Vibroacoustic stimulation for fetal assessment in labour in the presence of a nonreassuring fetal heart rate trace

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RHL summary

Findings of the review: Non-reassuring fetal heart rate patterns during labour have a high false-positive rate and are an important cause of avoidable interventions such as caesarean section. Confirmatory testing such as fetal scalp blood sampling, fetal ECG analysis and fetal pulse oxymetry are often not available. Diagnostic accuracy reviews of fetal vibroacoustic stimulation (VAS) have shown good accuracy rates. Authors of this review found no randomized trials to determine whether diagnostic accuracy translates to improved clinical outcomes.

Implementation: Simplified methods of VAS have been suggested, such as flicking the ring opener of an empty soft drink can held with the base against the mother’s abdomen, and using the mother’s perception of fetal movement or an auscultated fetal heart rate acceleration as the response. Research on the effectiveness of such methods in low-resource settings is justified.

Cochrane review

Citation: East CE, Smyth RMD, Leader LR, Henshall NE, Colditz PB, Lau R, Tan KH. Vibroacoustic stimulation for fetal assessment in labour in the presence of a nonreassuring fetal heart rate trace. Cochrane Database of Systematic Reviews 2013, Issue 1. Art. No.: CD004664. DOI: 10.1002/14651858.CD004664.pub3

Abstract

Fetal vibroacoustic stimulation (VAS) is a simple, non-invasive technique where a device is placed on the maternal abdomen over the region of the fetal head and sound is emitted at a predetermined level for several seconds. It is hypothesised that the resultant startle reflex in the fetus and subsequent fetal heart rate (FHR) acceleration or transient tachycardia following VAS provide reassurance of fetal well-being. This technique has been proposed as a tool to assess fetal well-being in the presence of a nonreassuring cardiotocographic (CTG) trace during the first and second stages of labour.

To evaluate the clinical effectiveness and safety of VAS in the assessment of fetal well-being during labour, compared with mock or no stimulation for women with a singleton pregnancy exhibiting a nonreassuring FHR pattern.
We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (6 September 2012) and reference lists of all retrieved articles. We sought unpublished trials and abstracts submitted to major international congresses and contacted expert informants.

All published and unpublished randomised trials that compared maternal and fetal/neonatal/infant outcomes when VAS was used to evaluate fetal status in the presence of a nonreassuring CTG trace during labour, compared with mock or no stimulation.

Two review authors independently sought to assess for inclusion all the potential studies we identified as a result of the search strategy. We planned to resolve any disagreement through discussion or, if required, to consult a third person. Where there was uncertainty about a particular study, we attempted to contact study authors for additional information. However, these attempts were unsuccessful.

The search strategies yielded six studies for consideration of inclusion. However, none of these studies fulfilled the requirements for inclusion in this review.

There are currently no randomised controlled trials that address the safety and efficacy of VAS used to assess fetal well-being in labour in the presence of a nonreassuring CTG trace. Although VAS has been proposed as a simple, non-invasive tool for assessment of fetal well-being, there is insufficient evidence from randomised trials on which to base recommendations for use of VAS in the evaluation of fetal well-being in labour in the presence of a nonreassuring CTG trace.