Transcutaneous electrical nerve stimulation does not relieve labor pain: updated systematic review

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**Authors' objectives**
To review the effectiveness of tran cutaneous electrical nerve stimulation (TENS) for labour pain.

**Searching**
The authors searched the electronic databases of MEDLINE (1966-1997), EMBASE (1980-1997), CINAHL (1982-1997), the Cochrane Library (issue 2, 1997) and the Oxford Pain Relief Database (1950-1995) using the keywords 'TENS', 'transcutaneous electrical nerve stimulation', 'labour', and 'childbirth' for full journal publications. Combinations of these keywords were used and the search had no language restrictions. Additional reports were identified from the reference lists of retrieved reports, retrieved articles, and textbooks. Manufacturers of TENS equipment were not contacted. Abstracts and review articles were not considered and unpublished reports were not sought.

**Study selection**
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) of TENS for the control of labour pain with at least 10 participants were included. Reports were also excluded when the method of treatment allocation was unconcealed.

Specific interventions included in the review
The intervention group received cranial, dorsal, and suprapubic transcutaneous electrical nerve stimulation (TENS) during labour. The control group received sham TENS (no current) (7 studies) or no TENS with conventional analgesic (3 studies). One study used both sham TENS and a no TENS control. Additional conventional analgesics were used in both the intervention and control groups when requested by participants.

Participants included in the review
Women requiring analgesia during labour. Reports of TENS for other pain conditions were excluded from the review.

Outcomes assessed in the review
Primary outcomes were defined as any prospective assessment of pain intensity or pain relief made at the time of labour and when TENS was in use as measured by various pain assessment scales, questionnaires and visual assessments by observers. Secondary outcomes were defined as any retrospective assessment of pain or pain relief or any other measure, or judgement made after delivery, or after TENS had been discontinued. Secondary outcome measures included the use of any additional pain interventions, the timing of such interventions and any retrospective global evaluation of the study treatments.

How were decisions on the relevance of primary studies made?
Each report was read by each of the four authors independently and was then scored for inclusion.

**Assessment of study quality**
Each report which met the inclusion criteria was scored for quality using a three-item scale (based on Jadad et al. 1996, See Other Publications of Related Interest) which rated randomisation, blinding, and withdrawals and drop-outs. An included study could have a maximum score of 5 and a minimum of 1. Each report was read by each of the four authors independently and was then scored for quality.

**Data extraction**
The authors do not state who, or how many of the reviewers, performed the data extraction. Data were extracted for the categories of women in labour, stages of labour, cervical dilation, number of women, study design, and timing and duration of treatment, information on other analgesic interventions and preferences for future childbirth.

**Methods of synthesis**

**How were the studies combined?**

A pooled relative risk (RR) was calculated with a 95% confidence interval (CI) using a random-effects model for analgesic data which were not homogeneous (p < 0.1).

The number-needed-to-treat (NNT) was calculated with 95% CI on any comparison which showed significance with relative risk.

**How were differences between studies investigated?**

Tests for homogeneity are not specifically reported, however the authors do discuss differences between studies in the text of the results section.

**Results of the review**

Ten RCTs were included with 877 participants (436 participants received active TENS in the intervention group and 441 participants acted as controls).

There were no statistically significant differences reported for prospective primary pain outcomes in any of the 10 studies. There was no consistency in the method of measuring pain intensity or relief. No study recorded any difference in pain intensity or relief scores between TENS and control during labour. The use of analgesic interventions was not different with active or sham TENS in a subgroup of 5 studies (RR 0.88; 95% CI: 0.72, 1.07).

There were no reports of adverse events in any of the ten studies.

**Cost information**

The authors state that the cost to the National Health Service of TENS used in labour includes the direct cost of initial purchase (ranging from £35 to £150 per device), the indirect costs of staff (time spent training patients to use TENS and the time spent applying the device and monitoring the effects), maintenance, leads, electrodes, tape and conductive gel, and the opportunity cost.

**Authors’ conclusions**

The findings of this review suggest that TENS has no significant effect on pain in labour.

**CRD commentary**

This is a good systematic review. The authors have clearly stated their research question and inclusion and exclusion criteria. The literature search is good, although the search terms are listed with American spellings (e.g. 'labor' versus 'labour').[A:The authors have stated in additional communications that all spellings were used, but that the journal edited these out before publication.] Data extraction is reported in tables and summarised in the text. The quality of the included studies was assessed and the authors have reported on how the articles were selected. The authors have not however reported on how many of the reviewers were involved in the data extraction. [A:The authors state in further information that all of the reviewers read the papers and assessed the papers for quality. Further, 2 of the 4 reviewers were directly involved in the data extraction, which was cross-checked by at least one other reviewer.] The studies were combined using a random-effects model because of the differences between studies but there results of the tests for homogeneity are not reported in the review even though the heterogeneity of studies is discussed in the text. The authors acknowledge several drawbacks about the quality and design of the individual studies and their conclusions appear to follow from the results.
Implications of the review for practice and research
The authors state that in practice, women should be offered more effective interventions for the relief of pain in labour. \[A\] The authors state that no further money should be spent on researching TENS in labour.

Bibliographic details

Other publications of related interest

Indexing Status
Subject indexing assigned by CRD

MeSH
Analgesia, Obstetrical; Female; Labor, Obstetric; Transcutaneous Electric Nerve Stimulation

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Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.