Uterine massage for preventing postpartum haemorrhage (Review)

Hofmeyr GJ, Abdel-Aleem H, Abdel-Aleem MA

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TABLE OF CONTENTS

[Intervention Review]

Uterine massage for preventing postpartum haemorrhage

G Justus Hofmeyr[1], Hany Abdel-Aleem[2], Mahmoud A Abdel-Aleem[3]

[1]Department of Obstetrics and Gynaecology, East London Hospital Complex, University of the Witwatersrand, University of Fort Hare, Eastern Cape Department of Health, East London, South Africa. [2]Department of Obstetrics and Gynecology, Faculty of Medicine, Assiut University Hospital, Assiut, Egypt. [3]Department of Obstetrics and Gynecology, Assiut University Hospital, Assiut, Egypt

Contact address: G Justus Hofmeyr, Department of Obstetrics and Gynaecology, East London Hospital Complex, University of the Witwatersrand, University of Fort Hare, Eastern Cape Department of Health, Frere and Cecilia Makiwane Hospitals, Private Bag X 9047, East London, Eastern Cape, 5200, South Africa. gjh@global.co.za.

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ABSTRACT

Background

Postpartum haemorrhage (PPH) (bleeding from the genital tract after childbirth) is a major cause of maternal mortality and disability, particularly in under-resourced areas. In these settings, poor nutrition, malaria and anaemia may aggravate the effects of PPH. In addition to the standard known strategies to prevent and treat PPH, there is a need for simple, non-expensive techniques which can be applied in low-resourced settings to prevent or treat PPH.

Objectives

To determine the effectiveness of uterine massage after birth and before or after delivery of the placenta, or both, to reduce postpartum blood loss and associated morbidity and mortality.

Search strategy

We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (March 2008), the Cochrane Central Register of Controlled Trials (*The Cochrane Library* 2007, Issue 2) and PubMed (1966 to June 2007).

Selection criteria

All published, unpublished and ongoing randomised controlled trials comparing uterine massage alone or in addition to uterotonics before or after delivery of the placenta, or both, to non-massage.

Data collection and analysis

Both authors extracted the data independently using the agreed form.

Main results

One randomised controlled trial in which 200 women were randomised to receive uterine massage or no massage after active management of the third stage of labour. The numbers of women with blood loss more than 500 ml was small, with wide confidence intervals and no statistically significant difference (risk ratio (RR) 0.52, 95% confidence interval (CI) 0.16 to 1.67). There were no cases of retained placenta in either group. The mean blood loss was less in the uterine massage group at 30 minutes (mean difference (MD) -41.60, 95% CI -75.16 to -8.04) and 60 minutes after enrolment (MD -77.40, 95% CI -118.71 to -36.09 ml) . The need for additional uterotonics

was reduced in the uterine massage group (RR 0.20, 95% CI 0.08 to 0.50). Two blood transfusions were administered in the control group.

Authors' conclusions

The present review adds support to the 2004 joint statement of the International Confederation of Midwives and the International Federation of Gynaecologists and Obstetricians on the management of the third stage of labour, that uterine massage after delivery of the placenta is advised to prevent PPH. However, due to the limitations of the one trial reviewed, trials with sufficient numbers to estimate the effects of sustained uterine massage with great precision, both with and in the absence of uterotonics, are needed.

PLAIN LANGUAGE SUMMARY

Uterine massage for preventing postpartum haemorrhage

Bleeding from the genital tract after childbirth (postpartum haemorrhage) is a major cause of maternal mortality and disability in under-resourced areas with poor access to health services. It is the leading cause of maternal mortality in Sub-Saharan Africa and Egypt and yet is largely preventable. In these settings, poor nutrition, malaria and anaemia add to the health risk. Heavy bleeding directly following childbirth or within 24 hours is most common. Possible causes are the uterus failing to contract after delivery (uterine atony), a retained placenta, inverted or ruptured uterus, and cervical, vaginal, or perineal lacerations.

In well-resourced settings haemorrhage is reduced by routine active management of delivery of the placenta, the third stage of labour.

