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Relationship between the degree of perineal trauma at vaginal birth and change in haemoglobin concentration

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ABSTRACT

Background: Postpartum anaemia is a problem with high prevalence that significantly affects maternal recovery. Among the causal factors is perineal trauma. However, it is still not known what degree of perineal trauma produces a greater reduction of haemoglobin.
Aim: To assess the relationship between the degree of perineal trauma and change in haemoglobin concentration at vaginal birth.
Methods: An observational, analytical retrospective cohort study was performed at the Mancha-Centro Hospital (Spain) during the period 2010–2014. Data were collected regarding 3479 women who gave birth vaginally. The main outcome variable was the change in haemoglobin concentration. Multivariate analysis by means of multiple linear regression was performed to control possible confounding factors and to determine the net effect of each degree of perineal trauma on haemoglobin reduction.
Findings: Of the total sample, 20.1% of women (699) had an intact perineum, 41.6% (1446) experienced some form of perineal trauma, but not episiotomy, and the remaining 38.3% of women (1334) underwent an episiotomy. The average reduction of haemoglobin was 1.46 g/dL (Standard Deviation (SD) = 1.09 g/dL) for women without episiotomy with a second degree tear and 2.07 g/dL (SD = 1.24 g/dL) for women who had an episiotomy and no perineal tear. The greatest reduction occurred among women with episiotomy and a third or fourth degree tear with a decrease of 3.10 g/dL (SD = 1.32 g/dL).
Conclusion: Episiotomy is related to greater reduction of haemoglobin concentration in comparison with all degrees of spontaneous perineal trauma. The use of episiotomy should be strictly limited.

Statement of significance

Problem or issue

The relationship between type of perineal trauma and peripartum change in haemoglobin concentration is unknown.

What is already known

Episiotomy and vaginal tears are risk factors of postpartum anaemia.

What this paper adds

Episiotomy use is associated with a greater reduction in haemoglobin concentration than spontaneous perineal trauma.

1. Introduction

In a vaginal birth without complications, the physiological blood loss can reach up to 500 mL. Although this is a significant volume, due to the haemodynamic changes during pregnancy women are able to adapt to these loss without consequences.[1]

However, there are several clinical circumstances that may produce greater postpartum bleeding,[2–5] and according to the previous levels of haemoglobin (Hb), can lead to higher maternal impact during the postpartum period.

Postpartum hemorrhage (PPH), defined as blood loss greater than 500 mL,[6] is estimated to occur in 6% of births,[7] and is one of

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the main causes of preventable maternal mortality and morbidity around the world. Among the most frequent complications arising from excessive bleeding is postpartum anaemia, which has become an important health problem in high and low incomes countries.[8] Its prevalence, although differs between countries, it is estimated to affect between 50–80% of women at 48 h after birth.[9] Its importance lies in the impaired quality of life of women from a physical and psychological point of view. According to several studies, this situation predisposes to a higher probability of fatigue, stress, depression and difficulty mother–child interactions[10–12]; and its effects can be prolonged for several months after birth.[8]

Different measures to reduce postpartum blood loss have been established, and thus reduce the incidence of maternal anaemia. Among them are the prevention of gestational anaemia through supplementation with iron[13] and the administration of uterotonics in the third stage of labour.[14,15]

Even so, there are other risk factors that are involved in the reduction of postpartum Hb levels. Among them are obstetric variables such as parity, multiple pregnancies, duration of labour, instrumental birth, caesarean section and perineal trauma.[16–18] The latter, is present in up to 85% of the vaginal births,[19] either because of an episiotomy, a spontaneous tear or the combination of an episiotomy and a tear. The postnatal morbidity is directly related to the complexity of perineal trauma, and although both types pose a risk of bleeding,[3,20,21] it is still not known which of them produces greater changes in postpartum Hb concentration.

