Introduction

Episiotomy, which involves surgical incision to increase the diameter of the vaginal outlet to facilitate a baby’s birth, is one of the most common medical procedures experienced by women throughout the world. Internationally, there is a wide variation in episiotomy practice, ranging from routine use in all births to use only when clinically indicated (i.e. restrictive or selective use). A systematic review of randomized controlled trials showed that restrictive episiotomy has several advantages over routine episiotomy: less posterior perineal trauma, less suturing and fewer healing complications. Although the restrictive approach was associated with an increased risk of anterior perineal trauma, there was no difference between the two approaches in severe vaginal or perineal trauma or in most pain measures. As a result, the World Health Organization recommended that episiotomy be performed only for a strictly limited number of indications. Nevertheless, the procedure is still used routinely in Vietnam, although the reason for this is unclear. As in many but not all Asian countries, over 85% of Vietnamese women who give birth vaginally, including almost 100% of primiparous, have an episiotomy. Since none of the randomized trials on episiotomy involved Asian women, Vietnamese clinicians question whether the results of these trials are generalizable to Vietnamese women.

We hypothesized that a study of episiotomy among Vietnamese women would help Vietnamese clinicians make informed decisions about clinical practice and, thereby, achieve the best pregnancy outcomes. The availability of population-based data in Australia provided an opportunity to examine this issue. Australia has a multicultural population and Vietnam is the fifth most common country of birth for women having babies in Australia. Furthermore, episiotomy is used on a restricted basis in the country. Therefore, the aim of this study was to describe the use of episiotomy among Vietnamese-born women giving birth in Australia. Specific objectives were to examine both risk factors for, and pregnancy outcomes associated with, episiotomy.

Methods

This population-based, retrospective cohort study included data on 598,305 singleton, term (i.e. ≥37 weeks’ gestation) and vertex-presenting vaginal births between 2001 and 2010. Data were obtained from linked, validated, population-level birth and hospitalization data sets. Contingency tables and multivariate analysis were used to compare risk factors and pregnancy outcomes in women who did or did not have an episiotomy.

Findings

The episiotomy rate among 12,208 Vietnamese-born women was 29.9%, compared with 15.1% in Australian-born women. Among Vietnamese-born women, those who had an episiotomy were significantly more likely than those who did not to be primiparous, give birth in a private hospital, have induced labour or undergo instrumental delivery. In these women, having an episiotomy was associated with postpartum haemorrhage (adjusted odds ratio, aOR: 1.26; 95% confidence interval, CI: 1.08–1.46) and postnatal hospitalization for more than 4 days (aOR: 1.14; 95% CI: 1.00–1.29). Among multiparous women only, episiotomy was positively associated with a third- or fourth-degree perineal tear (aOR: 2.00; 95% CI: 1.31–3.06); in contrast, among primiparous women the association was negative (aOR: 0.47; 95% CI: 0.37–0.60).

Conclusion

Episiotomy was performed in far fewer Vietnamese-born women giving birth in Australia than in Vietnam, where more than 85% undergo the procedure, and was not associated with adverse outcomes. A lower episiotomy rate should be achievable in Vietnam.

Research

Episiotomy rate in Vietnamese-born women in Australia: support for a change in obstetric practice in Viet Nam

Anh T Trinh, Amina Khambalia, Amanda Ampt, Jonathan M Morris & Christine L Roberts

Objective To describe the use of episiotomy among Vietnamese-born women in Australia, including risk factors for, and pregnancy outcomes associated with, episiotomy.

Methods This population-based, retrospective cohort study included data on 598,305 singleton, term (i.e. ≥37 weeks’ gestation) and vertex-presenting vaginal births between 2001 and 2010. Data were obtained from linked, validated, population-level birth and hospitalization data sets. Contingency tables and multivariate analysis were used to compare risk factors and pregnancy outcomes in women who did or did not have an episiotomy.