Facilities for resuscitation, blood transfusion and surgical interventions are also available. The 2004 joint statement of the International Confederation of Midwives and the International Federation of Gynaecologists and Obstetricians recommends routine massage of the uterus after delivery of the placenta to promote contraction. This involves placing a hand on the woman's lower abdomen and stimulating the uterus by repetitive massaging or squeezing movements to stimulate uterine contraction.

The present review included one controlled trial that randomly assigned 200 women to either uterine massage or no massage after active management of the third stage of labour, including the routine use of oxytocin.

Uterine massage given every 10 minutes for 60 minutes after birth effectively reduced blood loss, and the need for additional uterotonics, by some 80%. The number of women losing more than 500 ml of blood also appeared to be halved. Two women in the control group and none in the uterine massage group needed blood transfusions.

This one included study had a small sample size so the confidence intervals were wide. The chance of bias with respect to blood loss assessment was minimised by using objective direct measurement.

Disadvantages to massage include the use of staff time and discomfort to the women.

BACKGROUND

Postpartum haemorrhage (PPH) (excessive bleeding from the genital tract after childbirth) is a major cause of maternal mortality and disability, particularly in under-resourced areas (Fawcus 1995). It is the leading cause of maternal mortality in Sub-Saharan Africa (Lazarus 2005). The South African National Committee for the Confidential Enquiries into Maternal Deaths analysed 3406 reported maternal deaths for the years 2002 to 2004. Overall, 9.5% were due to PPH (NCCEMD 2006). In Egypt, in spite of the drop in maternal mortality ratio from 174/100000 live births in 1992 to 1993 to 80/100000 live births in the year 2000 (MOH 2000), PPH is still the leading cause and responsible for 34% of maternal deaths.

Deaths from PPH remain most common in areas where access to health services is poorest. In these settings, poor nutrition, malaria and anaemia may aggravate the effects of PPH. In well-resourced settings with healthier populations and adequate health services, deaths from PPH are extremely rare, as effective methods are available to reduce and treat PPH. These include routine active management of the third stage of labour and facilities for resuscitation, blood transfusion and surgical interventions. In the 2002 to 2004 South African National Confidential Enquiry into Maternal Deaths, 83% of the 313 deaths from PPH were found to be

'clearly preventable' (NCCEMD 2006). For these reasons, strategies to reduce deaths from PPH have been a focus of attempts to achieve the Millennium Development Goal of reducing maternal mortality by 75% by 2015.

Primary PPH, heavy bleeding directly following childbirth or within 24 hours thereafter, is the most common type of PPH and can be caused by uterine atony, retained placenta, inverted or ruptured uterus, and cervical, vaginal, or perineal lacerations. Uterine atony, when the uterus fails to contract after delivery, is the most important cause of primary PPH (WHO 2000). Methods leading to contraction of the uterus and correction of atony will reduce the amount of bleeding after delivery.

Recommendations for the prevention of PPH such as the joint statement of the International Confederation of Midwives and the International Federation of Gynaecologists and Obstetricians (ICM/FIGO 2004) recommend routine massage of the uterus after delivery of the placenta. Uterine massage involves placing a hand on the woman's lower abdomen and stimulating the uterus by repetitive massaging or squeezing movements. Massage is thought to stimulate uterine contraction, possibly through stimulation of local prostaglandin release and thus to reduce haemorrhage. However, it is not done routinely after delivery in a systematic way. If shown to be effective, it would have important advantages as it is inexpensive and requires no access to medication or other specialised services, and could be used in any location in which women give birth. Disadvantages include the use of staff time, and discomfort caused to women. However, there is very little empirical research to evaluate the effectiveness of this method. There is therefore a need to evaluate systematically the effectiveness of uterine massage for preventing PPH.

OBJECTIVES

To determine the effectiveness of uterine massage after birth and before or after delivery of the placenta, or both, to reduce postpartum blood loss and associated morbidity and mortality.

METHODS

Criteria for considering studies for this review

Types of studies

All published, unpublished and ongoing randomised controlled trials comparing uterine massage alone or in addition to uterotonics before or after delivery of the placenta, or both, to non-massage. Quasi-randomised trials (for example, those randomised by date of birth or hospital number) were to be excluded from the analysis. Studies reported only in abstract form were to be included if sufficient information to evaluate the trial was available. If not, they would be included in the 'Studies awaiting classification' category and be included in analyses when published as full reports.

