Cervical preparation for first trimester surgical abortion (Review)

Kapp N, Lohr PA, Ngo TD, Hayes JL

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[Intervention Review]

Cervical preparation for first trimester surgical abortion

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ABSTRACT

Background

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.

Objectives

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

Search methods

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 In addition, we hand-searched key references and contacted authors to locate unpublished studies or studies not identified in the database searches.

Selection criteria

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.

Data collection and analysis

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.

Main results

When compared to placebo, misoprostol (400-600 µg given vaginally or sublingually), gemeprost, mifepristone (200 or 600 mg), prostaglandin E and $F_{2\alpha}$ (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

$F_{2\alpha}$) were associated with high rates of gastrointestinal side-effects and unplanned pregnancy expulsions. Few studies reported women's satisfaction with cervical preparatory techniques.

Authors' conclusions

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, 400µg administered either vaginally or sublingually, are the most effective methods of cervical preparation.

PLAIN LANGUAGE SUMMARY

Preparing the cervix before first trimester surgical abortion

Preparing the cervix to make it softer and more open before a woman has an abortion may make the procedure easier and safer. There are different techniques for preparing the cervix before abortion, including several types of medications taken either by mouth, injection or placed in the vagina, as well as several types of small rods that can be placed within the cervix. This review found that cervical preparation decreased the length of time necessary for an abortion procedure, but did not seem to decrease rates of uncommon abortion complications. The medication called misoprostol worked better with less side-effects than other similar medications. Misoprostol is most effective with the least side-effects when placed in the vagina, but when placed under the tongue it is equally effective. Another drug called mifepristone worked better than misoprostol; however, it is more expensive to use. All methods of preparation take at least 2-3 hours or more to work. The review could not determine whether women preferred one method best.

BACKGROUND

Vacuum aspiration is a common method of first-trimester abortion worldwide. First-trimester surgical abortion has a low-risk of complications [Hakim-Elahi 1990] however, cervical injury, bleeding, uterine perforation, and incomplete evacuation can occur [Cates 1983; Kulier 2001]. Risk factors for these complications include provider inexperience, increased gestational age, and abnormal uterine anatomy [RCOG 1985, Hakim-Elahi 1990].

Cervical preparation may reduce the complications of uterine perforation and cervical injury. In addition, cervical preparation may make the procedure shorter in duration, more comfortable for the woman, and easier to perform. For these reasons, the guidelines of the Royal College of Obstetricians and Gynaecologists (RCOG) state "cervical preparation is beneficial prior to surgical abortion and should be routine if the woman is aged under 18 years of age or at a gestation of more than 10 weeks" [RCOG 2004]. Similarly, the World Health Organization recommends cervical preparation for women with durations of pregnancy over 9 completed weeks for nulliparous women, for women younger than 18 years old and for all women with durations of pregnancy over 12 completed weeks [WHO 2003].

Options for cervical preparation include osmotic dilators and pharmacologic agents. Osmotic dilators are able to produce wide cervical dilation in a predictable fashion. Isaptent, the Nelaton catheter and the vibrodilator were mechanical dilators used in the past [Khanna 1980, Manabe 1981, Ng 1973]. Current devices include laminaria, Lamicel ®, and Dilapan-S ®. Pharmacologic agents such as misoprostol, gemeprost, mifepristone, and sodium nitroprusside, soften the cervix and allow for easier, less forceful, cervical dilation.

This review includes data from all available randomized controlled trials regarding cervical preparation in first trimester abortion with the goal of answering whether preparation is needed at all, and if so, which preparatory agent is preferred.

OBJECTIVES

To compare the effect of different methods of cervical preparation used prior to first trimester surgical abortion on the amount of cervical dilation achieved, length of procedure, side-effects, satisfaction, and safety. Included trials will be those evaluating cervical preparation versus no preparation as well as comparisons between methods.

METHODS

Criteria for considering studies for this review

Types of studies

Only randomized controlled trials are included in this review.

Types of participants

Pregnant women undergoing surgical abortion at less than 14 weeks gestation.

Types of interventions

Any type of cervical preparation, pharmacologic or mechanical, excluding nitric oxide donors, administered prior to first trimester surgical abortion.

Types of outcome measures

- Amount of cervical dilation achieved (passage of largest dilator without resistance, pressure required to pass dilator)
- Procedure duration
- Procedure difficulty (various subjective scoring of providers)
- Side effects (nausea, vomiting, fever, chills, diarrhea)
- Patient's satisfaction
- Adverse events (cervical injury [laceration, perforation, false passage], hemorrhage (intraoperative and postoperative), uterine perforation, incomplete abortion, infection [febrile morbidity, need for therapeutic antibiotics], hospital admission)

Search methods for identification of studies

See: Cochrane Fertility Regulation Group methods used in reviews (www.lumc.nl/1060/cochrane/)
See: Cochrane Fertility Regulation Group search strategy. We searched the computerized databases-Cochrane Central Register of Controlled Trials, MEDLINE, EMBASE, and POPLINE for articles for trials of cervical preparation in first trimester surgical abortion. We will contact corresponding authors of all included published trials to seek other trials we might have missed. We also will search the reference lists of included trials.
MEDLINE search used the strategy:
(first trimester OR pregnancy trimester, first) AND (abortion, induced OR abortion, legal OR abortion, therapeutic OR pregnancy termination OR termination of pregnancy) AND (surgical abortion OR dilation and curettage OR curettage OR vacuum aspiration OR suction aspiration OR suction evacuation) AND (cervical priming OR cervical ripening OR cervical dilation OR antiprogesterone OR mifepristone OR mifegyne OR RU 486 OR prostaglandin OR misoprostol OR dinoprostone OR carboprost OR sulprostone OR gemeprost OR meteneprost OR nitroglycerin OR lamicel or laminaria OR dilapan OR osmotic dilator OR laminaria tent) AND (randomized controlled trial [pt] OR controlled clinical trial [pt] OR randomized controlled trials [mh] OR random allocation [mh] OR double-blind method [mh] OR single-blind method [mh] OR clinical trial [pt] OR clinical trials [mh] OR ("clinical trial" [tw]) OR ((singl* [tw] OR doubl* [tw] OR trebl* [tw] OR tripl* [tw]) AND (mask* [tw] OR blind* [tw])) OR (placebos [mh] OR placebo* [tw] OR random* [tw] OR research design [mh:noexp] OR comparative study [mh] OR evaluation studies [mh] OR follow-up studies [mh] OR prospective studies [mh] OR control* [tw] OR prospective* [tw] OR volunteer* [tw]) NOT (animals [mh] NOT human [mh]))
The POPLINE search used the strategy:

(Abortion & Pregnancy, first trimester) & (studies / clinical trials)
The Cochrane Central Register of Controlled Trials search used the strategy:
Abortion AND (first-trimester OR first trimester OR first-trimester OR pregnancy trimester, first OR gestational age)
The EMBASE search used the strategy:
(Abortion OR Therapeutic abortion) AND (First trimester abortion OR Gestational age) AND
(cervical priming OR cervical ripening OR cervical dilation OR laminaria OR dilapan OR osmotic dilator) AND (Randomized controlled trial OR Controlled study OR Clinical trial OR Randomization OR Double blind procedure OR Single blind procedure OR Methodology OR Comparative study OR Evaluation OR Follow-up OR Prospective study OR Crossover procedure OR (singl* OR doubl* OR trebl* OR tripl*) near (mask* OR blind*) in TI, AB OR Placebo* OR Random* OR control* OR Prospectiv* OR Volunteer*) AND Human

Data collection and analysis

Two independent reviewers evaluated the titles and abstracts identified from the literature searches and assessed relevant articles for inclusion. First trimester surgical abortion was defined as an abortion performed before 14 weeks gestation with either electric or manual vacuum aspiration, or dilation and curettage. The trials were critically appraised without consideration of their results by examining the following factors: study design, randomisation method, group allocation concealment, exclusions after randomisation, loss-to-follow-up, and early discontinuation. A score for concealment of allocation was assigned to each trial, per the criteria outlined in the Cochrane Handbook:
A) adequate concealment of allocation
B) unclear whether adequate concealment of allocation
C) inadequate concealment of allocation
Only trials scoring A or B were included in the review.
Data extraction was performed independently by two reviewers (NK, TD). Data such as country, setting, sponsor and outcomes of interest were extracted using a form designed to capture these data. Discrepencies were reviewed and resolved by the two individuals extracting the data.
The data were analyzed using RevMan 5.0 software.

RESULTS

Description of studies

See: Characteristics of included studies; Characteristics of excluded studies; Characteristics of ongoing studies.
See: Characteristics of included studies; Characteristics of excluded studies; Characteristics of studies awaiting classification.
From the search strategy described above, 51 studies met inclusion criteria for this review, resulting in 24 comparisons of cervical preparation.

Risk of bias in included studies

Randomisation and allocation methods were not further described in many studies; we attempted to contact the authors in these cases to clarify their methods. The number of trials which reported using both adequate randomisation and allocation concealment methods (whether published or by direct communication with the author) is 17; the remainder of studies stated they were randomised, but did not specify the method or had an unclear method of allocation. Loss to follow-up and post-randomisation exclusion data were collected from the included studies; no study had rates of >10%.

Effects of interventions

Comparisons to placebo *(*Analysis 1.1*;* Analysis 1.2*;* Analysis 1.3*;* Analysis 2.1*;* Analysis 3.1*;* Analysis 3.2*;* Analysis 4.1*;* Analysis 5.1; Analysis 5.2; Analysis 6.1; Table 1, Table 2*)*
There were significant differences in initial cervical dilation and/or need for further cervical dilation at the time of surgical abortion when misoprostol (400-600 µg given vaginally or sublingually), gemeprost, mifepristone (200 or 600 mg), prostaglandin E and $F_{2\alpha}$ (2.5 mg intracervical) were compared to placebos among 18 different studies. Additionally, the length of the procedure was decreased with use of misoprostol when compared to placebo (mean difference -1.09 [95% CI -1.55, -0.64]) although side-effects, such as nausea, were generally higher in the misoprostol group.
Misoprostol comparisons
*Dose of misoprostol (*Analysis 7.1; Analysis 7.2; Analysis 7.3*)*
Improved initial cervical dilation was demonstrated with 400 µg oral misoprostol when compared with 200 µg (mean difference 0.53 [95% CI 0.30, 0.77]) (Ngai 1999; Oppegaard 2004). When the same doses were administered vaginally, similar results were found (mean difference 0.92 [95% CI 0.53, 1.31]), although significant heterogeneity is present between these data from two trials (Ngai 1999; Singh 1998). dilation was also greater with a 400 µg dose of sublingual misoprostol compared to 200 µg (mean difference 2.20 [1.61, 2.79]) (Vimala, Mittal 2004). With a 400 µg dose of sublingual misoprostol, the abortion procedure took less time (RR -1.22 [95% CI -1.72, -0.71]); however, women reported more pain (RR 2.50 [95% CI 1.31, 4.75]) than those who received a 200 µg dose.
*Timing of misoprostol (*Analysis 8.1*;* Analysis 8.2*;* Analysis 8.3*)*
The effect of the interval between misoprostol administration and the procedure on cervical priming was investigated in one study

(Singh 1999). A significant improvement in initial cervical dilation (mean difference1.50 [95% CI 1.42, 1.58]) and less need for further dilation (RR 0.01 [95% CI 0.00, 0.08]) was demonstrated with an interval of 3 hours after 400 µg of vaginal misoprostol when compared with an interval of 2 hours after 600 µg vaginal misoprostol. Women who received 600 µg also reported pain with cervical priming more frequently (RR 0.10 [95% CI 0.02, 0.39]) than women who received 400 µg of misoprostol.

*Route of administration of misoprostol (*Analysis 9.1; Analysis 9.2; Analysis 9.3; Analysis 9.4; Analysis 9.5; Analysis 9.6*)*

Vaginal versus oral

Many studies have compared the vaginal and oral routes of misoprostol administration. Three studies used 400 µg, and were included in a meta-analysis (Cakir 2005; Ngai 1999). Three other studies compared doses ranging from 200 to 800 µg or assessed differing times of administration between oral and vaginal administration using the same dose (Ashok 2003; Carbonell 2001; Inal 2003; Oppegaard 2006). These studies are summarised in Table 3. Compared to oral administration, the vaginal route was associated with significantly greater initial cervical dilation (mean difference 0.50 [95% CI 0.13, 0.87]) in the meta-analysis.

Vaginal versus sublingual

Sublingual versus vaginal administration of 400 µg misoprostol has been compared in four studies (Esteve 2006; Tang 2004; Vimala 2004, Hamoda 2004). One study was not included in the meta-analysis of cervical effect as its data were reported incompletely (Hamoda 2004, Table 3). In the meta-anlaysis, significant heterogeneity was noted. A sensitivity analysis demonstrated that without the data from Vimala 2004 the effect estimate was -0.09 [95% CI -0.18, -0.01] in favor of sublingual application of misoprostol administered for 2-3 hours. When all studies were included in the analysis, the overall estimate of effect was larger, but consistent in demonstrating a greater effect on initial cervical dilation of sublingual misoprostol (mean difference -0.10 [95% CI -0.19, -0.01]) than vaginal misoprostol administration.

Sublingual misoprostol was similarly found to be associated with less need for further dilation (RR 1.41 [95% CI 1.15, 1.73]) than with vaginal misoprostol, in a meta-analysis. Sublingual administration was also associated with a higher occurrence of nausea than vaginal administration (RR 0.33 [95% CI 0.22, 0.49]), although no significant differences were noted between oral and vaginal groups (RR 0.59 [95% CI 0.26, 1.37]). Additionally, sublingual administration demonstrated significantly shorter procedure times (mean difference 0.38 [95% CI 0.11, 0.65]) when compared to vaginal administration while no differences in procedure length were noted between vaginal and oral administration.

One small study (Hamoda 2004) attempted to address women's level of satisfaction with her cervical ripening method; no differences in disatisfaction were noted between those who received misoprostol vaginally when compared with those who received it sublingually (RR 0.10 [95% CI 0.01, 1.97]).

*Misoprostol versus gemeprost (*Analysis 10.1; Analysis 10.2; Analysis 10.3; Analysis 10.4; Table 4*)*

Misoprostol, 400 µg, when compared to gemeprost, 1 mg, appears to be superior in terms of cervical dilation effect (mean difference 0.53 [95% CI 0.03, 1.04]) among 2 trials included in the meta-analysis (Ekerhovd 2003; Ngai, Yeung 1995), whereas 200 µg misoprostol had similar effects to 1 mg gemeprost (mean difference 0.40 [95% CI -0.16, 0.96] [Henry 1999]). One study, which could not be included in the meta-analysis, demonstrated no difference between 600 µg of misoprostol and gemeprost (El-Rafaey 1994). In comparison to gemeprost, misoprostol, 400 µg, had lower overall rates of gastrointestinal side-effects (RR 0.35 [95% CI 0.18, 0.68]); a similar effect estimate was found when 200 µg misoprostol was used (RR 0.35 [95% CI 0.18, 0.68]). The length of the procedure was significantly reduced with 400 µg misoprostol, when compared to gemeprost (mean differerence -1.50 [95% CI -3.00, 0.00]).

Misoprostol versus mifepristone (Analysis 11.1; Analysis 11.2)

Mifepristone, 200 mg given 24 hours prior to the procedure, had a greater cervical ripening effect than misoprostol, 600 µg orally or 800 µg vaginally (mean difference -0.79 [95% CI -1.29, -0.30] [Ashok 2000; Bokstrom 1998]).No differences in nausea/vomiting between the treatment groups were reported (RR 0.75 [95% CI 0.17, 3.33]).

Misoprostol versus laminaria (Analysis 12.1; Analysis 12.2; Analysis 12.3)

When 200 or 400 µg vaginal misoprostol was compared to day-prior placement of one laminaria tent, there was no difference in the need for further mechanical dilation (OR 1.04 [95% CI 0.48, 2.26]) or length of the procedure (mean difference -0.10 [95% CI -1.09, 0.89] [MacIsaac 1999; Burnett 2005]). Women were asked about their level of satisfaction with their cervical ripening method in both trials. In one, women reported favoring misoprostol over laminaria if they were to have a procedure in the future (RR 0.31 [95% CI 0.12, 0.84] [Burnett 2005]); the other trial reported only that <10% of women in both treatment groups were dissatisfied with their method of cervical dilation (MacIsaac 1999).

Misoprostol versus prostaglandin $F_{2\alpha}$ (Analysis 13.1; Analysis 13.2; Analysis 13.3; Analysis 13.4; Analysis 13.5)

One study compared misoprostol to prostaglandin $F_{2\alpha}$ (Vimala 2005). No significant differences were noted in the need for further cervical dilation (RR 0.48 [95% 0.16, 1.41]), rates of nausea and vomiting (RR 0.14 [95% CI 0.02, 1.23]), or the time required to complete the procedure (mean difference 0.20 [95% CI -0.76, 1.16]). Additionally, women reported no differences in satisfaction with misoprostol or prostaglandin $F_{2\alpha}$ (RR 0.23 [95% CI 0.04, 1.24]).

Gemeprost comparisons

Gemeprost versus Lamicel ® (Analysis 14.1; Analysis 14.2)

In addition to comparisons with placebo and misoprostol, gemeprost has been compared to several types of osmotic dilators. No differences in the need for further cervical dilation (RR 0.86 [95% CI 0.38, 1.95]) was reported when gemeprost was compared to

Lamicel (Golland 1989; Stornes 1991). Additionally, use of gemeprost was associated with lower rates pain during cervical preparation (RR 3.53 [95% CI 1.40, 8.90]) when compared to Lamicel, although no significant differences were noted in rates of nausea and vomiting (RR 6.89 [95% CI 0.83, 57.41]) during cervical preparation.

Gemeprost versus Dilapan-S ® (Analysis 15.1; Analysis 15.2)

No differences in need for further dilation between those who received gemeprost or Dilapan was noted (RR 0.87 [95% CI 0.32, 2.36]) in 2 studies (Jurgenson 1989; Golland 1989). Rates of nausea between women who received Dilapan and gemeprost were not significantly different (RR 0.83 [95% CI 0.35, 1.95]).

Gemeprost versus laminaria (Analysis 16.1; Analysis 16.2; Analysis 16.3)

When gemeprost and laminaria were compared (WHO 1986), the need for further cervical dilation in the gemeprost group demonstrated a significant reduction when compared to placement of laminaria (RR 0.56 [95% CI 0.29, 1.07]). Initial cervical dilation was found to be significantly greater in the gemeprost group when compared to the laminaria group (mean difference 0.50 [95% CI 0.05, 0.95]). Nausea and vomiting following application of laminaria was significantly less common than with use of gemeprost (RR 18.16 [95% CI 1.04, 318.09]).

Gemeprost versus prostaglandin $F_{2\alpha}$ (Analysis 17.1; Analysis 17.2; Analysis 17.3)

Gemeprost was superior to prostaglandin $F_{2\alpha}$ in terms of need for further cervical dilation (RR 0.31 [95% CI 0.15, 0.66]) and initial cervical dilation (mean difference 0.90 [95% CI 0.42, 1.38] [WHO 1986]). No differences between groups were noted in the occurrence of nausea and vomiting (RR 1.67 [95% CI 0.53, 5.25]).

Mifepristone comparisons: doses (Analysis 18.1; Analysis 18.2)

Doses of 100 mg and 25 mg mifepristone were compared in one study (WHO 1990). No significant differences between treatment groups in cervical dilation (mean difference 0.00 [95% CI -0.74, 0.74]) or the need for futher dilation (RR 0.74 [95% CI 0.12, 4.62]) were demonstrated.

Laminaria comparisons

Laminaria versus prostaglandin $F_{2\alpha}$ (Analysis 19.1; Analysis 19.2; Table 5)

One study compared the use of laminaria placed 3-4 hours prior to the procedure to that of prostaglandin $F_{2\alpha}$ (Morris 1986): these data are reported in table 5. The study authors reported a significantly ($p<0.01$) greater effect of laminaria on initial cervical dilation when compared to prostaglandin $F_{2\alpha}$ however given the presentation of the data without standard deviations, we were unable to calculate an effect estimate. Additionally, prostaglandin $F_{2\alpha}$ was associated with more unplanned expulsions of the pregnancy prior to the procedure (RR 0.07 [95% CI 0.00, 1.34]).

