

The effects of perineal management techniques on labor complications

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ABSTRACT

Background: Many women suffer from perineal trauma during the normal vaginal delivery. Perineal trauma is mainly associated with pain and complications after the childbirth. Perineal management techniques can play a significant role in perineal trauma reduction. This study aimed to compare the effects of perineal management techniques (hands-off technique, Ritgen maneuver and perineal massage using a lubricant during delivery) on the labor complications..

Materials and Methods: This quasi-experimental clinical trial was conducted on 99 primiparous women who referred to Daran Hospital, Isfahan, Iran for normal vaginal delivery in 2009. The subjects were selected using a convenient method and randomly assigned to three groups of Ritgen maneuver, hands-off technique and perineal massage with lubricant. A questionnaire was used to determine the demographic characteristics of the participants and complications after birth. The short form of McGill Pain Questionnaire and the visual analogue scale for pain were also employed. The incidence and degree of perineal tears were evaluated immediately after delivery. Moreover, the incidence and severity of perineal pain were assessed 24 hours and also 6 weeks after delivery.

Findings: In the Ritgen maneuver group, the frequency of tears, the relative frequency of tear degrees, the severity of perineal pain 24 hours after delivery and the frequency of pain and perineal pain severity 6 weeks after delivery were significantly different from the other two methods.

Conclusions: Hands-off technique during parturition of the neonate's head was associated with fewer complications after delivery. It was even better than perineal massage during the parturition.

Key words: Labor complications, hands-off technique, Ritgen maneuver, perineal massage, tearing, pain

INTRODUCTION

One of the important aspects of the lives of mothers is having a safe pregnancy and childbirth; hence, the health care providers must plan for it as a priority.^[1] According to many scientists,

describing childbirth without pain is improbable. In addition, in many studies, the most pain is described in the second stage of the labor during the crowing of the baby's head. Presumably, the descent of the baby's head and stretching of the perineal tissue are the most important factors which trigger pain at this stage.^[2] Each year approximately 3 million vaginal deliveries are performed in the United States. Most of them are with perineal damages associated with arising from either episiotomy or spontaneous ruptures.^[3]

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Perineal pain after childbirth and its side effects are seen in 26.3% of women. These issues may last for 8 to 24 weeks after the delivery, or even a year after childbirth.^[4] The prevalence of genital and pelvic pain after the delivery is listed from 5% to 33%.^[5] Furthermore, although the genital and pelvic pain after the childbirth is a known common early complication, the clinical course is less studied.

Chronic pelvic and genital area pain in 18% and chronic episodes of pain in this area, have been reported 26% after the delivery. 9% of mothers mentioned the start of the pains to be after the childbirth.^[6] Intermittent perineal tears cause pain and require more preventive policies to be carried out.^[7]

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Genital injuries can have a major impact on the physical and mental health of mothers. In addition, the case encompasses anxiety, depression and negative view towards the pregnancy. Women may feel that they are unable to express their problem very well and seeking medical attention in this field can be avoided.^[8]

Different strategies are taken into account for reducing the perineal injury at the time of delivery and some of them have been performed during the pregnancy, but most of these methods are used during the childbirth and labor. Ritgen maneuver (the obstetric procedure used to control delivery of the fetal head which involves applying upward pressure from the coccygeal region to extend the head during actual delivery, thereby protecting the musculature of the perineum) is one of the methods. There are still doubts about its superiority over perineal hands off method and needs more research in this field. It is in the C group of surveillance.^[9]

Mayerhofer et al. in a clinical study, carried out on 1076 childbirths, suggested the two methods, of touching and not touching the perineal while withdrawal of the fetal head were compared. 32.5% of the perineal touching group and 35.8% in the non-touching group had perineal trauma. 2.7% in the group of perineal touching had Level 3 tears, while in the other group the rate was 0.9%. 17.9% of the perineal touching group had episiotomy, but the rate was 10.1% in the other group.^[10]

The researchers preferred the method of touching the perineal. Due to reduction of the level 3 and 4 tears and fewer requirements to episiotomy and accordingly, the safety of Ritgen maneuver was questioned.^[10] On the other hand, in another trial, the two methods of perineal touching and non-touching the baby's head during childbirth had been compared. This research was conducted in two groups of 35 patients. It is observed that between these two methods, there were no significant differences in severity and the degree of tear.