Types of participants

Women who have given birth vaginally or by caesarean section.

Types of interventions

1. Uterine massage commencing after birth of the baby, or after delivery of the placenta.
2. No intervention or a 'dummy' procedure to mask allocation.

Types of outcome measures

Primary outcomes

1. Blood loss 500 ml or more after enrolment
2. Placenta delivered more than 30 minutes after birth

Secondary outcomes

1. Blood loss 1000 ml or more after enrolment
2. Mean blood loss after enrolment
3. Mean time to placental delivery
4. Use of additional uterotonics or other procedures for management of postpartum haemorrhage
5. Haemoglobin level after 12 to 24 hours less than 8 g/100 ml or blood transfusion
6. Blood transfusion
7. Maternal death or severe morbidity (organ failure, intensive care unit admission for more than 24 hours, major surgery)
8. Women's experience
9. Caregiver's experience
10. Cost

Only outcomes with available data appear in the analysis table. Outcome data that we did not prespecify, but which are reported by the trial authors, were to be labelled as such in the analysis but not used for the conclusions.

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 (March 2008).

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. handsearches of 30 journals and the proceedings of major conferences;
4. weekly current awareness alerts for a further 44 journals plus monthly BioMed Central email alerts.

Details of the search strategies for CENTRAL and MEDLINE, 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 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.

In addition, we searched CENTRAL (*The Cochrane Library* 2007, Issue 2), PubMed (1966 to June 2007) using the term 'uterine massage', and searched reference lists of key papers.

We did not apply any language restrictions.

Data collection and analysis

Selection of studies

We assessed for inclusion all potential studies identified as a result of the search strategy. We resolved any disagreement through discussion or, if required, consulted an outside person.

Data extraction and management

We designed a form to extract data. The review authors extracted the data using the agreed form. Discrepancies were resolved through discussion. The Review Manager software (RevMan 2008) was used to double enter all the data.

When information regarding any of the above was unclear, we attempted to contact authors of the original reports to provide further details.

Assessment of methodological quality of included studies

We assessed the validity of each study using the criteria outlined in the Cochrane Handbook for Systematic Reviews of Interventions (Higgins 2005). Methods used for generation of the randomisation sequence were described for each trial.

(1) Selection bias (randomisation and allocation concealment)

We assigned a quality score for each trial, using the following criteria:

(A) adequate concealment of allocation: such as telephone randomisation, consecutively-numbered, sealed opaque envelopes;

(B) unclear whether adequate concealment of allocation: such as list or table used, sealed envelopes, or study does not report any concealment approach;

(C) inadequate concealment of allocation: such as open list of random-number tables, use of case record numbers, dates of birth or days of the week.

We decided to exclude trials with inadequate allocation concealment (C).

(2) Attrition bias (loss of participants, for example, withdrawals, dropouts, protocol deviations)

We assessed completeness to follow up using the following criteria:

(A) less than 5% loss of participants;

(B) 5% to 9.9% loss of participants;

(C) 10% to 19.9% loss of participants;

(D) more than 20% loss of participants.

We decided to exclude outcomes with 10% or more missing data.

(3) Performance bias (blinding of participants, researchers and outcome assessment)

We assessed blinding using the following criteria:

1. blinding of participants (yes/no/unclear);
2. blinding of caregiver (yes/no/unclear);
3. blinding of outcome assessment (yes/no/unclear).

Measures of treatment effect

We carried out statistical analysis using the Review Manager software (RevMan 2008). We used fixed-effect meta-analysis for combining data in the absence of significant heterogeneity if trials were sufficiently similar. If heterogeneity was found, this was to be explored by sensitivity analysis followed by random-effects analysis if required.

Dichotomous data

For dichotomous data, we presented results as summary risk ratio with 95% confidence intervals.

Continuous data

For continuous data, we used the mean difference if outcomes were measured in the same way between trials. We used the standardised mean difference to combine trials that measure the same outcome, but used different methods. If there was evidence of skewness, this was to be reported.

Unit of analysis issues

Cluster-randomised trials

We decided to include cluster-randomised trials in the analyses along with individually randomised trials. However, we did not identify any cluster-randomized trials but if we do in the future, we will use the methods in Appendix 1.