Findings The episiotomy rate among 12,208 Vietnamese-born women was 29.9%, compared with 15.1% in Australian-born women. Among Vietnamese-born women, those who had an episiotomy were significantly more likely than those who did not to be primiparous, give birth in a private hospital, have induced labour or undergo instrumental delivery. In these women, having an episiotomy was associated with postpartum haemorrhage (adjusted odds ratio, aOR: 1.26; 95% confidence interval, CI: 1.08–1.46) and postnatal hospitalization for more than 4 days (aOR: 1.14; 95% CI: 1.00–1.29). Among multiparous women only, episiotomy was positively associated with a third- or fourth-degree perineal tear (aOR: 2.00; 95% CI: 1.31–3.06); in contrast, among primiparous women the association was negative (aOR: 0.47; 95% CI: 0.37–0.60).

Conclusion Episiotomy was performed in far fewer Vietnamese-born women giving birth in Australia than in Vietnam, where more than 85% undergo the procedure, and was not associated with adverse outcomes. A lower episiotomy rate should be achievable in Vietnam.

Abstracts in العربية, 中文, Français, Русский и Español at the end of each article.
The Admitted Patients Data Collection, whose contents are hereafter referred to as "hospital records", is a census of all inpatient discharges from both public and private hospitals in New South Wales. For each hospitalized patient, diagnoses and procedures are coded from medical records using the Australian modification of the International statistical classification of diseases and related health problems, tenth revision, and the affiliated Australian classification of health interventions.10

As Australia does not have a unique registration number for citizens, the separate data sets were linked using probabilistic linkage methods by the Centre for Health Record Linkage.11,12 This process involves blocking and matching combinations of selected variables, such as name, date of birth, address and hospital, and assigning a probability weight to the match. Linkage was performed independently of the research. The Centre for Health Record Linkage undertakes quality assurance for any data linkage and assesses linkage quality by manually reviewing personal identifiers for a sample of the records analysed for linkage.22 For this project, the reported linkage quality was less than 1 missed link per 1000 and less than 3 false-positive links per 1000. Researchers were provided with anonymized data. Approval for the record linkage and analysis for this study was obtained from the New South Wales Population Health and Health Services Research Ethics Committee.

Explanatory and outcome variables were prespecified and defined according to the data available in the two data sets and data that had been assessed in previous validation studies.13–16 Episiotomy was treated both as an outcome variable for factors associated with episiotomy use and as an exposure variable for third- or fourth-degree perineal tears, postpartum haemorrhage and prolonged postnatal hospitalization. A third-degree perineal tear is defined as partial or complete disruption of the anal sphincter muscles, which may involve either the external or internal anal sphincter muscles or both, and a fourth-degree tear, as disruption of the anal sphincter muscles involving a breach of the rectal mucosa. Episiotomy use was identified from birth or hospital records, with an ascertainment rate of 91% and a positive predictive value of 98%.13 The occurrence of third- or fourth-degree perineal tears was identified from either diagnostic or procedural (i.e. repair) codes in hospital records (ascertainment rate: 94%, positive predictive value: 100%),15 as was the occurrence of postpartum haemorrhage (ascertainment rate: 74%, positive predictive value: 84%).16 The length of the mother’s hospital stay after birth was defined as the number of days between the date of the baby’s birth and the discharge date and prolonged hospitalization was considered to be any stay longer than 4 days.

Information about the mother’s country of birth (i.e. Viet Nam or Australia) and about the explanatory variables of tobacco smoking, type of obstetric care (i.e. public or private) and maternal hypertension were obtained from either birth or hospital records,14,16 Data on the presence of diabetes were obtained from hospital records alone.13 Birth records alone provided details of other explanatory variables, including: maternal age; parity; rural or urban residence; initiation of antenatal care by 12 weeks’ gestation; onset of labour (i.e. spontaneous or induced); epidural analgesia, including combined spinal and epidural anaesthesia; instrumental birth involving forceps or vacuum suction; and birth weight (i.e. <3800 or ≥3800 g). Among Vietnamese-born women giving birth in Australia, a birth weight of 3800 g equates to approximately the 90th birth weight percentile for babies born at full term. In Viet Nam, this birth weight equates to the 95th percentile. In the absence of information on fetal distress, which is a potential explanatory factor for episiotomy, we used an Apgar score of less than 4 one minute after birth.

