Comparison On The Effect Of "Hands on" versus "Hands off" Method On Perineal Trauma And Delivery Outcome Among Nulliparous Women*

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ABSTRACT

Objectives: The study aims to determine the degree of perineal trauma, postpartum perineal pain and fetal outcome in both groups using different maneuvers: "hands on" and "hands off" during the late second stage of labor among nulliparous women without episiotomy.

Design: Prospective Randomized Research Study

Setting: This study was conducted at the Labor / Delivery room complex from June 2012 to February 2013.

Methods: In the second stage of labor, nulliparous women (120) giving birth were randomly allocated to "hands on"(the fetal head delivery was performed by using a towel-draped, gloved hand exerting forward pressure on the chin of the fetus through the perineum just in front of the coccyx) and "hands off" (the OB resident observed the parturient woman and did not touch perineum during the second stage of labor and the other hand exerts pressure superiorly against the occiput while the fetus was delivering) group. The two groups were compared as to their demographic characteristics, perineal trauma, postpartum pain and neonatal outcomes.

Results: All women were nulliparous, term, without episiotomy and had similar demographic characteristics. Pain scores were collected in both groups after delivery. No significant difference in the postpartum pain scale values at 24 hours (p=0.134), 7 days (p=0.866), to 10 days (p=0.77) in both groups. Perineal trauma showed no significant association between laceration (p=0.212). Differences in APGAR Score as a measure of neonatal outcome was similar in both groups.

Conclusions: This study showed that perineal trauma, postpartum perineal pain and neonatal outcome between the "hands on" versus "hands off" have no significant difference. Therefore, it is not necessary to use "hands on" technique on all women in labor during the second stage of labor.

Keywords: Hands on, Hands off, Perineal Trauma, Postpartum pain

INTRODUCTION AND REVIEW OF RELATED LITERATURE

Childbirth is one of the common reason for hospital admission in the Philippines and approximately 95% had spontaneous vaginal birth.[1] In our institution, one thousand three hundred fifteen nulliparous women had normal spontaneous delivery for the past three years using the "Hands on" technique. Among those having delivered spontaneously, a total of 90.12% had an episiotomy. The majority of those with episiotomy had third and fourth degree laceration and were nulliparous.

Perineal trauma is common during childbirth and in women having their first baby. It is also associated with short and long-term outcome.[2] These include increased blood loss, perineal pain postpartum, rectal sphincter tears and hematomas. Various methods have been made to minimize these problems to reduce emotional, physical and financial burden to both the mother and healthcare professionals, such as restrictive use of episiotomy, use of mediolateral instead of median episiotomy if needed, and to use hands on maneuver. "Hands on" (Ritgen) maneuver is performed by allowing controlled delivery of the head by exerting forward pressure on the chin of the fetus through the perineum just in front of the coccyx. Concurrently, the other hand exerts pressure superiorly against the occiput.[3]

* Finalist, 2013 Philippine Obstetrical and Gynecological Society (POGS) Research Paper Contest, October 25, 2013, 3rd Floor, POGS Building, Quezon City

Studies have challenged the use of the "hands on" maneuver because it was associated with more third-degree lacerations and more frequent use of episiotomy.[4] While the results of the HOOP (Hands on or off) trial showed that trauma is indeed a very common experience of low-risk child bearing women: 68% had major or minor trauma to the perineum, 61% had vaginal lacerations, and 11% had episiotomies. The trauma profiles of women in the "hands on" versus "hands off" groups were virtually identical. However, fewer women in the "hands on" group reported perineal pain at the 10th postpartum day.[5] Another study by Kettle et al, showed that the "hands off" method of delivery may be more effective at reducing the proportion of women with episiotomy, but not at reducing perineal trauma requiring suturing, or the occurrence of third- and fourth-degree tears.[6]