Dealing with missing data

We decided to analyse data on all participants with available data in the group to which they are allocated, regardless of whether or not they received the allocated intervention. If in the original reports participants are not analysed in the group to which they were randomised, and there was sufficient information in the trial report or the information could be obtained from the trial authors, we would attempt to restore them to the correct group.

Assessment of heterogeneity

We decided to apply tests of heterogeneity between trials, if appropriate, using the I^2 statistic. If we had identified high levels of heterogeneity among the trials (exceeding 50%), we would have explored it by prespecified subgroup analysis and performed sensitivity analysis. A random-effects meta-analysis would be used as an overall summary if this was considered appropriate.

Subgroup analyses

We decided to conduct planned subgroup analyses classifying whole trials by interaction tests as described by Deeks 2001.
The plan was to carry out the following subgroup analyses:

1. women delivered vaginally or by caesarean section;
2. comparisons with or without the use of routine oxytocics;
3. uterine massage commenced before or after placental delivery.

Sensitivity analyses

Sensitivity analyses are planned to explore the effect of trial quality assessed by concealment of allocation by excluding studies with inadequate allocation of concealment (rated B) and to assess the possible effect of publication bias by a sensitivity analysis excluding trials not identified from prospective trial registers.

RESULTS

Description of studies

See: Characteristics of included studies.
The review included one small randomised trial conducted in a teaching hospital located in a developing country (Egypt). *See* table of 'Characteristics of included studies'.

Risk of bias in included studies

See table of 'Characteristics of included studies', particularly the 'Methods' section.

The allocation concealment was adequate and there was no loss to follow up. There was no blinding of participants and caregivers. Because outcome assessment was dependent on objective measurement of blood loss and done by the nurses, not the researchers, the risk of bias is low. The methodological quality of this trial is moderate.

Effects of interventions

This review included one trial in which 200 women were randomly allocated to receive uterine massage or no massage after active management of the third stage of labour, including the routine use of oxytocin 10 units. The study was underpowered for precise assessment of the proportion of women with blood loss more than 500 ml, with wide confidence intervals (risk ratio (RR) 0.52, 95% confidence interval (CI) 0.16 to 1.67). There were no cases of retained placenta in either group. The mean blood loss was less in the uterine massage group at 30 (mean difference (MD) -41.60, 95% CI -75.16 to -8.04) and 60 minutes after enrolment (MD -77.40, 95% CI -118.71 to -36.09 ml). The need for additional uterotonics was reduced in the uterine massage group by 80% (RR 0.20, 95% CI 0.08 to 0.50). There were two blood transfusions in the control group and none in the uterine massage group (too few for statistical analysis).

DISCUSSION

The present review included one small trial which showed that sustained uterine massage (every 10 minutes for 60 minutes after birth) as an adjunct to active management of the third stage of labour is effective in reducing mean blood loss and the need for additional uterotonics. Limitations of the study include the small sample size, thus the confidence intervals were wide. Because of the nature of the intervention, staff could not be blinded to the group allocation. The chance of bias with respect to blood loss

assessment was minimised by using objective direct measurement. However, the use of other interventions could have been influenced by knowledge of the group allocation. The study was underpowered to address the primary outcomes of this review, blood loss greater than 500 ml after enrolment and placenta delivered more than 30 minutes after birth.

It would be reasonable to expect that the effectiveness of uterine massage in the absence of uterotonics would, if anything, be more pronounced, but direct evidence was not found.

AUTHORS' CONCLUSIONS

Implications for practice

The joint statement of ICM/FIGO 2004 on management of the third stage of labour, advises uterine massage after delivery of the placenta to prevent postpartum hemorrhage.The data from one small trial reviewed here are consistent with this advice, but the limitations should be recognised.

Implications for research

Due to the limitations of the included trial, trials with sufficient numbers to estimate the effects of sustained uterine massage with greater precision, both with and in the absence of uterotonics, are needed.

ACKNOWLEDGEMENTS

As part of the prepublication editorial process, this protocol has been commented on by three peers (an editor and two referees who are external to the editorial team), a member of the Pregnancy and Childbirth Group's international panel of consumers and the Group's Statistical Adviser.

