Impact of first-stage ambulation on mode of delivery among women with epidural analgesia

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CRD summary
This well-conducted and clearly reported review assessed the impact of ambulation during first-stage labour on mode of delivery for women with epidural analgesia. The authors concluded that ambulation in the first stage of labour provided no clear improvements or obvious problems. The authors’ conclusions are likely to be reliable.

Authors' objectives
To compare the effects of ambulation or upright position versus recumbent position in the first stage of labour on mode of delivery and other maternal and infant outcomes in women with epidural analgesia.

Searching
MEDLINE, EMBASE, CINAHL and the Cochrane Controlled Trials Register were searched to March 2004; the search terms were reported. Reference lists were screened. Only studies published as full-text articles were included.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) that reported adequate allocation concealment, outcome data for at least 80% of the participants and an intention-to-treat (ITT) analysis were eligible for inclusion in the review.

Specific interventions included in the review
Studies that compared ambulation or upright position versus recumbent position in the first stage of labour were eligible for inclusion. In the review, the upright position included walking, standing or sitting while the recumbent position included supine or lateral positions less than 45 degrees from the horizontal. The included studies used different epidural regimens (intermittent bolus, continuous infusion or combined spinal epidural) and ambulatory interventions (details were reported).

Participants included in the review
Studies of women with effective first-stage epidural analgesia in an uncomplicated pregnancy were eligible for inclusion. Studies that included women with complicated or high-risk pregnancies were excluded. In all of the studies, participants had singleton, cephalic presentation at term. Some studies only included nulliparous women, some only included women with spontaneous onset of labour, and others included women who had been induced.

Outcomes assessed in the review
Studies that assessed mode of delivery were eligible for inclusion. The primary review outcome was instrumental delivery. The secondary outcomes included Caesarean section (CS), spontaneous vaginal delivery, oxytocin augmentation, length of first stage, length of second stage, perineal laceration (including episiotomy), post-partum haemorrhage, inadequate pain relief, satisfaction with labour care, longer term outcomes including incontinence, and specified adverse maternal and infant outcomes.

How were decisions on the relevance of primary studies made?
Two reviewers independently selected studies and resolved any disagreements through discussion.

Assessment of study quality
Two reviewers independently assessed allocation concealment, losses to follow-up and ITT analysis. Any disagreements were resolved through discussion.
Data extraction
Two reviewers independently extracted the data using a standardised form. Any disagreements were resolved through discussion. For each study, relative risks (RRs) and 95% confidence intervals (CIs) were calculated for dichotomous outcomes on an ITT basis, while weighted mean difference (WMDs) with 95% CIs were calculated for continuous outcomes.

Methods of synthesis
How were the studies combined?
The studies were combined in a fixed-effect meta-analysis (Mantel-Haenszel) where there was no evidence of statistical heterogeneity; a random-effects model (DerSimonian and Laird) was used where there was evidence of heterogeneity (p<0.1). The pooled RR and 95% CI were calculated for dichotomous outcomes and the pooled WMD and 95% CI calculated for continuous outcomes.

How were differences between studies investigated?
Statistical heterogeneity was assessed using Cochran's Q test and the I-squared statistic. Pre-specified subgroup analyses were used to examine the influence of parity, type of regional analgesia and high-quality study (adequate allocation concealment (although the authors stated that this was an inclusion criterion), <20% lost to follow-up and ITT analysis).

Results of the review
Five RCTs (n=1,161) were included in the review.

There were no statistically significant differences between ambulation and recumbent position for instrumental delivery (RR 1.16, 95% CI: 0.93, 1.44), CS (RR 0.91, 95% CI: 0.70, 1.19), or spontaneous vaginal delivery (RR 0.97, 95% CI: 0.89, 1.06). No significant heterogeneity was found for any of these meta-analyses. The results were similar when the data were analysed according to parity, type of regional analgesia and study quality.

There were no statistically significant differences between ambulation and recumbent position in the use of oxytocin augmentation (5 studies), use of additional analgesia (2 studies), or satisfaction with analgesia (2 studies).

The total duration of labour was significantly greater in ambulatory compared with recumbent women (WMD -48.5, 95% CI: -77.0, -20.1; based on 2 studies). The duration of first- and second-stage labour was non significantly increased in ambulatory women (2 studies).

The few studies that reported data on adverse effects reported small numbers of such events. Three studies reported on motor block: two reported no events and in the third motor block was transient. Two studies reported no falls in ambulatory women.

There was a non significant decrease in foetal heart rate abnormalities among ambulatory women (2 studies using intermittent monitoring unless indicated otherwise). There were no significant differences between ambulatory and recumbent women for low Apgar scores at 1 minute (2 studies) or 5 minutes (4 studies).

Authors' conclusions
For women with epidural analgesia, ambulation in the first stage of labour provided no clear improvements but presented no obvious problems.

CRD commentary
The review addressed a clear question that was defined in terms of the participants, intervention, outcomes and study design. Several relevant sources were searched but only published studies were eligible, thereby raising the possibility of publication bias. It was unclear whether attempts were made to minimise language bias. Methods were used to minimise reviewer errors and bias in the study selection, validity assessment and data extraction processes. Only studies meeting pre-specified quality criteria were included.
Adequate information about the included studies was provided. The studies were appropriately combined in a meta-analysis, statistical heterogeneity was assessed, and pre-specified subgroup analyses were used to examine potential sources of clinical heterogeneity, although the results of these analyses were not fully reported. Overall, this was a well-conducted and clearly reported review and the authors’ conclusions are likely to be reliable.

Implications of the review for practice and research
Practice: The authors stated that, where ambulation is considered, criteria for safe ambulation need to be developed and adhered to. They warned that meeting safety criteria may require time from the delivery ward staff and possibly the acquisition of equipment.

Research: The authors did not state any implications for further research.

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