Statistical analysis

The analysis was conducted in three stages. First, we compared episiotomy rates and trends in Vietnamese-born and Australian-born women. Second, we assessed explanatory factors for episiotomy. Finally, we explored the association between episiotomy and the outcomes of postpartum haemorrhage, prolonged hospitalization and third- or fourth-degree perineal tears. Explanatory factors for episiotomy were examined using contingency table and multivariate logistic regression analysis. Multivariate logistic regression was also used to examine associations between episiotomy and the outcomes of postpartum haemorrhage, prolonged hospitalization and third- or fourth-degree perineal tears. Since the association between episiotomy and third- or fourth-degree perineal tears was influenced by parity, primiparous and multiparous women were modelled separately. All potential explanatory factors suggested by univariate analysis and possible confounders were included in the multivariate adjusted models. Less than 0.1% of data were missing for any variable and records with missing data were excluded from all logistic regression models. The results of logistic regression analysis are presented as odds ratios (ORs) and 95% confidence intervals (95% CIs). All analyses were carried out using SAS 9.1 (SAS Institute Inc., Cary, United States of America).

Results

Between 2001 and 2010, there were 598 305 vaginal births of single, vertex-presenting infants at term among women of all ethnicities in New South Wales, including 100 910 women (16.9%) who had an episiotomy. The rate of episiotomy among Australian-born women was 15.1% (i.e. 62 349 of 413 047 women), compared with 29.9% (i.e. 3646 of 12 208 women) among Vietnamese-born women (P < 0.0001). The rate differed by parity in both groups: in Australian-born women, it was 27% among primiparous and 7% among multiparous; in Vietnamese-born women, the corresponding rates in the two groups were 48% and 17%, respectively.

Table 1 lists the maternal and labour factors associated with the performance of an episiotomy among Vietnamese-born mothers. Multivariate analyses showed that a woman who had an episiotomy was more likely than one who did not to be primiparous, to have received private obstetric care and to have had an induced labour or a forceps- or vacuum-assisted delivery. Living in a rural locality and being a smoker during pregnancy were associated with a decreased likelihood of an episiotomy. Although epidural analgesia was associated with episiotomy in the univariate analysis (data not shown), the relationship was confounded by instrumental birth and private care, and epidural analgesia was not independently associated with episiotomy in the multivariate analysis. A birth weight of 3800 g or more was not associated with episiotomy and increasing the birth weight cut-off did
not change this finding. Only 380 (3.3%) Vietnamese-born women had infants that weighed 4000 g or more, including 28 (0.2%) who had infants weighing 4500 g or more.

The overall rate of postpartum haemorrhage, a hospital stay longer than 4 days and third- or fourth-degree perineal tears among Vietnamese-born mothers was 8.4%, 14.2% and 4.1%, respectively. The postpartum haemorrhage rate was greater in women who had an episiotomy than in those who did not (10.6% versus 7.4%, respectively), as was the rate of prolonged hospitalization (22.6% versus 10.6%, respectively). Among multiparous women, episiotomy was associated with third- or fourth-degree perineal tears: the rate was 3.2% in women who had an episiotomy and 1.3% in those who did not (Table 2). In contrast, among primiparous women, 6.1% of those who had an episiotomy had a third- or fourth-degree perineal tear compared with 9.0% of those who did not have an episiotomy. This reduction in risk among primiparous women persisted after adjustment for other explanatory factors for third- or fourth-degree perineal tears (Table 2).

**Discussion**

This study shows that episiotomy was performed twice as often in Vietnamese-born women living in Australia than in Australian-born women: the episiotomy rate was approximately 30% in Vietnamese-born women and 15% in
Australian-born women. Nevertheless, the rate in Vietnamese-born women was markedly lower than that in Viet Nam. In Australia, where the use of episiotomy is restricted, episiotomy among Vietnamese women was associated with an increased risk of postpartum haemorrhage and of prolonged hospitalization and, in primiparous women only, with a decreased risk of a third- or fourth-degree perineal tear. If these findings are generalizable to Vietnamese women giving birth in Viet Nam, a reduction in the episiotomy rate in that country may be achieved without increasing the number of adverse outcomes.