Laminaria versus sulprostone (Analysis 20.1; Analysis 20.2; Analysis 20.3)

In comparison with sulprostone, laminaria had significantly less effect on initial cervical dilation (mean difference -0.80 [95% CI -1.27, -0.33]) as well as on the need for further dilation (RR 2.38 [95% CI 1.26, 4.47]) (WHO, 1986). Use of sulprostone, however, had significantly higher rates of nausea and vomiting than laminaria (RR 0.02 [95% CI 0.00, 0.39]).

Laminaria versus prostaglandin E_2. (Analysis 21.1; Analysis 21.2; Analysis 21.3)

The prostaglandin, 9 deoxo-16, 16-dimethyl-9-methylene PGE_2, was compared to laminaria in one trial (WHO 1986). The effects on initial cervical dilation and need for further dilation were not significantly different, although approaching significant values in favour of a greater effect from the prostaglandin E_2. Nausea and vomiting were more common in the group receiving the prostaglandin E_2 (RR 0.03 [95% CI 0.00, 0.51]) when compared to those who received laminaria.

Sulprostone comparisons

Sulprostone dosing by intracervical administration (Analysis 22.1; Analysis 22.2; Analysis 22.3 and Table 6)

Sulprostone doses have been compared in three studies; in two (Rath 1983; Rath 1985), intracervical doses were compared and in one study, intramuscular doses were compared (Christensen 1985). For intracervical doses of either 50 or 100 µg administered 6-8 hours prior to the procedure, no differences in cervical effects or in rates of nausea/ vomiting (RR 0.79 [95% CI 0.21, 3.04]) were detected. Differences were noted, however, in the occurrence of unplanned expulsion prior to the abortion procedure: significantly higher rates of unplanned expulsion occurred with the 100 µg dose when compared with the 50 µg dose of sulprostone (RR 0.04 [95% CI 0.00, 0.37]).

Sulprostone dosing by intramuscular administration (Analysis 23.1; Analysis 23.2;Analysis 23.3)

When dosing by intramuscular injection was used 3-4 hours prior to the procedure, no differences in cervical effect were noted between 250 µg and 500 µg of sulprostone (RR 0.72 [95% CI 0.24, 2.15]). Nausea and vomiting did differ between the doses with significantly higher rates occurring in the 500 µg group (RR 0.13 [95% CI 0.04, 0.44]). One unplanned expulsion occurred in the higher dose group, while none occurred among those who received the lower dose (RR 0.34 [95% CI 0.01, 8.36]).

PGE_2 comparisons

Prostaglandin E_2 versus prostaglandin $F_{2\alpha}$ (Analysis 24.1; Analysis 24.2; Analysis 24.3)

One study compared prostaglandins E_2 and $F_{2\alpha}$ (Heinzl 1981). Women who received 1mg oral prostaglandin E_2 required more mechanical cervical dilation than women receiving 2.5 mg intracervical prostaglandin $F_{2\alpha}$ (RR 12.90 [95% CI 7.22, 23.05]). However, they experienced less nausea (RR 0.17 [95% CI 0.04, 0.78]) and had significantly fewer unplanned expulsions prior to the procedure (RR 0.01 [95% CI 0.00, 0.23]) than those in the prostaglandin $F_{2\alpha}$ group.

Lamicel comparisons (Analysis 25.1)

Lamicel® versus cervical tents without $MGSO_4$ (Table 7)

One study compared Lamicel to similar tents which did not contain $MgSO_4$. Data reported were not complete enough for re-analysis, but initial cervical dilation between the two groups was similar. Additionally, the occurrence of unplanned expulsion prior to the procedure was similar between treatment groups (RR 3.65 [95% CI 0.14, 94.97]).

DISCUSSION

The quality of evidence included in this review is mixed; however, the more recent studies are generally of good or fair quality. To improve the quality of evidence we reviewed, we excluded studies with evidence of bias, either in the methodology of randomisation or concealment of allocation. Since assessment of cervical dilation and any immediate, procedure-related complications occur at the time of the procedure, loss to follow-up in included studies did not introduce a significant source of bias. In addition, we attempted to reduce bias from our assessment and analyses of the evidence by assessing articles for inclusion in the review and extraction of data by two independant researchers.

There are many safe methods of cervical ripening prior to surgical abortion, although efficacy and side-effects between methods vary. Reports of adverse events such as cervical laceration or uterine perforation are uncommon in this body of evidence and no study has investigated whether cervical preparation impacts these rare outcomes among women having first trimester abortion procedures.

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. The decreased procedural time may have very little impact on procedures at early gestation which already take very little time to perform. 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.

Few studies have evaluated women's satisfaction or perception of cervical ripening procedures. It is difficult to assess women's preferences, particularly in randomised trials where a woman experiences only one method of cervical preparation; in three of the four trials that investigated this outcome, there were no differences between treatment groups and women's disatisfaction with their cervical ripening method. In one trial, women reported higher rates of dissatisfaction with use of laminaria when compared to misoprostol.

When prostaglandins are compared, misoprostol is superior to gemeprost in terms of cervical ripening effect and in decreasing the occurrence of side-effects. Two trials demonstrated, however, a greater effect of mifepristone when compared to misoprostol, with no differences in side-effects. Misoprostol appears to be equally effective as laminaria in the studies included in this review. The dose of 400 μg is superior to 200 μg in terms of effects on the cervix. Routes of administration may be sublingual, which is superior to vaginal in terms of cervical effect, or vaginal, which is superior in terms of limiting side-effects.

All methods of preparation prior to the surgical procedure require 3 hours to be most efficacious, with the exception of sublingual misoprostol which may be effective at 2 hours after administration. For methods such as osmotic dilators or mifepristone, more time is needed. Particularly when prostaglandins are used, this time period of cervical preparation can be painful for women, and can be associated with gastrointestinal side-effects. Older prostaglandins, particularly at higher doses or over longer time periods, were associated with unplanned expulsion of the pregnancy prior to the surgical procedure; this appears to occur infrequently when misoprostol is administered 3 hours prior to the abortion procedure.

The conclusions of this review agree with the most recent review of cervical dilation techniques prior to 14 weeks gestation, published by the Society for Family Planning 2007 (Allen 2007). Although RCOG 2004 and WHO 2003 recommends adolescents receive cervical preparation prior to abortion procedures, no randomised trials have compared the rates of adverse outcomes of adolescents with those of adult women.

AUTHORS' CONCLUSIONS

Implications for practice

Misoprostol is the preferred prostaglandin for cervical ripening. If misoprostol is used, it should be given adequate time to have maximum effect (3 hours for vaginal administration, 2 hours for sublingual) without extending the time to the point where unplanned expulsions begin to occur (6-8 hours or overnight use). When adequate time elapses between administration and the surgical procedure, lower doses are as effective with lower rates of side-effects. Laminaria have a cervical ripening effect with generally lower rates of gastrointestinal side-effects and greater rates of insertional pain; their use may be limited in women who prefer a same-day procedure. Mifepristone may be superior to misoprostol in terms of cervical preparation, however, its use may be limited by its current high cost and time required for effect (24 hours).

Implications for research

Research should attempt to delineate the gestational age where cervical preparation decreases adverse events and whether there are groups of women where cervical preparation is particularly important (adolescents or nulliparae). Additionally, the use of mifepristone for cervical preparation in the later first trimester should be investigated. Women's preferences for cervical preparatory tech-

niques have been inadequately explored and should be included in future research.

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* *Indicates the major publication for the study*

CHARACTERISTICS OF STUDIES

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

Aronsson 2004

Methods	Randomisation method not described. Allocation using sealed, sequentially numbered envelopes
Participants	32 women Included: women between 8 and 12 weeks of pregnancy. Exclusion criteria: prior delivery/abortion, abnormal pregancy, contraindication to misoprostol, signs of genital infection Hospital setting, Sweden.
Interventions	Intervention 1: 400 µg misoprostol administered orally 3 h prior to surgery Intervention 2: 400 µg misoprostol administered sublingually 3 h prior to surgery
Outcomes	Pre-operative cervical dilation, blood loss
Notes	Sealed envelopes did not stipulate that they were opaque. Attempted to clarify randomisation and allocation with author but received no response

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B- unclear

Ashok 2000

Methods	Randomisation using sequentially numbered, sealed, opaque envelopes that had been prepared using a random number table
Participants	90 women. Included: women who underwent vacuum aspiration abortion, 15-40 years old, between 6.6 and 12. 1 weeks gestation age, with no contraindications to prostaglandin or mifepristone. Exculsion criteria: symptoms or signs of a threatened miscariage, history of cervical surgery, or women living $\geq$1 hour away from the hospital Hospital setting, Scotland.
Interventions	1) 800 µg vaginal misoprostol 24 h prior to procedure; 2) 200 mg mifepristone 24 h prior to procedure; 3) 200 mg mifepristone 48 h prior to procedure
Outcomes	Initial cervical dilation, need for further dilation, force needed for dilation, blood loss, acceptibility
Notes	

Risk of bias

Item	Authors' judgement	Description

Ashok 2000 (*Continued*)

Allocation concealment?	Yes	A-Adequate

Ashok 2003

Methods	Randomisation by random number tables and allocation by sequentially numbered, opaque, sealed envelopes
Participants	64 women Included: women in in their first pregnancy over 16 years, singleton viable intrauterine pregnancy at gestations up to 91 days, no contraindication to prostaglandins. Exclusion criteria: threatened miscarriage or hemorrhagic disorders Hospital setting, Scotland.
Interventions	1) misoprostol 400 µg orally at home; 2) Two tablets of misoprostol 400 µg vaginally in the hospital 2-4hours pre-operative
Outcomes	Efficacy (initial dilation and force needed), side-effects, acceptability
Notes	No cervical lacerations or perforations occurred.

Risk of bias

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

Bokstrom 1998

Methods	Randomised in a double-blinded manner (not otherwise specified)
Participants	45 women. Included: nulliparae between 8 to <10 weeks gestation. Gestational age confirmed by ultrasound Hospital setting, Sweden
Interventions	Treated with 1) misoprostol orally (600 µg) 16 to 20 h before surgery 2) mifepristone (200 mg) 48 and 24 h before surgery or 3) placebo
Outcomes	Side effects and pain, degree of cervical dilation, immunohistochemistry
Notes	Attempted to clarify randomisation and allocation with author but received no response

Risk of bias

Item	**Authors' judgement**	**Description**
Allocation concealment?	Unclear	B-Unclear

Burnett 2005

Methods	Randomisation by coin toss. Open-label.
Participants	70 women. Included: healthy women <15 weeks gestation. Exclusion criteria: not stated Canada, unclear setting
Interventions	1) misorpostol 200 µg vaginally; 2) Laminaria tents
Outcomes	Degree of dilation
Notes	

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B-Unclear

Cakir 2005

Methods	Computer-based restricted stratified randomisation was generated, and sealed envelopes were used for allocation concealment. Placebo-controlled trial
Participants	160 women randomised. Included: women at 7-10 weeks gestation with singleton pregnancy. Exclusion criteria: systemic disease, contraindication for misoprostol, history cervical surgery (major or minor), threatened or missed abortion or initialinitial cervical dilation, Hgb<10, bleeding or spotting during current pregnancy, multiple pregnancy, basal cervical dilation greater than 4mm. Confirmed gestational age by US Family planning clinic, Turkey.
Interventions	Three hours prior to procedure: 1) oral placebo 2) vaginal placebo 3) oral misoprostol 400 µg 4) vaginal misoprostol 400 µg
Outcomes	Side effects, blood loss, degree of cervical dilation
Notes	Sealed envelopes did not stipulate that they were opaque or sequentially numbered Reported no unplanned expulsions of the pregnancy before scheduled procedure and no hospitalizations for complications Two women who received oral misoprostol developed fevers.

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B- unclear

Carbonell 2001

Methods	Randomisation method not specified. Allocation using sealed, opaque, sequential envelopes
Participants	900 women. Included: women at least 18 years of age, gestational age up to 63 days, ability of the woman to give informed consent, to understand and complete the protocol, and willingness to abstain from sexual intercourse for the first 14 days of the study. Exclusion criteria: Hgb < 10, HTN, threatened/ ongoing abortion, contraindication to misoprostol, active gential infection. Confirmed gestational age by US Maternity hospital, Cuba.
Interventions	400 µg misoprostol administrered 1) orally 8 h prior 2) vaginally 4 h prior
Outcomes	Cervical dilation, side-effects, blood loss
Notes	2 women who received oral misoprostol had unplanned expulsions prior to the procedure No cervical lacerations or perforations occurred.

Risk of bias

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

Cheng 1975

Methods	Double-blinded randomised controlled trial (method not specified)
Participants	50 women. Included: women aged 15-29 with gestational ages 7-12 weeks and who were nulliparous Hospital setting, Singapore
Interventions	Twenty hours before procedure: 1) 25 µg 15 methyl PGE2 methyl ester administered extra-amniotically 2) 2 ml normal saline
Outcomes	Side effects, cervical dilation
Notes	Attempted to clarify randomisation and allocation with author but received no response. There were 3 cervical lacerations in the placebo group

Risk of bias

Item	**Authors' judgement**	**Description**
Allocation concealment?	Unclear	B- Unclear

Christensen 1984

Methods	Randomised controlled trial (not otherwise specified).
Participants	134 women randomised. Mean gestation 69-71 (51-119) days. Included nulliparous healthy women, gestational age <13 weeks , no signs of threatened abortion Hospital setting, Sweden
Interventions	3 hours prior to procedure, women received either 1)16,16-dimethyl-trans-delta2- PGE1 methyl ester 2) placebo
Outcomes	Cervical dilation, further dilation needed, blood loss
Notes	Attempted to clarify randomisation and allocation with author but received no response. No cervical lacerations occurred. Two uterine perforations occurred in the placebo group

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B- Unclear

Christensen 1985

Methods	Randomised controlled trial
Participants	200 women. Included: women in 8-12th week pregnancy with average age 22-23 years and average gestational age 10 weeks Hospital setting, Sweden
Interventions	3-4 h before procedure intramuscular sulprostone 1) 250 µg 2) 500 µg
Outcomes	Side-effects, cervical dilation
Notes	Attempted to clarify randomisation and allocation with author but received no response. No cervical lacerations occurred. One uterine perforation occurred in the 500 µg group

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B- Unclear

de Jonge 2000

Methods	Double-blind, randomised (using permuted size 8 blocks for the first 152 women but not for the following 118) placebo-controlled trial
Participants	278 women randomised. Included: gestational age<13 weeks (average gestational age of 62 days, average age 27-28). Exclusion criteria: symptomatic asthma/cardiac disease, anticoagulant therapy or Hgb<8, other serious medical conditions. Gestational age confirmed by US Hospital setting, South Africa.
Interventions	2-3 hours prior to procedure: 1) 600 µg misoprostol vaginally or 2) placebo (750 mg ascorbic acid)
Outcomes	Degree of cervical dilation
Notes	

Risk of bias

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

Durlot 1988

Methods	Double-blinded randomised controlled trial (methods not specified) using a non-algorithmic randomisation method, per study authors. This method was not further described
Participants	64 women randomised. Included women between 6-12 weeks gestation. Exclusion criteria: women with liver, GI or renal disease or having received corticosteriods last 3 month Hospital setting, France
Interventions	2 days prior to procedure women received: 1) placebo 2) mifepristone 200 mg/ day
Outcomes	Cervical dilation
Notes	

Risk of bias

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

Ekerhovd 2003

Methods	Randomisation by sealed, opaque sequential envelopes prepared using random number tables
Participants	90 women randomised. Included women who were healthy and nulliparous with singleton pregnancy, 8-12 weeks' gestation. Excluded women with threatened abortion or any kind of chronic disease (requiring daily meds). Confirmed dating by US Hospital setting, Sweden
Interventions	3-4 h prior to procedure, women receieved either: 1) 1 mg gemeprost or 2) 400 µg misoprostol
Outcomes	Cervical dilation and peak force to dilate
Notes	No cervical lacerations or uterine perforations occurred.

Risk of bias

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

El-Rafaey 1994

Methods	Randomisation using computer-generated random number tables.
Participants	90 women randomised. Included: nulliparous women with pregnancies between 9-13 weeks. Excluded: women with history of cervical surgery or threated abortion Hospital setting, Scotland
Interventions	2-4 h prior to procedure women received vaginally: 1) gemeprost 1 mg 2) misoprostol 600 µg or 3) placebo
Outcomes	Side-effects, cervical dilation, blood loss, biopsy specimens
Notes	One cervical laceration and one hospitalization occurred in the placebo group. No uterine perforations occurred

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B- Unclear

Esteve 2006

Methods	Computer-generated randomisation with allocation using sealed, opaque sequential envelopes
Participants	1424 women randomised. Average gestation 55 days. Included: healthy women no more than 84 days gestation, willingness to abstain from sex for 14 days after abortion, and ability to give informed consent. Exclusion for Hgb <10, HTN (≥160-90), threatened abortion (prior uterine bleeding), active genital infection, suspected ectopic, or intolerance to misoprostol. Gestational age confirmed by US Clinics in Spain.
Interventions	Misoprostol 400 µg 1-3 h before procedure, administered 1) sublingually 2) vaginally
Outcomes	Cervical dilation, side-effects, length of procedure
Notes	No cervical lacerations or uterine perforations occurred. One hospitalization occurred

Risk of bias

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

Golland 1989

Methods	Randomised by random number generation.
Participants	66 women randomised. Included nulliparous women between 7-14 weeks gestation aged 16-28 years. Excluded those with a history of cervical surgery Hospital setting, UK
Interventions	3 hour prior to procedure women received: 1) gemeprost 1 mg 2) 3mm Lamicel dilator 3) 4mm Dilapan
Outcomes	Degree of cervical dilation
Notes	Surgeon blinded to treatment group. Two cervical lacerations occurred. There were no uterine perforations, hospitalizations or infections

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B- unclear

Gupta 1990

Methods	Randomised, placebo-controlled study using a stratified randomisation code
Participants	30 women randomised. Included: women up to 91 days gestation aged 18-39. Excluded: women with multiple gestations, ectopic pregancy, missed abortion, threatened abortion, previous cervical surgery, serious medical illness, or treatment with steriods in last 6 months Hospital setting, UK.
Interventions	42-53 h before procedure, women received: 1) placebo or 2) mifepristone 600mg orally
Outcomes	Cervical dilation, blood loss
Notes	A third party held the allocation code.

