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Better perineal outcomes in sitting birthing position cannot be explained by changing from upright to supine position for performing an episiotomy

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ABSTRACT

Background: women who give birth in supine position are more likely to have an episiotomy than women who give birth in sitting position. A confounding effect may be that women in upright positions in second stage of labour are asked to lie down if a professional needs to perform an episiotomy. This prospective cohort study aimed to determine whether this factor can explain the lower rate of episiotomy in sitting compared to supine position.
Methods: data from 1196 women who had a spontaneous, vaginal birth were analysed. Positions during second stage and at birth were carefully recorded. Three groups of birthing positions were compared in multivariable analyses: 1) horizontal during second stage and supine at birth (horizontal/supine), 2) horizontal and upright during second stage and supine at birth (various/supine), 3) sitting at birth regardless of the position in second stage. Logistic regression analysis was used to adjust for known risk factors for perineal damage.
Findings: women in sitting position at birth compared to those in the horizontal/supine group had a lower episiotomy rate (adjusted OR 0.28;95%-CI 0.14–0.56) and a non-significant higher intact perineum rate (adjusted OR 1.40, 95% CI 0.96–2.04). Women in the various/supine group compared to the horizontal/supine group had a similar episiotomy rate (adjusted OR 1.12;95%-CI 0.69–1.83).
Conclusions: we did not confirm our hypothesis that more women in supine compared to sitting position have an episiotomy because women in upright position are asked to lie down if an episiotomy is necessary.

Introduction

Perineal damage is a common complication in childbirth. In the Netherlands, in 2007, 67.7% of all women in primary midwifery care had some perineal damage (The Netherlands Perinatal Registry, 2007). Perineal damage, especially episiotomy, causes pain and discomfort and can be immobilizing for women. Furthermore, it is a risk factor for blood loss and infection. Restricted rather than routine use of episiotomy is now recommended (Carroli and Mignini, 2009). Therefore, it is important to determine the different factors that influence perineal outcome, especially episiotomy, and to identify opportunities for prevention. Earlier studies found the following factors to be associated with perineal damage: maternal age (Aikins and Feinland, 1998; Shorten et al.,

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2002; Weber and Meyn, 2002; de Jonge et al., 2010), parity (Aikins and Feinland, 1998; Shorten et al., 2002; Albers et al., 2005; Soong and Barnes, 2005; de Jonge et al., 2010), ethnicity (Weber and Meyn, 2002; Albers et al., 2005; Altman et al., 2007), duration of second stage of labour (Aikins and Feinland, 1998; Shorten et al., 2002; Guendelman et al., 2006; de Jonge et al., 2010), birth weight (Shorten et al., 2002; Albers et al., 2005; Soong and Barnes, 2005; de Jonge et al., 2010) and type of birth attendant (Albers et al., 2005).

The effect of birth positions on perineal outcome is unclear. Three different systematic reviews found a decrease in episiotomy rate in upright position, which was partly (de Jonge et al., 2004; Gupta et al., 2012) or totally (Eason et al., 2000) compensated by an increase in second degree tears. The methodological quality of the included studies included in these reviews was variable. Many observational studies did not adjust for known risk factors for perineal damage (Waldenstrom and Gottvall, 1991; Soong and Barnes, 2005; Ragnar et al., 2006). Some studies found no difference in intact perineum rate between the position groups (Stewart et al., 1983; de Jong et al., 1997; de Jonge et al., 2010; Thies-Lagergren et al., 2011; Smith et al., 2013), other studies found a difference with some showing a higher rate of intact perineum in upright positions (Gardosi et al., 1989; Aikins and Feinland, 1998; Albers et al., 2005), other studies showing a lower rate (Turner et al., 1986; Shorten et al., 2002). A few studies found more labial tears in upright position (Turner et al., 1986; Waldenstrom and Gottvall, 1991). However, most studies did not mention labial tears at all.

An unmentioned factor in all studies is that women often change position during labour. This can be their own choice, but it is also possible that a health professional asks women in upright position to lie down when an episiotomy is indicated. This can result in an overrepresentation of women with an indication for an episiotomy in the supine group and (partly) explain the lower episiotomy rate in sitting compared to supine birth position.

This prospective cohort study aimed to determine whether the episiotomy rate is higher in women who change from upright to supine position compared to women who are in horizontal position all the time, and to women who give birth in sitting position.

