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Postpartum Perineal Pain in a Low Episiotomy Setting: Association with Severity of Genital Trauma, Labor Care and Birth Variables

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Abstract

Background—Perineal pain is common after childbirth. We studied the effect of genital tract trauma, labor care, and birth variables on the incidence of pain in a population of healthy women exposed to low rates of episiotomy and operative delivery.

Methods—A prospective study of genital trauma at birth and assessment of postpartum perineal pain and analgesic use was conducted in 565 midwifery patients. Perineal pain was assessed using the Present Pain Intensity (PPI) and Visual Analog Scale (VAS) components of the validated short form McGill pain scale. Multivariate logistic regression examined which patient characteristics or labor care measures were significant determinants of perineal pain and use of analgesic medicines.

Results—At hospital discharge, women with major trauma reported higher VAS pain scores (2.16 $\pm$ 1.61 vs 1.48 $\pm$ 1.40; $P < 0.001$) and were more likely to use analgesic medicines (76.3 vs 23.7%, $P = 0.002$) than women with mild or no trauma. By 3 months average VAS scores were low in each group and not significantly different. Perineal pain at the time of discharge was associated in univariate analysis with higher education level, ethnicity (non-Hispanic white), nulliparity, and longer length of active maternal pushing efforts. In a multivariate model only trauma group and length of active pushing predicted pain at hospital discharge. In women with minor or no trauma, only length of the active part of second stage labor had a positive relationship with pain. In women with major trauma, the length of active second stage labor had no independent effect on level of pain at discharge beyond its effect on the incidence of major trauma.

Conclusions—Women with spontaneous perineal trauma reported very low rates of postpartum perineal pain. Women with major trauma reported increased perineal pain compared with women who had no or minor trauma; however, by 3 months postpartum this difference was no longer

present. In women with minor or no perineal trauma, a longer period of active pushing was associated with increased perineal pain.

Keywords

childbirth; perineal pain; genital tract trauma; labor management

Perineal pain after vaginal delivery affects women's recovery from childbirth. Genital tract trauma after birth is common; the HOOP ("Hands On Or Poised") trial revealed that 85 percent of 5,471 women giving birth had at least minimal genital tract trauma (1). Both episiotomy and perineal laceration are strongly associated with the presence of perineal pain during the immediate postpartum period (2, 3) and at 3 months (2). At 3 months 20 percent of 89 women after an episiotomy described pain as distressing to excruciating on the McGill pain scale and 44 percent had pain that was present most of the time (2). Nine percent of 274 primiparas reported pain interfering with routine activities "extremely" or "quite a bit" in the first 2 months after spontaneous vaginal delivery in a nationwide United States survey (4). Perineal pain can also occur after birth with an intact perineum; 38 percent of 84 women who delivered with intact perineums reported pain 7 days postpartum (3).

Few studies address the role of obstetrical risk factors other than perineal trauma (2, 3) or operative vaginal delivery (3, 5, 6) on the presence of postpartum perineal pain. Both increased length of labor (6, 7) and decreased parity (3, 6) have been positively associated with postpartum perineal pain, although it is unclear if they remain independent risk factors for perineal pain when the presence and severity of genital tract trauma are controlled for. Other labor care factors associated with increased perineal pain are the use of chromic rather than synthetic polyglactin suture (8-10) and the suturing of the perineal skin edges (11). The practice of routine episiotomy is gradually being abandoned, with overall rates of episiotomy in the United States decreasing from 56 to 16 percent from 1990 to 2006 (12, 13). In the absence of routine episiotomy, the relationship between perineal pain and spontaneous genital tract trauma, labor care measures, and birth variables can be investigated.

The aim of the current study was to describe the incidence and risk factors for postpartum perineal pain in a low-risk healthy population of women exposed to low rates of episiotomy and operative delivery.

Methods

This study was a planned secondary analysis of a prospective study of midwifery patients who consented to documentation of genital trauma at birth and assessment of postpartum perineal pain and analgesic use. All women in the current study were also enrolled in a randomized trial to evaluate the impact of perineal warm compresses and massage on genital tract trauma, the results of which have been previously published (14, 15).