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Abdel-Aleem 2006 *{published data only}*
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Higgins 2005

Higgins JPT, Green S, editors. Cochrane Handbook for Systematic Reviews of Interventions 4.2.4 [updated March 2005]. In: The Cochrane Library, Issue 2, 2005. Chichester, UK: John Wiley & Sons, Ltd.

ICM/FIGO 2004

International Confederation of Midwives (ICM), International Federation of Gynaecologists and Obstetricians (FIGO). Joint statement: management of the third stage of labour to prevent postpartum haemorrhage. *Journal of Midwifery and Women's Health* 2004;**49**:76–7.

Lazarus 2005

Lazarus JV, Lalonde V. Reducing postpartum hemorrhage in Africa. *International Journal of Gynecology & Obstetrics* 2005;**88**:89–90.

MOH 2000

Anonymous. *Egyptian Ministry of Health and Population (MOP). National Maternal Mortality Study*. Egyptian Ministry of Health and Population, 2000.

NCCEMD 2006

National Committee for the Confidential Enquiries into Maternal Deaths. *Saving Mothers. Third Report on Confidential Enquiries into Maternal Deaths in South Africa 2002-2004*. South Africa: Department of Health, 2006. [MEDLINE: ISBN 1-920031-26-X]

RevMan 2008

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World Health Organization (WHO). Vaginal bleeding after childbirth. *Managing complications in pregnancy and childbirth: a guide for midwives and doctors. WHO/RHR/00.7*. Geneva: WHO, 2000:S25–S34.

* *Indicates the major publication for the study*

CHARACTERISTICS OF STUDIES

Characteristics of included studies *[ordered by study ID]*

Abdel-Aleem 2006

Methods	Randomised clinical trial. Allocation in computer-generated random sequence by numbered, sealed, opaque envelopes. Attrition bias: no. Blinding of participants: no. Blinding of caregiver: no. Blinding of outcome assessment: yes.
Participants	200 women delivered vaginally. Women were enrolled shortly after birth of the baby, by opening the sealed allocation envelope. Setting: labour ward in a University hospital, Assiut, Egypt.
Interventions	Uterine massage after delivery of the placenta, every 10 minutes for 60 minutes (98 women). Control group: no intervention (102 women). All women received active management of the third stage of labour including oxytocin 10 units.
Outcomes	Blood loss > 500 ml after enrolment. Mean blood loss after enrolment (up to 30 and 60 minutes). Blood loss was measured objectively with a plastic drape placed under the woman's buttocks after birth of the baby. Placenta delivered > 30 minutes after birth. Use of additional uterotonics. Blood transfusion.
Notes	

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Yes	A - Adequate

DATA AND ANALYSES

Comparison 1. Uterine massage after placental delivery versus no massage: vaginal birth

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Blood loss 500 ml or more after enrolment	1	200	Risk Ratio (M-H, Fixed, 95% CI)	0.52 [0.16, 1.67]
1.1 Routine uterotonic used	1	200	Risk Ratio (M-H, Fixed, 95% CI)	0.52 [0.16, 1.67]
1.2 No routine uterotonic	0	0	Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
2 Placenta delivered more than 30 minutes after birth	1	200	Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
2.1 Routine uterotonic used	1	200	Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
2.2 No routine uterotonic	0	0	Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
3 Blood loss 1000 ml or more after enrolment	0	0	Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
4 Mean blood loss in 30 minutes after enrolment	1		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
4.1 Routine uterotonics used	1	200	Mean Difference (IV, Fixed, 95% CI)	-41.60 [-75.16, -8.04]
4.2 No routine uterotonics	0	0	Mean Difference (IV, Fixed, 95% CI)	Not estimable
5 Mean blood loss in 60 minutes after delivery (ml)	1	200	Mean Difference (IV, Fixed, 95% CI)	-77.40 [-118.71, -36.09]
5.1 Routine uterotonics used	1	200	Mean Difference (IV, Fixed, 95% CI)	-77.40 [-118.71, -36.09]
5.2 No routine uterotonics	0	0	Mean Difference (IV, Fixed, 95% CI)	Not estimable
6 Use of additional uterotonics	1	200	Risk Ratio (M-H, Fixed, 95% CI)	0.20 [0.08, 0.50]
6.1 Routine uterotonics used	1	200	Risk Ratio (M-H, Fixed, 95% CI)	0.20 [0.08, 0.50]
6.2 No routine uterotonics	0	0	Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
7 Haemoglobin level after 12 to 24 hours less than 8 g/100 ml	0	0	Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
8 Blood transfusion	1	200	Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
8.1 Routine uterotonics used	1	200	Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
8.2 No routine uterotonics	0	0	Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
9 Maternal death or severe morbidity	1	200	Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
9.1 Routine uterotonics used	1	200	Risk Ratio (M-H, Fixed, 95% CI)	Not estimable
9.2 No routine uterotonics	0	0	Risk Ratio (M-H, Fixed, 95% CI)	Not estimable