There has been inconsistent view regarding whether "hands on" or "hands off" method will decrease perineal trauma and pain. There is insufficient scientific evidence to support or refute the use of either of these maneuvers for perineal protection during delivery. It appears that these techniques have been adopted in clinical practice before conclusive evidence supporting a particular approach to reduce perineal trauma was demonstrated.[7]

While difference varies, this study was undertaken to ascertain whether that "hands off" will decrease the degree of laceration as compared to "hands on" method. This in turn will reduce the rate of infection, minimize the usage of antibiotics, and shorten the time of postpartum healing. "Hands off" also decreases the use of manpower, since there is less need for another healthcare person. Overall, there is reduction of resources, which minimize the cost. Thus, it is of interest in our institution because "hands on" for management of the actual delivery is the practice norm in our institution and country.

The aim of this study is to compare the degree of perineal trauma, postpartum perineal pain, fetal outcome and hematoma using "hands on" versus "hands off" maneuver during the second stage of labor among nulliparous women without episiotomy.

SCOPE AND LIMITATION

Includes all nulliparous women without episiotomy in labor.

This study has several limitations including the different perception of pain among subjects in the 3 periods that they were interviewed. This study also had no allocation concealment and the lack of blinding during the collection of data.

OBJECTIVES

General objective:

The study aims to compare the degree of perineal trauma, postpartum perineal pain and fetal outcome in both groups using different maneuvers: "hands on" and "hands off" during the second stage of labor among nulliparous women without episiotomy.

Specific objectives:

1. To determine maternal demographic characteristics and neonatal profile of nulliparous women in the "hands on" and "hands off" group.

   Maternal demographics
   - Age
   - Height
   - Weight
   - Gestational age, week
   - Fundal height

   Neonatal Profile
   - Birthweight
   - Ballard score

2. To determine and compare the presence or absence of perineal trauma in both "hands on" and "hands off" groups:
   - No laceration
   - Degree of laceration:
     - o Anterior perineal laceration
     - o Posterior perineal laceration
       - First degree
       - Second degree
       - Third degree
       - Fourth degree
   - Hematoma

3. To determine and compare the presence of perineal pain postpartum in "hands on" and "hands off" groups:
   - Day 1 postpartum
   - 1 week postpartum
   - At 10 days

4. To determine and compare the neonatal outcome in "hands on" and "hands off" group:
   - Apgar score

Definition of Terms:

1. Hands on /modified ritgen maneuver- when the head distends the vulva and perineum enough to open the vaginal introitus to a diameter of 5 cm or more,

a towel-draped, gloved hand may be used to exert forward pressure on the chin of the fetus through the perineum just in front of the coccyx until the delivery of the fetal body. Concurrently, the other hand exerts pressure superiorly against the occiput.

2. Hands off or hand poised – OB resident observed the parturient woman and do not touch perineum during the second stage of labor while fetus was delivering.
3. First degree- superficial tear that involves the vaginal mucosa and/or perineal skin.
4. A second-degree laceration – extends into the fascia and muscles that surround the vagina.
5. A third-degree laceration- extends into or through the external anal sphincter muscle.
6. A fourth-degree laceration – extends into the anorectal lumen and thus involves disruption of both the external and internal anal sphincters.
7. Anterior perineal trauma – defined as the injuries to the clitoris, vestibule, periurethral region, labia major, labia minor and vaginal mucosa.
8. Macgill pain scale - 0-10 grade rating scale, 0 = no pain, 1-3 = mild pain, 4-6 = moderate pain, 7-9 = sever pain,10 = unbearable pain.

METHODS

Study Design

Prospective Randomized Research Study

Study Setting

This study was conducted at the Labor/ Delivery room complex from June 2012 to February 2013.

Data Collection Procedure

This is a randomized clinical study carried out to compare the effect of the two methods, “hands on” and “hands off”, on perineal traumas and neonatal outcome. The study was carried out in the labor/delivery room complex. All nulliparous women, term, in labor, who signed the consent form, admitted from 1 June 2012 to 28 February 2013 enrolled at Privileged Mother’s Program.