All women were delivered vaginally at the University of New Mexico Health Sciences Center in Albuquerque, New Mexico, and were attended by a member of the nurse-midwife group. The study was a collaborative effort between the College of Nursing and the departments of Obstetrics and Gynecology (including University Midwifery Associates) and Family Medicine, at the University of New Mexico Health Sciences Center in Albuquerque. Approval was obtained by the University of New Mexico Human Research Review Committee.

During prenatal visits, a cohort of 576 midwifery patients (at least 18 years of age and able to speak and write English or Spanish) gave written informed consent to the documentation

of genital trauma and perineal repair at birth and to the assessment of postpartum perineal pain and functional pelvic floor outcomes. Data collected included patient characteristics and labor care measures, birth events, and a detailed map of genital tract trauma.

Major trauma was defined as > second degree laceration of the perineum, trauma requiring suturing, or both. Second degree lacerations involved the muscles of the perineal body without transgressing the anal sphincter complex. Women with absence of trauma or any skin or mucosa separation not fulfilling the definition of major trauma as defined above were classified as having minor trauma.

Suture technique and suture (delayed absorbable 3 -0 polyglactin 910) were standardized for the repair of perineal lacerations as previously described (16, 17). Anterior lacerations were repaired as needed to restore anatomy and achieve hemostasis. The decision of whether or not to repair second degree perineal lacerations was at the discretion of the attendant nurse-midwife, the results of which have been published previously (18).

Perineal pain was assessed using the Present Pain Intensity (PPI) and Visual Analog Scale (VAS) components of the validated shortform McGill Pain Questionnaire (19) at the time of discharge, at 6 weeks, and at 3 months postpartum. The five-point Likert scale for the PPI is none, mild, discomforting, distressing, or horrible. Analgesic use was assessed at discharge and at 3 months. Demographic variables that were collected included age, parity, ethnicity, education, body mass index (BMI), and maternal weight gain. Labor care variables included length of active pushing efforts (second stage), position while pushing, style of pushing, and epidural and oxytocin use. Style of pushing was described as either “directed, forceful and Valsalva” or “spontaneous, self-paced, and non-Valsalva.” Birth care variables included infant position at birth (e.g., occiput anterior) and infant weight.

Before initiation of the study, the principal investigators held teaching sessions to standardize intrapartum evaluation of genital tract trauma and repair of perineal lacerations. The high accuracy and reliability of genital tract trauma assessments for this study has been previously published (14). If women did not return for their 6-week or 3-month evaluations, they were asked to complete questionnaires by telephone interview. Women who completed both interviews were compensated \$10.00.

Data Analysis

Descriptive statistics including means and proportions were used for patient characteristics and labor care measures. Fisher’s exact test and t tests were used for comparison of variables between women who did and did not follow up. Comparison of women with major trauma versus those with minor or no trauma was assessed by t tests for continuous dependent variables or by Fischer exact test for proportions. Multivariate logistic regression was used to assess which patient characteristics or labor care measures remained as significant determinants of the three pain outcome measures (VAS, PPI, and use of analgesic medicines). Stepwise methods verified by “best subsets” analyses were used to determine the important predictors of pain. Analyses were performed using SAS version 9 (20). Significance was set at $p = 0.05$.

Results

Between March 2002 and December 2005, 576 women who had been prospectively enrolled in this study had vaginal births. Eleven women underwent episiotomy or operative delivery and were excluded from further analyses. One hundred and fifty-two (27%) women had major trauma with 104 (18%) second degree lacerations, 4 (<1%) had third degree lacerations, and 2 (<1%) had fourth degree lacerations; 413 women had minor or no trauma.

Ninety-eight percent (553/565) of women gave data about postpartum pain at the time of discharge. Sixty-one percent (343/565) of women presented for follow-up at 6 weeks and 326/565 (58%) at 3 months. Overall, 444/565 (79%) women were followed-up at either 6 weeks or 3 months. No differences were noted between 6--week and 3-month data (all $p=NS$); therefore, all results are reported as 6-week to 3-month follow-up in a last observation carried forward analysis. Six-week data were used only if 3-month data were not available.

Women with major perineal trauma were more likely to be nulliparous, have a higher education level, and to have gained more weight in pregnancy than women with minor perineal trauma (all $p < 0.05$). The labors of women with major trauma more commonly involved epidural analgesia, use of oxytocin, directed forceful pushing, a longer period of active pushing, and larger birthweight infants than women with minor trauma (all $p < 0.05$) (Table 1).