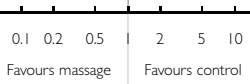
Analysis 1.1. Comparison 1 Uterine massage after placental delivery versus no massage: vaginal birth, Outcome 1 Blood loss 500 ml or more after enrolment.

Review: Uterine massage for preventing postpartum haemorrhage

Comparison: 1 Uterine massage after placental delivery versus no massage: vaginal birth

Outcome: 1 Blood loss 500 ml or more after enrolment

Study or subgroup	Uterine massage n/N	Control n/N	Risk Ratio M-H,Fixed,95% CI	Weight	Risk Ratio M-H,Fixed,95% CI
1 Routine uterotonic used					
Abdel-Aleem 2006	4/98	8/102		100.0 %	0.52 [0.16, 1.67]
Subtotal (95% CI)	**98**	**102**		**100.0 %**	**0.52 [0.16, 1.67]**
Total events: 4 (Uterine massage), 8 (Control)					
Heterogeneity: not applicable					
Test for overall effect: Z = 1.10 (P = 0.27)					
2 No routine uterotonic					
Subtotal (95% CI)	**0**	**0**		**0.0 %**	**0.0 [0.0, 0.0]**
Total events: 0 (Uterine massage), 0 (Control)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
Total (95% CI)	**98**	**102**		**100.0 %**	**0.52 [0.16, 1.67]**
Total events: 4 (Uterine massage), 8 (Control)					
Heterogeneity: not applicable					
Test for overall effect: Z = 1.10 (P = 0.27)					



Analysis 1.2. Comparison 1 Uterine massage after placental delivery versus no massage: vaginal birth, Outcome 2 Placenta delivered more than 30 minutes after birth.

Review: Uterine massage for preventing postpartum haemorrhage

Comparison: 1 Uterine massage after placental delivery versus no massage: vaginal birth

Outcome: 2 Placenta delivered more than 30 minutes after birth

Study or subgroup	Uterine massage n/N	Control n/N	Risk Ratio M-H,Fixed,95% CI	Risk Ratio M-H,Fixed,95% CI
1 Routine uterotonic used				
Abdel-Aleem 2006	0/98	0/102		0.0 [0.0, 0.0]
Subtotal (95% CI)	**98**	**102**		**0.0 [0.0, 0.0]**
Total events: 0 (Uterine massage), 0 (Control)				
Heterogeneity: not applicable				
Test for overall effect: Z = 0.0 (P < 0.00001)				
2 No routine uterotonic				
Subtotal (95% CI)	**0**	**0**		**0.0 [0.0, 0.0]**
Total events: 0 (Uterine massage), 0 (Control)				
Heterogeneity: not applicable				
Test for overall effect: not applicable				
Total (95% CI)	**98**	**102**		**0.0 [0.0, 0.0]**
Total events: 0 (Uterine massage), 0 (Control)				
Heterogeneity: not applicable				
Test for overall effect: Z = 0.0 (P < 0.00001)				

Analysis 1.4. Comparison 1 Uterine massage after placental delivery versus no massage: vaginal birth, Outcome 4 Mean blood loss in 30 minutes after enrolment.