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B- unclear

Hamoda 2004

Methods	Randomised by sequential, opaque sealed envelopes generated by random number tables
Participants	74 women were randomised. Included: women who were nulliparous, with singleton pregnancy in first trimester. Excluded: women with previous cervical surgery, contraindication to misoprostol, or a previous pregnancy. Gestational age confirmed by US Hospital setting, Scotland.
Interventions	2-4 h prior to surgery, women received misoprostol 400 μg either: 1) sublingually or 2) vaginally
Outcomes	Bleeding, side-effects, cervical dilation
Notes	No cervical lacerations, uterine perforations, hospitalizations or infections occurred

Risk of bias

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

Heinzl 1981

Methods	Randomisation using a random number table. The trial was double-blinded
Participants	581 women randomised. The average gestation was between 9-10 weeks. Included women up to 12 weeks (7-12 weeks) gestation Hospital setting, Switzerland.
Interventions	Administered approximately 16 h prior: 1) 1 mg prostaglandin E2 orally 2) 2.5 mg prostglandin F2 alpha intracervically 3) placebo intracervical gel or 4) nothing
Outcomes	Cervical dilation
Notes	Author contacted to provide the methods of randomisation and allocation No uterine perforations occurred. Two infections (one each in the oral PGE group and placebo group) and 1 hospitalization (oral PGE group) occurred

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B- Unclear

Henry 1999

Methods	Randomisation generated by random number tables (with block size of 20) and allocated using sealed envelopes
Participants	199 women randomised. Included: women aged 18-44 years with mean gestational age of 9.7 weeks Maternity hospital, Finland.
Interventions	Women received: 1) 200 µg vaginal misoprostol; 2) gemeprost 1 mg vaginal
Outcomes	Cervical dilation, blood loss
Notes	No cervical lacerations, uterine perforations or hospitalizations occurred

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B- Unclear

Ho 1983

Methods	Double blinded placebo-controlled trial by random number generation, blocks of 10
Participants	120 women randomised. Included: women aged 21-33 with average gestational age of 10 weeks (9.1-10.3). Excluded: women with signs of threatened abortion, history of atopy or serious medical disease or pregnancy beyond first trimester Hospital setting, Hong Kong.
Interventions	3 h prior to procedure, women received 1) 1 mg 16, 16,-dimethyl-trans delta2- porostaglandin E1 methyl ester or 2) placebo
Outcomes	Side-effects, cervical dilation, blood loss, complications
Notes	One cervical laceration in the placebo group occurred. There were no uterine perforations

Risk of bias

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

Inal 2003

Methods	Double-blinded, randomised controlled trial (method not described)
Participants	120 women. Included: women with gestational age within the 1st trimester. Gestational age was determined by ultrasonography Hospital setting, Turkey.
Interventions	10 h prior to procedure, received 1) 200 µg misoprostol orally 2) 200 µg misoprostol vaginally 3) oral placebo or 4) vaginal placebo
Outcomes	Cervical dilation, length of procedure, side-effects, expulsion
Notes	Attempted to clarify randomisation and allocation with author but received no response

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B- unclear

Jurgenson 1989

Methods	Randomised controlled study (method not described)
Participants	40 women randomised. Included: healthy, nulliparous women in first trimester. Confirmed gestational age by US Hospital setting, Sweden.
Interventions	4 h prior to procedure, women received 1) 16,16 dimethyl-trans-delta-PGE1 (Cervagem®) or 2) one Dilapan® (4x65mm)
Outcomes	Initial cervical dilation, need for additional dilation, blood loss
Notes	Attempted to clarify randomisation and allocation with author but received no response No cervical lacerations, uterine perforations or hospitalizations occurred

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B- unclear

MacIsaac 1999

Methods	Placebo-controlled double-blinded (or, at least provider-blinded) trial with randomisation performed by using a computer-generated, random-number-producing algorithm with randomly permuted fixed blocks of seven. Allocation by sequential, opaque, sealed envelopes
Participants	106 women randomised. Included: women >16 years between 7-14 weeks gestation, willing to comply with standard treatment and speaking either English or Spanish. Excluded women who were intolerant/ allergic to misoprostol, who had severe asthma or hypertension requiring daily medication. Confirmed gestational age by US Hospital setting, USA.
Interventions	Approximately 4 h prior to procedure: 1) one medium laminaria; 2) 400 µg misoprostol vaginally; 3) 400 µg misoprostol orally
Outcomes	Cervical dilation, need for additional dilation, blood loss, procedure duration, side-effects, acceptability
Notes	No cervical lacerations or uterine perforations occurred. Although unplanned expulsion not reported, 5 women who received misoprostol had their procedures early due to vaginal bleeding

Risk of bias

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

MacKenzie 1990

Methods	Randomisation by random number table
Participants	1030 women randomised. Included: women aged 16-47 who were not more than 13 weeks gestation. Exclusion criteria not stated Hospital setting, UK.
Interventions	Morning of procedure (1-4 h prior to procedure), women received 1) 10 mg vaginal pessary of PGE2 or 2) gemeprost 1mg
Outcomes	Initial dilation, need for and ease of further dilation, surgical complications (uterine/ cervical injury) and blood loss
Notes	There were 28 (gemeprost) and 33 (PGE) cervical lacerations and 7 (gemeprost) and 1 (PGE) uterine perforations during this study

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B- unclear

Morris 1986

Methods	Randomised controlled trial
Participants	60 women. Included: women who had not been pregnant before, were between 6-13 weeks, and had never undergone any gynaecological surgery Hospital setting, Australia.
Interventions	12 h prior, women received 1) laminaria 2) PGF2a gel (20 mg) 3) no treatment
Outcomes	Cervial dilation, ease of further dilation, blood loss
Notes	Attempted to clarify randomisation and allocation with author but received no response. No hospitalizations as a result of abortion complications. Five unplanned expulsions in PGF group

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B- unclear

Ngai 1995

Methods	Double-blind randomised controlled trial, with randomisation and allocation performed as described in Clinical trials: Design, conduct and analysis.
Participants	75 women randomised. Included: women with gestations between 42-84 days Average age 20-21 in misoprostol group and 24-25 in placebo group. Average gestational age of 9 weeks (8.9-9.3) Clinic setting, Hong Kong.
Interventions	12 h prior, women took 1) placebo (vitamin B) 2) misoprostol 400 µg orally
Outcomes	Cervical dilation, need for further dilation, ease of dilation, blood loss
Notes	One cervical laceration occurred in the placebo group. There were 2 repeat curretages for incomplete procedure, one in each treatment group

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B- unclear

Ngai 1999

Methods	Randomised controlled trial, with randomisation and allocation performed as described in Clinical trials: Design, conduct and analysis.
Participants	225 women randomised. Included: nulliparous women between 56-84 days gestation with normal general and GYN history Hospital setting, Hong Kong.
Interventions	3 h prior to procedure, women received 1) 200 µg oral misoprostol (vaginal placebo) 2) 400 µg oral misoprostol (vaginal placebo) 3) oral placebo and 200 µg vaginal misoprostol 4) oral placebo and 400 µg vaginal misoprostol 5) oral and vaginal placebo
Outcomes	Cervical dilation, further dilation and force needed, blood loss
Notes	No cervical lacerations, uterine perforations or unplanned expulsions occurred

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B- unclear

Ngai, Yeung 1995

Methods	Randomised controlled trial, with randomisation and allocation performed as described in Clinical trials: Design, conduct and analysis.
Participants	64 women randomised Included: nulliparous women between 42-84 days gestation (confirmed by either physical examination or ultrasound) Clinic setting, Hong Kong.
Interventions	12 h prior, women took either 1) 400 µg misoprostol or 2) placebo and then 3 h prior 1 mg gemeprost placed vaginally
Outcomes	Cervical dilation, further dilation needed, blood loss
Notes	No cervical lacerations, uterine perforations or hospitalizations occurred

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B- unclear

Okanlomo 1999

Methods	Double-blinded randomised trial by computer generated numbers and allocation using sealed, opaque sequential envelopes
Participants	136 women randomised. Included: healthy women between 6-12 weeks gestation, with no medical disorders. Excluded: women with malodorous vaginal discharge or anxiety Clinic setting, South Africa.
Interventions	12 h and 4 h prior, women received 1) 600 µg and 400 µg misoprostol (vaginal 1st dose, oral 2nd dose) 2) placebo
Outcomes	Cervical dilation, procedure length, estimated gestational age from products of conception, and visual analog score of pain experience
Notes	No cervical lacerations or uterine perforations occurred.

Risk of bias

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

Oppegaard 2004

Methods	Double-blinded randomised controlled trial, with randomisation performed with permuted blocks using a randomisation plan generator. Allocation by sealed, opaque, sequentially numbered envelopes
Participants	600 women randomised. Included: women with viable pregnancies between 7-12 weeks. Excluded: women who did not speak Norwegean or English, with a known allergy to misoprostol or gestational age outside of the 7-12 weeks. Confirmed gestational age by US Clinic setting, Norway.
Interventions	The night before the procedure, women took either 1) oral misoprostol 400 µg 2) oral misoprostol 200 µg
Outcomes	Cervical dilation, blood loss
Notes	No unplanned expulsions occurred.

Risk of bias

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

Oppegaard 2006

Methods	Randomisation was performed with permuted blocks using a randomisation plan generator. Allocation by sealed, opaque, sequential envelopes
Participants	338 women randomised. Included women with viable pregnancies between 7-12 weeks. Exclusion: speaking a language other than Norwegean or English or known allergy to misoprostol. Confirmed gestational age by US Clinic setting, Norway.
Interventions	1) 400 µg vaginal misoprostol 2) 400 µg oral misoprostol
Outcomes	Cervical dilation, pain, acceptability
Notes	One cervical laceration occurred in the oral misoprostol group; there were no uterine perforations or hospitalizations

Risk of bias

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

Osmers 1990

Methods	Placebo-controlled, double blinded randomised controlled trial (method of randomisation not described)
Participants	50 women randomised. Included: nulliparous, healthy women between 7-12 weeks aged 15-38 years. Confirmed gestational age by US Hospital setting, Germany.
Interventions	6 h prior to procedure 1) placebo 2) intracervical gel of 500 µg PGE2
Outcomes	Pain, cervical dilation, blood loss
Notes	Attempted to clarify randomisation and allocation with author but received no response. One cervical laceration occurred in the placebo group; there were no uterine perforations. Two women in the placebo group required re-evacuation

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B- unclear

Rabe 1985

Methods	Placebo- controlled double-blinded randomised trial (randomisation method not further described)
Participants	109 women randomised. Included: women between 9-12 weeks gestation, aged 18-42. Exclusions: threatened abortion, previous gynaecological operation, prostaglandin allergy, cardiovascular disease, ulcerative colitis, diabetes, coagulation problems, thalassaemia, renal insufficiency, glomerulonephritis, or epilepsy Hospital setting, Germany.
Interventions	3 hours before the intervention, the medication was placed into the posterior fornix followed by 1 hour of bedrest, either 1) Gemeprost 1mg/pv; 2) Placebo
Outcomes	Status of the cervix (firm/soft/open), difficulty of dilation (subjective measurement and size of hegar dilator), side-effects
Notes	

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B-unclear

Radestad 1988

Methods	Randomised clinical trial (method of randomisation and allocation concealment not described)
Participants	42 women randomised. Included: women with gestational ages between 7-11 weeks. Ultrasound used to confirm gestational age Sweden, unclear setting.
Interventions	12 and 24 h prior, women received 1) mifepristone 100 mg or 2) placebo
Outcomes	Force of dilation, cervical dilation, side-effects
Notes	Attempted to clarify randomisation and allocation with author but received no response. No cervical lacerations or uterine perforations occurred

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B-unclear

Radestad 1989

Methods	Randomised controlled trial (methods of randomisation and allocation concealment not described)
Participants	45 women randomised. Included: women with gestational age between 6-11 weeks, with no history of spontaneous abortion, cesarean section or cervical procedures. Ultrasound used for gestational age dating Hospital setting, Sweden.
Interventions	3-4 h prior to procedure, women received 1) Lamicel, 3 mm or 2) synthetic sponge without MgSO4
Outcomes	Cervical dilation, force needed for further dilation, blood loss
Notes	Attempted to clarify randomisation and allocation with author but received no response

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B- unclear

Rath 1983

Methods	Double-blinded randomised trial
Participants	30 women randomised. Included: nulliparous women in the first trimester who were healthy, without gynaecologic or internal disorders Hospital setting, Germany

Rath 1983 (*Continued*)

Interventions	Intracervical placement 8 h prior to procedure of 1) 0.5 mg PGE2 gel 2) 0.05 mg sulprostone gel or 3) 0.1 mg sulprostone gel
Outcomes	Cervical dilation, ease of passage through canal measured by tonometry, bleeding, pain, abortion
Notes	Attempted to clarify randomisation and allocation with author but received no response. There were 2 cervical lacerations in the PGE2 group; no uterine perforations occurred

Risk of bias

Item	**Authors' judgement**	**Description**
Allocation concealment?	Unclear	B- unclear

Rath 1985

Methods	Randomised controlled trial
Participants	60 women randomised. Included women in the first trimester with an average gestational age of 10 weeks Hospital setting, Germany
Interventions	6-8 h prior to procedure, women received intracervical sulprostone 1) 25 µg 2) 50 µg or 3) 100 µg
Outcomes	Cervical dilation, force needed to dilate, success of dilation, pain and side-effects
Notes	Attempted to clarify randomisation and allocation with author but received no response. No uterine perforations or hospitalizations occurred

Risk of bias

Item	**Authors' judgement**	**Description**
Allocation concealment?	Unclear	B-unclear

Shalev 1988

Methods	Double-blinded, randomised controlled trial (method not described)
Participants	40 women randomised. Included nulliparous women between 16-25 years with gestational age between 7-12 weeks Hospital setting, Israel
Interventions	Intracervical placement the night before procedure of: 1) PGE2 gel 1 mg or 2) placebo
Outcomes	Cervical dilation, difficulty of procedure, side-effects

Shalev 1988 (*Continued*)

Notes	Attempted to clarify randomisation and allocation with author but received no response. No cervical lacerations or uterine perforations occurred. There was one reaspiration in the placebo group

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B-unclear

Sharma 2005

Methods	Randomised controlled trial using computer-generated random number generation
Participants	90 women randomised. Included healthy women >18 years old, between 7-10 weeks gestation who had no contraindication to misoprostol use. Excluded women with possible threatened abortion. Confirmed gestational age dating by ultrasound Hospital setting, UK.
Interventions	60 minutes prior to procedure: 1) oral miso 400 µg 2) vaginal miso 800 µg 3) no treatment
Outcomes	Force required to dilate cervix, initial dilation
Notes	Allocation method not described. No cervical lacerations or uterine perforations occurred

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B- unclear

Singh 1998

Methods	Double-blinded randomised controlled trial; randomisation as described in Clinical trials: Design, conduct and analysis, and allocation by sealed, opaque, sequential envelopes
Participants	Randomised 120 women. Included: nulliparous women in the first trimester. Ultrasound was used to confirm gestational age Hospital setting, Singapore
Interventions	3-4 h prior to procedure, vaginal administration of misoprostol at doses of 1) 200 µg 2) 400 µg 3) 600 µg, or 4) 800 µg
Outcomes	Cervical dilation, side-effects, need for further dilation, blood loss
Notes	

Singh 1998 (*Continued*)

Risk of bias		
Item	**Authors' judgement**	**Description**
Allocation concealment?	Yes	A- adequate

Singh 1999

Methods	Double blinded, randomised controlled trial. Randomisation by random number tables and allocation by sequential, sealed, opaque envelopes
Participants	60 women randomised. Included: nulliparae between 6-11 weeks with Hgb>10. Gestational age confirmed by US or pelvic exam Hospital setting, Singapore
Interventions	Misoprostol administered either 1) 600 µg vaginally 2 h prior 3) 400 µg 3 h prior
Outcomes	Cervical dilation, need for further dilation, blood loss
Notes	There were no hospitalizations or unplanned expulsions.

Risk of bias		
Item	**Authors' judgement**	**Description**
Allocation concealment?	Yes	A- adequate

Singh, Fong 1999

Methods	Randomised controlled trial. Randomisation by random number tables and allocation by sequential, opaque envelopes
Participants	180 women randomised. Included nulliparae between 6-11 weeks gestation with Hgb>10 Hospital setting, Singapore.
Interventions	Prior to procedure, women received misoprostol vaginally 1) 400 µg 3 h prior 2) 600 µg 2 h prior 3) 800 µg 2 h prior
Outcomes	Cervical dilation, blood loss, successful dilation
Notes	There were no unplanned expulsions.

Risk of bias		
Item	**Authors' judgement**	**Description**

Singh, Fong 1999 (*Continued*)

Allocation concealment?	Yes	A- adequate

Stornes 1991

Methods	Randomised clinical trial.
Participants	108 women randomised. Included: nulliparae between 7-12 weeks who were 19-24 years old. Excluded: women with asthma, cardiovascular insufficiency, elevated ocular pressure, or allergies to prostaglandins Hospital setting, Denmark
Interventions	4 h prior to procedure, women received 1) gemprost vaginal pessary or 2) Lamicel tent (3mm except for last 3 patients who received 5 mm)
Outcomes	Cervical dilation, whether further dilation needed, blood loss, complications
Notes	Allocation per sealed, opaque, sequential envelopes, per author. Randomisation method unclear. There was one hospitalization in the Lamicel group

Risk of bias

Item	**Authors' judgement**	**Description**
Allocation concealment?	Yes	A- adequate

Tang 2004

Methods	Single-blinded trial with randomisation by computer-generated random numbers
Participants	80 women randomised. Included nulliparae <12 weeks gestation with a normal general and gynaecologic history and with a normal physical exam. Excluded women taking long-term medication, who had an IUD in situ, who were heavy smokers, or had an allergy to misoprostol. Ultrasound was used to confirm gestational ages in some cases Hospital setting, Hong Kong
Interventions	3 h prior to procedure, women received 400 µg misoprostol either 1) sublingually or 2) vaginally
Outcomes	Cervical dilation, force needed to further dilate, blood loss
Notes	There were no cervical lacerations or uterine perforations.

Risk of bias

Item	**Authors' judgement**	**Description**
Allocation concealment?	Unclear	B- unclear

Vimala 2003

Methods	Randomised controlled trial with allocation by sequential, opaque, sealed envelopes	
Participants	60 women randomised. Included women between 6-11 weeks gestation and excluded those with obstetric or gynaecologic complications or an allergy to misoprostol. Ultrasound used to confirm dating in some cases Hospital setting, India.	
Interventions	2 h prior to procedure, women received either 1) 400 µg sublingual misoprostol or 2) pyridoxine (placebo)	
Outcomes	Side-effects, cervical dilation, need for further dilation, blood loss	
Notes	No uterine perforations occurred.	
Risk of bias		
Item	**Authors' judgement**	**Description**
Allocation concealment?	Yes	A- adequate

Vimala 2004

Methods	Randomised controlled trial using random number table and allocation by sequential, opaque, sealed envelopes	
Participants	100 women randomised. Included women between 6-12 weeks gestation. Excluded those with medical problems, history of cervical surgery or cesarean or an allergy to misoprostol. Gestational age confirmed by ultrasound Hospital setting, India.	
Interventions	2 h prior to procedure, women received 400 µg misoprostol 1) sublingually or 2) vaginally	
Outcomes	Side- effects, cervical dilation, need for further dilation, duration of procedure, blood loss	
Notes	No uterine perforations occurred.	
Risk of bias		
Item	**Authors' judgement**	**Description**
Allocation concealment?	Yes	A- adequate

Vimala 2005

Methods	Randomised controlled trial using random number tables and allocated by sequential, opaque, sealed envelopes
Participants	60 women randomised. Included women with gestational age between 9-12 weeks. Excluded those with known heart disease, asthma, a scarred uterus, or allergy or contraindications to prostglandins. Dating confirmed by ultrasound Hospital setting, India
Interventions	2 h prior to procedure, women received either 1) 400 µg sublingual misoprostol or 2) 125 µg IM of 15-m-PG F_{2a}
Outcomes	Side-effects, cervical dilation, need for further dilation, blood loss, satsifaction
Notes	No uterine perforations occurred.

Risk of bias

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

Vimala, Mittal 2004

Methods	Randomised controlled trial using random ununber tables and allocated by sequential, opaque, sealed envelopes
Participants	120 women randomised. Included women between 6-11 weeks gestation. Excluded women with heart disease, asthma, known allergy to prostaglandins, multiple pregnancies, or scarred uterus. Ultrasound used to confirm dating Hospital setting, India
Interventions	2 or 3 h prior to procedure, women received 1) 400 µg sublingual misoprostol or 2) 200 µg sublingual misoprostol
Outcomes	Side- effects, cervical dilation, need for further dilation, blood loss
Notes	No uterine perforations or hospitalizations occurred.