The factors that influence decision-making around episiotomy in an environment where use of the procedure is restricted may be related to preconceptions about high-risk subgroups, in addition to clinical indicators or the risk of impending perineal trauma. It has been reported that Asian women are at an increased risk of both episiotomy and perineal trauma and that the risk remains elevated after adjustment for explanatory factors such as parity and instrumental delivery. However, this perception is not supported by a study from Hong Kong Special Administrative Region, China, that involved measuring the perineal length during labour. Lai et al. reported that the mean ± standard deviation perineal length of Chinese women was 38.8 ± 7.9 mm, which was comparable to the perineal lengths found using similar methods in other countries, including Israel (mean ± standard deviation: 40.2 ± 10.7 mm), Turkey (mean ± standard deviation: 36.6 ± 5.2 mm) and the United States of America (mean ± standard deviation: 39 ± 7.0 mm). However, this does not rule out the possibility that there are other ethnic differences in the functional and morphological characteristics of the pelvic floor.

The explanatory factors for episiotomy among Vietnamese-born women observed in our study (i.e. nulliparity, private obstetric care, induction of labour and instrumental delivery) are consistent with published risk factors. However, there was no association with an infant’s birth weight exceeding the 90th percentile of 3800 g in these women. In Caucasian populations, a birth weight of 4000 g or more has been identified as a predictive factor for episiotomy, as has a birth weight of 4500 g or more. Few infants of Vietnamese women reached these sizes and the few that did were no more likely to be born with the aid of an episiotomy than smaller infants. Similarly, an Apgar score less than 4 one minute after birth was not an independent explanatory factor for episiotomy, which suggests that fetal distress was unlikely to have had a major influence on the use of episiotomy in this population.

The relationship between episiotomy and severe perineal trauma was complex. Although the risk of a third- or fourth-degree perineal tear was associated with episiotomy, it was influenced by parity: the risk was decreased in primiparas and increased in multiparas. However, the burden of disease fell largely on primiparas: 78% of third- or fourth-degree perineal tears occurred among women having their first baby. As in our study, previous observational studies have reported that episiotomy is associated with fewer third- or fourth-degree perineal tears among primiparous women but not among multiparous women. In contrast, among primiparous, more episiotomies may be performed specifically to prevent perineal tears.

Our population-based study benefitted from the availability of reliably collected, labour and delivery data. However, these data did not include detailed clinical information on the type of episiotomy performed, other clinical risk factors (e.g. the duration of the second stage of labour), the accoucheur or the outcomes of perineal pain and dyspareunia. Furthermore, Vietnamese-born women giving birth in Australia may differ from those giving birth in Viet Nam and obstetric practice in the two countries is likely to be different; both of these factors may restrict the generalizability of our findings to Viet Nam. Nevertheless, our study suggests that a much lower episiotomy rate can be achieved in Vietnamese and other Asian women without increasing the number of adverse outcomes.

We hope that the results of this study will be helpful in bringing about a change in obstetric practice in Viet Nam. A maternity hospital in Hong Kong SAR reported successfully decreasing the episiotomy rate from 73% in 2003 to 27% in 2008 without increasing the rate of third- or fourth-degree perineal tears. However, the strategies implemented to achieve this outcome were not reported. Similarly a randomized controlled trial of a multifaceted intervention in South America reduced the episiotomy rate from 41% to 30%, in this trial, the intervention included: the involvement of selected opinion leaders; interactive workshops; skills training in the use of episiotomy for birth attendants; individual evidence-based education on episiotomy for birth attendants by trained health-care professionals; reminders; and feedback. Other activities planned to facilitate practice change in Viet Nam to reduce the episiotomy rate include: an audit of current episiotomy practice and outcomes based on delivery room registration of the episiotomies that have been performed; a survey of maternity care providers’ knowledge of and attitudes towards episiotomy; and an assessment of health service resources currently used (e.g. the number of staff skilled in conducting and repairing episiotomies, equipment costs and the length of hospitalization after episiotomy). This information will be used to develop a programme for improving practice. In conclusion, a more restrictive episiotomy policy for Vietnamese women may achieve the benefits seen in other populations without any increase in harm.

Acknowledgements
We thank the Australian Agency for International Development, the Hoc Mái Foundation, the New South Wales Ministry of Health and the New South Wales Centre for Health Record Linkage.
Episiotomy in Vietnamese women in Australia

Anh T Trinh et al.

