Development of chronic pain after episiotomy

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Abstract
Objective: To analyze the incidence of chronic pain 5 months after episiotomy, as well as potential prognostic factors.
Methods: A prospective cohort observational study was conducted on pregnant women age ≥ 18 years who had undergone an episiotomy. The presence of pain was evaluated in the area of episiotomy at 24 and 48 h of delivery using a structured face-to-face questionnaire, and by telephone questionnaire at 5 months. The primary endpoint was the presence of persistent pain at 5 months. A record was made of the presence of pain at delivery, and its intensity, the presence or absence of epidural analgesia, instrumental delivery, perineal tear, and pain when episiotomy was performed, as well as the presence of dyspareunia and urinary incontinence at 5 months post-episiotomy.
Results: A total of 87 parturient patients were included, of whom 78 completed the study. Of the patients who completed the study, 12.8% reported chronic episiotomy pain. Epidural analgesia was associated with a higher incidence of instrumental delivery and less pain at the time of episiotomy and expulsion (P < .0005, P < .02, and P < .01, respectively). Chronic pain is associated with operative delivery (P < .017), and with the presence of pain at rest at 24 and 48 h (P < .01), of wound complications (P < .026), and of dyspareunia (P < .001).
Conclusion: An incidence of 12.8% of women developing chronic pain after delivery with episiotomy suggests a health problem. More studies are needed to confirm our results.

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PALABRAS CLAVE
Dolor crónico; Episiotomía; Parto; Epidural

Cronificación del dolor tras episiotomía

Resumen
Objetivo: Analizar la incidencia de dolor crónico a los 5 meses de la realización de episiotomía y los posibles factores pronósticos asociados.

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Introduction

In the past ten years there has been growing interest in understanding the causes and mechanisms behind the transition from acute to chronic pain following surgical procedures. Tissue damage following surgery such as limb amputation, thoracotomy, mastectomy, and even inguinal herniorrhaphy, is a common cause of chronic post-surgical pain. This process has been associated with a number of prognostic factors, particularly female sex, age under 55 years, poorly controlled acute pain, and also psychosocial factors.

Several studies have reported an incidence of 2–6% for persistent pain at 6 months and more after childbirth, almost exclusively among women undergoing assisted vaginal delivery. The duration of the pain prompts patients to consult specialists, who report an average duration of 8 months (with a range of 3 months to 20 years), in which difficult delivery with a prolonged second stage and assisted delivery with or without episiotomy are often mentioned as trigger events. Prospective studies have also associated deep abdominal pain and pain in the pelvis and lower limbs with genital pain.

Several authors have associated episiotomy with a higher level of pain and inadequate pain management during the first postpartum day. The pain interfered with the patient’s activities of daily living and had a negative impact on their experience of motherhood. Reports suggest that in 13–23% of women this pain persists even at 6 weeks postpartum.

The prevention and management of post-episiotomy pain has been the subject research. These studies have focused on pain management strategies, such as pudendal nerve block, postpartum administration of nonsteroidal anti-inflammatory drugs and opioids, administration of epidural opioids and local anesthetics administered by different routes. However, the incidence of chronicification of this kind of pain has not been studied, and its prognostic factors have not been identified.

Our aim was to carry out a prospective study in our health care district of the incidence of chronic post-episiotomy pain (CPEP) at 5 months post-surgery and its associated prognostic factors.

Patients and methods

This is a prospective cohort study in postpartum women undergoing episiotomy at the end of the fetal expulsion stage. The study was approved by the Independent Ethics Committee of our hospital. Inclusion criteria were: patients aged 18 years or older undergoing episiotomy.

The aim of the study was explained to all patients, and their informed consent was sought before inclusion. Exclusion criteria, in addition to age, were: history of perineal pain or postpartum complications prolonging hospital stay beyond 48 h, refusal to take part in the study, or unforeseen difficulty in conducting the 5-month follow-up interview.

Episiotomy was defined as a 45° (centrolateral) 5–6 cm long incision through the skin, muscle and vaginal mucosa of the perineum using surgical scissors. Episiotomy was always performed by the attending obstetrician after local injection of 5–10 mL 2% lidocain. The wound was closed with a continuous suture.

The study was based on a structured face-to-face interview at 24 and 48 h postpartum, and a telephone interview at 5 months. The primary endpoint was chronic pain in the area of the episiotomy at 5 months post-surgery.