Risk of bias

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

Wang 1989

Methods	Randomised controlled trial
Participants	60 women randomised. Included nulliparae between 6-11 weeks gestation. China, unclear setting.
Interventions	12 h prior to procedure, women received: 1) PGF2a 1 mg suppository 2) placebo
Outcomes	Cervical dilation, blood loss
Notes	Attempted to clarify randomisation and allocation with author but received no response. No cervical lacerations or uterine perforations occurred

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	Not described

WHO 1986

Methods	Randomised controlled trial by computer-generated random number table and allocation by sealed envelopes
Participants	627 randomised. Included nulliparae between 8-12 weeks gestation, over the legal age of consent. Excluded women with cardiac disease (past or current), hypertension, respiratory disease, ulcerative colitis, diabetes, disorders of blood coagulation, kidney disease, liver disease, sickle-cell, history of allergic reactions or any other serious systemic disease 11 centers in 9 countries (Moscow, Stockholm, New Delhi, Szeged, Ljubljana, Chandigarh, Bombay, Singapore, Hong Kong, Lusaka, Havana)
Interventions	3-4 hours prior to procedure: 1) 0.5mg IM of 16-phenoxy-tetranor PGE2 methyl sulfonylamide 2) 1 mg of vaginal 16, 16, dimethyl trans delta2 PGE1 methyl ester 3) 30 mg of vaginal 9 deoxo-16, 16-dimethyl-9-methylene PGE2 4) 0.5 mg of vaginal 15 methyl-PGF2a methyl ester, or 5) one medium-size laminaria tent
Outcomes	Cervical dilation, need for and ease of further dilation
Notes	

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B- unclear

WHO 1990

Methods	Double-blinded randomised controlled trial by computer-generated random number tables. Allocation method not described
Participants	230 randomised. Included nulliparae between 18-35 years with normal general and gynaecologic history and exam and a living, intrauterine pregnancy between 70-84 days. Excluded women with past cervical surgery or dilation, or with current signs of threatened abortion and those who wished to start hormonal or intrauterine contraception within 1 month of abortion. Confirmed dating by ultrasound 6 centers (Aberdeen, Greifswald, Hong Kong, Singapore, Stockholm, Szeged)
Interventions	Women received 24 hours and 12 hours prior to procedure one of the following: 1) placebo 2) 25 mg mifepristone 3) 50 mg mifepristone or 4) 100 mg mifepristone
Outcomes	Cervical dilation, ease of dilation, blood loss, side-effects and complications
Notes	Four cervical lacerations (randomisation groups not stated) and no uterine perforations occurred. Four women required reaspiration in the placebo group, as did 1 in the 25 mg mifepristone group

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B- unclear

Wiebe 1998

Methods	Randomised controlled trial using a random number table. Allocation method by sealed envelopes
Participants	93 women randomised. Included women with first trimester pregnancies Canada, unclear setting
Interventions	2 h prior to procedure, women received 1) placebo or 2) 750 µg misoprostol vaginally
Outcomes	Cervical dilation, pain, side-effects
Notes	

Risk of bias

Item	Authors' judgement	Description
Allocation concealment?	Unclear	B- unclear

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

Study	Reason for exclusion
Bryman 1988	Method of randomisation inadequate
Frankman 1980	Not randomised
Heinzl 1987	Method of randomisation inadequate
Hulka 1987	Did not report on any of our outcomes of interest
Ivy Li 2003	Studied nitric oxide donors, which are excluded from this review (subject of another review)
Khanna 1980	Included women with gestational ages in the second trimester
Platz-Christensen	Comparisons were carried out consecutively over time
Saxena 2004	No allocation concealment
Saxena 2006	Method of randomisation inadequate
Skjeldestad 1990	Method of randomisation inadequate
Vengadasalam 1981	Not randomised

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

von Hertzen

Trial name or title	Pretreatment with misoprostol before vacuum aspiration for first trimester induced abortion
Methods	Randomised controlled trial
Participants	4972 women prior to surgical abortion <12 weeks gestation
Interventions	Misoprostol 400 µg versus placebo
Outcomes	Need for further dilation and adverse events (uterine perforation, cervical laceration)
Starting date	2002
Contact information	Helena von Hertzen
Notes	completed enrolment in September 2005. Preparation is ongoing and should be forthcoming in the next year, as per personal communication with Helena von Hertzen

DATA AND ANALYSES

Comparison 1. Misoprostol versus placebo

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Cervical dilation at procedure start	5		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
1.1 Misoprostol 400 µg, vaginal	2	161	Mean Difference (IV, Fixed, 95% CI)	2.36 [1.92, 2.79]
1.2 Misoprostol 400 µg, sublingual	1	60	Mean Difference (IV, Fixed, 95% CI)	4.30 [3.53, 5.07]
1.3 Misoprostol 600 µg, oral	1	30	Mean Difference (IV, Fixed, 95% CI)	1.40 [0.51, 2.29]
1.4 Misoprostol 600 µg, vaginal	1	278	Mean Difference (IV, Fixed, 95% CI)	1.60 [1.14, 2.06]
2 Side-effects: occurrence of nausea	4	539	Odds Ratio (M-H, Fixed, 95% CI)	1.71 [1.10, 2.66]
2.1 Misoprostol 400 µg, vaginal	2	201	Odds Ratio (M-H, Fixed, 95% CI)	2.35 [1.11, 4.98]
2.2 Misoprostol 400 µg, sublingual	1	60	Odds Ratio (M-H, Fixed, 95% CI)	31.24 [1.73, 563.16]
2.3 Misoprostol 600 µg, vaginal	1	278	Odds Ratio (M-H, Fixed, 95% CI)	0.97 [0.53, 1.80]
3 Procedure length (minutes)	3		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
3.1 Misoprostol 400 µg, vaginal	2	161	Mean Difference (IV, Fixed, 95% CI)	-0.68 [-1.17, -0.19]
3.2 Misoprostol, 400 µg, sublingual	1	60	Mean Difference (IV, Fixed, 95% CI)	-3.5 [-4.69, -2.31]

Comparison 2. Gemeprost 1 mg versus placebo

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Need for additional mechanical dilation	3	349	Odds Ratio (M-H, Random, 95% CI)	0.04 [0.00, 0.51]

Comparison 3. Mifepristone versus placebo

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Need for additional mechanical dilation	3	168	Odds Ratio (M-H, Fixed, 95% CI)	0.33 [0.13, 0.82]
1.1 100 mg mifepristone	1	108	Odds Ratio (M-H, Fixed, 95% CI)	0.65 [0.10, 4.08]
1.2 200 mg mifepristone	1	30	Odds Ratio (M-H, Fixed, 95% CI)	0.58 [0.14, 2.48]
1.3 600 mg mifepristone	1	30	Odds Ratio (M-H, Fixed, 95% CI)	0.09 [0.02, 0.50]
2 Cervical dilation at procedure start	4	232	Mean Difference (IV, Fixed, 95% CI)	1.82 [1.40, 2.24]
2.1 100 mg mifepristone	1	108	Mean Difference (IV, Fixed, 95% CI)	1.40 [0.66, 2.14]
2.2 200 mg mifepristone	2	94	Mean Difference (IV, Fixed, 95% CI)	2.02 [1.51, 2.52]
2.3 600 mg mifepristone	1	30	Mean Difference (IV, Fixed, 95% CI)	Not estimable

Comparison 4. Prostaglandin $F_2\alpha$ versus placebo

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Need for additional mechanical dilation	1	287	Odds Ratio (M-H, Fixed, 95% CI)	0.02 [0.01, 0.04]

Comparison 5. Prostaglandin E_2 versus placebo

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Need for additional mechanical dilation	4		Odds Ratio (M-H, Fixed, 95% CI)	Subtotals only
1.1 1 mg prostaglandin E_2, intracervical	1	40	Odds Ratio (M-H, Fixed, 95% CI)	Not estimable
1.2 25 µg 15 methyl PGE2 methyl ester, extra-amniotic	1	50	Odds Ratio (M-H, Fixed, 95% CI)	Not estimable
1.3 1 mg PGE_2, oral	1	288	Odds Ratio (M-H, Fixed, 95% CI)	0.23 [0.12, 0.43]
1.4 0.5 mg prostaglandin E_2	1	50	Odds Ratio (M-H, Fixed, 95% CI)	0.09 [0.02, 0.35]
2 Cervical dilation at procedure start	2	328	Mean Difference (IV, Fixed, 95% CI)	6.8 [5.99, 7.61]
2.1 1 mg prostaglandin E_2, intracervical	1	40	Mean Difference (IV, Fixed, 95% CI)	6.8 [5.99, 7.61]
2.2 1 mg prostaglandin E_2, oral	1	288	Mean Difference (IV, Fixed, 95% CI)	Not estimable

Comparison 6. Osmotic dilators versus placebo

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Cervical dilation at procedure start	1	40	Mean Difference (IV, Fixed, 95% CI)	Not estimable

Comparison 7. Misoprostol dose: 400 µg misoprostol versus 200 µg misoprostol

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Cervical dilation at procedure start	4		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
1.1 Oral misoprostol	2	632	Mean Difference (IV, Fixed, 95% CI)	0.53 [0.30, 0.77]
1.2 Vaginal misoprostol	2	137	Mean Difference (IV, Fixed, 95% CI)	0.92 [0.53, 1.31]
1.3 Sublingual misoprostol	1	120	Mean Difference (IV, Fixed, 95% CI)	2.20 [1.61, 2.79]
2 Need for additional mechanical dilation	2	180	Odds Ratio (M-H, Fixed, 95% CI)	0.04 [0.02, 0.10]
2.1 Vaginal misoprostol	1	60	Odds Ratio (M-H, Fixed, 95% CI)	0.01 [0.00, 0.09]
2.2 Sublingual misoprostol	1	120	Odds Ratio (M-H, Fixed, 95% CI)	0.07 [0.03, 0.17]
3 Pain with cervical priming	2	180	Odds Ratio (M-H, Fixed, 95% CI)	2.50 [1.31, 4.75]
3.1 Vaginal misoprostol	1	60	Odds Ratio (M-H, Fixed, 95% CI)	8.11 [1.61, 40.77]
3.2 Sublingual misoprostol	1	120	Odds Ratio (M-H, Fixed, 95% CI)	1.84 [0.89, 3.80]
4 Procedure length (minutes)	2	197	Mean Difference (IV, Fixed, 95% CI)	-1.22 [-1.72, -0.71]
4.1 Vaginal misoprostol	1	77	Mean Difference (IV, Fixed, 95% CI)	-0.30 [-1.34, 0.74]
4.2 Sublingual misoprostol	1	120	Mean Difference (IV, Fixed, 95% CI)	-1.50 [-2.08, -0.92]

Comparison 8. Interval between misoprostol application and procedure: 2 hours versus 3 hours

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Cervical dilation at procedure start	1	60	Mean Difference (IV, Fixed, 95% CI)	1.5 [1.42, 1.58]
2 Need for additional mechanical dilation	1	60	Odds Ratio (M-H, Fixed, 95% CI)	0.01 [0.00, 0.08]
3 Pain with cervical priming	1	60	Odds Ratio (M-H, Fixed, 95% CI)	0.10 [0.02, 0.39]

Comparison 9. Route of misoprostol administration

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Cervical dilation at procedure start	5		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
1.1 400 µg vaginal versus oral	2	157	Mean Difference (IV, Fixed, 95% CI)	0.50 [0.13, 0.87]
1.2 400 µg vaginal versus sublingual	3	1604	Mean Difference (IV, Fixed, 95% CI)	-0.10 [-0.19, -0.01]
2 Need for additional mechanical dilation	3		Odds Ratio (M-H, Fixed, 95% CI)	Subtotals only
2.1 400 µg vaginal versus oral	1	80	Odds Ratio (M-H, Fixed, 95% CI)	0.47 [0.08, 2.75]
2.2 400 µg vaginal versus sublingual	2	1524	Odds Ratio (M-H, Fixed, 95% CI)	1.41 [1.15, 1.73]
3 Side-effects: occurrence of nausea	6		Odds Ratio (M-H, Fixed, 95% CI)	Subtotals only
3.1 400 µg vaginal versus oral	2	157	Odds Ratio (M-H, Fixed, 95% CI)	0.59 [0.26, 1.37]
3.2 400 µg vaginal versus sublingual	4	1678	Odds Ratio (M-H, Fixed, 95% CI)	0.32 [0.23, 0.46]
4 Cervical dilation at procedure start	1	32	Mean Difference (IV, Fixed, 95% CI)	0.5 [-0.55, 1.55]
5 Procedure length (minutes)	4		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
5.1 400 µg vaginal versus oral	2	157	Mean Difference (IV, Fixed, 95% CI)	-0.23 [-0.61, 0.15]
5.2 400 µg vaginal versus sublingual	2	1524	Mean Difference (IV, Fixed, 95% CI)	0.38 [0.11, 0.65]
6 Patient disatisfaction	1	73	Odds Ratio (M-H, Fixed, 95% CI)	0.10 [0.01, 1.97]

Comparison 10. Misoprostol versus gemeprost

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Cervical dilation at procedure start	3	342	Mean Difference (IV, Fixed, 95% CI)	0.47 [0.10, 0.85]
1.1 400 µg misoprostol versus 1 mg gemeprost	2	154	Mean Difference (IV, Fixed, 95% CI)	0.53 [0.03, 1.04]
1.2 200 µg misoprostol versus 1 mg gemeprost	1	188	Mean Difference (IV, Fixed, 95% CI)	0.40 [-0.16, 0.96]
2 Side-effects of 200 µg misoprostol versus gemeprost	1	564	Odds Ratio (M-H, Fixed, 95% CI)	0.35 [0.18, 0.68]
2.1 Nausea	1	188	Odds Ratio (M-H, Fixed, 95% CI)	0.41 [0.17, 1.01]
2.2 Vomiting	1	188	Odds Ratio (M-H, Fixed, 95% CI)	0.35 [0.09, 1.35]
2.3 Diarrhea	1	188	Odds Ratio (M-H, Fixed, 95% CI)	0.23 [0.05, 1.11]
3 Side-effects of 400 misoprostol versus gemeprost	1	128	Odds Ratio (M-H, Fixed, 95% CI)	0.47 [0.11, 1.98]
3.1 Nausea	1	64	Odds Ratio (M-H, Fixed, 95% CI)	0.36 [0.06, 2.01]
3.2 Vomiting	1	64	Odds Ratio (M-H, Fixed, 95% CI)	1.0 [0.06, 16.71]

4 Procedure length (minutes)	1	64	Mean Difference (IV, Fixed, 95% CI)	-1.5 [-3.00, 0.00]

Comparison 11. Misoprostol versus mifepristone

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Cervical dilation at procedure start	2	90	Mean Difference (IV, Fixed, 95% CI)	-0.79 [-1.29, -0.30]
1.1 800 µg misoprostol versus 200 mg mifepristone	1	60	Mean Difference (IV, Fixed, 95% CI)	-0.70 [-1.30, -0.10]
1.2 600 µg misoprostol versus 400 mg mifepristone (divided doses)	1	30	Mean Difference (IV, Fixed, 95% CI)	-1.0 [-1.89, -0.11]
2 Side-effects: nausea and vomiting	2	90	Odds Ratio (M-H, Fixed, 95% CI)	0.75 [0.17, 3.33]
2.1 800 µg misoprostol versus 200 µg mifepristone	1	60	Odds Ratio (M-H, Fixed, 95% CI)	0.19 [0.01, 4.06]
2.2 600 µg misoprostol versus 400 mg mifepristone (divided doses)	1	30	Odds Ratio (M-H, Fixed, 95% CI)	1.63 [0.23, 11.46]

Comparison 12. Misoprostol versus laminaria

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Need for additional mechanical dilation	2	131	Odds Ratio (M-H, Fixed, 95% CI)	1.04 [0.48, 2.26]
1.1 200 µg misoprostol	1	70	Odds Ratio (M-H, Fixed, 95% CI)	1.18 [0.43, 3.25]
1.2 400 µg misoprostol	1	61	Odds Ratio (M-H, Fixed, 95% CI)	0.88 [0.27, 2.90]
2 Procedure length (minutes)	1	70	Mean Difference (IV, Fixed, 95% CI)	-0.10 [-1.09, 0.89]
3 Patient disatisfaction	1	70	Odds Ratio (M-H, Fixed, 95% CI)	0.31 [0.12, 0.84]

Comparison 13. Misoprostol versus prostaglandin $F_{2\alpha}$

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Need for additional mechanical dilation	1	60	Odds Ratio (M-H, Fixed, 95% CI)	0.48 [0.16, 1.41]
2 Cervical dilation at procedure start	1	60	Mean Difference (IV, Fixed, 95% CI)	1.80 [1.04, 2.56]
3 Side-effects: nausea and vomiting	1	60	Odds Ratio (M-H, Fixed, 95% CI)	0.14 [0.02, 1.23]
4 Procedure length (minutes)	1	60	Mean Difference (IV, Fixed, 95% CI)	0.20 [-0.76, 1.16]

5 Patient disatisfaction	1	60	Odds Ratio (M-H, Fixed, 95% CI)	0.23 [0.04, 1.24]

Comparison 14. Gemeprost 1 mg versus Lamicel

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Need for additional mechanical dilation	2	153	Odds Ratio (M-H, Fixed, 95% CI)	0.86 [0.38, 1.95]
2 Side-effects	2		Odds Ratio (M-H, Fixed, 95% CI)	Subtotals only
2.1 Nausea	2	153	Odds Ratio (M-H, Fixed, 95% CI)	6.89 [0.83, 57.41]
2.2 Pre-operative pain	2	153	Odds Ratio (M-H, Fixed, 95% CI)	3.53 [1.40, 8.90]

Comparison 15. Gemeprost versus Dilapan

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Need for additional mechanical dilation	2	83	Odds Ratio (M-H, Fixed, 95% CI)	0.87 [0.32, 2.36]
2 Side-effects	2		Odds Ratio (M-H, Fixed, 95% CI)	Subtotals only
2.1 Nausea	2	83	Odds Ratio (M-H, Fixed, 95% CI)	0.50 [0.10, 2.51]
2.2 Pre-operative pain	2	83	Odds Ratio (M-H, Fixed, 95% CI)	1.02 [0.37, 2.84]

Comparison 16. Gemeprost versus laminaria

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Need for additional mechanical dilation	1	250	Odds Ratio (M-H, Fixed, 95% CI)	0.56 [0.29, 1.07]
2 Cervical dilation at procedure start	1	250	Mean Difference (IV, Fixed, 95% CI)	0.5 [0.05, 0.95]
3 Side-effects: nausea and vomiting	1	250	Odds Ratio (M-H, Fixed, 95% CI)	18.16 [1.04, 318.09]

Comparison 17. Gemeprost versus prostaglandin $F_{2\alpha}$

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Need for additional mechanical dilation	1	252	Odds Ratio (M-H, Fixed, 95% CI)	0.31 [0.15, 0.66]
2 Cervical dilation at procedure start	1	252	Mean Difference (IV, Fixed, 95% CI)	0.90 [0.42, 1.38]
3 Side-effects: nausea and vomiting	1	252	Odds Ratio (M-H, Fixed, 95% CI)	1.67 [0.53, 5.25]

Comparison 18. Dose of mifepristone

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Need for additional mechanical dilation	1	102	Odds Ratio (M-H, Fixed, 95% CI)	0.74 [0.12, 4.62]
2 Cervical dilation at procedure start	1	102	Mean Difference (IV, Fixed, 95% CI)	Not estimable

Comparison 19. Laminaria versus prostaglandin $F_{2\alpha}$

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Cervical dilation at procedure start	1	40	Mean Difference (IV, Fixed, 95% CI)	Not estimable
2 Unplanned expulsion prior to procedure	1	40	Odds Ratio (M-H, Fixed, 95% CI)	0.07 [0.00, 1.34]

Comparison 20. Laminaria versus sulprostone

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Cervical dilation at procedure start	1	251	Mean Difference (IV, Fixed, 95% CI)	-0.80 [-1.27, -0.33]
2 Need for additional mechanical dilation	1	251	Odds Ratio (M-H, Fixed, 95% CI)	2.38 [1.26, 4.47]
3 Side-effects: nausea and vomiting	1	251	Odds Ratio (M-H, Fixed, 95% CI)	0.02 [0.00, 0.39]

Comparison 21. Laminaria versus PGE2

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Cervical dilation at procedure start	1	249	Mean Difference (IV, Fixed, 95% CI)	-0.40 [-0.81, 0.01]
2 Need for additional mechanical dilation	1	249	Odds Ratio (M-H, Fixed, 95% CI)	1.81 [0.95, 3.48]
3 Side-effects: nausea and vomiting	1	249	Odds Ratio (M-H, Fixed, 95% CI)	0.03 [0.00, 0.51]

