

A Comparison of the “Hands-Off” and “Hands-On” Methods to Reduce Perineal Lacerations: A Randomised Clinical Trial

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Abstract

Objective The objective of the current study was to compare the “Hands-off” and “Hands-on” methods to reduce perineal lacerations.

Method We conducted a randomized controlled trial to compare the effectiveness of two techniques for perineum protection during spontaneous delivery. Study participants included 600 nulliparous expectant mothers, who were divided equally between the “hands off” and “hands on” groups (n_300 per group).

Findings A total of 147 (49 %) women in the “Hands-on” and 143 women (47.7 %) in the “Hand -off” groups encountered perineal trauma ($p = 0.74$). In the “Hands-on” group, 8 women (2.7 %) experienced a third degree trauma compared with (0.3 %) that in the “Hands-off” method ($p = 0.1$).

Episiotomy was performed on 38 women (12.7 %) from the “Hands-on” and 17 (5.7 %) women from the “Hands-off” ($p = 0.003$) groups. In addition, 28 women (9.3 %) from the “Hands-on” group and 47 women (15.7 %) from the “Hands-off” group experienced periurethral tears ($p = 0.01$) that did not need mending.

Conclusion Application of the “Hands-off” method for vaginal delivery has a positive effect on the mother’s health because of the reduction of Episiotomy and third degree tearing. Therefore, we conclude that the “Hands-off” method offers a safer alternative for perineal control during labor.

Keywords Hands-on · Hand off · Perineal lacerations

Introduction

Every year, more than 130 million babies are delivered worldwide. Labor and delivery can cause injuries such as genital tract lacerations to the mothers [1] Most of which occur as a result of episiotomy, spontaneous perineal lacerations, or both. Pain, bleeding, and wound healing are short-term problems for mothers and they have a direct relationship with the severity of genital tract lacerations during delivery [2]. Perineal lacerations and the arising pain could lead to difficulty in breast feeding following delivery because they interfere with a comfortable sitting and disturbances in maternal mood, which in turn adversely affects her behavior toward the baby [3]. Maternal trauma during delivery can also lead to long lasting consequences such as severe pain in perineum as well as bowel, urinary, and sexual dysfunctions. Therefore, reducing the risk of perineal lacerations during childbirth is of importance for both women and their caregivers [4].

Several women receive the required attention to reach the desirable consequences, but its real effect and

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consequences have not been proved yet [5]. Worldwide, various techniques have been employed by obstetricians and midwives to reduce trauma during delivery [6]. In the recent years, one of the key recommendations has been to reduce trauma to the perineum by avoiding routine episiotomy. Therefore, World Health Organization has issued strict guidelines to minimize the instances of episiotomy [7]. Attempts to reduce or eliminate perineal lacerations during delivery include reducing the instances of episiotomy, perineal massage [8] and a variety of techniques used during the delivery [9, 10]. However, these techniques have not been thoroughly evaluated and independently verified [2]. One of the strategies to reduce perineal lacerations is managing the second stage of delivery by use of the “Hands-on” or “Hands-off” method for controlling the perineum. However, reports on the effectiveness of these methods are contradictory; this will be discussed in the following section. de Souza et al. [9] studied frequency, degree, and location of perineal traumas and the neonatal outcomes when the “Hands-on” and “Hands-off” techniques were employed for perineal protection. The authors concluded that compared with the “Hands-on” technique, the “Hands-off” technique does not alter the frequency or degree of perineal lacerations during childbirth [9]. However, two separate studies concluded that, compared with the “Hands-off” group, frequencies of the third degree lacerations, episiotomy, bleeding [11, 12], and pain after delivery was higher in the “Hands-on” group [12].

Objective

The hypothesis investigated in the present study was that maneuvers related to the protection of the perineum are associated with a greater frequency and degree of perineal laceration.

The purpose of our study was to compare incidences of perineal lacerations, need for episiotomy, and severity of perineal tears in the “Hands-on” (routinely used in Iranian midwifery units for fetal head control during delivery) and “Hands-off” methods of delivery.

Method

Design

We conducted a randomized controlled trial comparing the “Hands-on” and “Hands-off” methods to reduce perineal lacerations during labor. Allocation of the two groups (300 on each arm) was randomized using numbered opaque sealed envelopes cards containing computer generated

random allocations. These kept in an agreed location on labor ward.

Randomisation took place at the end of the second stage, where vaginal delivery is assured.

Data Collection

The data reported here was collected within a span of 16 months between April 2012 and August 2013. Data collection was done by the respective midwife in charge of the delivery. Midwives were trained in the perineal methods as well as on both methods of delivery. Allocation of the groups and the delivery were supervised by the scientists, in charge of this study.

Participants

The subjects of this study were 600 primiparous healthy women between aged 15 and 35 years with singleton pregnancy, weighing 2500–4000 g. Amniotic membranes were intact at the time of admission and the labor duration was less than 12 h after the individuals were admitted. Oxytocin was not used at the first and second stage of delivery neither was the preparation of the perineal done during pregnancy. Patients or fetuses that needed special medical attention were excluded from the study.