All women admitted to the labor room and meet the inclusion criteria of the study. Nulliparous women (120) giving birth were randomly allocated using a computer generated program 8(simple random sampling using random numbers generator) to “hands on”(61) and “hands off”(59) group. In the “hands on” group, the fetal delivery was performed by using a towel-draped, gloved hand exerting forward pressure on the chin of the fetus through the perineum just in front of the coccyx until delivery of the fetal body by a medical senior clerk. Concurrently, the hand of the OB resident exerted pressure superiorly against the occiput, when the head distended the vulva and perineum enough to open the vaginal introitus to a diameter of 5 cm or more. In the “hands off” group, the OB resident observed the parturient woman and did not touch perineum, while the other hand exerted pressure superiorly against the occiput during the second stage of labor while fetus was delivering.

Approval by the Ethics Committee and written informed consent by the participants in the study were obtained. Considering that the “hands on” method was routinely followed during delivery, another informed consent was obtained from those women who were randomly assigned to “hands off” group.

The two groups were compared as to their demographic characteristics, neonatal profile, perineal trauma, postpartum pain (Macgill pain questionnaire with a 0-10 grade rating scale, 0 = no pain, 1-3 = mild pain, 4-6 = moderate pain, 7-9 = sever pain, 10 = unbearable pain)[9] and neonatal outcome. The data was gathered using a questionnaire.

Data Analysis

The presence or absence of perineal trauma in both “hands on” and “hands off” and APGAR scores uses frequency and percentage distribution for categorical data. Moreover, for maternal age, height, weight, gestational age (weeks), Fundal height, neonatal birthweight, Ballard score, and pain score, mean and standard deviation were employed as indicators of continuous variables. As for test of mean differences, Mann Whitney U test was done due to its non-parametric distribution. Finally, as for the test of association, chi square test of independence was used among categorical variables.

An associated p-value lesser than 0.05 alpha was considered significant. The statistical software used were MS EXCEL version 2010 and Systat ver. 12.

Study Population

All nulliparous patients enrolled at OPD Package Deal in labor who were admitted at labor room, from June 1, 2012 up to February 28, 2013 were included in this study.

Inclusion criteria

1. Nulliparity
2. Term (37 to 42weeks)
3. Cephalic presentation
4. Occiput anterior

Exclusion criteria

1. Women with fundal pressure performed during delivery
2. Special medical conditions
3. Those who underwent epidural analgesia during labor
4. Those with episiotomy

RESULTS

Of the 305 nulliparous, one hundred eighty five were excluded, mostly due to surgical intervention (cesarean section, forceps delivery) and episiotomy. In total, 298 women consented to participate in the trial and 120 were randomized, 59 for the "hands off" group and 61 for the "hands on" group (Figure 1).

All women were nulliparous, term, without episiotomy done and had similar demographic characteristics presented in Table 1. Patients in both groups had no differences in their average age (p=0.617). Most of their age was within 20-30 years old(p=0.769). The patients' initial weight (p=0.8110), final weight (p=0.2060) and average weight gain(p=0.1200) did not differ significantly between groups. On the other hand, patients' AOG under "Hands Off" group was slightly higher than those under "Hands On" (p=0.0250). No differences were observed with regards to the fundal height (p=0.0680).