The researchers believed that the probable causes were not only the low number of samples but also considering the small scratches and tears that do not require stitches. They have stated that more researches need to be done in this field.^[11] Meanwhile, the researches in Iran indicate the positive effects of the method of non-touching the perineal on perineal tears, compared to Ritgen maneuver which has been done at the time of the delivery on two groups of 35 patients. Perhaps this is due to the gradual expansion of the perineal with the descent of the fetus, which prepares the perineal tissues and therefore decreases the tears in the perineal area.^[12]

One of the major mechanisms during the fetal head delivery is the Ritgen maneuver in which no points of the perineal is left without protection and the hand support prevents the perineal tears.^[13] The results of other studies suggested that perineal massage is an effective approach to raising the chance of healthy perineal in mothers.^[14]

Stamp et al. believe that perineal massaging is an effective strategy for increasing the incidence of a healthy perineal following vaginal delivery especially in nulliparous women.^[12] It seems that perineal massaging causes an increase in blood flow and elasticity, softness of tissue, helping a mother with a sense of tingling, burning and thus sense of less pressure and tension, followed by the withdrawal of the baby's head.^[15] Moreover, in a trial among the three techniques used to reduce damage to the perineal, including perineal hot compresses, massage with lubricant and the non-touching the perineal, which was conducted on three groups of 400 people, tear rates in the two groups with the tripper massage and hot compresses were the same, but in the perineal non-touching group, were significantly reduced.^[16]

So far the most effective method in the investigation is unclear, the researcher wanted to conduct a study with the aim of comparing the impact of these side effects after childbirth in order to achieve the following goals: To determine the relative frequency of perineal laceration, the relative frequency distribution of perineal laceration degree, the mean severity of perineal pain 24 hours after the childbirth, the relative frequency of perineal pain at 6 weeks after postpartum and the mean perineal pain intensity 6 weeks after postpartum in the three groups, i.e., non-touching perineal, Ritgen maneuver and use of the tripper

MATERIALS AND METHODS

During a randomized clinical trial, after obtaining permission from the Regional Ethics Committee for Research in Isfahan University of Medical Sciences, from 30/11/2011 to 8/02/2012, 99 nulliparous women admitted to Daran Martyr Rajaei Hospital were studied. The inclusion criteria were as follows: Maternal age from 18 to 35 years, primiparous, singleton, gestational age from 37 to 41 weeks, estimated fetal weight of less than 4000 grams (using the Johnson's low), displays a series of abortions, 7 to 8 cm dilatation of the cervix, no embryo water, spontaneous rupture of the bag before the active phase of labor, the lack of perineal preparation during pregnancy (perineal massage in the last 4 weeks of pregnancy, attending classes in preparation for labor, doing regular exercise or sport as a professional), the probability

of difficult delivery, no indications for cesarean section, no mental disorders, no chronic disease of the mother (maternal health, with questions and case studies), the risk of preeclampsia, no obvious lesions such as severe varicose veins or hematoma in the vulva or perineal, symptoms of vaginal infections and genital herpes (in the case of painful sores or lesions on the vulva and perineal, genital herpes diagnosis was possible), non-prescribed opioids, the use of Entonox gas for no-pain delivery, no need for episiotomy (rigid and resistant perineal).

Exclusion criteria included the following: the lack of progress in labor, fetal distress in the second stage of labor in each of three groups, using vacuum or forceps in delivery, perineal edema or rash occurrence, the mothers' withdrawal from partnership in the study. For sampling in this study the participants who had the inclusion criteria were randomly assigned to the three groups with the ratio of 1:1:1, using a random numbers table. This table was used by the researcher closing their eyes and putting a finger on one of the table numbers. Therefore, with the sequence of five pieces, numbers were selected from a batch of 30 each. Number 1, was the code used for the non-touch group, number 2 was the allocated code for the person in the Ritgen maneuver and number 3 was the code used for the massage group. After preparing the white envelopes of the same shape, the numbers and code groups were noted on them. The envelopes contained the questionnaires and the codes. The number of samples in this study were 99 primiparous women, who were randomly assigned to three group, 33 women in each group.

