila Hashemi-Nasab[2], Golbahar Gaderkhani[2], Farzaneh Zaheri[2], Faranak Shahoei[3]

1 Associate Professor, Clinical Care Research Center AND Department of Midwifery, School of Nursing and Midwifery, Kurdistan University of Medical Sciences, Sanandaj, Iran
2 Lecturer, Department of Midwifery, School of Nursing and Midwifery, Kurdistan University of Medical Sciences, Sanandaj, Iran
3 Besat Hospital, Kurdistan University of Medical Sciences, Sanandaj, Iran

Original Article

Abstract

BACKGROUND: This study was aimed to investigate the effect of perineal massage during pregnancy on perineal pain and lacerations.

METHODS: This randomized clinical trial study was conducted at Besat Hospital of Sanandaj, Iran, from June 2014 to July 2015, on 115 women. Subjects in the intervention group practiced a daily 8-minute perineal massage with olive oil, starting from the 34th week of gestation until delivery. A questionnaire, made by researchers, was used to collect data through interviews and observations as well as reading the women's health files. The collected data was analyzed using SPSS software. The descriptive results were reported in terms of frequencies, means and standard deviations (SD).

RESULTS: The incidence of episiotomy was 53.33% and 57.33% in interventional and control groups, respectively, reflecting the significant difference ($P < 0.050$). In the interventional group, the frequency of first and second-degree and urethra tears was 81.82%, 9.09%, and 9.09%, respectively. The frequency of the first and second-degree, urethra and vestibule tears was 72.23%, 11.11%, and 16.66%, respectively, in control group. Comparing the degrees of pain between two groups revealed the significant difference in severity of pain at 3 days, 10 days and 3 months after childbirth ($P < 0.001$).

CONCLUSION: Antenatal perineal massage has a significant effect on the incidence of intact perineum, episiotomy and postnatal perineal pain.

KEYWORDS: Laceration, Episiotomy, Pregnancy, Pain, Postpartum, Massage

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Introduction

Women regularly suffer from perineal trauma during childbirth process, particularly for the first delivery. Any damage to the perineum during childbirth may occur spontaneously or after episiotomy.[1] Approximately, 85% of women experience perineal trauma during childbirth and more than two-thirds of them need perineal repair.[2] Perineal injury during labor is accompanied with short- and long-term complications such as bleeding, infection, the need for surgical repair, urinary and fecal incontinence, dyspareunia, persistent pain and pelvic floor muscle weakness. Such complication rarely is seen in women with an intact perineum. Perineal pain after childbirth can damage the interaction between the mother and child, breastfeeding, childcare, sexual and emotional relationships and even interfere with recovery.[3] About 22% of women have reported the

Corresponding Author:
Roonak Shahoei
Email: rshaho@yahoo.com

continuance of perineal pain for eight weeks that sometimes lasts for one year or more.[1] Perineal trauma is associated with dyspareunia during the first 3 months after childbirth. The women with an intact perineum are more likely to start an early sexual activity and report less pain during sexual intercourse. Also, they may report orgasm in the first six months after childbirth.[4]

Nowadays, low-risk strategies such as complementary and alternative medicine, acupressure, aromatherapy and massage during pregnancy and childbirth have been suggested for reducing labor pain, and perineal trauma and pain.[5] Perineal massage by the husband a few weeks before childbirth increases elasticity and lowers the risk of perineal trauma induced by episiotomy or spontaneous ruptures.[6] Perineal massage also increases blood flow and the ability to stretch the perineum during childbirth that reduces pain associated with passing out the child from the birth canal. It also can reduce perineal trauma and pain after childbirth.[7]

The most common complication of childbirth, especially in nulliparous women, is a postpartum perineal pain. It has consequences such as insomnia, anxiety, delays in establishing the relationship between the mother and child prevents the romance between them and hinders the correct posture for breastfeeding.[8,9] Perineal pain debilitates the mother in childcare and its persistence endangers marital relationships.[10]

Several studies have reported that perineal massage during pregnancy can be an effective strategy for prevention of perineum trauma after vaginal delivery, especially in nulliparous women.[11,12] In America, a study with 368 nulliparous and multiparous women revealed that perineal massage during pregnancy reduced the frequency of laceration and episiotomy after childbirth.[11] However, it is reported that perineal massage during pregnancy had no protective effect on the perineum with no prevention of perineal trauma.[12] Although the study supports the claim that perineal massage during pregnancy decreases the need for episiotomy, perineal tear and pain after childbirth, nevertheless, there are still doubts that need to be addressed by further studies.[4] The mother's factors influencing perineal tear during childbirth are age, parity, gain of weight during pregnancy, hematocrit during pregnancy, childbirth position, the second stage of labor duration, history of episiotomy in previous births, history of tear in previous delivery and perineal massage during pregnancy. The newborn's factors are weight, fetal position during delivery, nuchal arm and the size of fetus.[11] The main purpose of this study was to evaluate the effect of massage during pregnancy on perineal trauma during childbirth and postpartum pain in women who referred to Besat hospital of Sanandaj, Iran.

