Cervical preparation for first trimester surgical abortion

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Key findings

The review assessed the different methods of cervical preparation used prior to a first trimester surgical abortion by comparing the amount of cervical dilation achieved, length of procedure, side-effects, satisfaction, and safety. Nitric oxide donors were excluded, as they are considered in a separate review.

Key findings from this review are:

- Efficacy and side-effects of the modern cervical ripening methods vary but are generally safe.
- The length of a surgical abortion procedure can be reduced by using cervical preparation.
- Mifepristone 200mg, osmotic dilators, and misoprostol 400mcg per vaginal or sublingual appear to be the most effective methods of cervical preparation.
- Findings from the trials do not indicate a specific gestational age where the benefits of cervical ripening outweigh the side-effects.

Evidence included in this review

Fifty-one trials were included in the review, with 24 comparisons of cervical preparation:

- Comparisons to placebo
- Misoprostol comparisons (dose of misoprostol, timing, method of administration, misoprostol vs gemeprost, misoprostol vs mifepristone, misoprostol vs luminaria, misoprostol vs prostaglandin F₂α)
- Gemeprost comparisons (gemeprost vs lamicel®, gemeprost vs dilapan-S®, gemepost vs prostaglandin F₂α)
- Laminaria comparisons (luminaria vs prostaglandin F₂α, luminaria vs sulprostone, luminaria vs prostaglandin E₂)
- Sulprostone comparisons (dosage, method of administration)
- PGE₂ comparisons (prostaglandin E₂ vs prostaglandin F₂α)
- Lamicel comparisons (lamicel vs cervical tents without MGSO₄)

Quality assessment

The GRADE approach was not used, however the overall quality of evidence was mixed. Seventeen trials had both adequate randomization and allocation concealment methods. The rest of the trials stated they were randomized, but did not specify method used.
Clinical implications

The review findings suggest three effective methods for cervical ripening: misoprostol, osmotic dilators, and mifepristone. The preferred prostaglandin for cervical ripening, misoprostol, requires sufficient time between administration and the surgical procedure to allow for maximum effect. The use of laminaria, an osmotic dilator with lower rates of gastrointestinal side effects and higher rates of insertional pain may be limited to women seeking same day procedures. The use of mifepristone is limited due its current high cost and time required for effect (24 hours).

Further research

Further trials examining at what gestational age cervical preparation reduces the chances of adverse events are required. Identifying whether there are specific sub-population groups, e.g. adolescents or nulliparous women, who require cervical priming before the procedure would also be useful. Other areas for further research are: examining the use of mifepristone for cervical preparation during later stages of first trimester; and exploring women’s preferences for cervical preparation methods.

Cochrane review


Abstract

Preparing the cervix prior to surgical abortion is intended to make the procedure both easier and safer. Options for cervical preparation include osmotic dilators and pharmacologic agents. Many formulations and regimens are available, and recommendations from professional organizations vary for the use of preparatory techniques in women of different ages, parity or gestational age of the pregnancy.

To determine whether cervical preparation is necessary in the first trimester, and if so, which preparatory agent is preferred.

We searched Cochrane, Popline, Embase, Medline and Lilacs databases for randomised controlled trials investigating the use of cervical preparatory techniques prior to first trimester surgical abortion. In addition, we hand-searched key references and contacted authors to locate unpublished studies or studies not identified in the database searches.

Randomised controlled trials investigating any pharmacologic or mechanical method of cervical preparation, with the exception of nitric oxide donors (the subject of another Cochrane review), administered prior to first trimester surgical abortion were included. Outcome measures must have included the amount of cervical dilation achieved, the procedure duration or difficulty, side-effects, patient satisfaction or adverse events to be included in this review.
Trials under consideration were evaluated by considering whether inclusion criteria were met as well as methodologic quality. Fifty-one studies were included, resulting in 24 different cervical preparation comparisons. Results are reported as odds ratios (OR) for dichotomous outcomes and weighted mean differences for continuous data.

When compared to placebo, misoprostol (400-600 µg given vaginally or sublingually), gemeprost, mifepristone (200 or 600 mg), prostaglandin E and F$_2$ (2.5 mg administered intracervically) demonstrated larger cervical preparation effects. When misoprostol was compared to gemeprost, misoprostol was more effective in preparing the cervix and was associated with fewer gastrointestinal side-effects. For vaginal administration, administration 2 hours prior was less effective than administration 3 hours prior to the abortion. Compared to oral misoprostol administration, the vaginal route was associated with significantly greater initial cervical dilation and lower rates of side-effects; however, sublingual administration 2-3 hours prior to the procedure demonstrated cervical effects superior to vaginal administration.

When misoprostol (600 µg oral or 800 µg vaginal) was compared to mifepristone (200 mg administered 24 hours prior to procedure), misoprostol had inferior cervical preparatory effects. Compared to day-prior laminaria tents, 200 or 400 µg vaginal misoprostol showed no differences in the need for further mechanical dilation or length of the procedure; similarly, the osmotic dilators Lamicel and Dilapan showed no differences in cervical ripening when compared to gemeprost, although gemeprost had cervical effects which were superior to laminaria tents. Older prostaglandin regimens (sulprostone, prostaglandin E$_2$ and F$_2$) were associated with high rates of gastrointestinal side-effects and unplanned pregnancy expulsions. Few studies reported women's satisfaction with cervical preparatory techniques.

Modern methods of cervical ripening are generally safe, although efficacy and side-effects between methods vary. Reports of adverse events such as cervical laceration or uterine perforation are uncommon overall in this body of evidence and no published study has investigated whether cervical preparation impacts these rare outcomes. Cervical preparation decreases the length of the abortion procedure; this may become increasingly important with increasing gestational age, as mechanical dilation at later gestational ages takes longer and becomes more difficult. These data do not suggest a gestational age where the benefits of cervical dilation outweigh the side-effects, including pain, that women experience with cervical ripening procedures or the prolongation of the time interval before procedure completion. Mifepristone 200 mg, osmotic dilators and misoprostol, 400 µg administered either vaginally or sublingually, are the most effective methods of cervical preparation.