Secondary variables were: history of chronic pain, previous episiotomy, newborn birth weight, gestational age, and...
nulliparous or multiparous patient. Other variables were: post-expulsion pain and its intensity measured verbally on a 0–10 scale (where 0 is no pain and 10 maximum pain), administration of epidural anesthesia, assisted or unassisted vaginal delivery, perineal tearing, and level of pain during episiotomy (rated as not painful, slightly painful, quite painful or very painful). The patients were seen by an anesthesiologist 24 and 48 h postpartum, and asked whether they were experiencing pain around the site of the episiotomy during rest and movement (getting up and walking around). The pain was rated on the same verbal 0–10 numerical scale.

At 5 months postpartum, the patients were contacted by telephone and asked whether they were still experiencing pain, and to describe the pain. Patients reporting no pain at the time of the telephone interview were asked whether they had experienced pain for at least 2 months following the episiotomy. They were also asked about other complications, such as hematomata or infection at the wound site, dyspareunia and urinary incontinence (Appendix 1).

The Anesthesiology and Critical Care Department has protocols for the administration of epidural anesthesia in all patients requesting this form of pain relief after onset of labor, provided it is not contraindicated and the patient has signed an informed consent form. The Obstetrics and Gynecology Department has protocolized the treatment and follow-up of perineal wound healing following episiotomy and perineal tear. This includes the administration of antibiotic therapy in the delivery room and 5 days postpartum, the use of laxatives, a 5-day course of diclofenac (in combination with metamizole and/or paracetaol if more analgesia is required), and hygiene practices that should continue after hospital discharge. Postpartum, mothers were allowed to walk around freely following transfer to the ward.

Data from the entire cohort were analyzed statistically on the basis of the “chronic pain at 5 months” variable. Quantitative variables are expressed as median and 25th and 75th percentile, and the qualitative variables are expressed as percentages. The relationship between qualitative variables were analyzed using contingency tables and the chi-square test, or by Monte Carlo testing and Fisher’s exact test. To evaluate differences in means between 2 groups, the independent samples Student’s t-test, or the Mann–Whitney U test in the case of non-normal distributions, was used. Significant differences in means were quantified to a confidence interval of 95%, and in the case of non-normal data differences between medians were quantified using Hodges–Lehmann 95% confidence intervals. Data were analyzed using SPSS® 22.0 for Windows® (IBM®). Significance was set at p < 0.05.

Results

A total of 87 patients undergoing episiotomy were included over a 16-month period, of which 9 were lost to follow-up at 5 months, leaving a study cohort of 78 patients. Of the total cohort, 88.5% received epidural anesthesia during labor; 55.2% were primiparous, and 79.48% of the multiparous group claimed to have undergone episiotomy during the previous labor. In total, 12.6% of patients reported a history of chronic pain (Table 1).

In terms of gestation, 90.8% gave birth after 38 weeks. In 67.8% of patients, newborn birth weight ranged from 3000 to 4000 g, in 23% birth weight was lower, and in 9.2% it was higher than 4000 g. A total of 54% underwent assisted delivery, 89.3% of which had received epidural anesthesia. In 32.6% of cases, the midwife noted perineal tear during delivery on the patient’s obstetric history. All the foregoing data are shown in Table 1.

A total of 8% of mothers reported pain (rated as quite painful or very painful) during episiotomy, and mean reported pain during expulsion was 3.80 ± 3.8 (Table 2). Differences in the level of reported movement and resting pain at 24 and 48 h postpartum and its relationship to receiving epidural or not were not statistically significant (Table 2). However, the level of pain at the time of expulsion and during episiotomy reported by women not receiving epidural anesthesia was significantly higher than that reported by epidural patients (p ≤ 0.01 and p ≤ 0.02, respectively) (Table 2).

Of 34.6% of women reported pain around the episiotomy site at 2 months postpartum, and 12.8% reported pain at 5 months postpartum (CPEP criteria). Pain intensity on the verbal numerical scale, was 2.9 ± 1.66 (median 2.5, P25—P75 2.0–3.25); 80% reported pain at the wound site, and 20% at the wound site and surrounding area. In terms of pain, 80% described it as a stabbing pain, 20% as a burning pain, and 80% as a deep pain. In 1 patient, the pain was associated with depression, and in another, with anxiety. None of the mothers reported any limitations in their activities of daily living.