The data were collected by observation, examination and questionnaire. The questionnaire included four parts: the first, individual characteristics: age, body mass index (BMI), maternal education, duration of second stage of labor, birth weight, gestational age, the second part: frequency and perineal laceration severity, the third part: pain in the perineal in the first 24 hours after delivery and finally: the frequency and severity of perineal pain at 6 weeks postpartum. The method of content validity was used to determine the scientific validity of the questionnaire. Thus with the study of authoritative sources in the field, a questionnaire was prepared in terms of quality content, then reviewed and evaluated and approved by a group of faculty members of the School of Nursing and Midwifery. To determine the scientific validity of the data gathering tool, the content validity method was used. To assess the reliability of the data gathering tool, a tool was used which its incidence and level of tearing was prepared by referring to reliable sources, and had been studied in previous studies on the

incidence and level of tearing.^[15] To determine the perineal pain scores, visual scale of the McGill questionnaire was used, which is the most reliable tool to measure pain. Thus, a 10 cm line was drawn and each mother was asked to show the severity of pain by marking the line. The point where a mother marked showed the severity of the pain that she was feeling.

With the necessary coordination between hospital staff and the officials, If the rate of cervical dilatation became 7 to 8 cm (first phase of transition at a birth), the researcher would be present at the parturient bedside and if she was in the group using the tripper, with completion of cervical dilation (10 cm) and also during the baby's head coronary (position of fetus head Ischial tuberosity 2 +), the researcher with a glove-covered hand placed the tripper sterile water solution (lubricant gel) on the middle finger and index finger, started a slow massaging of the vagina (in a reciprocating U-shaped motion) with gentle pressure toward the rectum from one wall to another wall so that each part lasted about one minute. The massaging was done during and among the pressures of the mother and regardless of the positioning. The downward pressure was determined by the mother's response and if the mother felt pain or burning, the pressure of midwife's fingers would be reduced. The total length of massage therapy was about 5 to 10 minutes. If the person was placed in non-touching group, the midwife would not touch any part of the perineal during the crowning of the baby's head and with the left hand prevented the sudden exit of the baby's head. If the parturient was in the Ritgen maneuver group, when the baby's head was distended the vulva and perineal (vaginal opening was open with a diameter of 5 cm or more), through the perineal and just in front of sacroiliac joint (lumbar vertebrae), with a hand within the glove and a towel thrown on it, a forward direction pressure would be applied onto the fetus chin (this maneuver is traditionally called the adjusted Ritgen maneuver). During this action the left hand controlled the speed of the crowning of the baby's head. It should be noted that the researcher was present in all of the deliveries and also no episiotomy was performed in any groups.

Perineal laceration and its severity (degree), immediately after the delivery, the observation and examination were determined by the researcher (as the tear degree of 1, 2, 3 and 4), and the questionnaire was completed. The perineal pain after the first day of delivery (in the first 24 hours after childbirth) was marked by mothers onto McGill pain ruler under the supervision of the researcher in the Department of Obstetrics and Gynecology. The perineal and genital pain associated with everyday activities at 6 weeks postpartum with the visiting units, as well as the first

24 hours after childbirth, the mother was attended by the researcher and the third part of the questionnaire was also conducted by the researcher.

FINDINGS

In each group, 33 patients were enrolled. The average age in perineal non-touching group was 23.7 years [SD (standard deviation) = 4.17], 22.57 years in Ritgen maneuver group (SD = 2.82) and in the massage group with the tripper was 22.51 years (SD = 3.70). The average of body mass index (BMI) in perineal non-touching group was 22.0 (SD = 2.96), 22.16 in Ritgen maneuver group (SD = 3.0) and in the massage group with the tripper (lubricant) it was 22.23 (SD = 2.30). The levels of education among the samples were: 21.1% primary, 31.1% secondary school, 38.9% high school and 8.9% higher education. The average duration of the second stage of labor, in perineal non-touching group was 38.48 minutes (SD = 20.30), 43.93 minutes in Ritgen maneuver group (SD = 21.50) and in the massage group with the tripper (lubricant) it was 49.09 minutes (SD = 29.35). The average weight of the infant, in perineal non-touching group was 3239.39 grams (SD = 267.14), 3322.72 grams in Ritgen maneuver group (SD = 248.14) and in the massage group with the tripper (lubricant) it was 3337.87 grams (SD = 293.50). The average of gestational age in perineal non-touching group was 39.08 years (SD = 1.07), 39.32 years in Ritgen maneuver group (SD = 0.76) and in the massage group with the tripper it was 39.35 years (SD = 1.02).