Materials and Methods

This randomized clinical trial was conducted in an Iranian governmental educational hospital (Besat), from June 2014 to July 2015. Besat hospital is the referral center in Kurdistan Province, affiliated to Kurdistan University of Medical Sciences. The research population included the pregnant women attending to childbirth preparation class at Besat hospital.

The inclusion criteria of this study were singleton pregnancy, cephalic presentation, gestational age of 34 weeks, and lack of premature rupture of membranes, narrow pelvis, fetal distress and placental abruption, and eagerness to participate in this study. Those women with multiple pregnancies, previous cesarean childbirth with the forceps and vacuum, the history of administration of oxytocin, shoulder dystocia, posterior occiput, fetal distress, macrosomia, opioid drugs and a lack of labor progression were excluded from this study.

The principal investigator chose a specialist in the field of midwifery who was working in the labor room at the hospital as the research assistant and taught her how to massage the perineum, choose samples, fill out data collection

forms and obtain the written informed consent. The research assistant provided the women participating in childbirth preparation classes at the hospital with information about perineal exercise and the study process. Those women who willingly agreed to participate in this study were asked to sign written informed consent and undergone verbal and written education on perineal massage. Massage should be performed with the thumb through the vagina in a semi-sitting position and using olive oil drawing a U-shape. The intervention group was asked to perform perineal massage using olive oil from the 34th week of pregnancy to childbirth in an everyday manner and for eight minutes in each session. The women in the intervention group were asked not to provide any information about performing perineal massage during pregnancy to labor staff.

The samples size for this study consisted of 150 women who were considered eligible after reviewing of list. They were randomly assigned to two 75-woman groups. The statistical factors incorporated into formula were as follow: 95% confidence interval (CI), p1 = 70% and p2 = 91% as perineal rupture in the intervention and control groups reported by a previous study (11) and $\bar{p}$ as the mean of ratios.

The research assistant used the closed envelope to select the control group of those women who had the inclusion criteria with yes or no written on paper inside the envelope. In the control group, no intervention was performed during pregnancy and they received routine antenatal care.

Childbirth in both intervention and control groups was managed by a midwife in charge of deliveries who also filled out the questionnaires. The midwife in charge of deliveries was not informed of the allocation of the women into the groups. In both groups, the decision for episiotomy during childbirth was based on the detection of indications of labor and episiotomy. After childbirth, the perineal and vaginal tear and the indications for episiotomy were assessed by the delivery agent and the required forms were completed. A questionnaire was used to collect data through interviews and observation as well as reading the women's health files.

This questionnaire which was made by researchers consisted of three parts. The first part was the demographic characteristics of the samples including age, education, occupation, history of abortion, gestational age and maternal body mass index (BMI). The second part was related to information about childbirth such as episiotomy, the laceration grade, weight and sex of the child, head circumference, chest circumference and Apgar score. The third part was related to pain on the third and tenth days and three months after childbirth. The first-grade tear was defined as a damage to skin and perineal mucous. The second-grade tear consisted of the first-grade tear and the muscle tear. The third-grade tear was the second-grade tear along with damage to the anal sphincter.

Questionnaire validity was confirmed by content validity (questioner assessed by 10 midwifery lecturer of nursing and midwifery school) and its reliability was evaluated by test-retest method (r = 0.74). The samples were taught to assess and report their pain using the pain measurement ruler. Telephone follow-ups by the researcher were conducted on the third and tenth days and three months after childbirth to ensure of recording pain and its severity by the samples.

The collected data was analyzed using descriptive and inferential statistics via the SPSS software (version 21, IBM Corporation, Armonk, NY, USA). The descriptive results were reported in terms of frequencies, means and standard deviations. Also, Student's independent t-test, chi-square test and Fisher's exact test were used to compare the groups. $P < 0.050$ was considered statistically significant.

The research proposal of this study was approved by the Research Council and Ethics Committee of Kurdistan University of Medical Sciences. Considering the ethical issues in this

study, the participants were clearly informed about the objective and nature of the study. Moreover, prior to the study, the participants provided us with their written consents in the formal language (Persian). Ethically, we have met a commitment to keep all of the participants' information confidential. The ethical consideration of this study complies with the code of ethics issued by the Ministry of Health and the declaration of Helsinki.