Ethical Standards

This study was approved by the ethics committee of Mazandran University of Medical Science. A signed consent was obtained from all voluntary participants, both expectant mothers and nurse-midwives, who were assured the right to withdraw from the study at any moment.

The Setting

This study was conducted at the Imam Ali Central Education located in Amol city and affiliated to the Mazandran University of Medical Science, Iran. Approximately 220 vaginal deliveries takes place in this center each month. All the vaginal deliveries are done safely by the midwives. In case of a cesarean and dystocia, the obstetrician takes the responsibility. All the deliveries in this center are done in the dorsal position and episiotomy is done when necessary.

Study Procedure

Participants were admitted to the hospital with labor pain and intact amniotic membranes. In both methods the delivery procedure up to the point when the fetus head was at the stage of pushing, developed spontaneously.

During the expulsive period of the “Hands-off” method, the midwife’s conduct is exclusively expectant, she only observes the successive movements of restitution, external rotation, delivery of the shoulders, and the remainder of the body. The midwife rotates the head and helps in the delivery, when this does not occur spontaneously within 15 min after the delivery of head or the newborn appears hypoxic.

When crowning was done in perineal control through the “Hands-on” method, the midwife places the index, ring, and little fingers of her left hand close together on the fetus’s occiput, with the palm turned toward the anterior region of the perineum. In this manner, expulsion is controlled by maintaining the flexion of the head protecting the anterior region of the perineum, providing support to the ischio-cavernous and bulbo-cavernous muscles, the urethral introitus, and the labia major and minor. Simultaneously, the right hand is flattened, and placed on the posterior perineum, with the index finger, and the thumb forming a “U” shape, exerting pressure. All regions of the perineum, particularly the fourchette, remained protected. When the shoulders and the rest of the body were coming out, the right hand was kept in place, protecting the posterior region of the perineum and the left hand supports the baby head so that the outside and head rotation happens spontaneously. Mid-wife pulled out the baby shoulder and the rest of its body when this did not happen spontaneously.

Sample Size Calculations

It is postulated that the “Hands-off” technique will reduce the present 50 % of the “Hands-on” perineal rate to 15 %: this will require $n = 300$ subjects per group for 80 % power and a 2-sided 5 %

Study Variables

The technique used during delivery, hands off or hands on, was the independent variable. The dependent variables was perineal conditions (frequency, degree, and location of perineal laceration).

For assessment of frequency and degree of perineal laceration, the following definitions were adopted:

- Without laceration: intact perineum (no abrasions or unsutured lacerations).
- With laceration: some degree of laceration of the fourchette, the perineal skin, or vaginal mucous membrane, may or may not affect the underlying fascia and muscle.
- First-degree: laceration involving the fourchette, the perineal skin, and vaginal mucous membrane, but not the underlying fascia and muscle.

- Second-degree: laceration involving, in addition to skin and mucous membrane, the fascia and muscles of the perineal body but not the rectal sphincter.
- Third-degree: laceration extending through the skin, mucous membrane, perineal body, and involving the anal sphincter.
- Fourth-degree: laceration extending through the rectal mucosa to expose the lumen of the rectum. To identify the location of perineal laceration, a detailed figure showing the perineal region was used and annexed to the data collection form.

Statistical Analyses

The statistical analyses were performed using SPSS 19. The differences in quantitative variables between the two techniques were analyzed using parametric *t* test when normality and homogeneity assumptions were satisfied, otherwise the non-parametric Mann–Whitney *U* test was used. Chi square test was used to compare the difference in the categorical variables. Statistical significance was set at $p < 0.05$.

Results

Six hundred primiparous women were equally randomized to the “Hands-on” or “Hands-off” techniques. The mean (sd) age of the mothers was 22.7 (3.01) in the “Hands-off” group and 22.4 (2.9) in the “Hands-on” group ($p = 0.13$).

The average time of delivery in the “Hands-on” and “Hands-off” groups was 44.15 ± 17.53 and 45.78 ± 16.7 respectively ($p = 0.16$). There was no significant difference between the two groups among birth weight, baby head circumference, and the first and fifth minutes’ apgar (Table 1). No significant difference was noticed in perineal lacerations ($p = 0.74$) between the two groups. The most common laceration in both the groups was the first degree perineal tearing. The third degree traumas ($p = 0.01$) and the rate of episiotomy ($p = 0.003$) in the “Hands-off” group was less than that of the “Hands-on” group, but the rate of periurethral tears in the “Hands-off was more than that of the “Hands-on” group ($p = 0.01$) (Table 2).

