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[Intervention Review]

Operative versus conservative management for 'fetal distress' in labour

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ABSTRACT

Background

Suspected fetal distress usually results in expedited delivery of a baby (often operatively). The potential harm to a mother and baby from operative delivery may not always be justified especially when fetal distress may be misdiagnosed. Even with a correct diagnosis it is not clear whether an operative or conservative approach is better.

Objectives

The objective of this review was to assess the effects of operative management for fetal distress on maternal and perinatal morbidity.

Search methods

We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (15 February 2012).

Selection criteria

Randomised trials of operative (caesarean section or expedited vaginal delivery) versus conservative management of suspected fetal distress.

Data collection and analysis

Trial quality assessment and data extraction were done by both review authors.

Main results

One study of 350 women was included. This trial was carried out in 1959. There was no difference in perinatal mortality (risk ratio 1.18, 95% confidence interval 0.56 to 2.48).

Authors' conclusions

There have been no contemporary trials of operative versus conservative management of suspected fetal distress. In settings without modern obstetric facilities, a policy of operative delivery in the event of meconium-stained liquor or fetal heart rate changes has not been shown to reduce perinatal mortality.

PLAIN LANGUAGE SUMMARY

Operative versus conservative management for 'fetal distress' in labour

Too little evidence to show whether relieving factors causing a baby's distress during labour is better than birth with caesarean, forceps or ventouse intervention.

Babies showing signs of distress during labour (unusual heart rates or the passing of a bowel motion) are at greater risk of complications following their birth. Operative management, such as surgery to remove the baby through the woman's abdomen (caesarean delivery) or the use of surgical instruments for vaginal delivery may be offered. The review of one study (350 women) found too little evidence to show whether operative management is more beneficial than treating factors which may be causing the baby's distress, such as too little fluid surrounding the baby, the woman's physical position or pain relief (conservative management). Further research is needed.

BACKGROUND

The management of 'fetal distress' during labour by expedited delivery of the baby, usually operatively, has become entrenched in obstetric practice without evidence from randomised trials of its effectiveness. Many would regard such evidence as unnecessary, because the need for expedited delivery of fetuses in 'distress' is seen as a self-evident imperative.

However, the value of a policy of operative delivery for 'fetal distress' can be questioned. Firstly, methods of diagnosing 'fetal distress' are far from precise. It is possible that the harm done by unnecessary interventions in falsely diagnosed cases may outweigh any benefits of the policy. Even if 'fetal distress' is correctly diagnosed, it is possible that operative delivery of a depressed infant may be more harmful than conservative management to allow time for recovery to take place in utero, particularly if aggravating factors which may have precipitated fetal compromise can be corrected. Such factors could include excessive uterine contractions, maternal supine position, oligohydramnios and adverse effects on the mother of interventions such as sedation or regional analgesia.

There is thus good reason to test the effectiveness of a policy of operative delivery for 'fetal distress'.

For further information see [Grant 1989](#), and Cochrane reviews: 'Continuous electronic fetal monitoring' ([Alfirevic 2006](#)); 'Intrapartum ECG plus heart rate recording' ([Neilson 2006](#)); 'Tocolysis for fetal distress' ([Kulier 1998](#)) and 'Amnioinfusion for cord compression' ([Hofmeyr 1998](#)).

OBJECTIVES

To determine, from the best available evidence, the effects on maternal and perinatal morbidity and mortality of operative management for suspected fetal distress.

METHODS

Criteria for considering studies for this review

Types of studies

Clinical trials comparing operative versus conservative policies for the management of suspected fetal distress; random allocation to treatment and control groups, with adequate allocation concealment; violations of allocated management and exclusions after allocation not sufficient to materially affect outcomes.

Types of participants

Pregnant women considered to have evidence of fetal distress.

Types of interventions

A policy of operative management, whether by caesarean section or expedited vaginal delivery, versus a policy of conservative management.

Types of outcome measures

Measures of maternal and perinatal morbidity and mortality. Outcomes included if clinically meaningful; reasonable measures taken to minimise observer bias; missing data insufficient to materially influence conclusions; data available for analysis

according to original allocation, irrespective of protocol violations; data available in format suitable for analysis.

Search methods for identification of studies

Electronic searches

We searched the Cochrane Pregnancy and Childbirth Group's Trials Register by contacting the Trials Search Co-ordinator (15 February 2012).

The Cochrane Pregnancy and Childbirth Group's Trials Register is maintained by the Trials Search Co-ordinator and contains trials identified from:

1. quarterly searches of the Cochrane Central Register of Controlled Trials (CENTRAL);
2. weekly searches of MEDLINE;
3. weekly searches of EMBASE;
4. handsearches of 30 journals and the proceedings of major conferences;
5. weekly current awareness alerts for a further 44 journals plus monthly BioMed Central email alerts.