Comparison 22. Sulprostone versus sulprostone (intracervical doses)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Need for additional mechanical dilation	1	40	Odds Ratio (M-H, Fixed, 95% CI)	Not estimable
2 Side-effects: nausea and vomiting	2	60	Odds Ratio (M-H, Fixed, 95% CI)	0.79 [0.21, 3.04]
3 Unplanned expulsion prior to procedure	2	60	Odds Ratio (M-H, Fixed, 95% CI)	0.04 [0.00, 0.37]

Comparison 23. Sulprostone versus sulprostone (intramuscular doses)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Need for additional mechanical dilation	1	200	Odds Ratio (M-H, Fixed, 95% CI)	0.72 [0.24, 2.15]
2 Side-effects: nausea and vomiting	1	200	Odds Ratio (M-H, Fixed, 95% CI)	0.13 [0.04, 0.44]
3 Unplanned expulsion prior to procedure	1	200	Odds Ratio (M-H, Fixed, 95% CI)	0.34 [0.01, 8.36]

Comparison 24. Prostaglandin E_2 versus prostaglandin $F_{2\alpha}$

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Need for additional mechanical dilation	1	299	Odds Ratio (M-H, Fixed, 95% CI)	12.9 [7.22, 23.05]
2 Side-effects: nausea and vomiting	1	299	Odds Ratio (M-H, Fixed, 95% CI)	0.17 [0.04, 0.78]
3 Unplanned expulsion prior to procedure	1	299	Odds Ratio (M-H, Fixed, 95% CI)	Not estimable

Comparison 25. Lamicel versus synthetic sponge without $MgSO_4$

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Unplanned expulsion prior to procedure	1	41	Odds Ratio (M-H, Fixed, 95% CI)	3.65 [0.14, 94.97]

Analysis 1.1. Comparison 1 Misoprostol versus placebo, Outcome 1 Cervical dilation at procedure start.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 1 Misoprostol versus placebo

Outcome: 1 Cervical dilation at procedure start

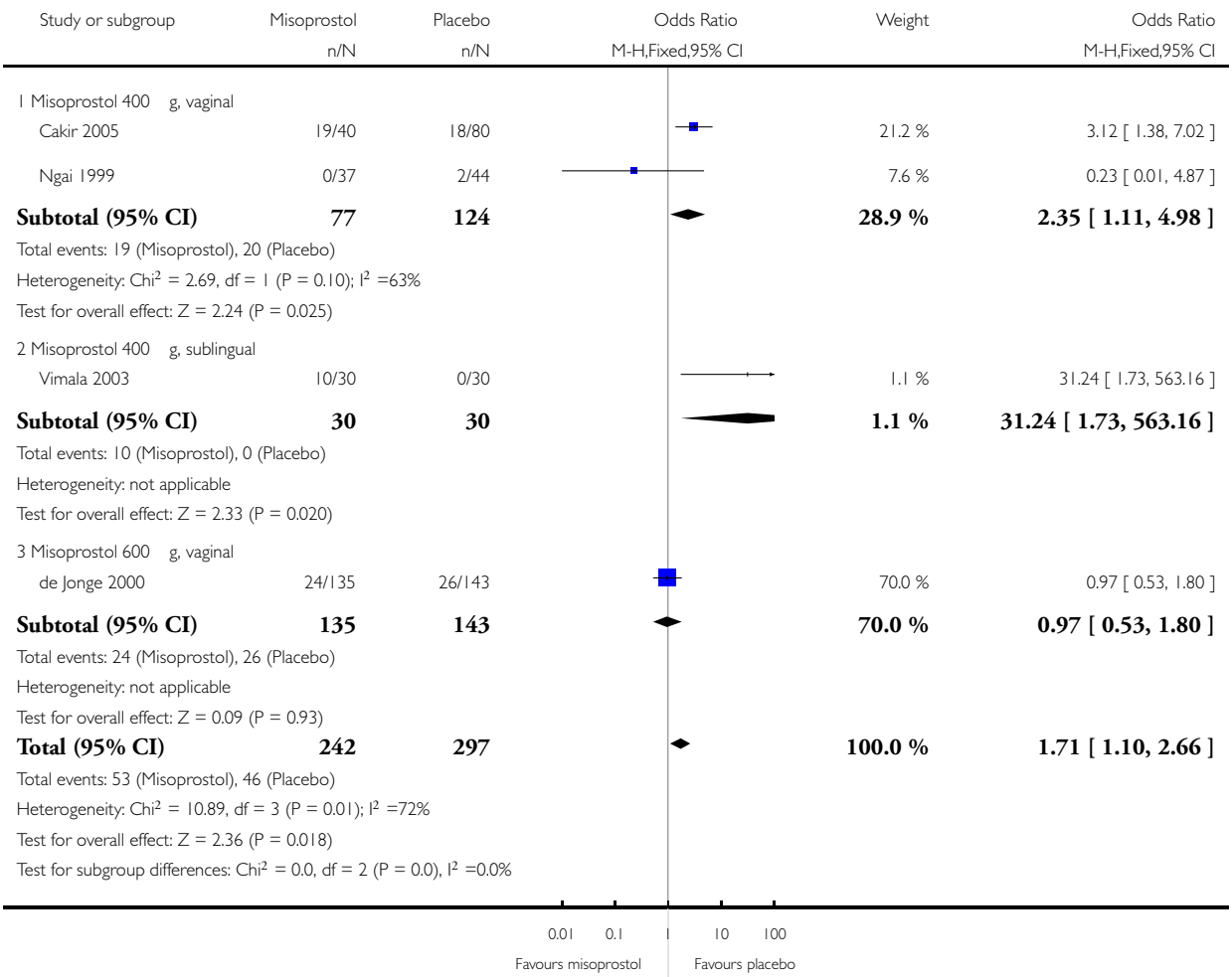
Study or subgroup	Misoprostol N	Mean(SD)	Placebo N	Mean(SD)	Mean Difference IV,Fixed,95% CI	Weight	Mean Difference IV,Fixed,95% CI
1 Misoprostol 400 g, vaginal							
Cakir 2005	40	7.2 (0.8)	40	3.6 (1.9)		45.9 %	3.60 [2.96, 4.24]
Ngai 1999	37	6.8 (1.3)	44	5.5 (1.4)		54.1 %	1.30 [0.71, 1.89]
Subtotal (95% CI)	**77**		**84**			**100.0 %**	**2.36 [1.92, 2.79]**
Heterogeneity: Chi^2 = 26.93, df = 1 (P<0.00001); I^2 =96%							
Test for overall effect: Z = 10.67 (P < 0.00001)							
2 Misoprostol 400 g, sublingual							
Vimala 2003	30	7.7 (1.3)	30	3.4 (1.7)		100.0 %	4.30 [3.53, 5.07]
Subtotal (95% CI)	**30**		**30**			**100.0 %**	**4.30 [3.53, 5.07]**
Heterogeneity: not applicable							
Test for overall effect: Z = 11.01 (P < 0.00001)							
3 Misoprostol 600 g, oral							
Bokstrom 1998	15	5.9 (1.5)	15	4.5 (0.9)		100.0 %	1.40 [0.51, 2.29]
Subtotal (95% CI)	**15**		**15**			**100.0 %**	**1.40 [0.51, 2.29]**
Heterogeneity: not applicable							
Test for overall effect: Z = 3.10 (P = 0.0019)							
4 Misoprostol 600 g, vaginal							
de Jonge 2000	135	7.6 (2.1)	143	6 (1.8)		100.0 %	1.60 [1.14, 2.06]
Subtotal (95% CI)	**135**		**143**			**100.0 %**	**1.60 [1.14, 2.06]**
Heterogeneity: not applicable							
Test for overall effect: Z = 6.80 (P < 0.00001)							
Test for subgroup differences: Chi^2 = 38.93, df = 3 (P = 0.00), I^2 =92%							

Analysis 1.2. Comparison 1 Misoprostol versus placebo, Outcome 2 Side-effects: occurrence of nausea.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 1 Misoprostol versus placebo

Outcome: 2 Side-effects: occurrence of nausea

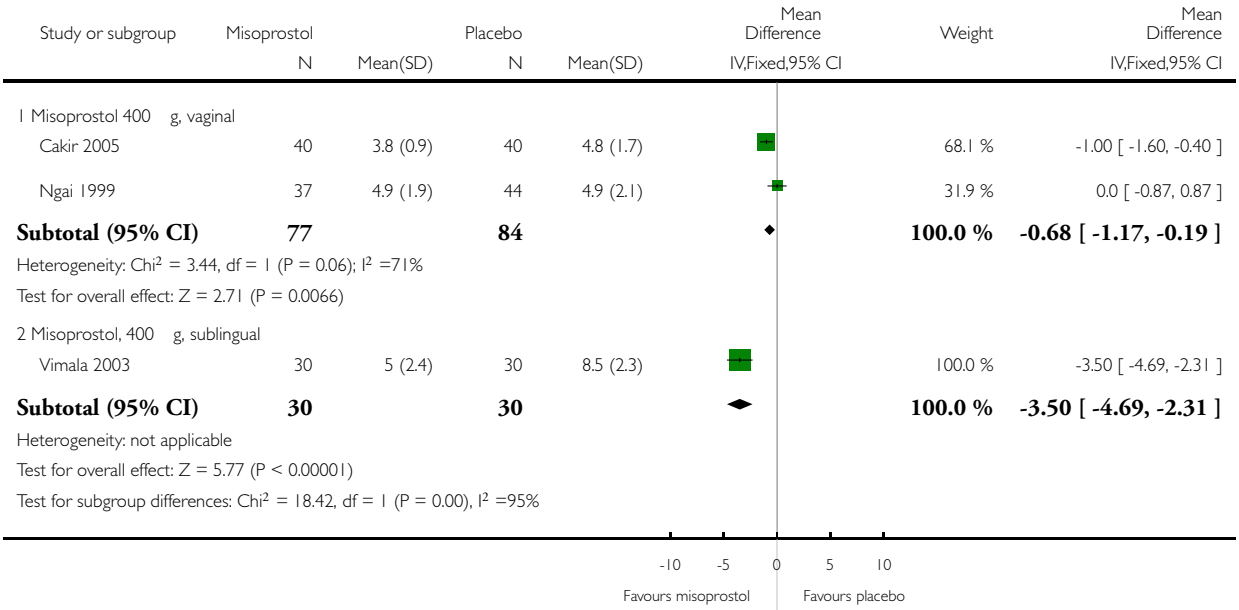


Analysis 1.3. Comparison 1 Misoprostol versus placebo, Outcome 3 Procedure length (minutes).

Review: Cervical preparation for first trimester surgical abortion

Comparison: 1 Misoprostol versus placebo

Outcome: 3 Procedure length (minutes)



Analysis 2.1. Comparison 2 Gemeprost 1 mg versus placebo, Outcome 1 Need for additional mechanical dilation.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 2 Gemeprost 1 mg versus placebo

Outcome: 1 Need for additional mechanical dilation

Study or subgroup	Gemeprost n/N	Placebo n/N	Odds Ratio M-H,Random,95% CI	Weight	Odds Ratio M-H,Random,95% CI
Christensen 1984	10/65	63/64		31.4 %	0.00 [0.00, 0.02]
Ho 1983	37/58	48/53		37.3 %	0.18 [0.06, 0.53]
Rabe 1985	46/55	53/54		31.3 %	0.10 [0.01, 0.79]
Total (95% CI)	**178**	**171**		**100.0 %**	**0.04 [0.00, 0.51]**
Total events: 93 (Gemeprost), 164 (Placebo)					
Heterogeneity: $Tau^2 = 4.20$; $Chi^2 = 12.94$, df = 2 (P = 0.002); $I^2 = 85\%$					
Test for overall effect: Z = 2.47 (P = 0.013)					

Analysis 3.1. Comparison 3 Mifepristone versus placebo, Outcome 1 Need for additional mechanical dilation.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 3 Mifepristone versus placebo

Outcome: 1 Need for additional mechanical dilation

Study or subgroup	Mifepristone n/N	Control n/N	Odds Ratio M-H,Fixed,95% CI	Weight	Odds Ratio M-H,Fixed,95% CI
1 100 mg mifepristone					
WHO 1990 (1)	51/54	52/54		17.5 %	0.65 [0.10, 4.08]
Subtotal (95% CI)	**54**	**54**		**17.5 %**	**0.65 [0.10, 4.08]**
Total events: 51 (Mifepristone), 52 (Control)					
Heterogeneity: not applicable					
Test for overall effect: Z = 0.45 (P = 0.65)					
2 200 mg mifepristone					
Bokstrom 1998	6/15	8/15		29.1 %	0.58 [0.14, 2.48]
Subtotal (95% CI)	**15**	**15**		**29.1 %**	**0.58 [0.14, 2.48]**
Total events: 6 (Mifepristone), 8 (Control)					
Heterogeneity: not applicable					
Test for overall effect: Z = 0.73 (P = 0.47)					
3 600 mg mifepristone					
Gupta 1990	4/15	12/15		53.4 %	0.09 [0.02, 0.50]
Subtotal (95% CI)	**15**	**15**		**53.4 %**	**0.09 [0.02, 0.50]**
Total events: 4 (Mifepristone), 12 (Control)					
Heterogeneity: not applicable					
Test for overall effect: Z = 2.75 (P = 0.0059)					
Total (95% CI)	**84**	**84**		**100.0 %**	**0.33 [0.13, 0.82]**
Total events: 61 (Mifepristone), 72 (Control)					
Heterogeneity: Chi^2 = 3.32, df = 2 (P = 0.19); I^2 =40%					
Test for overall effect: Z = 2.38 (P = 0.017)					
Test for subgroup differences: Chi^2 = 0.0, df = 2 (P = 0.0), I^2 =0.0%					

(1) 100 mg given 24 and 12 hours prior to procedure

Analysis 3.2. Comparison 3 Mifepristone versus placebo, Outcome 2 Cervical dilation at procedure start.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 3 Mifepristone versus placebo

Outcome: 2 Cervical dilation at procedure start

Study or subgroup	Mifepristone N	Mean(SD)	Placebo N	Mean(SD)	Mean Difference IV,Fixed,95% CI	Weight	Mean Difference IV,Fixed,95% CI
1 100 mg mifepristone							
WHO 1990	54	6.6 (1.9)	54	5.2 (2)		32.1 %	1.40 [0.66, 2.14]
Subtotal (95% CI)	**54**		**54**			**32.1 %**	**1.40 [0.66, 2.14]**
Heterogeneity: not applicable							
Test for overall effect: Z = 3.73 (P = 0.00019)							
2 200 mg mifepristone							
Bokstrom 1998	15	6.9 (0.9)	15	4.5 (0.9)		41.9 %	2.40 [1.76, 3.04]
Durlot 1988	32	5.5 (1.9)	32	4.1 (1.4)		26.0 %	1.40 [0.58, 2.22]
Subtotal (95% CI)	**47**		**47**			**67.9 %**	**2.02 [1.51, 2.52]**
Heterogeneity: Chi^2 = 3.55, df = 1 (P = 0.06); I^2 =72%							
Test for overall effect: Z = 7.81 (P < 0.00001)							
3 600 mg mifepristone							
Gupta 1990	15	5 (0)	15	3 (0)			Not estimable
Subtotal (95% CI)	**15**		**15**				**Not estimable**
Heterogeneity: not applicable							
Test for overall effect: not applicable							
Total (95% CI)	**116**		**116**			**100.0 %**	**1.82 [1.40, 2.24]**
Heterogeneity: Chi^2 = 5.38, df = 2 (P = 0.07); I^2 =63%							
Test for overall effect: Z = 8.55 (P < 0.00001)							
Test for subgroup differences: Chi^2 = 1.83, df = 1 (P = 0.18), I^2 =45%							

Analysis 4.1. Comparison 4 Prostaglandin F2α versus placebo, Outcome 1 Need for additional mechanical dilation.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 4 Prostaglandin $F_{2\alpha}$ versus placebo

Outcome: 1 Need for additional mechanical dilation

Study or subgroup	Prostaglandin $F_{2\alpha}$ n/N	Placebo n/N	Odds Ratio M-H,Fixed,95% CI	Weight	Odds Ratio M-H,Fixed,95% CI
Heinzl 1981 (1)	20/149	124/138		100.0 %	0.02 [0.01, 0.04]
Total (95% CI)	**149**	**138**		**100.0 %**	**0.02 [0.01, 0.04]**
Total events: 20 (Prostaglandin $F_{2\alpha}$), 124 (Placebo)					
Heterogeneity: not applicable					
Test for overall effect: Z = 10.92 (P < 0.00001)					
Test for subgroup differences: Not applicable					

(1) Data from vaginal application of 2.5 mg prostaglandin

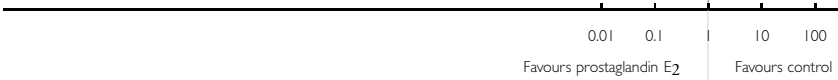
Analysis 5.1. Comparison 5 Prostaglandin E2 versus placebo, Outcome 1 Need for additional mechanical dilation.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 5 Prostaglandin E_2 versus placebo

Outcome: 1 Need for additional mechanical dilation

Study or subgroup	Prostaglandin E_2 n/N	Control n/N	Odds Ratio M-H,Fixed,95% CI	Weight	Odds Ratio M-H,Fixed,95% CI
1 1 mg prostaglandin E_2, intracervical					
Shalev 1988	1/20	20/20		100.0 %	0.00 [0.00, 0.05]
Subtotal (95% CI)	**20**	**20**		**100.0 %**	**0.00 [0.00, 0.05]**
Total events: 1 (Prostaglandin E_2), 20 (Control)					
Heterogeneity: not applicable					
Test for overall effect: Z = 3.77 (P = 0.00016)					
2 25 g 15 methyl PGE2 methyl ester, extra-amniotic					
Cheng 1975	3/25	25/25		100.0 %	0.00 [0.00, 0.06]
Subtotal (95% CI)	**25**	**25**		**100.0 %**	**0.00 [0.00, 0.06]**
Total events: 3 (Prostaglandin E_2), 25 (Control)					
Heterogeneity: not applicable					
Test for overall effect: Z = 3.76 (P = 0.00017)					
3 1 mg PGE_2, oral					
Heinzl 1981	100/150	124/138		100.0 %	0.23 [0.12, 0.43]
Subtotal (95% CI)	**150**	**138**		**100.0 %**	**0.23 [0.12, 0.43]**
Total events: 100 (Prostaglandin E_2), 124 (Control)					
Heterogeneity: not applicable					
Test for overall effect: Z = 4.50 (P < 0.00001)					
4 0.5 mg prostaglandin E_2					
Osmers 1990	4/25	17/25		100.0 %	0.09 [0.02, 0.35]
Subtotal (95% CI)	**25**	**25**		**100.0 %**	**0.09 [0.02, 0.35]**
Total events: 4 (Prostaglandin E_2), 17 (Control)					
Heterogeneity: not applicable					
Test for overall effect: Z = 3.48 (P = 0.00051)					



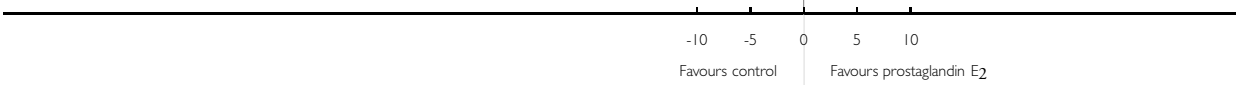
Analysis 5.2. Comparison 5 Prostaglandin E2 versus placebo, Outcome 2 Cervical dilation at procedure start.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 5 Prostaglandin E_2 versus placebo