81.8% (27 patients) in perineal non-touching group experienced spontaneous perineal tearing, and 18.2%

(6 patients) had normal and intact perineal. 97.0% (32 patients) in Ritgen maneuver group experienced spontaneous perineal tearing and only one patient (3.0 percent) had normal and intact perineal, while 78.8% (26 patients) in the massage group with the tripper (lubricant) experienced spontaneous perineal tearing and 21.2% (7 patients) had normal and intact perineal (Table 1). Chi-square test ($p = 0.04$) indicates that the tearing abundance in Ritgen maneuver group is significantly more than the other two groups. Otherwise between the other two groups, a statistically significant difference was not found ($p < 0.05$). The Kruskal-Wallis test ($p < 0.001$), showed that the level 2 tearing in Ritgen maneuver group is more than the other two groups but between the other two groups, a statistically significant difference was not found ($p < 0.05$). The average perineal pain scores in the first 24 hours after the childbirth in perineal non-touching group was 3.75 (SD = 2.30), 6.18 in Ritgen maneuver group (SD = 2.03) and in the massage group with the tripper (lubricant) it was 4.54 (SD = 2.52). The ANOVA (analysis of variance) test ($p < 0.0001$) indicated that the average of perineal pain score in the first 24 hours after vaginal delivery in Ritgen maneuver group was significantly more than the other two groups.

In perineal non-touching group, 15 patients (45.5%) felt pain in the perineal and genital area during everyday activities, 18 patients (54.5%) had no pain in this area while the abundance of pain in Ritgen maneuver group was 25 patients (75.8%) and 14 patients (42.4%) in the massage group with the tripper (lubricant) (Table 2). The chi-square test between the two groups showed that the prevalence of pain in the Ritgen maneuver group is

Table 1. Comparison of the frequency distribution of perineal laceration degree of the study

Laceration degree	Group		Non-touching the perineal		Ritgen maneuver		Massage with tripper	
	n	percent	n	percent	n	percent	n	percent
NO	6	18.2	1	3.0	7	21.2		
Degree 1	19	57.6	6	18.2	13	39.4		
Degree 2	8	24.2	26	78.8	13	39.4		
Sum	33	100	33	100	33	100		

$\chi^2 = 19.6$; $p < 0.001$

Table 2. Comparison of the relative frequency of perineal pain at six weeks after childbirth of the samples studied in three groups

Pain	Group		Non-touching		Ritgen maneuver		Massage	
	n	percent	n	percent	n	percent	n	percent
Pain	15	45.5	25	75.8	14	42.4		
No pain	18	54.5	8	24.2	19	57.6		
Sum	33	100	33	100	33	100		

$\chi^2 = 9.4$; $p < 0.011$

significantly higher than the other two groups ($p = 0.011$) but the difference is not significant between the two groups of massage with the tripper (lubricant) and perineal non-touching ($p < 0.05$). The average perineal pain score was 1.65 (SD = 1.33) and a minimum of zero and a maximum of 4 at six weeks following the vaginal delivery, whereas in the Ritgen maneuver group, the figures were respectively SD = 2.66 and a minimum of zero and a maximum of six. In the massage group with the tripper (lubricant), the average was 1.87 (SD = 1.45) and a minimum of zero and a maximum of five. The ANOVA test in the 3 groups showed that the average perineal pain score at 6 weeks after the vaginal delivery in Ritgen maneuver group is significantly greater than the other two groups ($p = 0.006$) but between the two groups of perineal non-touching and the massage group with the tripper (lubricant), there is no statistically significant difference ($p < 0.05$).

