The influence of medical abortion compared with surgical abortion on subsequent pregnancy outcome

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CRD summary
First trimester medical abortion may be safer than surgical abortion with respect to effects on the next pregnancy; however, no firm conclusions could be drawn due to the questionable quality of the evidence. Given the lack of randomised evidence, imprecise reporting of gestational age in the primary studies and heterogeneity with respect to miscarriage rates, the tentative conclusions appear justified.

Authors' objectives
To compare the effect of medical abortion (MA) versus surgical abortion (SA) performed in the first trimester on the next pregnancy.

Searching
The following databases were searched: MEDLINE, EMBASE, RHL (World Health Organisation Reproductive Health Library), The Cochrane Library, Chinese Biomedical Database Disc, China National Knowledge Infrastructure, China Medical Academic Conference database and VIP. Search terms were reported. Nine reproductive health journals (listed) and the reference lists of articles retrieved were handsearched. Online search engines (for example, Google) were also used to seek additional papers. Search dates varied across sources and spanned 1974 to December 2006. The search was limited to papers in English or Chinese. There was no limitation by publication status.

Study selection
Studies of MA and SA performed in the first trimester were eligible for inclusion, provided they reported outcome measures associated with the next pregnancy and delivery. Specific outcomes of interest were listed in the review and specific placental abnormalities were defined. Studies involving women with high-risk pregnancies (medical conditions listed in the review) were excluded, as were studies in which women in the SA group had a history of MA and vice versa. The review was apparently limited to randomised controlled trials (RCTs) and prospective cohort studies.

All the included studies were conducted in China among nulliparous women. Their mean age ranged from 25 to 27 years. Some studies included women who had had multiple MAs or SAs. In all studies MA was conducted using mifepristone (total dose 75 to 200 mg) with or without a prostaglandin. In most cases SA was performed by vacuum aspiration without a prostaglandin. In the largest study, about 25 per cent of women in the MA group subsequently underwent uterine curettage for bleeding or incomplete abortion. The gestational age of the fetus was in all cases less than three months (no studies reported more precise data for this variable). Most studies failed to report the time to next pregnancy; where stated, this was two to 24 months.

Two reviewers selected studies for inclusion, with disagreements resolved by consensus.

Assessment of study quality
Included studies were evaluated using published criteria for assessing the validity of prospective cohort studies (Stroup 2000). Criteria included representativeness of participants, quality of outcome measures, controls for bias, sample size and statistical methods.

Data extraction
Odds ratios (ORs) were calculated from the numbers of events in the control and intervention groups of each study, with 95% confidence intervals (CIs). Sensitivity analyses were conducted excluding lower quality studies. Two reviewers extracted the data, with disagreements resolved by consensus. Attempts were made to contact authors for clarification about study design (where necessary).

Methods of synthesis
Data were combined to calculate pooled ORs and 95% CIs. Data adjusted for pregnancy-related risk factors (for example, maternal age) were used where possible. The $\chi^2$ test was used to assess heterogeneity. If heterogeneity was detected, a random-effects model was used; otherwise a fixed-effect model was used. Sensitivity analyses were conducted and low-quality studies excluded.

**Results of the review**

Seven prospective cohort studies were included in the review (n=12,484, range 300 to 9,731). In all cases, participants were considered representative of the general population, sample size was considered adequate, outcomes measures were reliable and statistical methods were robust. Reported losses to follow up were one per cent or less in all studies.

**MA versus SA: outcomes for subsequent pregnancy**

Rates of miscarriage (OR 0.48, 95% CI: 0.25, 0.92, random effects, seven RCTs) and postpartum haemorrhage (0.60, 95% CI: 0.37, 0.98, fixed effect, five RCTs) were significantly lower in the MA group. There was significant heterogeneity (p<0.0001) for the outcome of miscarriage. There was no statistically significant difference between the groups for any other outcome (including pregnancy-induced hypertension, total placental abnormalities in pregnancy, placenta praevia, placental abruption, fetal distress, prolonged pregnancy, premature delivery, placental abnormality in third phase of labour, placental adhesion, placental remnant, incomplete fetal membrane, premature rupture of membrane, neonatal malformation, low body weight and fetal death).

Sensitivity analyses by study quality did not change the statistical significance of any analysis, but the findings for miscarriage rates were no longer significantly heterogeneous.

**Authors’ conclusions**

First trimester medical abortion may be safer than surgical abortion with respect to effects on the next pregnancy; however, no firm conclusions could be drawn due to the questionable quality of the evidence.

**CRD commentary**

The objectives and inclusion criteria of the review were clear in most respects, although criteria for study design were implied rather than explicit. Relevant sources were searched for published and unpublished studies, but the limitation by language may have meant that some studies were missed. Publication bias did not appear to have been assessed. Steps were taken to minimise error and bias by having more than one reviewer undertake the processes of study selection and data extraction, but it was unclear whether this also applied to validity assessment. Relevant criteria were used in assessment of study validity. Appropriate statistical techniques were used to combine studies and assess for heterogeneity. Sensitivity analyses were used to assess the effect of study quality on findings. It was unclear (given the principles of intention to treat analysis) whether it was appropriate to exclude the largest study in the review from sensitivity analyses on the grounds that study quality was compromised by the inclusion of women in the MA group who subsequently required surgery. There was some inconsistency between text and tables. The authors pointed out that it was unclear whether there was any difference between the MA and SA groups in the gestational age of the fetus, and that it is possible that pregnancy duration was shorter in the MA group.

Given the lack of randomised evidence and imprecise reporting of gestational age in the primary studies and heterogeneity with respect to miscarriage rates, the authors’ tentative conclusions appeared justified.

**Implications of the review for practice and research**

Practice: The authors did not state any implications for practice.

Research: The authors stated that research was needed to determine whether the effect of abortion differs among women who have had multiple abortions compared to women undergoing a single abortion.

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