Outcome: 2 Cervical dilation at procedure start

Study or subgroup	Prostaglandin E_2 N	Mean(SD)	Control N	Mean(SD)	Mean Difference IV,Fixed,95% CI	Weight	Mean Difference IV,Fixed,95% CI
1 1 mg prostaglandin E_2, intracervical							
Shalev 1988	20	11.2 (0.73)	20	4.4 (1.7)		100.0 %	6.80 [5.99, 7.61]
Subtotal (95% CI)	**20**		**20**			**100.0 %**	**6.80 [5.99, 7.61]**
Heterogeneity: not applicable							
Test for overall effect: Z = 16.44 (P < 0.00001)							
2 1 mg prostaglandin E_2, oral							
Heinzl 1981	150	7 (0)	138	5.6 (0)			Not estimable
Subtotal (95% CI)	**150**		**138**				**Not estimable**
Heterogeneity: not applicable							
Test for overall effect: not applicable							
Total (95% CI)	**170**		**158**			**100.0 %**	**6.80 [5.99, 7.61]**
Heterogeneity: not applicable							
Test for overall effect: Z = 16.44 (P < 0.00001)							
Test for subgroup differences: Not applicable							



Analysis 6.1. Comparison 6 Osmotic dilators versus placebo, Outcome 1 Cervical dilation at procedure start.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 6 Osmotic dilators versus placebo

Outcome: 1 Cervical dilation at procedure start

Study or subgroup	Osmotic dilators		Control		Mean Difference	Weight	Mean Difference
	N	Mean(SD)	N	Mean(SD)	IV,Fixed,95% CI		IV,Fixed,95% CI
Morris 1986	20	8.1 (0)	20	4.9 (0)			Not estimable
Total (95% CI)	**20**		**20**				**Not estimable**
Heterogeneity: not applicable							
Test for overall effect: not applicable							
Test for subgroup differences: Not applicable							

Analysis 7.1. Comparison 7 Misoprostol dose: 400 µg misoprostol versus 200 µg misoprostol, Outcome 1 Cervical dilation at procedure start.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 7 Misoprostol dose: 400 g misoprostol versus 200 g misoprostol

Outcome: 1 Cervical dilation at procedure start

Study or subgroup	Higher dose N	Mean(SD)	Lower dose N	Mean(SD)	Mean Difference IV,Fixed,95% CI	Weight	Mean Difference IV,Fixed,95% CI
1 Oral misoprostol							
Ngai 1999	40	7.2 (1)	43	6.6 (0.9)		32.4 %	0.60 [0.19, 1.01]
Oppegaard 2004	275	5.9 (1.7)	274	5.4 (1.7)		67.6 %	0.50 [0.22, 0.78]
Subtotal (95% CI)	**315**		**317**			**100.0 %**	**0.53 [0.30, 0.77]**
Heterogeneity: Chi² = 0.15, df = 1 (P = 0.69); I² =0.0%							
Test for overall effect: Z = 4.46 (P < 0.00001)							
2 Vaginal misoprostol							
Ngai 1999	37	6.8 (1.3)	40	6.8 (1.2)		48.7 %	0.0 [-0.56, 0.56]
Singh 1998	30	8.2 (0.8)	30	6.4 (1.3)		51.3 %	1.80 [1.25, 2.35]
Subtotal (95% CI)	**67**		**70**			**100.0 %**	**0.92 [0.53, 1.31]**
Heterogeneity: Chi² = 20.33, df = 1 (P<0.00001); I² =95%							
Test for overall effect: Z = 4.62 (P < 0.00001)							
3 Sublingual misoprostol							
Vimala, Mittal 2004	60	8.2 (2)	60	6 (1.2)		100.0 %	2.20 [1.61, 2.79]
Subtotal (95% CI)	**60**		**60**			**100.0 %**	**2.20 [1.61, 2.79]**
Heterogeneity: not applicable							
Test for overall effect: Z = 7.31 (P < 0.00001)							
Test for subgroup differences: Chi² = 27.03, df = 2 (P = 0.00), I² =93%							

Analysis 7.2. Comparison 7 Misoprostol dose: 400 µg misoprostol versus 200 µg misoprostol, Outcome 2 Need for additional mechanical dilation.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 7 Misoprostol dose: 400 g misoprostol versus 200 g misoprostol

Outcome: 2 Need for additional mechanical dilation

Study or subgroup	Higher dose n/N	Lower dose n/N	Odds Ratio M-H,Fixed,95% CI	Weight	Odds Ratio M-H,Fixed,95% CI
1 Vaginal misoprostol					
Singh 1998	1/30	23/30		38.6 %	0.01 [0.00, 0.09]
Subtotal (95% CI)	**30**	**30**		**38.6 %**	**0.01 [0.00, 0.09]**
Total events: 1 (Higher dose), 23 (Lower dose)					
Heterogeneity: not applicable					
Test for overall effect: Z = 4.12 (P = 0.000037)					
2 Sublingual misoprostol					
Vimala, Mittal 2004	7/60	40/60		61.4 %	0.07 [0.03, 0.17]
Subtotal (95% CI)	**60**	**60**		**61.4 %**	**0.07 [0.03, 0.17]**
Total events: 7 (Higher dose), 40 (Lower dose)					
Heterogeneity: not applicable					
Test for overall effect: Z = 5.59 (P < 0.00001)					
Total (95% CI)	**90**	**90**		**100.0 %**	**0.04 [0.02, 0.10]**
Total events: 8 (Higher dose), 63 (Lower dose)					
Heterogeneity: Chi² = 2.37, df = 1 (P = 0.12); I² =58%					
Test for overall effect: Z = 7.21 (P < 0.00001)					
Test for subgroup differences: Chi² = 0.0, df = 1 (P = 0.0), I² =0.0%					

Analysis 7.3. Comparison 7 Misoprostol dose: 400 µg misoprostol versus 200 µg misoprostol, Outcome 3 Pain with cervical priming.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 7 Misoprostol dose: 400 g misoprostol versus 200 g misoprostol

Outcome: 3 Pain with cervical priming

Study or subgroup	Higher dose n/N	Lower dose n/N	Odds Ratio M-H,Fixed,95% CI	Weight	Odds Ratio M-H,Fixed,95% CI
1 Vaginal misoprostol					
Singh 1998	11/30	2/30		10.6 %	8.11 [1.61, 40.77]
Subtotal (95% CI)	**30**	**30**		**10.6 %**	**8.11 [1.61, 40.77]**
Total events: 11 (Higher dose), 2 (Lower dose)					
Heterogeneity: not applicable					
Test for overall effect: Z = 2.54 (P = 0.011)					
2 Sublingual misoprostol					
Vimala, Mittal 2004	37/60	28/60		89.4 %	1.84 [0.89, 3.80]
Subtotal (95% CI)	**60**	**60**		**89.4 %**	**1.84 [0.89, 3.80]**
Total events: 37 (Higher dose), 28 (Lower dose)					
Heterogeneity: not applicable					
Test for overall effect: Z = 1.64 (P = 0.10)					
Total (95% CI)	**90**	**90**		**100.0 %**	**2.50 [1.31, 4.75]**
Total events: 48 (Higher dose), 30 (Lower dose)					
Heterogeneity: Chi^2 = 2.72, df = 1 (P = 0.10); I^2 =63%					
Test for overall effect: Z = 2.79 (P = 0.0052)					
Test for subgroup differences: Chi^2 = 0.0, df = 1 (P = 0.0), I^2 =0.0%					

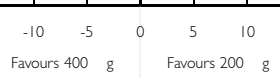
Analysis 7.4. Comparison 7 Misoprostol dose: 400 µg misoprostol versus 200 µg misoprostol, Outcome 4 Procedure length (minutes).

Review: Cervical preparation for first trimester surgical abortion

Comparison: 7 Misoprostol dose: 400 g misoprostol versus 200 g misoprostol

Outcome: 4 Procedure length (minutes)

Study or subgroup	Higher dose N	Mean(SD)	Lower dose N	Mean(SD)	Mean Difference IV,Fixed,95% CI	Weight	Mean Difference IV,Fixed,95% CI
1 Vaginal misoprostol							
Ngai 1999	37	4.9 (1.9)	40	5.2 (2.7)		23.6 %	-0.30 [-1.34, 0.74]
Subtotal (95% CI)	**37**		**40**			**23.6 %**	**-0.30 [-1.34, 0.74]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.57 (P = 0.57)							
2 Sublingual misoprostol							
Vimala, Mittal 2004	60	3.1 (1.4)	60	4.6 (1.8)		76.4 %	-1.50 [-2.08, -0.92]
Subtotal (95% CI)	**60**		**60**			**76.4 %**	**-1.50 [-2.08, -0.92]**
Heterogeneity: not applicable							
Test for overall effect: Z = 5.10 (P < 0.00001)							
Total (95% CI)	**97**		**100**			**100.0 %**	**-1.22 [-1.72, -0.71]**
Heterogeneity: Chi^2 = 3.93, df = 1 (P = 0.05); I^2 =75%							
Test for overall effect: Z = 4.73 (P < 0.00001)							
Test for subgroup differences: Chi^2 = 3.93, df = 1 (P = 0.05), I^2 =75%							



Analysis 8.1. Comparison 8 Interval between misoprostol application and procedure: 2 hours versus 3 hours, Outcome 1 Cervical dilation at procedure start.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 8 Interval between misoprostol application and procedure: 2 hours versus 3 hours

Outcome: 1 Cervical dilation at procedure start

Study or subgroup	3 hours N	Mean(SD)	2 hours N	Mean(SD)	Mean Difference IV,Fixed,95% CI	Weight	Mean Difference IV,Fixed,95% CI
Singh 1999 (1)	30	8.1 (0.1)	30	6.6 (0.2)		100.0 %	1.50 [1.42, 1.58]
Total (95% CI)	**30**		**30**			**100.0 %**	**1.50 [1.42, 1.58]**

Heterogeneity: not applicable

Test for overall effect: Z = 36.74 (P < 0.00001)

Test for subgroup differences: Not applicable

(1) 400 g vaginal misoprostol 3 hours prior, and 600 g vaginal misoprostol 2 hours prior

Analysis 8.2. Comparison 8 Interval between misoprostol application and procedure: 2 hours versus 3 hours, Outcome 2 Need for additional mechanical dilation.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 8 Interval between misoprostol application and procedure: 2 hours versus 3 hours

Outcome: 2 Need for additional mechanical dilation

Study or subgroup	3 hours n/N	2 hours n/N	Odds Ratio M-H,Fixed,95% CI	Weight	Odds Ratio M-H,Fixed,95% CI
Singh 1999 (1)	2/30	25/30		100.0 %	0.01 [0.00, 0.08]
Total (95% CI)	**30**	**30**		**100.0 %**	**0.01 [0.00, 0.08]**

Total events: 2 (3 hours), 25 (2 hours)

Heterogeneity: not applicable

Test for overall effect: Z = 4.82 (P < 0.00001)

Test for subgroup differences: Not applicable

(1) 400 g vaginal misoprostol used 3 hours prior and 600 g used 2 hours prior

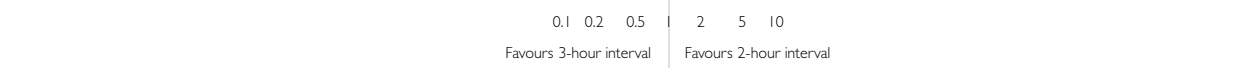
Analysis 8.3. Comparison 8 Interval between misoprostol application and procedure: 2 hours versus 3 hours, Outcome 3 Pain with cervical priming.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 8 Interval between misoprostol application and procedure: 2 hours versus 3 hours

Outcome: 3 Pain with cervical priming

Study or subgroup	3 hours n/N	2 hours n/N	Odds Ratio M-H,Fixed,95% CI	Weight	Odds Ratio M-H,Fixed,95% CI
Singh 1999	3/30	16/30		100.0 %	0.10 [0.02, 0.39]
Total (95% CI)	**30**	**30**		**100.0 %**	**0.10 [0.02, 0.39]**
Total events: 3 (3 hours), 16 (2 hours)					
Heterogeneity: not applicable					
Test for overall effect: Z = 3.28 (P = 0.0010)					
Test for subgroup differences: Not applicable					

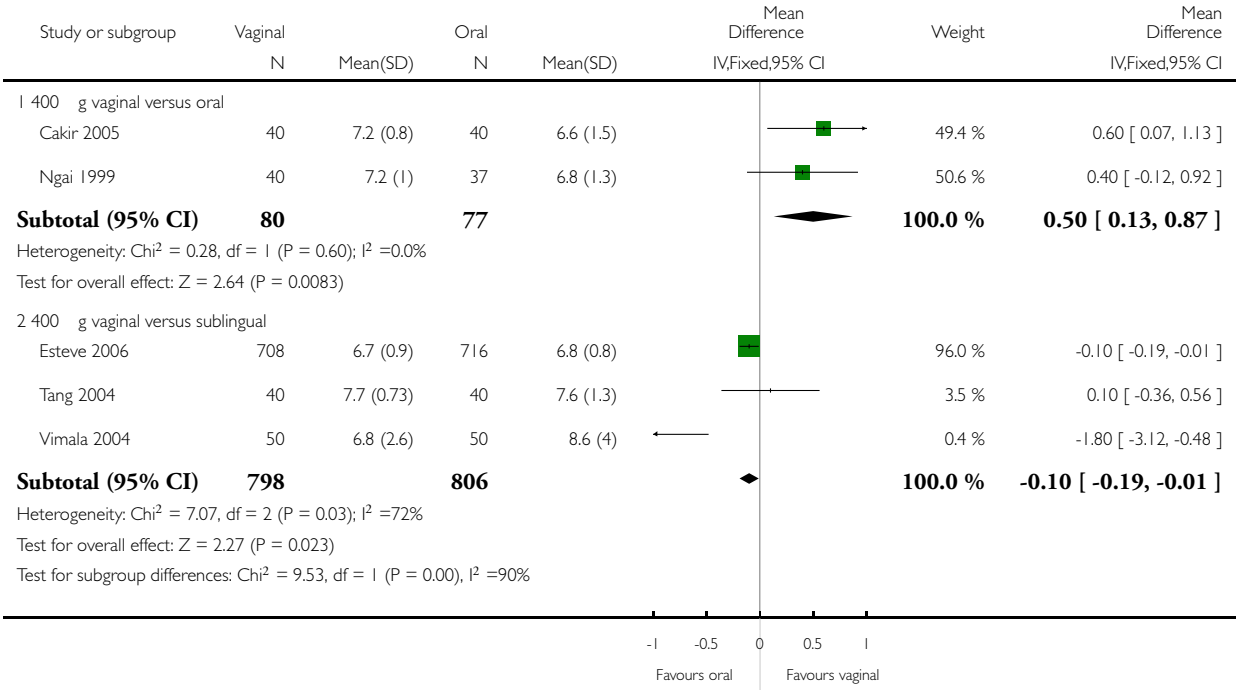


Analysis 9.1. Comparison 9 Route of misoprostol administration, Outcome 1 Cervical dilation at procedure start.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 9 Route of misoprostol administration

Outcome: 1 Cervical dilation at procedure start

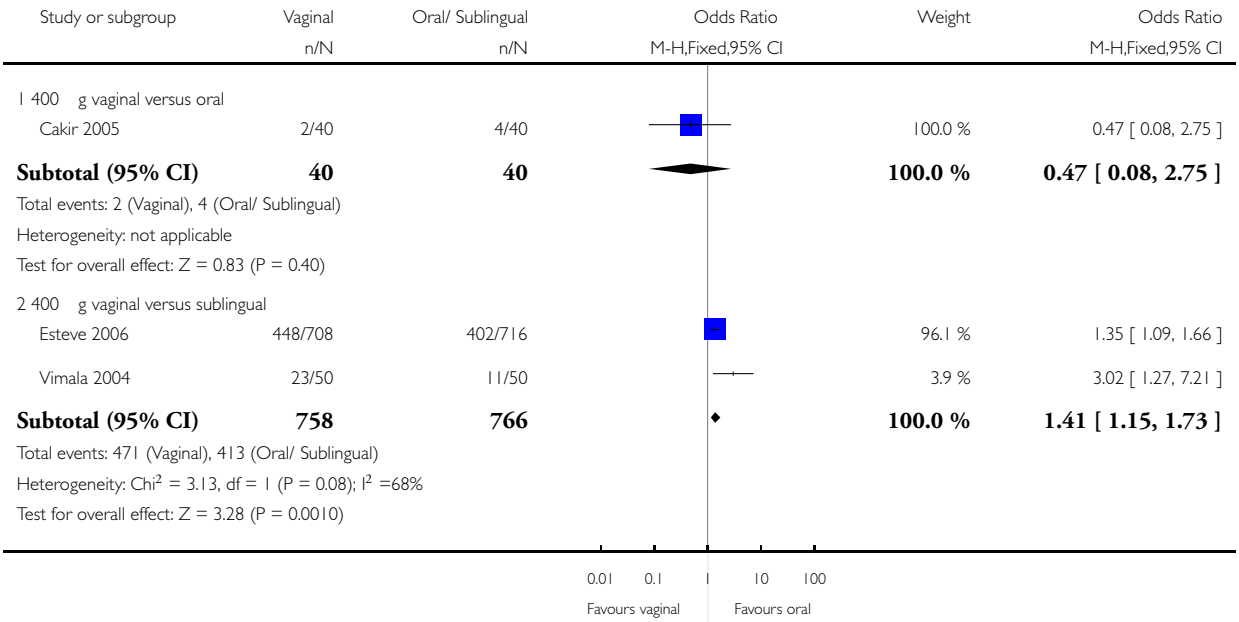


Analysis 9.2. Comparison 9 Route of misoprostol administration, Outcome 2 Need for additional mechanical dilation.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 9 Route of misoprostol administration

Outcome: 2 Need for additional mechanical dilation

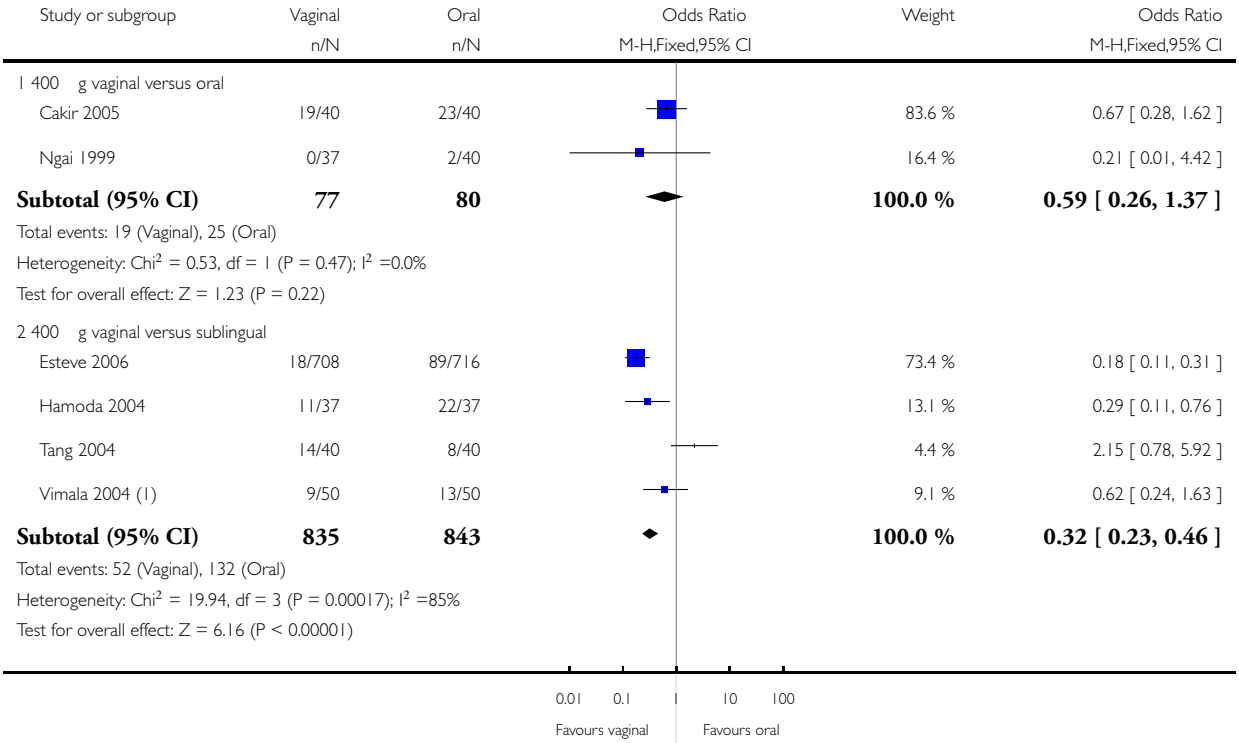


Analysis 9.3. Comparison 9 Route of misoprostol administration, Outcome 3 Side-effects: occurrence of nausea.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 9 Route of misoprostol administration

Outcome: 3 Side-effects: occurrence of nausea



(1) measurement included nausea and vomiting

Analysis 9.4. Comparison 9 Route of misoprostol administration, Outcome 4 Cervical dilation at procedure start.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 9 Route of misoprostol administration

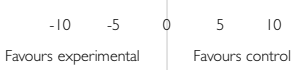
Outcome: 4 Cervical dilation at procedure start

Study or subgroup	Sublingual N	Mean(SD)	Oral N	Mean(SD)	Mean Difference IV,Fixed,95% CI	Weight	Mean Difference IV,Fixed,95% CI
Aronsson 2004	15	7.5 (1.2)	17	7 (1.8)		100.0 %	0.50 [-0.55, 1.55]
Total (95% CI)	**15**		**17**			**100.0 %**	**0.50 [-0.55, 1.55]**

Heterogeneity: not applicable

Test for overall effect: Z = 0.93 (P = 0.35)

Test for subgroup differences: Not applicable



Analysis 9.5. Comparison 9 Route of misoprostol administration, Outcome 5 Procedure length (minutes).