DISCUSSION

The current study shows that tearing prevalence during the labor in Ritgen maneuver group is more than the other two groups and there are significant differences. The severity of tearing in Ritgen maneuver is associated with the higher levels of tearing.

In the study which was conducted by De Souza et al. in 2006, the prevalence of perineal tearing and injuries in both of the perineal non-touching and Ritgen maneuver groups had no statistically significant difference.^[15]

On the other hand, in the study conducted by Eyyanbagha et al., the rate of perineal health in non-touching group was higher than the Ritgen maneuver group with a significant difference. The rate of grade 1 and 2 of perineal tears were less than Ritgen maneuver group and there was a lower significant difference.^[16]

In the study conducted by Stamp et al., the perineal laceration incidence prevalence had no significant differences in the massage group with the tripper and Ritgen maneuver group.^[12]

In the study by Attarha et al., the frequency of perineal tears in the perineal massage group at the second stage of labor was significantly less than the Ritgen maneuver group.^[13] The results are consistent with the present study.

A research conducted by Leah et al. showed that although the frequency of tearing had no significant differences between the groups of the tripper massage and hot packs

on the perineal, the rate was lower in the perineal non-touching group. The results indicated that the lack of perineal contact has been associated with less perineal tear frequency in comparison with the massage with tripper and putting hot packs on the perineal.^[17]

In the present study, there were no significant differences between the frequencies of perineal laceration in the groups of perineal massage with the lubricant and perineal non-touching. Perhaps the causes of these differences were the small sample sizes relative to the study of Leah et al.

It should be also noted that although all of the deliveries in the present study have been performed by one person (the researcher), in the study by Leah et al., numerous agents have participated in the vaginal deliveries; therefore, this fact can be effective in detecting and estimating the results.^[17]

The findings of the present study have showed that the average perineal pain scores in the first 24 hours following the vaginal delivery in Ritgen maneuver group were significantly higher than the other two groups. The findings of the study by Macarthur et al. have shown that the severity of perineal pain were slightly higher in the perineal non-touching group 10 days after childbirth.

Perhaps the difference is in the large number of samples in this study, in which the 5014 samples have been assessed through the questionnaires. In our study, the interview and visiting mothers have been performed after the delivery in the Midwifery Department, whereas in the above mentioned study the information is obtained by mailing questionnaires. This fact that the patients themselves complete the questionnaires at home and after hospital discharge may also affect the results.

In addition, the findings of this research have indicated that frequency of perineal and genital area pain with everyday activities in Ritgen maneuver group were significantly higher than the other two groups 6 weeks after the childbirth. The difference is not significant between the two groups of perineal non-touching and massage with lubricant.

Moreover, the average score of perineal pain at 6 weeks after the childbirth were significantly more in the Ritgen maneuver group than the two other groups. However, no significant differences were found between the two groups of perineal massage with lubricant and perineal non-touching.

Perhaps these differences are due to this fact that in the

absence of the perineal touching during parturition, the tissue reaches its natural and gradual dilation and reduces tearing and its severity, and therefore creates less pain and fewer complications after the delivery.

By recognizing the satisfactory effects of perineal non-touching technique on reducing perineal complications following labor, it appears that in connection with physiological vaginal delivery this method can be used for the delivery of fetal head and also the training of the medical and midwifery students. It can be expected that the mentioned method is also associated with the mothers' greater satisfaction and establish a positive attitude. This method reduces the mothers' pain severity, therefore, less painkiller medications can be prescribed and this promotes the general health of the mother. By using this method in the busy maternity and pediatric hospitals, in which the midwife to mother ratio is less than 1:1, the midwife will have more time for caring for the mothers. On the other hand, by the reduction of complications after childbirth, the economic burden of treatment and diagnosis will be reduced in the health centers and also the families. Many forwarding steps can be taken by promoting a positive attitude in natural and physiological vaginal delivery in mothers. This method, which is one of the physiological vaginal delivery techniques, is better than the Ritgen maneuver and even better than some cases of massage methods, with better results in the postpartum period for mothers and families. Therefore, it is recommended that by training of this method, it be used more widely to be a method for the development of physiological vaginal delivery.

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