

The use of birth stools during second stage labour and the risk of perineal trauma

Alexandra Rauli

Centre for Clinical Effectiveness
Monash Medical Centre
Locked Bag 29
Clayton VIC 3168
Australia

Telephone: +61 3 9594 2726
Fax: +61 3 9594 6970
Email: alex.raulli@med.monash.edu.au
URL: <http://www.med.monash.edu.au/healthservices/cce/>

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SUMMARY STATEMENT:

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REQUEST:

Are birth stools associated with a higher incidence of perineal trauma?

REQUESTED BY:

Georgette Payet-Dale, CMS Birth Unit, Dandenong Hospital, Dandenong

SUMMARY OF FINDINGS:

- One study was retrieved that met inclusion criteria. This study was a recent systematic review examining the benefits and risks of vertical compared to lateral positions during second stage labour. It included an assessment of the use of birth stools compared to the supine position.
- The systematic review reported an increase in second degree perineal tears (OR=3.18 95% CI 1.68 to 6.06) in women using birth/squatting stools compared to women in the supine position. There was no statistical difference (OR=1.54, 95% CI 0.26 to 9.00) in the incidence of third and fourth degree tears in women using the birth/squatting stool compared to those using the supine position.
- The methodology of the review met the validity criteria and therefore the potential for bias is minimal.

METHODOLOGY

Search Strategy

The Centre for Clinical Effectiveness defined the 'best available evidence' as that research we can identify that is least susceptible to bias. We determine this according to predefined NHMRC criteria (see Appendix).

First we search for systematic reviews, evidence-based clinical practice guidelines, or health technology assessments, and randomised controlled trials. If we identify sound, relevant material of this type, the search stops. Otherwise, our search strategy broadens to include studies that are more prone to bias, less generalisable, or have other methodologic difficulties. We include case-control and longitudinal cohort studies in our critical appraisal reports. While we cite observational and case series studies, and narrative reviews and consensus statements, in our reports we do not critically appraise them. Some studies can produce accurate results but they are generally too prone to bias to allow determination of their validity beyond their immediate setting.

Details of Evidence Request:

Patients	Women undergoing labour
Interventions	Birth stools
Comparisons	Other birthing positions
Outcomes	Perineal trauma

Search terms:

The following search terms were used to scour electronic databases and websites:

Table 1. Search terms used in the retrieval of articles from electronic databases and websites (both MeSH and text words were used).

Field of focus	Search term
Patient terms	None applied
Intervention terms	Birth\$ stool\$, birth\$ chair\$, obstetric chair\$, posture, birth\$ pos\$, hospital equipment & supplies, obstetrics, delivery
Comparison terms	None applied
Outcome terms	Labor complications, perineum, perineal tears, perineal lacerations, perineal trauma

\$ - represents a wildcard

Resources Searched

We searched the following databases and Internet websites:

- Cochrane Library CD-ROM, Issue 2 2001
- OVID CINAHL 1982-May 2001
- OVID Premedline June 11, 2001
- OVID Medline 1966-May Week 3, 2001
- OVID Current Contents 1993 Week 26 – 2001 Week 25
- OVID EBM Reviews-ACP Journal Club 1991-Jan/Feb 2001
- Bandolier
- Turning Research into Practice (TRIP) database

Refinements, Searching & Reporting Constraints:

Our electronic searching was completed on June 11, 2001. The following inclusion and exclusion criteria were applied:

Inclusion Criteria

- Randomised controlled trials or systematic reviews of randomised controlled trials comparing birth stools to other birthing positions in women undergoing labour.

Exclusion Criteria

- Study was in abstract form only (eg conference proceedings)
- Study was published in a language other than English
- Study presented data included in another published report, including randomised controlled trials assessed in systematic reviews
- Non-randomised comparative studies, case-control studies, case series or case reports.

RESULTS:

The search strategy identified a total of 80 studies. Fourteen were included for further assessment in full-text. One of the 14 studies was a recent systematic review that was eligible for critical appraisal. As systematic reviews are considered the highest level of evidence according to NHMRC guidelines (see Appendix), the remaining thirteen studies were excluded from critical appraisal. The search was expanded to retrieve randomised controlled trials not included in the systematic review or published subsequently; however none were found. We are reasonably confident this study represents the most important findings published to date.

Evidence Summaries

Evidence summaries in the form of spreadsheets are at the end of this report. Each spreadsheet contains the article citation, the study design with level of evidence available according to NHMRC guidelines (2000), patient description, scientific validity of the article, results, and pertinent remarks from the authors and Centre for Clinical Effectiveness reviewer.