At discharge, women with major trauma compared with women with minor or no trauma were more likely to report higher VAS pain scores (2.16 ± 1.61 vs. 1.48 ± 1.40 ; $p < 0.001$) and more likely to use analgesic medicines (76.3 vs. 23.7%, $p = 0.002$) (Table 2). Of the women ($n=204$) using analgesic medicines for perineal pain at discharge, 96 percent were using ibuprofen and 27 percent were using acetaminophen. In a multivariate analysis, this difference between trauma groups' use of analgesics was explained by the difference in parity between the women with major trauma and those with minor or no trauma ($p = 0.18$). By 3 months differences between groups were no longer significant and already low average VAS scores for both trauma groups became lower (0.19 ± 1.49 vs. $0.17 \pm .65$; $p = 0.77$) (Table 2).

When perineal pain was assessed using the PPI scale at time of hospital discharge, 19.4 percent of women reported no pain, 40.4 percent mild pain, 35.8 percent discomforting pain, 3.5 percent distressing pain, and 0.92 percent horrible or excruciating pain. When women were dichotomized into groups with "no or mild pain" versus "discomforting, distressing or horrible pain" on the Likert scale, discomforting perineal pain was associated with the presence of major perineal trauma versus minor or no trauma. (55% vs. 35%, $p < 0.001$). By 3 months nearly all women reported no perineal pain (90.3% [$n=444$]) and no analgesic use (93.4% [$n=444$]). Four of the six women with third or fourth degree perineal lacerations were seen at 6 weeks or 3 months postpartum, with only one of the four reporting ongoing perineal pain that was rated discomforting on her 3-month PPI.

Perineal pain at the time of time of discharge was associated with higher education level ($p < 0.001$), ethnicity (non-Hispanic white) ($p = 0.05$), nulliparity ($p < 0.0001$), and longer length of active maternal pushing efforts ($p < 0.01$) in a univariate analysis. In a multivariate model analyzing pain on the VAS scale as a continuous variable, only trauma group and length of active pushing predicted increased perineal pain at the time of discharge (interaction $p = 0.003$). When the patient and labor characteristics differing between trauma groups were analyzed, only length of the active part of second stage labor had a positive relationship with the level of pain in women with minor or no trauma. In women with major trauma, the length of active second stage labor had no independent effect on level of pain at discharge beyond its effect on the incidence of major trauma.

Discussion

Incidence of perineal pain in this cohort of healthy women was low at discharge and even lower 3 months postpartum. At time of discharge, 60 percent of women reported mild or no pain on validated measures. We identified that major trauma and, for women with minor

trauma, length of active pushing was associated with an increased risk for perineal pain at the time of discharge from the hospital. By 3 months only 3 percent of women reported any pain rated greater than mild. Our definition of major trauma is liberal; we included all second degree lacerations and any sutured trauma as major trauma, and excluded the very few women who had episiotomy or operative vaginal delivery. Nonetheless, only 27 percent of the women in our cohort were classified as having major trauma. Major trauma in this cohort was associated with discharge pain but not continued pain at 3 months; however, the small numbers of women with pain at 3 months limits our ability to assess independent risk factors for the very few women with continued perineal pain.

Our results compare favorably with other studies where postpartum women have reported high levels of postpartum perineal pain. Klein et al reported that 11 percent of women had pain rated as distressing or worse 3 months after a birth with an episiotomy (2). Similarly, Macarthur et al found that 36 percent of 96 women with episiotomy described their pain as distressing or worse on postpartum day one and 6 percent reported the same pain levels on postpartum day seven (3). In our study the rates of significant pain were much lower than these studies as were the incidence of episiotomy and major trauma. These findings support previous findings that low rates of episiotomy may have beneficial effects on the incidence and persistence of postpartum pain (21). In the HOOP study 7.3 percent of women reported pain at 3 months; however, validated pain scales were not used (1).

The low incidence of perineal trauma allowed us to examine other obstetrical risk factors for postpartum perineal pain. We found that the length of active second stage labor was associated with perineal pain at the time of discharge when minor or no perineal trauma was present. The length of active second stage labor is potentially modifiable because it may be decreased by allowing for a period in which the woman “labors down” the baby with uterine contractions without the initiation of active expulsive efforts. Prolonging the passive part of second stage labor has been demonstrated to be safe for the fetus (22), but the effect on pelvic floor function including perineal pain has not been well studied.