Review: Cervical preparation for first trimester surgical abortion

Comparison: 9 Route of misoprostol administration

Outcome: 5 Procedure length (minutes)

Study or subgroup	Vaginal N	Mean(SD)	Oral N	Mean(SD)	Mean Difference IV,Fixed,95% CI	Weight	Mean Difference IV,Fixed,95% CI
1 400 g vaginal versus oral							
Cakir 2005	40	3.8 (0.9)	40	3.9 (1)		83.5 %	-0.10 [-0.52, 0.32]
Ngai 1999	37	4.9 (1.9)	40	5.8 (2.3)		16.5 %	-0.90 [-1.84, 0.04]
Subtotal (95% CI)	**77**		**80**			**100.0 %**	**-0.23 [-0.61, 0.15]**
Heterogeneity: Chi^2 = 2.33, df = 1 (P = 0.13); I^2 =57%							
Test for overall effect: Z = 1.19 (P = 0.23)							
2 400 g vaginal versus sublingual							
Esteve 2006	708	7.4 (2.5)	716	7 (2.8)		94.2 %	0.40 [0.12, 0.68]
Vimala 2004	50	3.16 (3.6)	50	3.08 (1.8)		5.8 %	0.08 [-1.04, 1.20]
Subtotal (95% CI)	**758**		**766**			**100.0 %**	**0.38 [0.11, 0.65]**
Heterogeneity: Chi^2 = 0.30, df = 1 (P = 0.59); I^2 =0.0%							
Test for overall effect: Z = 2.79 (P = 0.0052)							
Test for subgroup differences: Chi^2 = 6.66, df = 1 (P = 0.01), I^2 =85%							

Analysis 9.6. Comparison 9 Route of misoprostol administration, Outcome 6 Patient disatisfaction.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 9 Route of misoprostol administration

Outcome: 6 Patient disatisfaction

Study or subgroup	Vaginal n/N	Sublingual n/N	Odds Ratio M-H,Fixed,95% CI	Weight	Odds Ratio M-H,Fixed,95% CI
Hamoda 2004	0/36	4/37		100.0 %	0.10 [0.01, 1.97]
Total (95% CI)	**36**	**37**		**100.0 %**	**0.10 [0.01, 1.97]**

Total events: 0 (Vaginal), 4 (Sublingual)

Heterogeneity: not applicable

Test for overall effect: Z = 1.51 (P = 0.13)

Test for subgroup differences: Not applicable

Analysis 10.1. Comparison 10 Misoprostol versus gemeprost, Outcome 1 Cervical dilation at procedure start.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 10 Misoprostol versus gemeprost

Outcome: 1 Cervical dilation at procedure start

Study or subgroup	Misoprostol N	Mean(SD)	Gemeprost N	Mean(SD)	Mean Difference IV,Fixed,95% CI	Weight	Mean Difference IV,Fixed,95% CI
1 400 g misoprostol versus 1 mg gemeprost							
Ekerhovd 2003	45	7.6 (1.6)	45	7.4 (1.5)		34.4 %	0.20 [-0.44, 0.84]
Ngai, Yeung 1995	32	8.1 (1.7)	32	7 (1.7)		20.4 %	1.10 [0.27, 1.93]
Subtotal (95% CI)	**77**		**77**			**54.8 %**	**0.53 [0.03, 1.04]**
Heterogeneity: Chi^2 = 2.82, df = 1 (P = 0.09); I^2 =65%							
Test for overall effect: Z = 2.06 (P = 0.039)							
2 200 g misoprostol versus 1 mg gemeprost							
Henry 1999	95	7.1 (2.1)	93	6.7 (1.8)		45.2 %	0.40 [-0.16, 0.96]
Subtotal (95% CI)	**95**		**93**			**45.2 %**	**0.40 [-0.16, 0.96]**
Heterogeneity: not applicable							
Test for overall effect: Z = 1.40 (P = 0.16)							
Total (95% CI)	**172**		**170**			**100.0 %**	**0.47 [0.10, 0.85]**
Heterogeneity: Chi^2 = 2.94, df = 2 (P = 0.23); I^2 =32%							
Test for overall effect: Z = 2.47 (P = 0.013)							
Test for subgroup differences: Chi^2 = 0.12, df = 1 (P = 0.73), I^2 =0.0%							

Analysis 10.2. Comparison 10 Misoprostol versus gemeprost, Outcome 2 Side-effects of 200 µg misoprostol versus gemeprost.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 10 Misoprostol versus gemeprost

Outcome: 2 Side-effects of 200 g misoprostol versus gemeprost

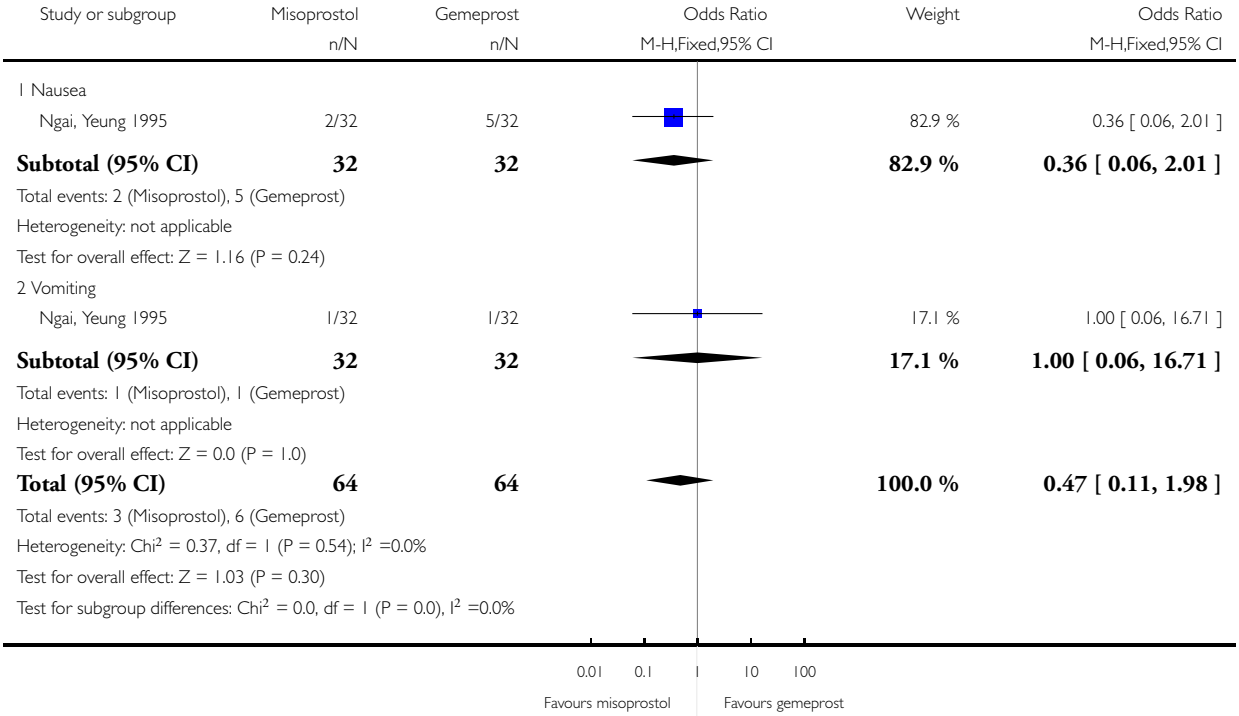
Study or subgroup	Misoprostol n/N	Gemeprost n/N	Odds Ratio M-H,Fixed,95% CI	Weight	Odds Ratio M-H,Fixed,95% CI
1 Nausea					
Henry 1999	8/95	17/93		50.0 %	0.41 [0.17, 1.01]
Subtotal (95% CI)	**95**	**93**		**50.0 %**	**0.41 [0.17, 1.01]**
Total events: 8 (Misoprostol), 17 (Gemeprost)					
Heterogeneity: not applicable					
Test for overall effect: Z = 1.95 (P = 0.052)					
2 Vomiting					
Henry 1999	3/95	8/93		24.9 %	0.35 [0.09, 1.35]
Subtotal (95% CI)	**95**	**93**		**24.9 %**	**0.35 [0.09, 1.35]**
Total events: 3 (Misoprostol), 8 (Gemeprost)					
Heterogeneity: not applicable					
Test for overall effect: Z = 1.53 (P = 0.13)					
3 Diarrhea					
Henry 1999	2/95	8/93		25.1 %	0.23 [0.05, 1.11]
Subtotal (95% CI)	**95**	**93**		**25.1 %**	**0.23 [0.05, 1.11]**
Total events: 2 (Misoprostol), 8 (Gemeprost)					
Heterogeneity: not applicable					
Test for overall effect: Z = 1.83 (P = 0.067)					
Total (95% CI)	**285**	**279**		**100.0 %**	**0.35 [0.18, 0.68]**
Total events: 13 (Misoprostol), 33 (Gemeprost)					
Heterogeneity: Chi^2 = 0.41, df = 2 (P = 0.82); I^2 =0.0%					
Test for overall effect: Z = 3.07 (P = 0.0021)					
Test for subgroup differences: Chi^2 = 0.0, df = 2 (P = 0.0), I^2 =0.0%					

Analysis 10.3. Comparison 10 Misoprostol versus gemeprost, Outcome 3 Side-effects of 400 misoprostol versus gemeprost.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 10 Misoprostol versus gemeprost

Outcome: 3 Side-effects of 400 misoprostol versus gemeprost



Analysis 10.4. Comparison 10 Misoprostol versus gemeprost, Outcome 4 Procedure length (minutes).

Review: Cervical preparation for first trimester surgical abortion

Comparison: 10 Misoprostol versus gemeprost

Outcome: 4 Procedure length (minutes)

Study or subgroup	Misoprostol N	Mean(SD)	Gemeprost N	Mean(SD)	Mean Difference IV,Fixed,95% CI	Weight	Mean Difference IV,Fixed,95% CI
Ngai, Yeung 1995	32	5.5 (2.7)	32	7 (3.4)		100.0 %	-1.50 [-3.00, 0.00]
Total (95% CI)	**32**		**32**			**100.0 %**	**-1.50 [-3.00, 0.00]**

Heterogeneity: not applicable

Test for overall effect: Z = 1.95 (P = 0.051)

Test for subgroup differences: Not applicable

Analysis 11.1. Comparison 11 Misoprostol versus mifepristone, Outcome 1 Cervical dilation at procedure start.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 11 Misoprostol versus mifepristone

Outcome: 1 Cervical dilation at procedure start

Study or subgroup	Misoprostol N	Mean(SD)	Mifepristone N	Mean(SD)	Mean Difference IV,Fixed,95% CI	Weight	Mean Difference IV,Fixed,95% CI
1 800 g misoprostol versus 200 mg mifepristone							
Ashok 2000 (1)	30	7.6 (1.4)	30	8.3 (0.9)		68.8 %	-0.70 [-1.30, -0.10]
Subtotal (95% CI)	**30**		**30**			**68.8 %**	**-0.70 [-1.30, -0.10]**
Heterogeneity: not applicable							
Test for overall effect: Z = 2.30 (P = 0.021)							
2 600 g misoprostol versus 400 mg mifepristone (divided doses)							
Bokstrom 1998 (2)	15	5.9 (1.5)	15	6.9 (0.9)		31.2 %	-1.00 [-1.89, -0.11]
Subtotal (95% CI)	**15**		**15**			**31.2 %**	**-1.00 [-1.89, -0.11]**
Heterogeneity: not applicable							
Test for overall effect: Z = 2.21 (P = 0.027)							
Total (95% CI)	**45**		**45**			**100.0 %**	**-0.79 [-1.29, -0.30]**
Heterogeneity: Chi^2 = 0.30, df = 1 (P = 0.58); I^2 =0.0%							
Test for overall effect: Z = 3.15 (P = 0.0016)							
Test for subgroup differences: Chi^2 = 0.30, df = 1 (P = 0.58), I^2 =0.0%							

(1) Vaginally-applied misoprostol

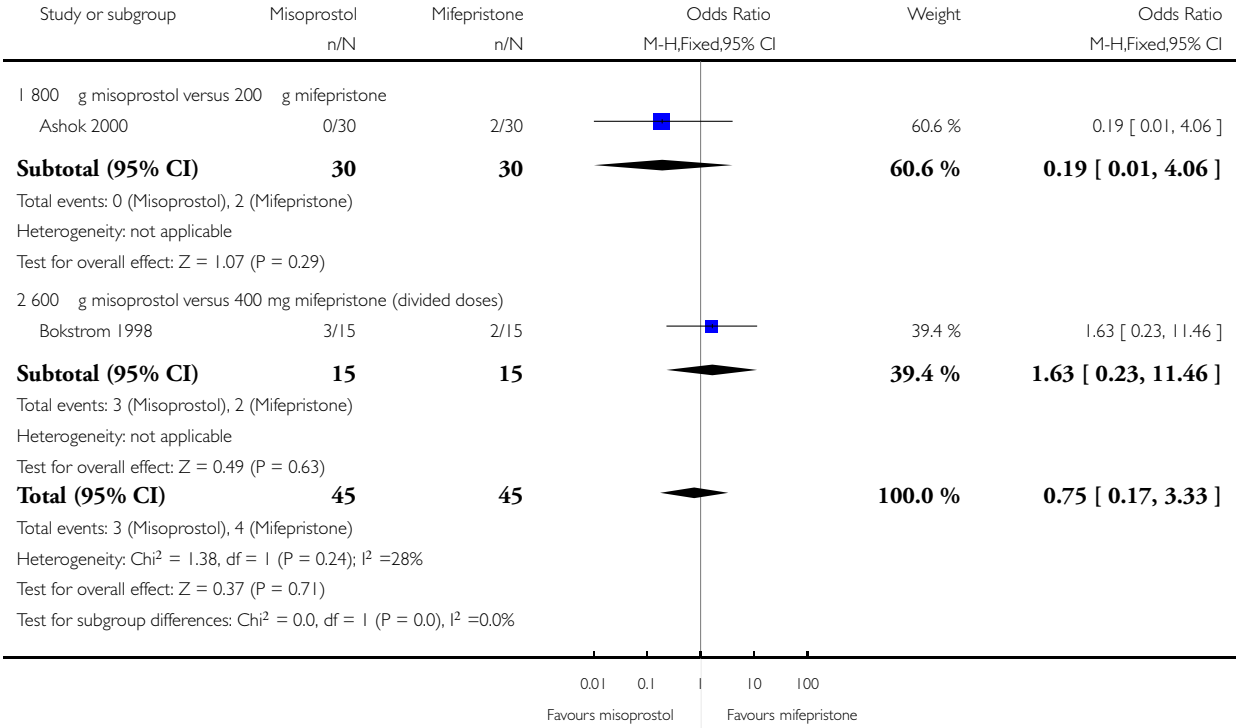
(2) Oral administration of misoprostol

Analysis 11.2. Comparison 11 Misoprostol versus mifepristone, Outcome 2 Side-effects: nausea and vomiting.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 11 Misoprostol versus mifepristone

Outcome: 2 Side-effects: nausea and vomiting

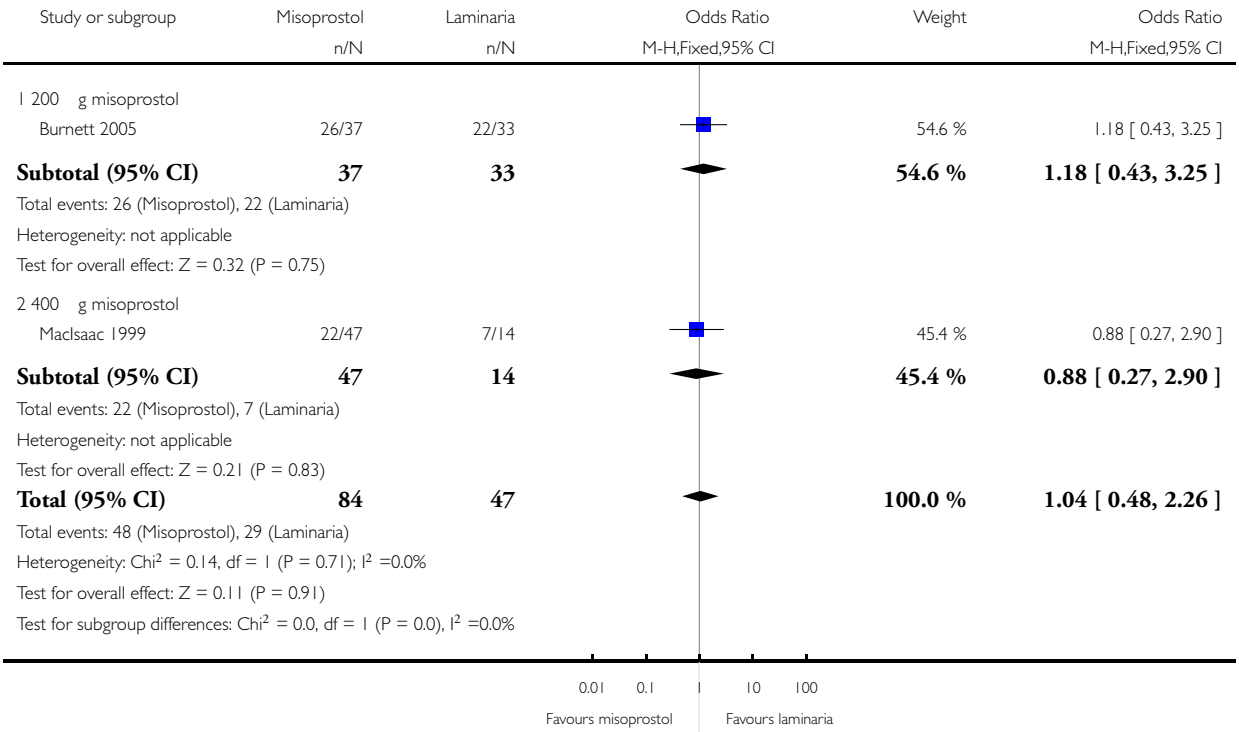


Analysis 12.1. Comparison 12 Misoprostol versus laminaria, Outcome 1 Need for additional mechanical dilation.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 12 Misoprostol versus laminaria

Outcome: 1 Need for additional mechanical dilation



Analysis 12.2. Comparison 12 Misoprostol versus laminaria, Outcome 2 Procedure length (minutes).

