



Influence of a pelvic floor training programme to prevent perineal trauma: A quasi-randomised controlled trial



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ABSTRACT

Background: perineal injury is common after birth and may be caused by tears or episiotomy or both. Perineal massage has been shown to prevent episiotomies in primiparous women. On the other hand, pelvic floor exercises might have an influence by shortening the first and second stages of labour in the primigravida.

Aim: the aim of this study was to investigate the effects of a pelvic floor training following a birth programme on perineal trauma.

Design: a single-blind quasi-randomized controlled trial with two groups: standard care and intervention.

Setting: a tertiary, metropolitan hospital in Seville, Spain.

Participants: women ($n=466$) who were 32 weeks pregnant, having a singleton pregnancy and anticipating a normal birth were randomised. Women in the experimental groups were asked to perform a pelvic floor training programme that included: daily perineal massage and pelvic floor exercises from 32 weeks of pregnancy until birth. They were allocated to an intervention group by clusters (antenatal education groups) randomized 1:1. The control group had standard care that did not involve a perineal/pelvic floor intervention. These women were collected in a labour ward at admission 1:3 by midwives.

Results: outcomes were analysed by intention-to-treat. Women assigned to the perineal/pelvic floor intervention showed a 31.63% reduction in episiotomy (50.56% versus 82.19%, $p < 0.001$) and a higher likelihood of having an intact perineum (17.61% versus 6.85%, $p < 0.003$). There were also fewer third (5.18% versus 13.12%, $p < 0.001$) and fourth degree-tears (0.52% versus 2.5%, $p < 0.001$). Women allocated to the intervention group also had less postpartum perineal pain (24.57% versus 36.30%, $p < 0.001$) and required less analgesia in the postnatal period (21.14% versus 30.82%, $p < 0.001$).

Conclusions: a training programme composed of pelvic floor exercises and perineal massage may prevent episiotomies and tears in primiparous women. This programme can be recommended to primiparous women in order to prevent perineal trauma.

Key conclusion: the pelvic floor programme was associated with significantly lower rates of episiotomies and severe perineal trauma; and higher intact perineum when compared with women who received standard care only.

Implications for practice: the programme is an effective intervention that we recommend to all women at 32nd week of pregnancy to prevent perineal trauma.

Introduction

Most vaginal births are associated with some kind of perineal trauma, with reported rates of around 85% internationally (Edqvist et al., 2017), which may occur spontaneously or as a result of an episiotomy. Rates of perineal trauma vary widely, often due to

inconsistency of reporting practices and different definitions (Aasheim et al., 2011), but they are especially high in primiparous women (Ott et al., 2015). The frequency of episiotomy has declined in recent years but remains high in some countries such as Spain (33% to 77%), (Ministerio de Sanidad y Consumo, 2007) and the EUROPERISTAT (2013) assumed a rate of episiotomies in Spain of 40.2%.

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The most recent national statistics in Spain are from 2007; however, a study published by Escuriet et al. (2015) showed similar data in Catalonia, showing nonuniform distribution in episiotomy rates between public and private hospitals.

Identified factors that may influence perineal trauma during the birth include instrumental deliveries (Christianson et al., 2003), care providers (Hodnett et al., 2011; Hatem et al., 2009), maternal positions (Kemp et al., 2013; Meyvis et al., 2012), place of birth (Hodnett et al., 2011; Wax et al., 2010). Other risk factors that include maternal age, gestational age at birth and birth weight (Ott et al., 2015).

Perineal trauma is related to significant short and long-term morbidity for women; for example, perineal trauma causes pain and discomfort after birth which can impact negatively on early mothering. Women giving birth with an intact perineum report pain less frequently at 1, 7, and 45 days postpartum (MacArthur, 2004) than those who have some degree of perineal trauma. Nevertheless, women with different degrees of trauma had similar rates of perineal pain and only slightly lower sexual function scores (Leeman et al., 2016).

A wide range of techniques are used during labour to avoid lacerations and episiotomy. These include warm compresses (Albers et al., 2005; Dahlen et al., 2007), maternal upright position in the second stage of labour for women without epidural anaesthesia reducing episiotomies but increasing second-degree tears (Gupta et al., 2012), type of pushing (Simpson and James, 2005), hyaluronidase injections into the perineum during 2nd stage of labour (Scarabotto and Riesco, 2008) and immersion in water during labour (Cluett and Burns, 2012; Dahlen et al., 2007). Antepartum use of Epi-No birth trainer for preventing perineal trauma was demonstrated to increase the likelihood of having an intact perineum and reduced episiotomy rates (Ruckhaberle et al., 2009). Recent studies reported that had no influence on reducing perianal tears (Oliveira Brito et al., 2015) or intrapartum levator ani damage or anal sphincter and perineal trauma (Kamisan Atan et al., 2016).