Review: Uterine massage for preventing postpartum haemorrhage

Comparison: 1 Uterine massage after placental delivery versus no massage: vaginal birth

Outcome: 4 Mean blood loss in 30 minutes after enrolment

Study or subgroup	Uterine massage N	Mean(SD)	Control N	Mean(SD)	Mean Difference IV,Fixed,95% CI	Weight	Mean Difference IV,Fixed,95% CI
1 Routine uterotonics used							
Abdel-Aleem 2006	98	168.8 (90.5)	102	210.4 (146.2)		100.0 %	-41.60 [-75.16, -8.04]
Subtotal (95% CI)	**98**		**102**			**100.0 %**	**-41.60 [-75.16, -8.04]**
Heterogeneity: not applicable							
Test for overall effect: Z = 2.43 (P = 0.015)							
2 No routine uterotonics							
Subtotal (95% CI)	**0**		**0**			**0.0 %**	**0.0 [0.0, 0.0]**
Heterogeneity: not applicable							
Test for overall effect: not applicable							

Analysis 1.5. Comparison 1 Uterine massage after placental delivery versus no massage: vaginal birth, Outcome 5 Mean blood loss in 60 minutes after delivery (ml).

Review: Uterine massage for preventing postpartum haemorrhage

Comparison: 1 Uterine massage after placental delivery versus no massage: vaginal birth

Outcome: 5 Mean blood loss in 60 minutes after delivery (ml)

Study or subgroup	Uterine massage N	Mean(SD)	Control N	Mean(SD)	Mean Difference IV,Fixed,95% CI	Weight	Mean Difference IV,Fixed,95% CI
1 Routine uterotonics used							
Abdel-Aleem 2006	98	204.3 (121.4)	102	281.7 (173.1)		100.0 %	-77.40 [-118.71, -36.09]
Subtotal (95% CI)	**98**		**102**			**100.0 %**	**-77.40 [-118.71, -36.09]**
Heterogeneity: not applicable							
Test for overall effect: Z = 3.67 (P = 0.00024)							
2 No routine uterotonics							
Subtotal (95% CI)	**0**		**0**			**0.0 %**	**0.0 [0.0, 0.0]**
Heterogeneity: not applicable							
Test for overall effect: not applicable							
Total (95% CI)	**98**		**102**			**100.0 %**	**-77.40 [-118.71, -36.09]**
Heterogeneity: not applicable							
Test for overall effect: Z = 3.67 (P = 0.00024)							

Analysis 1.6. Comparison 1 Uterine massage after placental delivery versus no massage: vaginal birth, Outcome 6 Use of additional uterotonics.

Review: Uterine massage for preventing postpartum haemorrhage

Comparison: 1 Uterine massage after placental delivery versus no massage: vaginal birth

Outcome: 6 Use of additional uterotonics

Study or subgroup	Uterine massage n/N	Control n/N	Risk Ratio M-H,Fixed,95% CI	Weight	Risk Ratio M-H,Fixed,95% CI
1 Routine uterotonics used					
Abdel-Aleem 2006	5/98	26/102		100.0 %	0.20 [0.08, 0.50]
Subtotal (95% CI)	**98**	**102**		**100.0 %**	**0.20 [0.08, 0.50]**
Total events: 5 (Uterine massage), 26 (Control)					
Heterogeneity: not applicable					
Test for overall effect: Z = 3.44 (P = 0.00058)					
2 No routine uterotonics					
Subtotal (95% CI)	**0**	**0**		**0.0 %**	**0.0 [0.0, 0.0]**
Total events: 0 (Uterine massage), 0 (Control)					
Heterogeneity: not applicable					
Test for overall effect: not applicable					
Total (95% CI)	**98**	**102**		**100.0 %**	**0.20 [0.08, 0.50]**
Total events: 5 (Uterine massage), 26 (Control)					
Heterogeneity: not applicable					
Test for overall effect: Z = 3.44 (P = 0.00058)					

Analysis 1.8. Comparison 1 Uterine massage after placental delivery versus no massage: vaginal birth, Outcome 8 Blood transfusion.

Review: Uterine massage for preventing postpartum haemorrhage

Comparison: 1 Uterine massage after placental delivery versus no massage: vaginal birth