Results

The mean and standard deviation (SD) of the age of the samples in the intervention and control groups were 26.25 ± 4.35 and 26.42 ± 3.65 years, respectively. The highest percentage of the age group in both groups belonged to the age group of 26-30 years old. Also, 88.00% (66) and 96.00% (72) of the women in the intervention and control groups were housewife, respectively. The majority (45.33%) of the women in the intervention group had an academic education, while 44% of the women in the control group had a diploma degree. The majority of the women in both groups had no history of abortion, 89.30% (67) in the intervention group and 93.30% (70) in the control group, respectively (P = 0.380). In the intervention group, the majority of the women 48% (36) were nulliparous, but 49.30% (37) of the women in the control group experienced their second pregnancy. The mean of gestational age of the women in the intervention group was 39.92 ± 0.84 weeks and in the control group was 39.34 ± 0.80 weeks.

The majority of infants in intervention and control groups were boy (53.30%) and girl (50.67%), respectively. The mean of the newborn weight in the intervention group was 3000 ± 760 g and in the control group was 3000 ± 570 g. The mean of head circumference of infants in the intervention and control group was 34.61 ± 1.68 and 34.32 ± 1.23, respectively. Also, the same figures for the infants' chest circumferences were 33.52 ± 1.2 and 32.85 ± 1.09, respectively.

The mean of the Apgar score in the first and fifth minutes after birth in both groups was 9 and 10, respectively. The maternal BMI in the intervention group was 23.49 ± 2.81, and in the control group was 23.60 ± 2.75 kg/m^2.

No statistically significant differences were observed between the groups in terms of age (P = 0.089), occupation (P = 0.073), education (P = 0.076), birth weight (P = 0.065) (Table 1).

Table 1. Demographic characteristic of participants (n = 150)

Characteristic		Group		P*
		Intervention	Control	
Age (year)	≤ 20	5 (6.70)	5 (6.70)	0.089
	21-25	14 (18.70)	27 (36.00)	
	26-30	41 (54.70)	28 (37.30)	
	≥ 31	15 (20.00)	15 (20.00)	
Occupation	House wife	66 (88.00)	72 (96.00)	0.073
	Employed	9 (12.00)	3 (4.00)	
Education	Primary school	9 (12.00)	16 (21.30)	0.076
	Diploma	32 (42.67)	33 (44.00)	
	Academic	34 (45.33)	26 (34.70)	
History of abortion	Yes	8 (10.70)	5 (6.70)	0.380
	No	67 (89.30)	70 (93.30)	
Gravida (n)	1	36 (48.00)	33 (44.00)	0.060
	2	15 (20.00)	37 (49.30)	
	≥ 3	24 (32.00)	5 (6.70)	
Newborn sex	Girl	35 (46.70)	38 (50.67)	0.180
	Boy	40 (53.30)	37 (49.33)	
Birth weight (g)	< 2500	1 (1.30)	1 (1.30)	0.065
	2500-3000	32 (42.70)	22 (29.30)	
	3001-3500	21 (28.00)	37 (49.30)	
	3501-4000	17 (22.70)	11 (14.70)	
	≥ 4001	4 (5.30)	4 (5.300	

Data are shown as number (%); * Chi-square test

The incidence of episiotomy in the intervention and control groups was 53.33% and 57.33%, respectively, which were statistically significant (Table 2).

Table 2. Comparative episiotomy rate among groups

Group	Episiotomy		P*
	Yes	No	
Intervention	40 (53.33)	35 (46.67)	< 0.001
Control	43 (57.33)	32 (42.67)	

Data are shown as number (%); * Chi-square test

Also, in the intervention group, 81.82% of the women experienced the grade-one tear, 9.09% the grade-two tear, and 9.09% had urethral rupture. The same figure in the control group was as follows: 72.23% the grade-one tear, 11.11% the grade-two tear and 16.66% had urethral and vestibule ruptures, which were reported statistically significant (P < 0.050) (Table 3).

Perineal pain after childbirth on days 3 and 10 and three months after childbirth was statistically significant. With regard to the severity of pain, pain on days 3, 10 and three months after childbirth in the groups was statistically significant (P < 0.001) (Table 4).

Discussion

Our investigations in this study have depicted that perineal massage during pregnancy protected the perineum during childbirth, as the incidence of episiotomy in the intervention group was lower in comparison with the control group. This finding is pretty in line with the findings of a bunch of studies.[1,4,11,13] One of the important factors during labor and childbirth care is the prevention of any damage to the perineum. Studies in the 1970s and 1980s showed that episiotomy not only did not stop perineal rupture, but also increased its frequency and intensity. Also, the only benefit of episiotomy was the prevention of anterior ruptures. The episiotomy technique is not effective in the prevention of perineal tear. Therefore, perineal massage can be considered a preventive intervention for perineal lacerations.[11]

In a systematic review of four studies conducted on 2497 patients concluded that perineal massage during pregnancy was associated with the reduction of trauma, the need for perineal stitches and treatment as well as episiotomy.[14] A systematic review on three clinical trials about perineal massage involving 1941 nulliparous women and 493 multiparous women concluded that perineal massage reduced the prevalence of trauma to the perineum and the need for episiotomy and perineal stitches in nulliparous women.[15]