Benefits of perineal massage performed from 34th to 36th weeks of pregnancy include a reduction in episiotomy in primiparous women and a reduction in postpartum pain in multiparous women. However, no differences were seen in the incidence of 1st, 2nd, 3rd or 4th degree perineal trauma (Aasheim et al., 2011). Pelvic floor exercises have been recommended to strengthen perineal muscles before and after birth to help protect against pelvic floor damage and, in particular, urinary and anal incontinence (Hay-Smith, 2000), or dyspareunia (Carroli and Mignini, 2009). Antenatal pelvic floor muscle training may be effective at shortening the first and second stages of labour in primiparous (Du et al., 2015).

The aim of this study is to evaluate the effect of a combined pelvic floor exercise and perineal massage training programme on the rate of intact perineum when undertaken by primiparous women from 32 weeks of pregnancy until birth.

Methods

A quasi-randomized trial was conducted from September 2010 to December 2011 at three Primary Health Centres attached to one maternity hospital, in Seville, in the state of Andalusia, Southern Spain. As women discuss these issues while they wait, cross-contamination between intervention and control groups is unavoidable. The non-randomised trial design chosen prevented contamination and was feasible, with the potential to produce unbiased results.

Setting

3 primary health centres (centre A, B, C) were chosen to provide participants for the intervention group and the other three were designated as control sites randomly (D, E, F).

Participants

Women who were 32 weeks pregnant, attending antenatal education classes in chosen centres and expecting their first baby, were approached to participate in the experimental group in the study. During the study period, 52 groups of antenatal education classes were held in centres. Of these, half were randomly selected to take part in the intervention by 1:1. To keep the numbers included in each group comparable, and assist in blinding attending clinicians, one third of the women attending centres D, E and F were included in the control group when they were admitted in labour.

Primiparous women in both groups were eligible to join the trial if they met the following inclusion criteria: singleton pregnancy with cephalic presentation, anticipating a normal birth at a public Hospital, signed consent form and ability to understand instructions in Spanish. Women with a high likelihood of delivery by a caesarean section were excluded from both groups. Women could withdraw from the study at any point without prejudice to their care.

The primary hypothesis was that women who performed a perineal/pelvic floor training programme would have a 12% increase in the likelihood of an intact perineum (Labrecque et al., 1999) compared with the group who did not undertake the programme. This required a sample size of 400 women ($p=0.05$, 80% power), based on a hospital intact perineum rate of 10%. In all, 254 women were recruited to the intervention group (sample is higher because women were recruited by groups and not as individuals) and 212 women to control group.

Procedure

In 2011, 3491 women gave birth at the Virgen Macarena University hospital of which 2649 (76%) experienced a normal birth. Almost 15% (506) had an instrumental birth while 24% (842) had a caesarean section. Midwives who collaborated in the study selected the women however, these midwives did not attend the women during birth, so birth attendants were blinded to group allocation. Although midwives could have guessed that women were likely to be in the control or intervention groups due to the primary health centre they had attended, they would not know whether the woman had been chosen to participate or not. Blinding of women was not possible given the nature of the intervention. Participants were instructed not to inform their birth attendant of their allocation.

In the treatment group, the programme was taught from the second class of antenatal education and midwives reminded women to perform the exercises and massage every week until birth.

The programme

The perineal/pelvic floor programme suggested by two physiotherapists included the following:

- 1) Perineal massage was performed daily by the woman or her partner for eight minutes from 32 weeks of pregnancy until birth. One to two fingers were introduced 3–4 centimetres into the vagina and a downward and sideways pressure was used. Olive oil was used as a lubricant during massage.
- 2) Pelvic floor muscle training was carried out twice a day. Ten to fifteen voluntary pelvic floor muscle contractions were performed for five seconds each, with relaxation of the pelvic floor after each one. Other exercises involved contracting the muscles and gradually increasing intensity as though the muscles were a lift that has to go up floor by floor. The frequency was also 10–15 minutes twice a day.

Women were given a leaflet describing the massage/exercises, and a member of the research group explained how they should be performed with simulators. The control group received no instruction on massage or pelvic floor exercises. The control group were asked whether they had performed any kind of pelvic floor training during pregnancy when

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