While current evidence supports a restrictive practice in the use of episiotomy[22] and its indication is reduced mainly to an instrumental birth or suspected fetal compromise,[23] the variability of its practice is relevant.[24] A large part of this variability can be explained by the differences found in relation to the professional who attends birth (obstetrician or midwife),[25] as well as the position taken during birth,[26] parity,[27] prevention of severe tears,[22] the use of epidural analgesia[26] and the context where the birth takes place (hospital environment versus home birth).[28]

Perineal tears have also been identified as a risk factor for bleeding,[29] occurring more often in primiparous, heavier birthweight, longer duration of second stage labour, instrumental births or in woman where an episiotomy is not performed.[30–32]

The prevention of spontaneous perineal trauma, primarily severe grades, is an argument used by some professionals to justify further practice of the episiotomy.[22] There is therefore an important clinical issue, as the practice of episiotomy is modifiable and its reduction implies an increase of tears. The published studies are usually focused on the benefits of restrictive episiotomy against to systematic use on various complications,[33] as well as their healthcare costs.[34] However, the role of the episiotomy as well as tears in the later levels of Hb is still unknown, so it is unclear which grade of perineal trauma can add greater postpartum morbidity in terms of blood loss.

Taking into account that the practice of episiotomy is a modifiable risk factor for professionals attending births, the objective of the study was to evaluate the relationship between the degree of perineal trauma and the change in haemoglobin concentration at vaginal birth.

2. Method

2.1. Setting

The study was carried out in a General Hospital considered as secondary-level health centre. During the period under study a total of 3524 women (with both high and low risk pregnancies) gave birth.

With respect to the use of episiotomy, the technique used was mediolateral and was carried out both by midwives and obstetricians. Its use is not standardised in a systematic way and although the indications for it lists instrumental births or suspected fetal compromise, in a large number of cases, the final decision is delegated to the professional who is attending birth. After their employment, no additional measure such as the administration of intravenous fluids and the delay of suture was performed to prevent greater blood loss.

In the event of instrumental births, vacuum, forceps or spatulas in function of the fetal position were used, so sometimes a single instrumental or a combination of several of them were used. Episiotomy was not performed routinely with instrumental birth.

The suture of first, second and third degree tears, as well as episiotomies, were carried out in the delivery room, and woman was only moved to the operating theatre in the case of fourth-degree tears due to their complexity and the possibility to provide a higher level of analgesia if necessary. Suture, except the tears of greater severity (third and fourth degree), and perineal trauma that occurred in the attention of instrumental births, was conducted by midwives.

When woman are admitted to the delivery room, analytical extraction was performed on a routine practice to be able to carry out a comparison between antepartum and postpartum Hb levels and to determine the degree of blood loss. It is standardised a postpartum extraction at 24 h, however, since it is a technique dependent on the maternity services, the exact time at which the collection was done could range, although theoretically the analysis was carried out at 24 h after birth.

2.2. Design and participants

An observational, analytical retrospective cohort methodology was used on a total sample of 3479 women.

The study population consisted of women with singleton pregnancies who had a vaginal birth at Mancha Centro Hospital (Alcazar de San Juan), Ciudad Real (Spain) during the period 2010–2014. Women with antenatal fetal demise, multiple pregnancies and gestations under 35 weeks were excluded because these situations present special clinical conditions whose behaviour might vary with respect to the normal situations. Similarly, those women that could not be performed an analytical antepartum or postpartum extraction were excluded from the analysis.

2.3. Sources of information

Data were collected from women's electronic medical records under study. The persons responsible for its collection were the midwives of the birth service.

Main outcome variable: change in haemoglobin concentration, result of the difference between the measurement of Hb at onset of labour and at 24 h after birth.

Independent variable: type of perineal trauma. They divided into four categories and the morbidity that they generate depends on the extension of the tear. First degree tears are lesions that affect the perineal skin, second degree tears injure muscles of the perineum, third degree tears affect the anal sphincter and fourth degree tears extend to the rectal mucosa.[35]

The secondary variables taken into account to control possible confounding bias were: maternal age, parity, body mass index (BMI), gestational age, previous caesarean section, antepartum haemoglobin level, induction of labour, duration of the first and second stage of labour, instrumental birth, active management, manual removal of the placenta and weight of the newborn. All of them were selected by their association with higher blood loss in vaginal births.[3,36–38]

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