Funding: Anh T Trinh commenced this study as a 2011 Australian Agency for International Development Australian Leadership Awards Fellow, Christine L Roberts is supported by an Australian National Health and Medical Research Council (NHMRC) Senior Research Fellowship (#APP1021025) and Amina Khamba-Lia and Amanda Ampt, by an NHMRC Centres for Research Excellence grant (#APP1001066).

Competing Interests: None declared.
multiparales only, episiotomy has been positively associated with a
dechirure périnéale du troisième ou quatrième degré (ORa: 2,00; IC 95%:
1,31 à 3,06), en revanche, chez les femmes primipares, l’association a
été négative (ORa: 0,47; IC 95%: 0,37 à 0,60).

Conclusion L’épisiotomie a été réalisée chez beaucoup moins de
femmes nées au Viêt Nam et accouchant en Australie que chez celles
qui ont accouché au Viêt Nam, où plus de 85% subissent la procédure,
et elle n’a pas été associé à des résultats négatifs. Une baisse du taux
de l’épisiotomie devrait être possible au Viêt Nam.

Resumen
La tasa de episiotomías en mujeres vietnamitas en Australia: apoyo para cambiar una práctica obstétrica en Viêt Nam
Objetivo Describir el uso de la episiotomía entre mujeres vietnamitas en
Australia, incluidos los factores de riesgo y los resultados en el embarazo
asociados a ésta.
Métodos Este estudio de cohortes retrospectivo basado en la población
incluyó datos de 598 305 partos vaginales únicos, prematuros (esto
es, ≥37 semanas de gestación) y en posición cefálica entre 2001 y
2010. Los datos se obtuvieron de conjuntos de datos de nacimientos
y hospitalización asociados y validados a nivel de la población. Se
utilizaron tablas de contingencia y análisis multivariados para comparar
los factores de riesgo de los resultados de los embarazos entre las mujeres
que tuvieron o no una episiotomía.
Resultados La tasa de episiotomías entre 12 208 mujeres vietnamitas fue del 29,9%, comparada con el 15,1% de las mujeres australianas.
Entre las mujeres vietnamitas, aquellas que se habían sometido a una episiotomía tenían muchas más probabilidades de ser primiparas, dar a
luz en un hospital privado, tener un parto provocado o someterse a un
parto instrumental. En estas mujeres, someterse a una episiotomía se
asoció con hemorragias postparto (cociente de posibilidades ajustado,
CPa: 1,26; intervalo de confianza del 95%; IC: 1,08–1,46) y hospitalización
postnatal durante más de 4 días (CPa: 1,14; 95% IC: 1,00–1,29). La episiotomía se asoció de forma positiva con un desgarro perineal de tercer o cuarto grado solo entre las mujeres multiparas (CPa) 2,00;
95% IC: 1,31–3,06); mientras que dicha asociación fue negativa entre
las mujeres primiparas (CPa: 0,47; 95% IC: 0,37–0,60).
Conclusion La incidencia de la episiotomía en mujeres vietnamitas que
dieron a luz en Australia fue mucho menor que en Viêt Nam, donde
más del 85% se sometea a este procedimiento, y no estuvo asociada a
resultados adversos. Debería ser posible alcanzar una tasa de episiotomía
menor en Viêt Nam.

References
PMID:19160176
J.0730-7659.2005.00373.x PMID:1628977
childbirth/childbirth/2nd_stage/IC/en/index.html [accessed 20
February 2013].
4. Lai CY, Cheung HW, Hsi Lao TT, Lau TK, Leung TY. Is the policy of
restrictive episiotomy generalisable? A prospective observational
group.org/10.1080/09571265.2008.11583081
5. Lam KW, Wong HS, Pun TC. The practice of episiotomy in public hospitals in
6. Laopaiboon M, Lumbiganon P, McDonald SJ, Henderson-Smart DJ, Green S,
Crowther CA; SEA-ORCHID Study Group. Use of evidence-based practices
in pregnancy and childbirth: South East Asia Optimising Reproductive and
Child Health in Developing Countries project. PLoS One 2008;3:e2646. doi:
http://dx.doi.org/10.1371/journal.pone.0002646 PMID:18612381