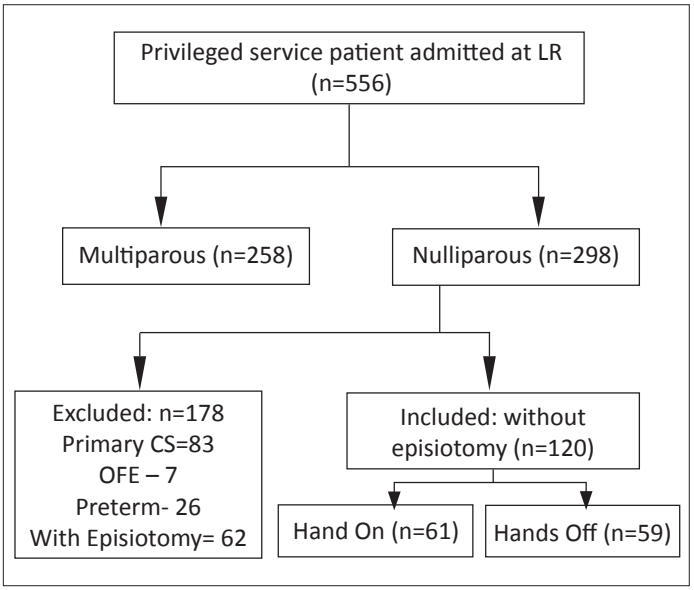

Figure 1

For the neonatal profile, the average fetal birthweight in both groups had almost equal values (p=0.283). The Ballard scores in both groups approximated term pregnancies (p=0.021). (Table 1)

Pain scores were collected in both groups after delivery. As reflected in Table 2, there was no significant difference in the postpartum pain scale values at 24 hrs (p=0.074), at 7 days (p=0.325), and at 10 days (p=0.101) in both groups. (Table 2)

Table 1. Maternal demographic characteristics of nulliparous women and neonatal profile in the "hands on" versus "hands off" method

Demographics	Hands off	(n=59)	Hands on	(n=61)	p-value
Age					
mean±sd	26.45	4.87	26.20	4.45	0.769
Height (m)	5.06	0.45	4.97	0.44	0.3210
Initial weight	119.48	23.61	118.52	19.96	0.8110
Final weight	132.50	19.81	123.41	50.88	0.2060
Weight gain	21.15	7.56	18.87	8.30	0.1200
Weight Category					
20-42	36	60%	26	43%	
3-19	23	40%	35	57%	0.0400
Age of gestation	39.03	0.96	38.61	1.08	0.0250
Fundic Height	33.09	1.16	32.44	2.41	0.0680
NEONATAL PROFILE					
Birthweight	2891.29	331.10	2816.39	418.76	0.283
Ballard profiles	38.55	1.08	38.11	0.95	0.021

Table 2. Patients' Pain Scale in Both Groups

Pain Scale profiles	Hands off	(n=59)	Hands on	(n=61)	p-value
at 24 hrs	5.22	2.11	5.92	2.09	0.074
at 7 days	2.59	2.06	2.26	1.48	0.325
at 10 days	0.79	1.40	0.44	0.87	0.101

Perineal trauma showed that the majority had 1st and 2nd degree laceration on both groups, however, there was no significant association between lacerations (p=0.212). Such trend was similar in those with hematoma(p=0.487) wherein no significant associations were found . No anterior perineal laceration was seen in either group. (Table 3)

APGAR Score as a measure of neonatal outcome at 1 minute (p=0.297) and at 5 minute (p=0.380) were similar in both groups. (Table 3)

DISCUSSION

The use of "hands on" technique during delivery of the baby is widely advocated by obstetricians in the Philippines to reduce perineal trauma and postpartum perineal pain. This current study is the only randomized trial that included women without episiotomy to evaluate the effect of "hands on" and "hands off" techniques on perineal trauma and pain locally.

According to Mayerhofer, both groups had similar result on perineal trauma although higher frequency of episiotomy and third degree laceration were also observed in the "hands-on" method. They attributed this to perineal ischemia during manual intervention in the "hands on" group.[3,4,11] However, the increased relation of this method to episiotomy might be attributed to prevent extension of laceration since episiotomy is performed before "hands on" method while the increase in third degree laceration might be related to episiotomy which increases the extension of laceration. In the Cochrane database review, it indicates that the net effect of routine episiotomy is a greater risk of posterior perineal trauma and other complication. The reviewers concluded that restrictive episiotomy utilization is preferable to routine utilization.[12] Thus, this current study only included nulliparous women without episiotomy. This is to remove the risk of extended laceration which is associated with episiotomy.