Discussion

The present study was done with the aim of comparing “Hands-off” and “Hands-on” methods to reduce the perineal lacerations during childbirth. No significant difference in the perineal lacerations was observed between the two methods. The two groups showed a significant

Table 1 Characteristics of newborns

	Hands on $N = 300$ Mean \pm SD	Hands off $N = 300$ Mean \pm SD	p value
Birth weight (g)	3125.09 \pm 328.1	3163.02 \pm 387.4	0.42
Head circumference	34.47 \pm 1.46	34.25 \pm 1.23	0.29
APGAR score			
At 1 min	7.72 \pm 0.95	7.71 \pm 0.94	0.72
At 5 min	8.90 \pm 0.23	8.95 \pm 0.27	0.64

Table 2 Frequency, distributions and sites of genital tract trauma

	Hands on $N = 300$ (%)	Hands off $N = 300$ (%)	Total $N = 600$ (%)	p value
Perineal tears	147 (49)	144 (47.9)	291 (48.5)	0.74
1st degree	52 (17.3)	66 (22)	118 (19.7)	0.17
2nd degree	17 (5.7)	12 (4)	29 (4.8)	0.34
3rd degree	8 (2.7)	1 (0.3)	9 (1.5)	0.01
Episiotomy	38 (12.7)	17 (5.7)	55 (9.2)	0.003
Location of other trauma				
Periurethral trauma	28 (9.3)	47 (15.7)	75 (12.5)	0.01
Labial trauma	4 (1.3)	1 (0.3)	5 (0.8)	0.1

difference among the third degree tears, the number of episiotomy and the periurethral tears. The “Hands-on” group showed higher third degree tears and the episiotomy than “Hands-off” group, whereas, the periurethral tears were more in the “Hands-off” group. In a previous study, Mayerhofer et al. studied 1,161 women, among which 35 % from the “Hands-off” and 32 % from the “Hands-on” group encountered perineal traumas; however, no significant difference was noticed. The third degree tears and the episiotomy in the “Hands-off” group was less than that of the “Hands-on” group, which is consistent with our results. They suggested that perineal ischemia caused by hand contributes to serious traumas; therefore, “Hands-off” method is a safer alternative to control the perineal lacerations during labor [11].

Among 5,471 women, where the above two methods were compared, there was no significant difference in the total perineal and the vaginal traumas, but the “Hands-on” group showed higher rate of third degree tears and episiotomy [1]. Jahdee et al. compared the consequence of delivery with the perineal control among 187 women using the two above methods. Their results showed no significant difference in perineal trauma between the two groups ($p = 0.5$) and low episiotomy in the “Hands-off” group ($p < 0.0001$), they emphasized toward the “Hands-off” method as a safer approach [6]. In another study, 70 nulliparous women were employed to compare the two methods. In this study, 81.4 % of the women faced perineal traumas, 82.5 % of that was the first degree tears. The two groups had no significant difference in perineal traumas,

the exerted traumas to the posterior or anterior perineum and the baby consequences. According to them there hasn't been enough scientific evidences to accept or reject any. Their data did not support either of the two methods [9]. In a similar study by Sohrabi et al. on 70 subjects, the “Hands-off” group showed a healthy perineum compared with those in the other group (49.2 versus 74.3 %) and the second degree tear was considerably higher in the “Hands-on” group. Episiotomy was not performed on any of these subjects and there was no third degree tear, they suggested that the “Hands-off” method was better for perineal health [2]. Foroughipour et al. [12] studied 100 primiparous women and their data also supported the “Hands-off” method as a better approach toward perineal health. During 1998 and 2007 several groups have analyzed primiparous and multiparous women and different methods, the reduction of perineal trauma such as warm compress, perineal massage against the hands off” method and also the comparison of the two methods of Hands on and Hands off; and it was seen that Warm compression of perineum and perineal massage caused a considerable reduction in third and fourth degree tears in both the groups; however, no significant difference between the two methods (Hands off and Hands on) was reported but the rate of episiotomy, was significantly decreased in the “Hands-off” method. It is important to consider the differences in the definition of the “Hands-on” and “Hands-off” methods among various studies, in some, “Hands-off” referred to not having to use Hands to support the perineum until the time of delivery of the head and shoulders, while in others it meant hand usage

was limited until the time of delivery of the head only, and in a few cases perineum was not supported by hand until the crowing was seen [13]. All these differences influenced the data and its interpretation.

Consistent with many of the Published studies, in our study the rate of episiotomy in the “Hands-off” group was significantly less compared the “Hands-on” group. Episiotomy is an important factor in severe perineal trauma and the woman with episiotomy are at high risk of anal sphincter injury [3], causing fecal incontinence, disparonia, and perineal pain [14] affecting quality of health and life of the woman following delivery.

In our study, the rate of periurethral tears in the “Hands-on” group was significantly high compared with those of the “Hands-off” group, but most of these tears have been less trivial and needed no mending. Since, the anterior part of the genital was supported by hand in “Hands-on” method, there was less harm in the periurethral areas.

A study by Greve [15] showed that, in the last 30 years in Scandinavian countries, during delivery there has been a clear increase in 3rd and 4th degree perineal traumas and this was primarily due to the midwife’s inability to recognize each patients risk factors and unable to use proper perineal control methods.

Conclusion

In this study, we show that the “Hands-off” method in vaginal delivery offers advantages to the mother’s health because this method showed reduced episiotomy and third degree tears. Therefore, we suggest that the “Hands-off” method a safer method of delivery. Further studies are warranted to evaluate the safety and effectiveness of these two methods, as well as the factors contributing to the perineal trauma during delivery.

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Conflict of interest The authors have no conflicts of interest

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