No third and fourth-grade ruptures were reported among the women in the current study. Perineal massage reduced the third and fourth-degree tears.[5,16] A study in Australia revealed that perineal massage during pregnancy from the 34th week to childbirth reduced perineal lacerations and the incidence of episiotomy, concluding that that perineal massage during pregnancy diminished the possibility of damage to the perineum, lowered the need for episiotomy and perineal pain after childbirth.[4] Perineal massage with fingers in the last month of pregnancy is well-tolerated and safe by those women who had no previous history of vaginal delivery. Also, those women who used this method experienced fewer traumas to the perineum as well as episiotomy in childbirth.[17]

Table 3. Comparative perineal injuries rate among groups

Group	Tear				P*
	Urethra	Vestibule	First-degree tear	Second-degree tear	
Intervention	1 (9.09)	0 (0)	9 (81.82)	1 (9.09)	0.010
Control	2 (11.11)	1 (5.55)	13 (72.23)	2 (11.11)	

Data are shown as number (%); * Fisher's exact test

Table 4. Comparative perineal pain and its severity among groups after birth

Variable			Group		P*
			Intervention	Control	
Perineal pain	3 days after birth		35 (46.70)	59 (78.70)	0.001
	10 days after birth		7 (9.30)	53 (69.30)	0.001
	3 months after birth		0 (0)	15 (20.00)	0.001
Pain severity	3 days after birth	No pain	40 (53.33)	46 (61.34)	0.001
		Mild	25 (33.33)	8 (10.66)	
		Moderate	10 (13.34)	8 (10.66)	
		Sever	0 (0)	13 (17.34)	
	10 days after birth	No pain	70 (93.33)	23 (30.67)	0.001
		Mild	4 (5.33)	29 (38.66)	
		Moderate	1 (1.34)	21 (28.00)	
		Sever	0 (0)	2 (2.67)	
	3 months after birth	No pain	75 (100)	60 (80.00)	0.001
		Mild	0 (0)	15 (20.00)	
		Moderate	0 (0)	0 (0)	
		Sever	0 (0)	0 (0)	

Data are shown as number (%); * Independent t test

In a clinical trial study on the impact of perineal massage on the increased likelihood of intact perineum during delivery reported that perineal massage before childbirth did not protect the perineum and had no significant impact on perineal trauma.[12] The results of the study showed that perineal massage had no effect on the perineum, the need for episiotomy and perineal laceration.[18] A clinical trial in Japan, performed perineal massage four times a week for more than three weeks, reported that the need for episiotomy was reduced by 21%. However, the rate of perineal tears in the intervention group was slightly more than that in the control group.[19]

Another finding of this study was the decreased perineal pain in the intervention group, in the third day and three months after childbirth. Also, as compared to the control group, the severity of pain on day 3 and 3 months after childbirth in the intervention group was less. Our findings are in line with those of other studies.[1,4,20] Perineal pain after vaginal birth affects healing. Also, both episiotomy and perineal pain are associated with perineal injuries during pregnancy and three months after childbirth.[21]

A study concluded that those women who had an intact perineum after childbirth experienced less perineal pain following childbirth and experienced less sexual dysfunction three months after childbirth.[22] Perineal massage in the last weeks of pregnancy reduced perineal pain, the need for episiotomy and tears grade two and three.[1] In a study, researchers asked the intervention group to perform perineal massage during the 34th week of pregnancy to childbirth. They reported that those women older than 30 years old in the intervention group were more likely to give birth with an intact perineum (P = 0.029). The authors concluded that perineal massage significantly contributed to reducing perineal pain after childbirth.[20] Also, it is mentioned that perineal massage in nulliparous women was followed by the lower levels of pain three months after childbirth.[15]

The results of this study depicted that perineal massage during pregnancy was accompanied by less perineal tear and pain, and the need for episiotomy. Although evidence confirmed these results, perineal massage during pregnancy was not recommended by any clinical guideline. It is believed that this approach is safe and acceptable by women. Since there is no strong

evidence globally to support this technique, family physicians can suggest it to those women who are interested in using such methods for reducing perineal trauma and pain after childbirth.[17]

The strength of this study was telephone follow-ups by the researcher for three months after childbirth.

Conclusion

The antenatal perineal massage was found to have a significant effect on the incidence of intact perineum, episiotomy and postnatal perineal pain. Therefore, conducting this study with a larger sample size and comparison of the effect of perineal massage between nulliparous and multiparous women are suggested. Also, this study can be repeated in hospitals in which physiologic childbirth is carried out to prevent possible consequences of not conducting.

Conflict of Interests

Authors have no conflict of interests.

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