In a study by Foroughipour, they concluded that the "hands off" is associated with less perineal trauma, lower need for episiotomy and lower incidence of postpartum hemorrhage.[9,10] This may be explained by the 2 forces that act on the fetal head. The first force exerted by the uterus acts posteriorly and the second force supplied by the resistant pelvic floor and symphysis pubis acts anteriorly.[3] This cause fetal extension which will bring the occiput into direct contact with the inferior margin of the symphysis pubis, making the anterior perineum at risk for trauma if

Table 3. Perineal Trauma and Neonatal Outcome in Nulliparous Woman in "Hands on" and "Hands off" Group

Clinical Outcomes	Hands off	(n=59)	Hands on	(n=61)	p-value
Laceration					
none	10	17%	7	11%	
1st	11	19%	11	18%	
2nd	32	55%	40	66%	
3rd	5	9%	3	5%	0.605
Hematoma					
w/o	58	98%	61	100%	
with	1	2%	0	0%	0.487
APGAR SCORES at 1 minute					
6	0	0%	1	2%	
7	3	5%	2	3%	
8	9	16%	4	7%	
9	47	79%	54	89%	0.297
at 5 mins					
8	0	0%	2	3%	
9	4	7%	4	7%	
10	55	93%	55	90%	0.380

"Hands on" technique is performed. This is congruent with the study of Costa et al., they observed that a higher rate of anterior tear was seen in the "hands on" group, while the severity of posterior laceration was similar in both groups of women who had "hands on" or "hands off".[7,9,13]

The findings of this current research correlates with the study mentioned above, showing no significant difference on posterior trauma on both groups. However, no anterior laceration was identified between groups because the hand exerts pressure superiorly against the occiput during the second stage of labor while fetus was delivering to decrease the force acting anteriorly during extension.

Perineal pain is related to the severity of perineal trauma. It has been reported that women who had spontaneous perineal laceration had lower rates of postpartum perineal pain.[14] Since both groups in this current study had similar spontaneous perineal trauma findings, perineal pain between groups were identical 24 hours, 7 days and 10 days postpartum.

There has been concern that an intact perineum might prolong the second stage of labor and its effect on the neonate or fetus.[15] The rate of tears and neonatal outcome in "hands off" method is similar to that of the "hands on" maneuver, albeit the rate of perineal trauma, particularly third degree tears is lower.4 APGAR score as a measure of neonatal outcome in this current study was similar in both groups.

First births or operative vaginal deliveries have consistently been observed with perineal trauma. Rates of trauma also appear to increase with infant birthweight, maternal weight gain in pregnancy, and fetal malpositions. This current study demonstrated no significant difference with regards to this factor.

Perineal trauma increases maternal morbidity and interfere with postpartum care of the mother to the neonate.[16] Interventions to prevent perineal trauma is important because these techniques will help the clinicians perform and encourage the appropriate method of fetal delivery.

This current study observed that the effect of the 2 methods are similar since physiologically during the delivery of the fetus, the shape of the vagina brings the fetal head in the direction of the vulvar opening, which causes fetal head extension. Thus "Hands off" technique will not increase perineal trauma while "Hands on" technique can be used if the other hand exerts pressure superiorly on the occiput to prevent anterior perineal laceration. Perineal pain is related to the degree of laceration and since both methods have similar perineal trauma, perineal pain is comparable between groups.

CONCLUSION

This study showed that perineal trauma, postpartum perineal pain and neonatal outcome between the "hands on" versus "hands off" have no significant difference. Therefore, it is not necessary to use "hands on" technique on all women during the second stage of labor.

RECOMMENDATIONS

1. This study recommends the routine use of "hands-off" technique during the second stage of labor.

2. This study recommends not to do routine episiotomy on all women in labor unless there are fetal or maternal indication such as forceps delivery, non reassuring fetal heart rate pattern and macrosomia.

3. This study shows that the hand should exert pressure superiorly against the occiput, when the head distends the vulva and perineum enough to open the vaginal introitus to a diameter of 5 cm or more to prevent anterior perineal laceration.

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