Findings

Gupta & Nikodem (2001) reviewed the different positions during the second stage of labour, ie lateral position, lithotomy position, Trendelenburg's position, knee-elbow position, sitting (obstetric chair/stool), semi-recumbent, kneeling, squatting (unaided or using squatting bars) and squatting (aided with Birth cushion) as well as maternal, foetal and neonatal outcomes. The reviewers compared the incidence of perineal trauma in women using birth or squatting stool with women in the supine position. They reported that two studies found an increase in second degree perineal tears OR=3.18 (95% CI 1.68-6.06) in women using the birth or squatting stool and no statistical difference OR=1.54 (95% CI 0.26-9.00) in the incidence of third and fourth degree tears between women in the two groups.

Research Methodology

The systematic review was reported in a transparent, thorough and explicit way. The search strategy was described fully and attempts were made to uncover unpublished

literature and to contact authors for additional information when necessary. Criteria for including/excluding studies were stated. A list of included/excluded studies was included as well as the reasons for inclusion/exclusion. The validity of included trials was assessed and data extraction tables were included. Therefore, the opportunity for bias in the review appears to be minimal.

ARTICLES CRITICALLY APPRAISED FOR THIS REPORT

- Gupta JK and Nikodem VC (2001). Women's position during second stage of labour (Cochrane Review). In: The Cochrane Library, Issue 2, Oxford: Update Software.

OTHER REFERENCES

- National Health and Medical Research Council (2000). How to use the evidence: assessment and application of scientific evidence. National Health and Medical Council, Canberra: Commonwealth of Australia.

ARTICLES EXCLUDED FROM THIS REPORT

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- Dougherty CR and Jones AD (1988). Obstetric management and outcome related to maternal characteristics. American Journal of Obstetrics & Gynecology 158: 470-474.
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- Flynn P, Franiek J, Janssen P, Hannah WJ and Klein MC (1997). How can second-stage management prevent perineal trauma? Critical review. Canadian Family Physician 43: 73-84.
- Gardosi J, Hutson N and C BL (1989). Randomised, controlled trial of squatting in the second stage of labour. Lancet 2: 74-77.
- Golay J, Vedam S and Sorger L (1993). The squatting position for the second stage of labor: effects on labor and on maternal and fetal well-being. Birth 20: 73-78.
- Gupta JK and Nikodem VC (2001). The Cochrane Library, Oxford.
- Renfrew MJ, Hannah W, Albers L and Floyd E (1998). Practices that minimize trauma to the genital tract in childbirth: a systematic review of the literature. Birth 25: 143-160.
- Rosser J (2000). Cochrane made simple. Women's position in second stage. Practising Midwife 3: 10-11.
- Stewart P and Spiby H (1989). A randomized study of the sitting position for delivery using a newly designed obstetric chair. British Journal of Obstetrics & Gynaecology 96: 327-333.

- Waldenstrom U and Gottvall K (1991). A randomized trial of birthing stool or conventional semirecumbent position for second-stage labor. Birth 18: 5-10.

ABBREVIATIONS

CI	Confidence interval
n	Sample size
OR	Odds ratio

APPENDIX

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Levels of Evidence

As Defined By "How to use the evidence: assessment and application of scientific evidence" (National Health & Medical Research Council, Canberra, 2000):

Level I		Evidence obtained from a systematic review (or meta-analysis) of all relevant randomised controlled trials.
Level II		Evidence obtained from at least one randomised controlled trial.
Level III	-1	Evidence obtained from pseudorandomised controlled trials (alternate allocation or some other method).
	-2	Evidence obtained from comparative studies (including systematic reviews of such studies) with concurrent controls and allocation not randomised, cohort studies, case control studies or interrupted time series with a control group.
	-3	Evidence obtained from comparative studies with historical control, two or more single-arm studies or interrupted time series without a parallel control group.
Level IV		Evidence obtained from case series, either post-test or pretest/post-test.