A small, randomized controlled trial demonstrated adverse effects on postpartum urodynamics of coached versus uncoached pushing (23). We have previously reported that major trauma and anal incontinence are associated with the length of active second stage of labor (17). A randomized trial of coached (closed glottis) versus uncoached second stage efforts demonstrated a 13-minute shorter second stage in the coached group (24). Larger randomized controlled trials of second stage management strategies, including passive descent versus early initiation of active maternal expulsive efforts and coached versus uncoached maternal efforts, should include pelvic floor outcomes including pain, urinary and anal continence, and sexual health. Our finding that length of active stage labor is associated with perineal pain should not be a justification to increase the use of episiotomy or operative vaginal delivery, because these interventions are major risk factors for anal sphincter lacerations (21, 25).

Limitations of the present study include the inclusion of parous women whose previous obstetrical history is unknown and a lack of information about the presence of perineal pain prior to or during pregnancy. Women and their midwives self-selected their pushing style and when to initiate active efforts in the second stage of labor; it is possible that confounding factors other than length of active second stage are responsible for the effect on perineal pain in women with minor trauma. The classification system of major and minor trauma was developed to dichotomize genital tract trauma by severity in a setting with very low rates of third and fourth degree perineal lacerations and is not a standardized system that allows comparison to other studies.

Conclusions

Women with spontaneous perineal trauma reported very low rates of postpartum perineal pain. Women with major trauma reported increased perineal pain compared with women who had no or minor trauma; however, by 3 months postpartum this difference was no longer present. In women with minor or no perineal trauma a longer period of active pushing was associated with increased perineal pain. Studies of directed Valsalva versus uncoached “open glottis” second stage management should consider the outcome of perineal pain.

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Table 1

Perineal trauma and demographic, labor care, and birth variables

Variables	Major trauma (n=152)	Minor or no trauma (n=413)	p value
Age $\pm$ SD* (years)	25.2 $\pm$ 5.7	24.7 $\pm$ 5.1	NS
Education $\pm$ SD (years)	13.6 $\pm$ 3.1	12.4 $\pm$ 2.3	<0.0001
Non-Hispanic white vs. others (%)	83 (54.6)	262 (63.4)	0.06
Ethnicity (%)			0.08
Non-Hispanic white	69 (45.4)	151 (36.6)	
American Indian	17 (11.2)	36 (8.7)	
Hispanic	56 (36.8)	201 (48.7)	
Other	10 (6.6)	25 (6.1)	
Weight gain $\pm$ SD* (kg)	33.9 $\pm$ 14.0	30.95 $\pm$ 14.8	0.03
BMI $\pm$ SD* (kg/m ²)	25.1 $\pm$ 5.8	25.4 $\pm$ 5.8	NS
Fetal weight $\pm$ SD* (grams)	3463.1 $\pm$ 419.8	3312.7 $\pm$ 444.8	<0.001
Epidural (%)	70 (46.1)	151 (36.6)	0.045
Oxytocin (%)	62 (41.1)	127 (30.8)	0.03
Sitting position while pushing (%)	117 (77.0)	343 (83.1)	NS
Direct forceful pushing (%)	38 (25)	74 (17.9)	0.07
Occiput anterior (%)	147 (96.7)	389 (94.2)	NS
Active $\pm$ SD* (minutes)	53.5 $\pm$ 52.6	29.8 $\pm$ 33.9	<0.0001

SD = Standard deviation; BMI = body mass index.

Table 2

Perineal pain in women with major and mild trauma at hospital discharge and 6 weeks or three months postpartum

Pain assessment measure	Major trauma	Mild or no trauma	P value
At time of postpartum hospital discharge			
Pain on VAS (range 0-10)(+/- SD)	2.16+/-1.61	1.48+/-1.40	<0.001
Discomforting or worse pain on PPI	(55%)	35%	<0.001
Use of analgesic medicines	45%	35%	0.02
At 6 weeks or 3 months postpartum			
Pain on VAS (range 0-10)(+/- SD)	0.19+/- 0.49	0.17+/- 0.65	NS
Discomforting or worse pain on Present Pain Intensity	3.2%	2.5%	NS
Use of analgesic medicines	7.1%	6.3%	NS

VAS= Visual Analog Scale; PPI = Present Pain Intensity component of McGill Pain Questionnaire.