Outcome: 8 Blood transfusion

Study or subgroup	Utrerine massage n/N	Control n/N	Risk Ratio M-H,Fixed,95% CI	Risk Ratio M-H,Fixed,95% CI
1 Routine uterotonics used				
Abdel-Aleem 2006	0/98	0/102		0.0 [0.0, 0.0]
Subtotal (95% CI)	**98**	**102**		**0.0 [0.0, 0.0]**
Total events: 0 (Utrerine massage), 0 (Control)				
Heterogeneity: not applicable				
Test for overall effect: Z = 0.0 (P < 0.00001)				
2 No routine uterotonics				
Subtotal (95% CI)	**0**	**0**		**0.0 [0.0, 0.0]**
Total events: 0 (Utrerine massage), 0 (Control)				
Heterogeneity: not applicable				
Test for overall effect: not applicable				
Total (95% CI)	**98**	**102**		**0.0 [0.0, 0.0]**
Total events: 0 (Utrerine massage), 0 (Control)				
Heterogeneity: not applicable				
Test for overall effect: Z = 0.0 (P < 0.00001)				

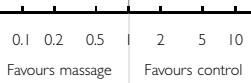
Analysis 1.9. Comparison 1 Uterine massage after placental delivery versus no massage: vaginal birth, Outcome 9 Maternal death or severe morbidity.

Review: Uterine massage for preventing postpartum haemorrhage

Comparison: 1 Uterine massage after placental delivery versus no massage: vaginal birth

Outcome: 9 Maternal death or severe morbidity

Study or subgroup	Uterine massage n/N	Control n/N	Risk Ratio M-H,Fixed,95% CI	Risk Ratio M-H,Fixed,95% CI
1 Routine uterotonics used				
Abdel-Aleem 2006	0/98	0/102		0.0 [0.0, 0.0]
Subtotal (95% CI)	**98**	**102**		**0.0 [0.0, 0.0]**
Total events: 0 (Uterine massage), 0 (Control)				
Heterogeneity: not applicable				
Test for overall effect: Z = 0.0 (P < 0.00001)				
2 No routine uterotonics				
Subtotal (95% CI)	**0**	**0**		**0.0 [0.0, 0.0]**
Total events: 0 (Uterine massage), 0 (Control)				
Heterogeneity: not applicable				
Test for overall effect: not applicable				
Total (95% CI)	**98**	**102**		**0.0 [0.0, 0.0]**
Total events: 0 (Uterine massage), 0 (Control)				
Heterogeneity: not applicable				
Test for overall effect: Z = 0.0 (P < 0.00001)				



APPENDICES

Appendix 1. Methods to be used for cluster-randomised controlled trials

Their sample sizes will be adjusted using the methods described in Gates 2005 using an estimate of the intracluster correlation coefficient (ICC) derived from the trial (if possible), or from another source. If ICCs from other sources are used, this will be reported and sensitivity analyses conducted to investigate the effect of variation in the ICC. If we identify both cluster-randomised trials and individually randomised trials, we plan to synthesise the relevant information. We will consider it reasonable to combine the results from both if there is little heterogeneity between the study designs and the interaction between the effect of intervention and the choice of randomisation unit is considered to be unlikely.

WHAT'S NEW

Last assessed as up-to-date: 30 March 2008.

18 March 2008	Amended	Converted to new review format

HISTORY

Protocol first published: Issue 2, 2007

Review first published: Issue 3, 2008

CONTRIBUTIONS OF AUTHORS

H Abdel-Aleem (HA) wrote the first draft of the protocol. GJ Hofmeyr (GJH) revised the protocol. HA and GJH independently extracted data. HA wrote the first draft of the final review. GJH revised the final review. M Abdel-Aleem developed the data extraction form, assisted with data extraction and approved the final version.

DECLARATIONS OF INTEREST

H Abdel-Aleem and GJ Hofmeyr are co-authors of a study evaluating the effect of uterine massage on postpartum blood loss (Abdel-Aleem 2006). One of the Pregnancy and Childbirth Group editors (AM Gulmezoglu) evaluated the study for inclusion in the review.

SOURCES OF SUPPORT

Internal sources

- (GJH) Effective Care Research Unit, University of the Witwatersrand, University of Fort Hare, Eastern Cape Department of Health, South Africa.
- Department of Obstetrics and Gynecology, Assiut University Hospital, Assiut, Egypt.

External sources

- (GJH) HRP-UNDP/UNFPA/WHO/World Bank Special Programme in Human Reproduction, Geneva, Switzerland.

INDEX TERMS

Medical Subject Headings (MeSH)

*Uterus; Labor Stage, Third; Massage [*methods]; Postpartum Hemorrhage [*prevention & control]; Uterine Contraction

MeSH check words

Female; Humans; Pregnancy