Details of the search strategies for CENTRAL, MEDLINE and EMBASE, the list of handsearched journals and conference proceedings, and the list of journals reviewed via the current awareness service can be found in the 'Specialized Register' section within the editorial information about the [Cochrane Pregnancy and Childbirth Group](#).

Trials identified through the searching activities described above are each assigned to a review topic (or topics). The Trials Search Co-ordinator searches the register for each review using the topic list rather than keywords.

We did not apply any language restrictions.

Data collection and analysis

The trial under consideration was evaluated for methodological quality and appropriateness for inclusion according to the prestated selection criteria, without consideration of the results. Individual outcome data were included in the analysis if they met the prestated criteria in [Types of outcome measures](#). Included trial data were processed as described in [Clarke 1999](#).

Data were extracted from the sources and entered onto the Review Manager (RevMan) computer software (Update Software, Oxford, UK), checked for accuracy, and analysed as above using the RevMan software. For dichotomous data, risk ratios and 95% confidence intervals were calculated.

RESULTS

Description of studies

See table of [Characteristics of included studies](#).

Risk of bias in included studies

See table of [Characteristics of included studies](#), particularly the 'Methods' and 'Notes' sections.

In the study of [Walker 1959](#), allocation of the participants 'was determined by drawing a sealed envelope from a drum'. No

data are available to assess the comparability of the two groups generated. No exclusions after allocation were recorded, and the main outcome assessed (perinatal mortality) is not subject to observer bias.

Effects of interventions

The actual operative delivery rates were strikingly different: operative policy 61% versus conservative policy 20% overall; 28% versus 7% for caesarean delivery; and 33% versus 13% for operative vaginal delivery. Operative deliveries in the conservatively managed group were for reasons other than fetal distress alone, such as cephalopelvic disproportion, intrauterine infection and pre-eclampsia. These problems, which carried a much worse prognosis, were therefore acted on in both the groups and the differences in management were largely a reflection of intervention for 'uncomplicated' fetal distress. Thirty-nine per cent of the women allocated to operative delivery had spontaneous vaginal deliveries because 'delivery was imminent' at trial entry.

There was no difference in perinatal mortality between groups (operative 14/174 versus conservative 12/176; risk ratio 1.18, 95% confidence interval 0.56 to 2.48).

DISCUSSION

Unfortunately, no details are available for maternal or neonatal morbidity. Nor are details given about the causes of the perinatal deaths; it is therefore impossible to assess whether the similarity in the overall death rates reflected fewer deaths ascribed to 'asphyxia' balanced by more deaths ascribed to trauma in the intervention group. Such a reciprocity is plausible, given that 24% of the

deliveries in the intervention group were achieved with the help of symphysiotomy or mid-cavity forceps.

While the conclusions of the trial by [Walker 1959](#) are not directly applicable to contemporary obstetric practice, they give cause to question interventionist policies for the management of suspected fetal distress which have become accepted practice without being subjected to randomized evaluation.

AUTHORS' CONCLUSIONS

Implications for practice

The changes in obstetric practice and methods of fetal evaluation since the trial of [Walker 1959](#) make it difficult to relate the results to contemporary obstetric practice. For those working in situations without modern obstetric facilities, it is useful to note that in this situation the policy of operative delivery in the event of meconium-stained liquor or fetal heart rate changes causes a considerable increase in operative deliveries, and has not been shown to reduce perinatal mortality.

Implications for research

Considerable scope exists for comparison of operative and conservative approaches within the 'grey areas' of the diagnosis of fetal distress by contemporary methods.

ACKNOWLEDGEMENTS

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REFERENCES

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Walker 1959 {published data only}

Walker N. A case for conservatism in management of foetal distress. *BMJ* 1959;**2**:1221-6.

Additional references

Alfirevic 2006

Alfirevic Z, Devane D, Gyte GML. Continuous cardiotocography (CTG) as a form of electronic fetal monitoring (EFM) for fetal assessment during labour. *Cochrane Database of Systematic Reviews* 2006, Issue 3. [DOI: [10.1002/14651858.CD006066](https://doi.org/10.1002/14651858.CD006066)]

Clarke 1999

Clarke M, Oxman AD, editors. *Cochrane Reviewers' Handbook* 4.0 [updated July 1999]. In: Review Manager (RevMan) [Computer program]. Version 4.0. Oxford, England: The Cochrane Collaboration, 1999.