A total of 7.7% patients presented episiotomy complications, with 42.3% reporting symptoms of dyspareunia, and 21.8%, of urinary incontinence (Table 3).

Epidural analgesia was associated with assisted (p < 0.005, OR 13.35) and non-assisted delivery, with pain during episiotomy (p < 0.02) and pain during expulsion (p < 0.01) (Tables 2 and 4). No differences were observed in the incidence of perineal tear (Table 4).

Chronic pain was associated with assisted delivery (OR 9.54 and p < 0.017), and with resting pain at 24 and 48 h postpartum (p < 0.01), episiotomy complications (p < 0.026), and dyspareunia (p < 0.001) (Table 5).

Discussion

Our results show that 12.8% of women undergoing episiotomy present chronic pain at 5 months postpartum, and that this is associated with obstetric and postpartum factors including pain in the first 48 h.

Ever since Crombie et al. published the first study on pain chronification following surgery in 1998, the phenomenon has been studied in relation to various surgical procedures, including arthroplasty, thoracotomy, mastectomy, cesarean section and hemiorrhaphy. One of the problems encountered in these studies is the lack of standardized criteria for defining chronic post-operative pain. Although it has been defined as post-operative pain lasting over 2 months, after ruling out other possible causes of the pain, some experts argue that this period should be extended to at least 3 and 6 months post-surgery because
the exact duration of the inflammatory process is as yet unclear.\textsuperscript{24}

Recent studies have drawn attention to the phenomenon of post-vaginal delivery pain.\textsuperscript{5,7,8} Kainu et al., in a retrospective study of women undergoing vaginal delivery, observed that in 30% pain persisted 1 year postpartum, and that this was to a certain extent associated with epidural analgesia, episiotomy, perineal tearing or complications. However, these authors were unable to find any significant differences between women meeting one or more of these criteria and those that did not.\textsuperscript{5} Eisenach et al. conducted a 2-, 6- and 12-month follow-up study in persistent postpartum pain in a cohort of women. They found that the pain decreased over time, with incidence of pain at 12 months postpartum being mostly associated with vaginal delivery.\textsuperscript{7} The presence of CPEP, however, has not hitherto been investigated. Studies published so far have focused on postepisiotomy pain, describing it as a significant problem that can persist up to 6 weeks postpartum, and have centered their efforts on finding the ideal analgesic for use during the first few hours postpartum.\textsuperscript{12,17} These authors report that episiotomy is associated with pain in 97% of

Table 1  Characteristics of all patients and of women with and without chronic post-episiotomy pain.

<table>
<thead>
<tr>
<th></th>
<th>All patients (n = 87)</th>
<th>CPEP (n = 10)</th>
<th>No CPEP (n = 68)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>31.44 ± 4.6</td>
<td>31.3 ± 4.6</td>
<td>31.2 ± 4.5</td>
</tr>
<tr>
<td><strong>Primiparous/multiparous</strong></td>
<td>55.2/44.8</td>
<td>80/20</td>
<td>52.9/47.1</td>
</tr>
<tr>
<td><strong>Multiparous with previous episiotomy</strong></td>
<td>79.4</td>
<td>20</td>
<td>36.8</td>
</tr>
<tr>
<td><strong>History of chronic pain</strong></td>
<td>12.6</td>
<td>10</td>
<td>14.7</td>
</tr>
<tr>
<td><strong>Gestational age (≥38)</strong></td>
<td>90.8</td>
<td>100</td>
<td>91.2</td>
</tr>
<tr>
<td><strong>Epidural analgesia (n = 77)</strong></td>
<td>88.5</td>
<td>90</td>
<td>94.1</td>
</tr>
<tr>
<td><strong>Assisted delivery</strong></td>
<td>54</td>
<td>90</td>
<td>48.5</td>
</tr>
<tr>
<td><strong>Newborn birth weight</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;2999 g</td>
<td>23</td>
<td>10</td>
<td>25</td>
</tr>
<tr>
<td>3000-3999 g</td>
<td>67.8</td>
<td>90</td>
<td>66.1</td>
</tr>
<tr>
<td>&gt;4999 g</td>
<td>9.2</td>
<td>0</td>
<td>8.8</td>
</tr>
<tr>
<td>Perineal tear</td>
<td>32.6</td>
<td>40</td>
<td>26.9</td>
</tr>
</tbody>
</table>

CPEP: chronic post-episiotomy pain.
Data expressed as mean ± standard deviation or percentage of patients.

