

## Effectiveness of water labor on the degree of perineal injury and episiotomy in primiparous women – A pilot study

Kavitha. V., P. Senthil Selvam, M. Manoj Abraham, Tushar J. Palekar, M.S.Sundaram

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### Abstract:

**Background:** Water immersion during the first stage of labor is a noninvasive and nonpharmacological form of pain relief. The aim of this study is to investigate the effect of immersion in warm water tub on the degree of perineal injury and the incidence of episiotomy.

**Method:** A total of 30 primiparous women were selected for the study. The subjects were randomized into either the experimental or control group. The women during labor were monitored thoroughly one hour once on the following parameters such as maternal body temperature, heart rate, respiratory rate, blood pressure, fetal heart rate, and CTG. The laboring women in the experimental group were asked to leave the pool on full dilation and push the baby on the bed in any position they wish to. The women in the control group are informed that they can push the baby in whatever position they are comfortable with on the bed. The perineum was examined and if necessary, tears were sutured. Episiotomy was sutured in 3 layers by the gynecologist.

**Results:** The total number of patients were equally divided into experimental and control group. In the experimental group 20% of the subjects had no tear of the perineum, 25% subjects had first degree tear, 15% women had second degree tear, and three women had third degree perineal tear and one woman had episiotomy. Most of the women in the control group were lying down on their back. In the control group, 70% women had episiotomy, two had second degree tear and three had third degree tear.

**Conclusion:** the perineal morbidity is significant lower in primiparous women in the experimental group than in the control group.

**Keywords:** Water immersion, Episiotomy, Perineal trauma, positions for labor.

### Introduction

There are various forms of pain relief available for women which includes various pharmacological and non-pharmacological practices. In the western world over the last three decades, there is an increasing trend towards the use of nonpharmacological practices such as use of warm water tub immersion during labor. Immersion in water is less popular and also the availability of the tub is also very rare. Labor in water has many positive outcomes both for the laboring women as well as the newborn as it offers physiological pain relief, encourage mobility, offers relaxation, buoyancy effect and control over her own birth and minimizes perineal injury. (1,2,3)

Water labor is nothing but women are allowed to stay in warm water pool in the first stage of labor. According to RCOG & ACOG benefits of hydrotherapy in the first stage of labor is well established but there was no noticeable benefit on second stage of labor.(2,4)According to the recent guidelines published by Royal College of Obstetricians & Gynecologist, there is no significant difference in the outcome measures for the birth occurred in water compared with that on the land (water labor). (12). So, this study was conducted with women in water during only the first stage of labor. There

are several research studies conducted on water immersion effect on shortening the length of labor, pain relief, the need for other analgesic use etc. but there is limited study on water labor about its effectiveness to reduce the degree of perineal tear or the need for episiotomy(6).

The perineum is the tissue which lies between in the external genital of the women between the vaginal and anal opening. When the women are in the second stage of labor the perineal tissue stretches naturally resulting in some degree of tearing especially in the primiparous vaginal birth. Episiotomy is a surgical cut of the perineum and the vagina performed by the care providers at the second stage of the labor with the belief that it will prevent serious tear during childbirth. More than 35 years ago, the World Health Organization recommended against episiotomy being performed on a routine basis for vaginal deliveries which were uncomplicated. Even after this recommendation, episiotomy is being performed on a routine basis among primiparous women in many developing countries like India. Perineal trauma is the most common complication during childbirth affecting up to 85-88% of women especially the primiparous women (13).Whereas the episiotomy rate in other Asian countries range from 44% to 64% of vaginal births. The reason for this routine episiotomy is many care providers believe that episiotomy helps to prevent grade 3 to 4 perineal trauma. On the other hand, routine episiotomy results in greater perineal trauma and need for suturing which results in many complications like infection at the suture site, delayed healing, urinary and fecal incontinence and pain with intercourse after birth.

A multi-country study conducted about the severity of the perineal tear especially of underdeveloped countries showed that grade 3 & 4 degree perineal tear was about 0.1 – 1.4% with the rate in developed countries such as Sweden is upto 5.1% in the year 2016 (6) Jansson. In Norway there was decline in anal sphincter injury from 4.03% to 1.17% 2002 to 2007. The factors which increased the perineal trauma incidence include primiparity, increased fetal weight, prolonged second stage of labor, vacuum and forces delivery, and episiotomy. Perineal support, warm compress, pushing in gravity assisted positions and water immersion helps to avoid severe degree of perineal trauma. The aim of this pilot study is to check the possibility of conducting a RCT research study on the effectiveness of water labor on perineal injury and to decrease the incidence of episiotomy (4).All the subjects voluntarily participated in the study and they were informed that they can withdraw from the study whenever they wish. Randomization was done when women entered the facility with active labor.

