Systematic review of the risk of uterine rupture with the use of amnioinfusion after previous cesarean delivery

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CRD summary
This review assessed the risk of uterine rupture with amnioinfusion in women with a previous Caesarean section. The author concluded that there was insufficient evidence to draw definitive conclusions and that further studies are required. The author's conclusions appear to reflect the limitations of the evidence, but poor reporting of the review methods hinders an assessment of the reliability of the results.

Authors' objectives
To assess the risk of uterine rupture following amniotransfusion in women with a previous Caesarean section.

Searching
MEDLINE (inception to November 2001) and the Cochrane Library (Cochrane Database of Systematic Reviews, Cochrane Controlled Trials Register and DARE; inception to Issue 3, 2001) were searched for studies published in any language; the keywords were reported. The reference lists of included studies were screened.

Study selection
Study designs of evaluations included in the review
Reviews were excluded but studies of any other design that presented original data were included.

Specific interventions included in the review
Studies of transcervical amnioinfusion were eligible for inclusion. The included studies performed amnioinfusion using the gravity method or using an electronic infusion pump. Studies infused normal saline as a bolus (250 to 600 mL); some studies followed this up with further infusions of fluid.

Participants included in the review
Studies that included women who had undergone at least one previous Caesarean section were eligible for inclusion. The included studies were in women undergoing a trial of labour after Caesarean section (TOLAC). Studies included women with oligohydramnios and/or variable decelerations during a trial of labour or meconium. One study included two control groups: women with no previous Caesarean section undergoing amnioinfusion and women undergoing TOLAC but not amnioinfusion.

Outcomes assessed in the review
The review assessed uterine rupture and other complications.

How were decisions on the relevance of primary studies made?
The author did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
The author did not state that they assessed validity.

Data extraction
The author did not state how the data were extracted for the review, or how many reviewers performed the data extraction.
Methods of synthesis
How were the studies combined?
The studies were combined in a narrative.

How were differences between studies investigated?
Differences between the studies were apparent from the text.

Results of the review
Four studies (n=1,456) were included: one retrospective cohort study with a control group (1,436 women undergoing TOLAC), one case series (n=18) and two case reports (n=2).

The retrospective cohort study (1,436 women undergoing TOLAC, including 122 women who had undergone amnioinfusion) found no increase in uterine rupture following amnioinfusion for women with previous Caesarean section (1 out of 122; 0.8%) compared with women with no previous Caesarean section versus (0%) or with the overall rate of uterine rupture at the same unit (1.1% overall). The study found that amnionitis was significantly increased in women undergoing amnioinfusion with previous Caesarean section compared with women with no previous Caesarean section (relative risk 1.75, 95% confidence interval: 1.19, 2.58).

The case series (n=18) found that 3 of the 18 women had a repeat Caesarean section and 15 women had a vaginal delivery, giving a successful trial of labour rate of 83%. No cases of uterine rupture or dehiscence were detected.

The two case reports each described one woman who required repeat Caesarean section following amnioinfusion for oligohydramnios. Both women were found to have uterine rupture or dehiscence.

Authors' conclusions
There was insufficient evidence to draw definitive conclusions about the safety of amnioinfusion in women with previous Caesarean section. Further studies are required.

CRD commentary
The review question was clear in terms of the intervention, participants and outcomes. The broad inclusion criteria for study design were appropriate given the paucity of studies. Several relevant databases were searched and attempts were made to minimise language and publication bias. The methods used to select studies and extract the data were not described, so it is not known whether any efforts were made to reduce errors and bias. The presence of a single author on the paper suggested that the review procedures may not have been checked for accuracy.

Given the differences among the studies, a narrative synthesis with the focus on the largest study was appropriate. Although validity was not formally assessed, some of the methodological limitations of the identified studies were discussed. The author's conclusions appear to reflect the limitations of the evidence from the identified observational studies. However, the lack of reporting of the review methods makes it difficult to assess the reliability of the results.

Implications of the review for practice and research
Practice: The author stated that there was insufficient evidence to recommend for or against amnioinfusion in women with previous Caesarean section.

Research: The author stated that prospective, randomised controlled trials or large, controlled, retrospective cohort studies are required to assess the safety of amnioinfusion in women with previous Caesarean section. He stated that future studies should assess the following elements of care present in the large retrospective cohort study that found no increase in uterine rupture: use of small bolus volumes (250 to 500 mL), confirmation of good backflow, and the use of gravity rather than an infusion pump.
Bibliographic details
Hicks P. Systematic review of the risk of uterine rupture with the use of amnioinfusion after previous cesarean delivery. Southern Medical Journal 2005; 98(4): 458-461

PubMedID
15898523

DOI
10.1097/01.SMJ.0000129791.09557.27

Indexing Status
Subject indexing assigned by NLM

MeSH
Amnion; Cesarean Section; Female; Humans; Infusions, Intravenous /adverse effects; Oligohydramnios /therapy; Pregnancy; Uterine Rupture /etiology

AccessionNumber
12005009917

Date bibliographic record published
31/10/2006

Date abstract record published
31/10/2006

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.