Table 2  Pain during episiotomy at different stages of the study with or without epidural analgesia.

<table>
<thead>
<tr>
<th>Pain during episiotomy</th>
<th>Total (n = 87), mean ± SD</th>
<th>Epidural (n = 77), median (P\textsubscript{25}−P\textsubscript{75})</th>
<th>No epidural (n = 10), median (P\textsubscript{25}−P\textsubscript{75})</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resting pain at 24 h</td>
<td>3.9 ± 2.8</td>
<td>5.00 (1.50−6.00)</td>
<td>3.00 (0.00−4.50)</td>
</tr>
<tr>
<td>Movement pain at 24 h</td>
<td>5.56 ± 2.67</td>
<td>7.00 (4.00−8.00)</td>
<td>4.50 (2.50−6.25)</td>
</tr>
<tr>
<td>Resting pain at 48 h</td>
<td>2.44 ± 2.5</td>
<td>2.00 (0.00−5.00)</td>
<td>2.00 (0.00−3.50)</td>
</tr>
<tr>
<td>Movement pain at 48 h</td>
<td>3.64 ± 2.66</td>
<td>4.00 (1.00−6.00)</td>
<td>4.00 (0.75−4.25)</td>
</tr>
<tr>
<td>Pain on expulsion</td>
<td>3.80 ± 3.82 (CI 95% −8.00; −2.00)</td>
<td>2.00 (0.00−6.50)</td>
<td>8.50 (7.50−10.00)</td>
</tr>
<tr>
<td>Pain during episiotomy</td>
<td>88.5/3.4/6.9/1.1</td>
<td>90.9/1.2/6.4/1.2</td>
<td>70/20/10/0\textsuperscript{**}</td>
</tr>
</tbody>
</table>

N/S/Q/V: no pain/som pain/quite painful/very painful; P\textsubscript{25}: 25th percentile; P\textsubscript{75}: 75th percentile; SD: standard deviation.

\* p < 0.01.
\** p < 0.001.

Table 3  Complications following episiotomy in patients completing the study with or without chronic post-episiotomy pain.

<table>
<thead>
<tr>
<th>Complications</th>
<th>Patients completing study (n = 78)</th>
<th>CPEP (n = 10)</th>
<th>No CPEP (n = 68)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Episiotomy complications (n = 78)</td>
<td>7.7</td>
<td>30\textsuperscript{*}</td>
<td>4.5</td>
</tr>
<tr>
<td>Dyspareumia (n = 78)</td>
<td>42.3</td>
<td>90\textsuperscript{**}</td>
<td>34.3</td>
</tr>
<tr>
<td>Urinary incontinence (n = 78)</td>
<td>21.8</td>
<td>40</td>
<td>17.9</td>
</tr>
</tbody>
</table>

CPEP: chronic post-episiotomy pain.
Data expressed as percentage of patients.

\textsuperscript{*} p < 0.02.

\textsuperscript{**} p < 0.001.
patients during the first postpartum day, decreasing to 71% by 7 days postpartum. The authors conclude that perineal trauma is associated with a higher incidence of pain.17

The severity of post-surgical pain (associated with the invasiveness of the surgical procedure) is an important factor in chronification. Recent studies have shown that the source of central sensitization could include nociceptive and surgical input and inflammatory mediators.25,26 Our results suggest that pain chronification is associated with resting pain at 24 and 48 h, assisted delivery, and episiotomy complications. These latter delay surgical wound healing and probably increase inflammatory mediators, which in turn trigger some kind of central sensitization. Dyspareunia could have a negative knock-on effect, or be a manifestation of pain chronification. On this subject, Brown and Lumley studied complications presented by postpartum mothers 6 months after delivery by means of a population-based postal survey, finding that 21% of subjects polled reported perineal pain, and that assisted delivery with forceps or a suction cap increased the probability of postpartum pain (OR 4.69), sexual problems (OR 2.06) and urinary incontinence (OR 1.81).27 The results of our prospective study coincide with these findings, and also suggest that, as in other more complex surgical procedures,3,4 pain in the first 48 h can be a predictor of chronification of postpartum pain.