<p>Evidence Summary Systematic Review</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>The use of birth stools during second stage labour and the risk of perineal trauma</p> </div>	<p style="text-align: center;">Study 1</p> <p style="text-align: center;">Gupta JK and Nikodem VC (2001). Women's position during second stage of labour (Cochrane Review). In: The Cochrane Library, Issue 2, Oxford: Update Software</p>
<p>STUDY DESIGN & NHMRC LEVELS OF EVIDENCE</p>	<p>Systematic review Level 1</p>
<p>DESCRIPTION: Patient (subjects), Interventions, Comparisons, Outcomes, Inclusion & Exclusion Criteria</p>	<p>Patients (Subjects): Pregnant women during the second stage of labour Interventions: upright positions during the second stage of labour Comparisons: supine or neutral positions during the second stage of labour Outcomes: Maternal outcomes: pain, use of analgesia/anesthesia, uterine efficiency (contraction intensity, frequency), blood pressure, duration of labour, mode of delivery, trauma to the birth canal that suturing, blood loss >500ml, long term perineal pain/discomfort, dyspareunia, urinary/faecal incontinence, maternal experience of and satisfaction with second stage labour. Foetal outcomes: abnormal foetal heart rate patterns needing intervention and persistent occipito-posterior position at birth Neonatal outcomes: neonatal condition, admission to neonatal intensive care uni and perinatal death Incl. and Excl. criteria: Types of studies included any randomised controlled trial that used random or quasi-random allocation and appropriate follow and that compares the positions listed in interventions.</p>
<p>VALIDITY: Methodology, rigour, selection, analysis</p>	<p>Focussed question: Yes Search strategy: Comprehensive, transparent and thorough. Authors of published and unpublished trials were contacted for additional information. Assessed validity: Trials were evaluated for methodological quality and appropriateness for inclusion without consideration of their results. Consistent results: Tests for statistical heterogeneity were performed and studies were found to be consistent. Appropriate analysis of results: Pooling of results was performed as studies were eligible for pooling in meta-analysis.</p>
<p>RESULTS: Generally favourable or unfavourable, specific outcomes of interest, estimate of experimental effect and precision if appropriate</p>	<p><i>Birth or squatting stool vs supine position</i> The review reported that two studies found an increase in second degree perineal tears OR=3.18 (95% CI 1.68-6.06). The review also reported no statistical difference in the incidence of third and fourth degree tears between women using the birth/squatting stool and those in the supine position.</p>
<p>AUTHORS COMMENTS: Limitations, implications for practice and research</p>	
<p>OUR COMMENTS: Opportunity for bias, weakness and strength</p>	<p>The review was reported in a transparent and explicit way, criteria for including/excluding studies were stated and lists of included/excluded studies were included as well as the reasons for inclusion/exclusion. The validity of included trials was assessed. The opportunity for bias in the review appears to be minimal.</p>

EXPLANATION OF TERMINOLOGY USED IN SPREADSHEET

Level of evidence: A hierarchy of study evidence that indicates the degree to which bias has been eliminated in the study design.

Focussed question: The review should address a clearly focused issue, in terms of the population studies, the intervention given and the outcomes considered.

Search strategy: A description of methods used to identify relevant studies from various computer databases and other sources.

Systematic review: The process of systematically locating, appraising and synthesising evidence from scientific studies in order to obtain a reliable overview.

Validity: The degree to which reviewers assessed the quality of the studies they included

Of measurement: an expression of the degree to which a measurement measures what it purports to measure; it includes construct and content validity.

Of study: the degree to which the inferences drawn from the study are warranted when account is taken of the study methods, the representativeness of the study sample, and the nature of the population from which it is drawn (internal and external validity, applicability, generalisability).

Consistent results: The similarity of results from the included studies. Often called heterogeneity which refers to the differences in treatment effect between studies contributing to a meta analysis (systematic review). If there is significant heterogeneity, this suggests that the trials are not estimating a single common treatment effect.

Appropriate analysis of results: When study results are pooled in a meta-analysis it is important that the results are combined in appropriate manner. The studies should be sufficiently similar in study design, the results of included studies should be clearly displayed and reasons for any variation in results should be discussed.

Potential for bias: Bias is a systematic deviation of a measurement from the 'true' value leading to either an over or underestimation of the treatment effect. Bias can originate from many different sources, such as allocation of patients, measurement, interpretation, publication and review of data.

Search Strategy:

- 1 (birth\$ adj stool\$).mp.
- 2 (birth\$ adj chair\$).mp.
- 3 obstetric chair\$.mp.
- 4 exp POSTURE/
- 5 (birth\$ adj pos\$).mp.
- 6 exp "Equipment and Supplies, Hospital"/
- 7 exp Obstetrics/mt, is [Methods, Instrumentation]
- 8 exp Labor Complications/
- 9 exp Perineum/in [Injuries]
- 10 (perineal adj tears).mp. [mp=ti, ab, rw, sh]
- 11 (perineal adj lacerations).mp. [mp=ti, ab, rw, sh]
- 12 (perineal adj trauma).mp. [mp=ti, ab, rw, sh]
- 13 delivery/mt
- 14 delivery/ae
- 15 random\$.mp.
- 16 or/1-7,13
- 17 or/8-12,14
- 18 system\$.mp.
- 19 16 and 17
- 20 15 and 19
- 21 18 and 19
- 22 20 or 21