Grant 1989

Grant AM. Monitoring the fetus during labour. In: Enkin MW, Keirse MJNC, Chalmers I editor(s). *Effective care in pregnancy and childbirth*. Oxford: Oxford University Press, 1989:846-82.

Hofmeyr 1998

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Kulier R, Hofmeyr GJ. Tocolytics for suspected intrapartum fetal distress. *Cochrane Database of Systematic Reviews* 1998, Issue 2. [DOI: [10.1002/14651858.CD000035](https://doi.org/10.1002/14651858.CD000035)]

Neilson 2006

Neilson JP. Fetal electrocardiogram (ECG) for fetal monitoring during labour. *Cochrane Database of Systematic Reviews* 2006, Issue 3. [DOI: [10.1002/14651858.CD000116.pub2](https://doi.org/10.1002/14651858.CD000116.pub2)]

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Hofmeyr GJ. Operative vs conservative care for 'fetal distress' in labour. [revised 20 April 1993]. In: Enkin MW, Keirse MJNC, Renfrew MJ, Neilson JP, Crowther C (eds.) *Pregnancy and Childbirth Module*. In: The Cochrane Pregnancy and Childbirth Database [database on disk and CDROM]. The Cochrane Collaboration; Issue 2, Oxford: Update Software; 1995.

CHARACTERISTICS OF STUDIES

Characteristics of included studies [ordered by study ID]

Walker 1959

Methods	Allocation of the participants 'was determined by drawing a sealed envelope from a drum'.
Participants	Women considered to have evidence of fetal distress (meconium-stained liquor; fetal heart rate below 110/minute, above 160/minute or irregular). Exclusion criteria: breech presentation; low birthweight (< 2500 grams); cord prolapse.
Interventions	Policy of operative delivery (n = 174) versus policy of non-intervention for 'fetal distress' without other obstetric complications (n = 176).
Outcomes	Perinatal mortality.
Notes	Durban, South Africa. 1950s. No data are available to assess the comparability of the 2 groups. No exclusions after allocation were recorded, and the outcome assessed (perinatal mortality) is not subject to observer bias.

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment (selection bias)	High risk	Inadequate

DATA AND ANALYSES

Comparison 1. Operative versus conservative care for `fetal distress' in labour

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Caesarean section	1	350	Risk Ratio (M-H, Fixed, 95% CI)	4.05 [2.23, 7.35]
2 Symphysiotomy	1	350	Risk Ratio (M-H, Fixed, 95% CI)	1.66 [0.88, 3.12]
3 Forceps delivery	1	350	Risk Ratio (M-H, Fixed, 95% CI)	3.93 [1.95, 7.94]
4 Perinatal mortality	1	350	Risk Ratio (M-H, Fixed, 95% CI)	1.18 [0.56, 2.48]

Analysis 1.1. Comparison 1 Operative versus conservative care for `fetal distress' in labour, Outcome 1 Caesarean section.

Analysis 1.2. Comparison 1 Operative versus conservative care for `fetal distress' in labour, Outcome 2 Symphysiotomy.

Analysis 1.3. Comparison 1 Operative versus conservative care for 'fetal distress' in labour, Outcome 3 Forceps delivery.

Analysis 1.4. Comparison 1 Operative versus conservative care for 'fetal distress' in labour, Outcome 4 Perinatal mortality.

WHAT'S NEW

Date	Event	Description
15 February 2012	New search has been performed	Search updated. No new trials identified.
15 February 2012	New citation required but conclusions have not changed	Review updated.

HISTORY

Protocol first published: Issue 2, 1998
Review first published: Issue 2, 1998

Date	Event	Description
2 July 2010	Amended	Contact details edited.
24 June 2009	New search has been performed	Search updated. No new trials identified.
20 September 2008	Amended	Converted to new review format.

Date	Event	Description
6 March 2006	New search has been performed	Search updated. No new trials identified.

CONTRIBUTIONS OF AUTHORS

GJ Hofmeyr prepared the original version, and is responsible for maintaining the review. R Kulier quality-checked and revised the review.

DECLARATIONS OF INTEREST

None known.

SOURCES OF SUPPORT

Internal sources

- University of the Witwatersrand, South Africa.
- Department of Obstetrics and Gynaecology, Geneva University Hospital, Switzerland.

External sources

- South African Medical Research Council, South Africa.
- Department for International Development, UK.
- Shell International Petroleum Company Limited, UK.

INDEX TERMS

Medical Subject Headings (MeSH)

*Labor, Obstetric; Cesarean Section; Delivery, Obstetric; Fetal Distress [*therapy]; Perinatal Mortality; Randomized Controlled Trials as Topic

MeSH check words

Female; Humans; Pregnancy