We found greater intensity of pain at 24 and 48 h postpartum in mothers receiving epidural analgesia vs local infiltration, although the latter reported more pain during episiotomy. A possible explanation of this could be that following established protocols epidural perfusion is withdrawn when the mother is transferred to the delivery room, but a residual analgesic effect could mask the pain of the episiotomy. In patients receiving local injection, meanwhile, the time between start of infiltration and incision could be less than the latency time of the local anesthetic used. In terms of subsequent evolution following these techniques, the effect of epidural analgesia could disappear when infusion is withdrawn, while the infiltrated analgesic could take effect shortly after episiotomy.

Clinicians could be accused of taking a somewhat relaxed attitude to evaluating and treating postepisiotomy pain. However, a number of different treatments and routes of administration have been explored,12,17 including the use of pudendal nerve block.19 Some therapies have been shown to be more effective than others, and the side effects of some analgesics, their passage into breast milk and subsequent harm to the neonate, must also be considered. This is why some authors recommend pudendal nerve block, which gives a more long-lasting analgesic effect with fewer side effects.19

In patients receiving epidural analgesia, the incidence of chronic pain at 5 months was lower, although this was not statistically significant. However, epidural anesthesia is unlikely to prevent pain chronification, since these patients presented greater pain at 24 and 48 h postpartum, and had a greater incidence of assisted delivery, both of which are associated, in our study, with pain chronification. Furthermore, incidence of perineal tearing was lower in patients receiving epidural anesthesia, probably due to relaxation of the perineal tissue. These differences, however, were not significant.

This study has a number of limitations. The first of these is the difficulty not only of recruiting women undergoing episiotomy (the current trend is toward a

<table>
<thead>
<tr>
<th>Table 4</th>
<th>Patients undergoing assisted delivery and reporting pain during episiotomy, according to epidural analgesia and chronic post-episiotomy pain.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Epidural (n = 73)</strong></td>
</tr>
<tr>
<td></td>
<td>CPEP (n = 9)</td>
</tr>
<tr>
<td>Assisted delivery</td>
<td>9</td>
</tr>
<tr>
<td>(n = 47) Perineal tear</td>
<td>4</td>
</tr>
<tr>
<td>Pain during episiotomy N/S/Q/V (n = 87)</td>
<td>7/0/2/0</td>
</tr>
</tbody>
</table>

CPEP: chronic post-episiotomy pain; N/L/Q/V: no pain/some pain/quite painful/very painful. Total: all patients included in study.

* p < 0.05, OR 13.35, 95% confidence interval from 1.6 to 110.7.

** p < 0.02.

<table>
<thead>
<tr>
<th>Table 5</th>
<th>Variables associated with chronic post-episiotomy pain at 5 months.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Odds ratio</strong></td>
</tr>
<tr>
<td>Assisted delivery</td>
<td>9.5</td>
</tr>
<tr>
<td>Episiotomy complications</td>
<td>9.1</td>
</tr>
<tr>
<td>Dyspareunia</td>
<td>17.2</td>
</tr>
<tr>
<td>Resting pain at 24 h</td>
<td>4.1</td>
</tr>
<tr>
<td>Resting pain at 48 h</td>
<td>4.1</td>
</tr>
</tbody>
</table>
less interventional approach to delivery), but above all of recruiting women not opting for epidural anesthesia. In addition to this, the small number of patients not receiving epidural anesthesia prevented us from determining a CPEP prediction model. Another shortcoming was the lack of information on analgesic intake in the early postpartum period, and the level of adherence to post-episiotomy and tear protocols. This would have enabled us to explore postoperative analgesic administration in greater depth.

In conclusion, we believe that an incidence of 12.8% of women with pain chronification following episiotomy during delivery is a significant finding. The extent of tissue damage contributes to subsequent pain chronification, and obstetricians must take greater care during certain interventions and improve pain management in the first 48 h postpartum. We also believe that further studies are needed to confirm our results.

Conflict of interest

The authors declare they have no conflict of interest.

Appendix 1. 5-month follow-up telephone interview

1. Are you currently in pain?
2. Were you in pain for at least 2 months?
3. Where was the pain?
4. Have you had any early wound complication?
5. How would you describe the pain?
6. Do you suffer from dyspareunia?
7. Do you suffer from urinary incontinence?
8. VNS of current pain
9. Do you take analgesics for your pain?
10. Do you have signs of depression, anxiety or fibromyalgia?
11. To what extent are your activities of daily living affected?

References