#### Materials and Methods:

**Study subjects:** This pilot study included 30 primiparous women.

**Study design:** The subjects were randomly allocated to experimental and control groups. All the subjects were informed about the study and they voluntarily participated in the study. There were also informed that they can withdraw from the study at any point of time they wish to. The women were also informed that if there is change in fetal heart rate, difficulty in progression of labor, fever, dizziness or bleeding they have to leave the warm water tub. The laboring women in the control group were asked to do breathing exercises and informed that they can push the baby in whatever position they are comfortable with.

**Water labor protocol:** The tub used for this study is an air-filled tub which was filled with warm tap water. The subjects can enter the tub when their cervix is 3-4 cm dilated. The tub is filled with warm water. The water level in the pool was adjusted such that the water is below the level of the

shoulder blade. The temperature of the water is maintained between 37 to 37.5°C. The temperature of the water is checked with the help of a thermometer. The laboring women were monitored on an hourly basis till they are in active stage of labor on the following parameters such as temperature, heart rate, respiratory rate, blood pressure, fetal heart rate, CTG, and every four hour once pelvic examination was done. Once the women entered the pool the fetal heart rates were monitored with the help of a waterproof fetal doppler every 30 minutes and recorded. The women were also informed that they can get into and out of the pool anytime they wish to. The women were also informed that they need to get out of the tub when their cervix is fully dilated to 10 cm. In the second stage of the labor, they would be on the bed in whatever position they decide to be in.

Inclusion criteria:

1. Women between the age of 18-35 years.
2. Singleton fetus.
3. Gestational age more than 37 weeks and less than 41 weeks.
4. Cephalic presentation.

Exclusion criteria:

1. Multiple pregnancy.
2. multigravida.
3. Breech presentation.
4. Pregnancy induced hypertension.
5. Gestational diabetes mellitus.

The degree of perineal tear, labial tear and episiotomy was analyzed. The associated factors such as length of the second stage of labor, baby weight, maternal weight, maternal age and maternal position during pushing were also analyzed.

Results and discussion: There were previous study which showed that perineal injury is very common upto affecting 80-85% of primigravida and episiotomy is done in approximately in more than 90% of the births.

The total number of subjects were equally divided into both the groups. Out of 15 subjects in the experimental group 1 women ended up with cesarean section because of fetal distress so not included for the study. In the control group, 4 subjects ended up with cesarean because of failure to progress and took epidural for labor pain relief so excluded from the study.

Statistical analysis was done using SPSS software. Mean, standard deviation and percentage were calculated for variables. The majority of the women in this study were between 22-27 years. The average weight of the subjects was between 64 to 68 years. The average weight of the babies was 3 to 3.3 kg. The women in the experimental group adopted quadruped position, squatting position or side lying position. Most of the women in the control group were lying down on their back and only 20% of the women adopted quadruped or side lying position.

In the experimental group 20% of the subjects had no tear of the perineum. In the experimental group, 25% subjects had first degree tear, 15% women had second degree tear, three women had third degree perineal tear and one woman had episiotomy. In the control group, 70% women had episiotomy, two had second degree tear and three had third degree tear. There was significant difference in the episiotomy rate in experimental and control group. There was no significant difference between the second and third-degree tear in experimental and control group.

In a previous study by Priyankur Roy et al. in the experimental group 22% of the women had no perineal laceration. Even after episiotomy 15% of the women had perineal tear and 4.5% patient had sphincter and anal tear.

In a study by Thacker & Banta, in the study group the incidence of perineal morbidity was 78%. There was no 4<sup>th</sup> degree perineal tear. About 22% of the subjects who participated in the study group did not had perineal laceration. 7.5% of subjects had third degree perineal tear.

In a study by Riskin-Mashiah et. al. primiparous women are at higher risk of serious perineal tear or morbidity. Multiparous women have shown to have first and second-degree perineal tear. In multiparous women fourth degree perineal tears are less common.

In a study by Manasi Thakur et. al. there was reduction in the rate of episiotomy. About 27% of the women had episiotomy in the experimental group whereas 100% of the women in the control group had episiotomy. In a study by Saxena et. al. 64% of the primiparous women had intact perineum.

**Conclusion:** The study concludes that in the water labor group 25% of women had intact perineum with minimal perineal injury. Only one woman had episiotomy in the water labor group. This pilot study shows that we can avoid the unnecessary or routine episiotomy when the women are in water during labor.

**Study Limitation:** This pilot study was done only with very small number of subjects which is the major limitation. This study did not include women in water during the second stage of labor.

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**Conflict of interest:** None.

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