Methods

Data were used from a prospective cohort study, conducted in primary care practices in the Netherlands from October 2005 until December 2007 among low-risk women in primary care at the onset of labour. The overall aim of this study was to investigate the influence of birthing position on the experience of pain, the feeling of control during second stage of labour, and the feeling of self-esteem, as well as the effect on medical outcomes, including perineal damage. In this article, we only report on the analysis of the effect of birthing position on perineal damage. The other outcomes were reported elsewhere (Nieuwenhuijze et al., 2012, 2013).

Setting and participants

All Dutch midwifery practices ($n=487$) were invited by letter to participate in the study; 54 practices (11%) responded. The practices were well distributed throughout the Netherlands, and covered urban and rural areas. In addition, student midwives collected data during their clinical placements in non-participating primary care midwifery practices all over the country.

In our analyses we only included women who gave birth in primary midwifery care, at home or in hospital; therefore women referred during labour were excluded.

Data collection

For this study, we used data recorded by the (student-)midwives. All positions during second stage and the position at birth were carefully recorded.

Based on earlier research, we expected supine position at birth to be the biggest group, followed by the birthing chair group, although positions such as lateral, all fours and standing would be rare (de Jonge et al., 2009). Because different upright positions at birth (such as squatting, standing or sitting) and different horizontal positions (supine or lateral) may not all have the same effect on perineal damage (Shorten et al., 2002; Soong and Barnes, 2005), the groups for position at birth were defined as sitting (sitting on a birthing stool or on the bed at an angle of more than 45°) or supine (lying on the back at an angle of less than 45°); other positions at birth, such as lateral, squatting, all fours or standing) were excluded. The position during the second stage was categorised as upright (sitting, birthing chair, standing, kneeling and hand and knees) or horizontal (supine and lateral). Positions in the bath at birth or during second stage were excluded.

The combinations of position during the second stage and at birth were categorised in three groups: 1) horizontal positions during second stage and supine position at birth (horizontal/supine); 2) upright and horizontal positions during second stage, supine position at birth (various/supine); 3) sitting position at birth. The groups are shown in Fig. 1.

The condition of the perineum was recorded as intact, first or second degree tear (including vaginal tear), third or fourth degree tear (involving the anal sphincter), episiotomy or labial tear. Perineal damage was recorded if at least one perineal suture was performed. The midwife, responsible for the woman's care, decided whether suturing was indicated. Intact perineum was recorded if no perineal suturing was performed, but there might be a labial tear or vaginal tear, i.e. a rupture limited to the vagina, while the perineum was intact. More than one type of perineal damage could be registered.

The following factors that may be associated with perineal damage were recorded: age (Aikins and Feinland, 1998; Shorten et al., 2002; Weber and Meyn, 2002; de Jonge et al., 2010), parity (Aikins and Feinland, 1998; Shorten et al., 2002; Albers et al., 2005; Soong and Barnes, 2005; de Jonge et al., 2010), ethnicity (Weber and Meyn, 2002; Albers et al., 2005; Altman et al., 2007), duration of second stage of labour (Aikins and Feinland, 1998; Shorten et al., 2002; Guendelman et al., 2006; de Jonge et al., 2010) and birth weight (Shorten et al., 2002; de Jonge et al., 2010; Albers et al., 2005; Soong and Barnes, 2005). No influence of type of birth attendant was present, because all women gave birth in primary midwifery care.

More perineal damage has been found in women with a long duration of second stage of labour (Aikins and Feinland, 1998; Shorten et al., 2002; Guendelman et al., 2006; de Jonge et al., 2010). On the other hand a very short duration of second stage may also lead to extensive perineal damage (Cunningham et al., 2005). Therefore, duration of second stage of labour was divided

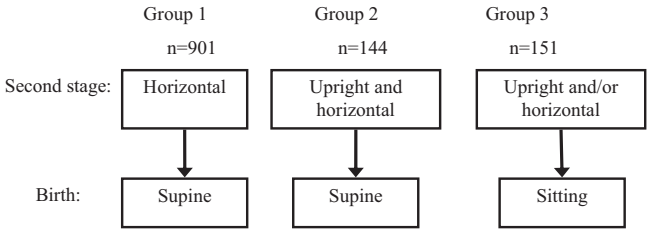

Fig. 1. Study groups.