Review: Cervical preparation for first trimester surgical abortion

Comparison: 12 Misoprostol versus laminaria

Outcome: 2 Procedure length (minutes)

Study or subgroup	Misoprostol N	Mean(SD)	Laminaria N	Mean(SD)	Mean Difference IV,Fixed,95% CI	Weight	Mean Difference IV,Fixed,95% CI
Burnett 2005	37	3.8 (2.5)	33	3.9 (1.7)		100.0 %	-0.10 [-1.09, 0.89]
Total (95% CI)	**37**		**33**			**100.0 %**	**-0.10 [-1.09, 0.89]**

Heterogeneity: not applicable

Test for overall effect: Z = 0.20 (P = 0.84)

Test for subgroup differences: Not applicable

Analysis 12.3. Comparison 12 Misoprostol versus laminaria, Outcome 3 Patient disatisfaction.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 12 Misoprostol versus laminaria

Outcome: 3 Patient disatisfaction

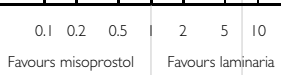
Study or subgroup	Misoprostol n/N	Laminaria n/N	Odds Ratio M-H,Fixed,95% CI	Weight	Odds Ratio M-H,Fixed,95% CI
Burnett 2005 (1)	11/37	19/33		100.0 %	0.31 [0.12, 0.84]
Total (95% CI)	**37**	**33**		**100.0 %**	**0.31 [0.12, 0.84]**

Total events: 11 (Misoprostol), 19 (Laminaria)

Heterogeneity: not applicable

Test for overall effect: Z = 2.32 (P = 0.021)

Test for subgroup differences: Not applicable



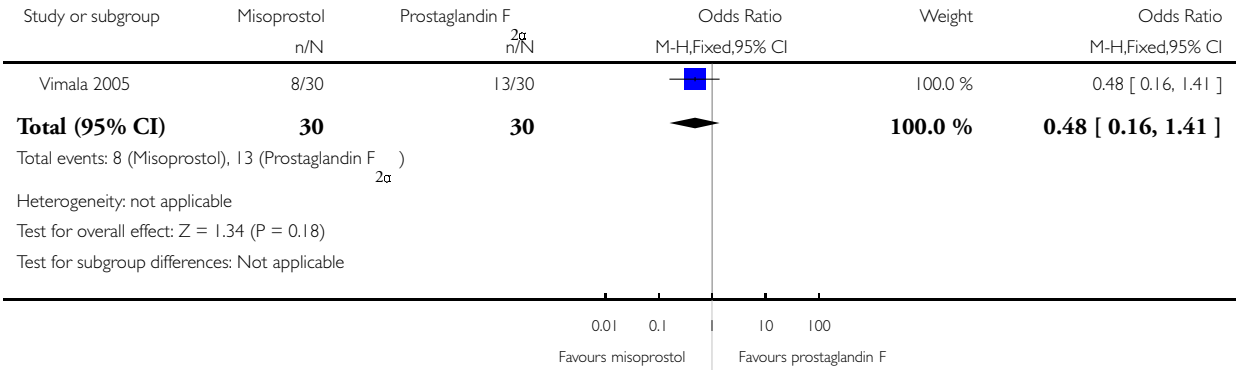
(1) Satisfaction measured by the woman's answer to question: would you have the same dilating device again?

Analysis 13.1. Comparison 13 Misoprostol versus prostaglandin F2α, Outcome 1 Need for additional mechanical dilation.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 13 Misoprostol versus prostaglandin F2α

Outcome: 1 Need for additional mechanical dilation

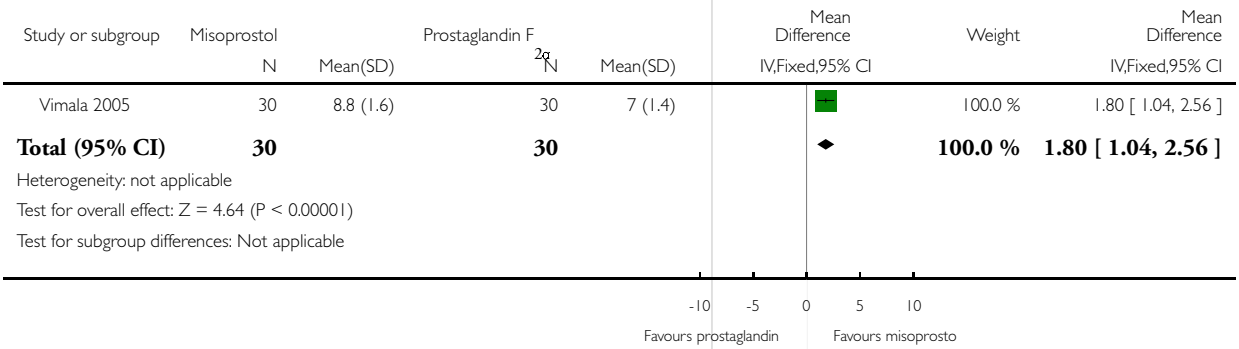


Analysis 13.2. Comparison 13 Misoprostol versus prostaglandin F2α, Outcome 2 Cervical dilation at procedure start.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 13 Misoprostol versus prostaglandin F2α

Outcome: 2 Cervical dilation at procedure start

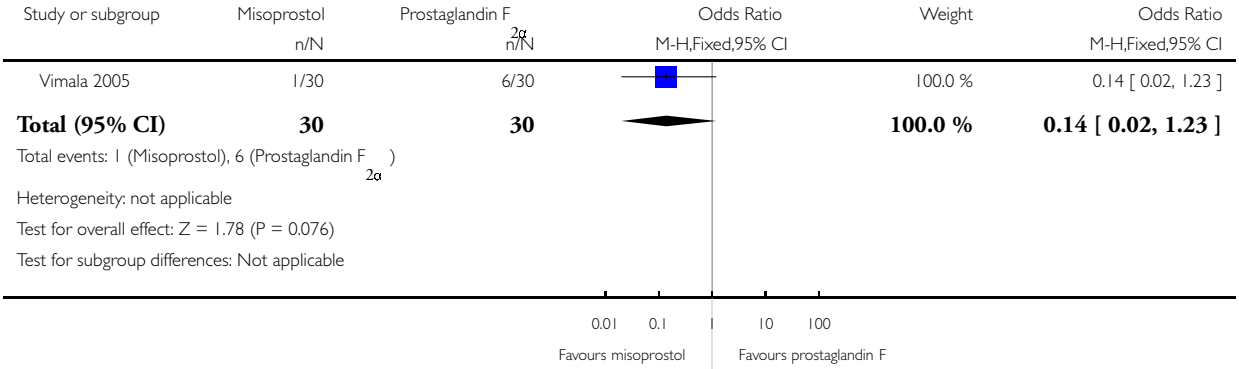


Analysis 13.3. Comparison 13 Misoprostol versus prostaglandin F2α, Outcome 3 Side-effects: nausea and vomiting.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 13 Misoprostol versus prostaglandin F2α

Outcome: 3 Side-effects: nausea and vomiting

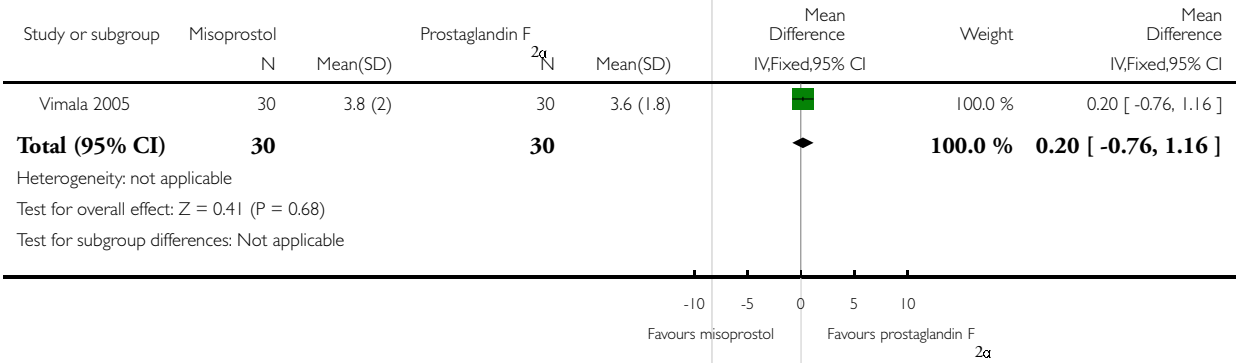


Analysis 13.4. Comparison 13 Misoprostol versus prostaglandin F2α, Outcome 4 Procedure length (minutes).

Review: Cervical preparation for first trimester surgical abortion

Comparison: 13 Misoprostol versus prostaglandin F2α

Outcome: 4 Procedure length (minutes)

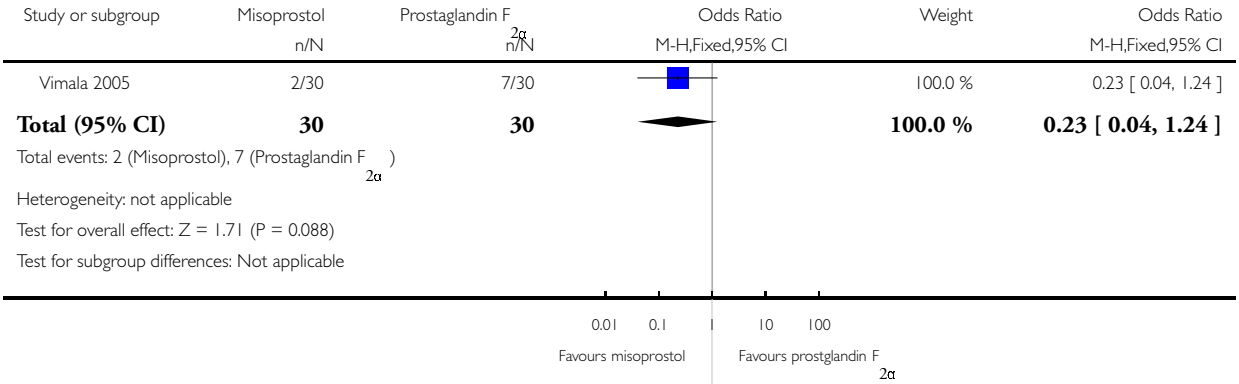


Analysis 13.5. Comparison 13 Misoprostol versus prostaglandin F2α, Outcome 5 Patient disatisfaction.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 13 Misoprostol versus prostaglandin F2α

Outcome: 5 Patient disatisfaction

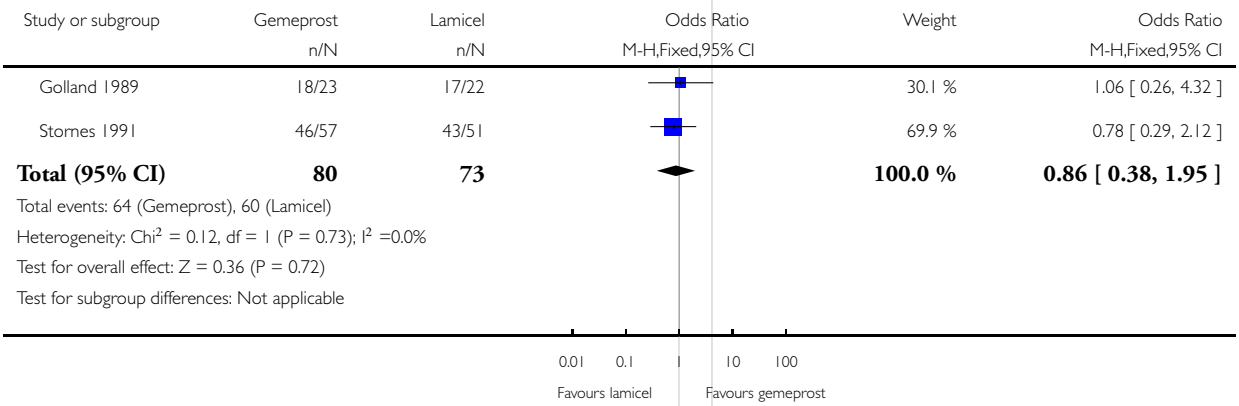


Analysis 14.1. Comparison 14 Gemeprost 1 mg versus Lamicel, Outcome 1 Need for additional mechanical dilation.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 14 Gemeprost 1 mg versus Lamicel

Outcome: 1 Need for additional mechanical dilation

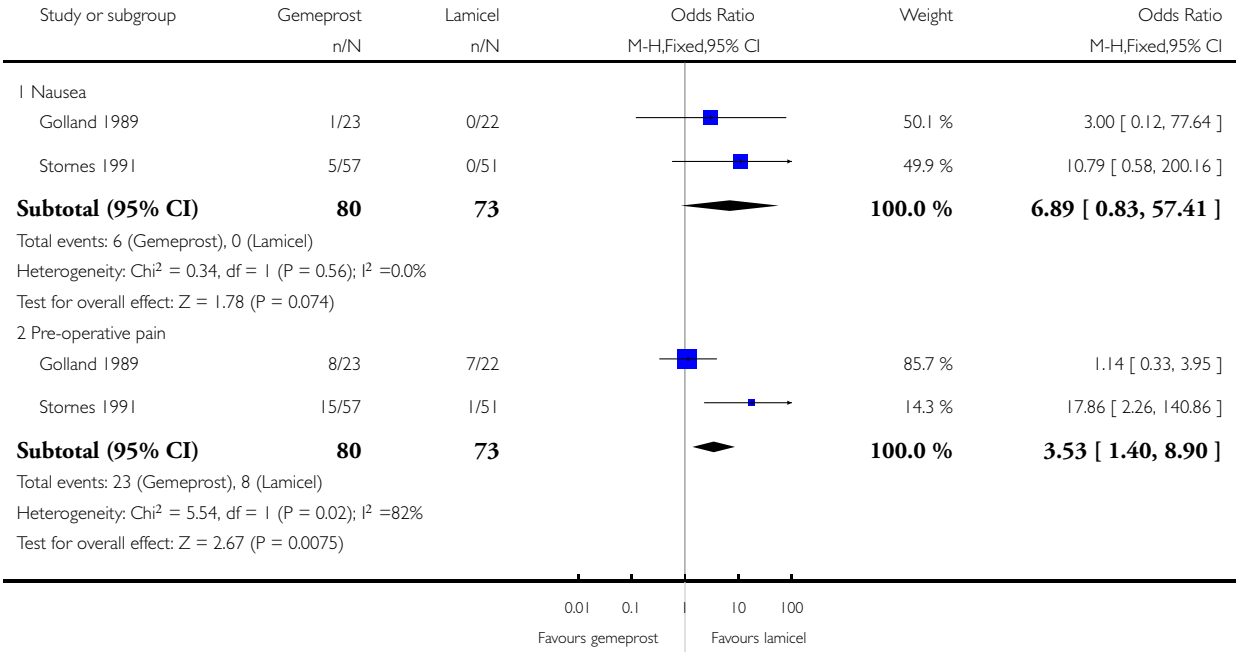


Analysis 14.2. Comparison 14 Gemeprost 1 mg versus Lamicel, Outcome 2 Side-effects.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 14 Gemeprost 1 mg versus Lamicel

Outcome: 2 Side-effects



Analysis 15.1. Comparison 15 Gemeprost versus Dilapan, Outcome 1 Need for additional mechanical dilation.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 15 Gemeprost versus Dilapan

Outcome: 1 Need for additional mechanical dilation

Study or subgroup	Gemeprost n/N	Dilapan n/N	Odds Ratio M-H,Fixed,95% CI	Weight	Odds Ratio M-H,Fixed,95% CI
Golland 1989	7/23	8/20		71.3 %	0.66 [0.19, 2.32]
Jurgenson 1989	17/20	16/20		28.7 %	1.42 [0.27, 7.34]
Total (95% CI)	**43**	**40**		**100.0 %**	**0.87 [0.32, 2.36]**

Total events: 24 (Gemeprost), 24 (Dilapan)

Heterogeneity: $Chi^2 = 0.53$, df = 1 (P = 0.47); $I^2 = 0.0\%$

Test for overall effect: Z = 0.26 (P = 0.79)

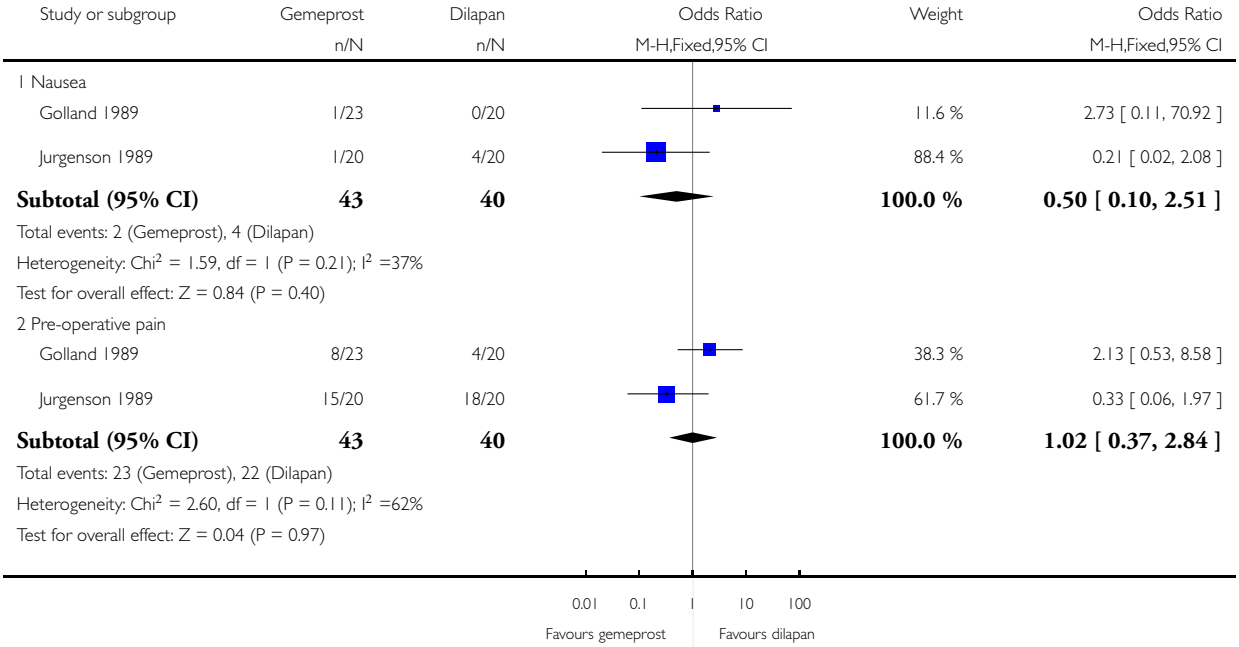
Test for subgroup differences: Not applicable

Analysis 15.2. Comparison 15 Gemeprost versus Dilapan, Outcome 2 Side-effects.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 15 Gemeprost versus Dilapan

Outcome: 2 Side-effects



Analysis 16.1. Comparison 16 Gemeprost versus laminaria, Outcome 1 Need for additional mechanical dilation.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 16 Gemeprost versus laminaria

Outcome: 1 Need for additional mechanical dilation

Study or subgroup	Gemeprost n/N	Laminaria n/N	Odds Ratio M-H,Fixed,95% CI	Weight	Odds Ratio M-H,Fixed,95% CI
WHO 1986	96/125	107/125		100.0 %	0.56 [0.29, 1.07]
Total (95% CI)	**125**	**125**		**100.0 %**	**0.56 [0.29, 1.07]**

Total events: 96 (Gemeprost), 107 (Laminaria)

Heterogeneity: not applicable

Test for overall effect: Z = 1.77 (P = 0.077)

Test for subgroup differences: Not applicable

Analysis 16.2. Comparison 16 Gemeprost versus laminaria, Outcome 2 Cervical dilation at procedure start.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 16 Gemeprost versus laminaria

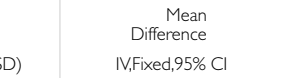
Outcome: 2 Cervical dilation at procedure start

Study or subgroup	Gemeprost N	Mean(SD)	Laminaria N	Mean(SD)	Mean Difference IV,Fixed,95% CI	Weight	Mean Difference IV,Fixed,95% CI
WHO 1986	125	7.4 (2.1)	125	6.9 (1.5)		100.0 %	0.50 [0.05, 0.95]
Total (95% CI)	**125**		**125**			**100.0 %**	**0.50 [0.05, 0.95]**

Heterogeneity: not applicable

Test for overall effect: Z = 2.17 (P = 0.030)

Test for subgroup differences: Not applicable

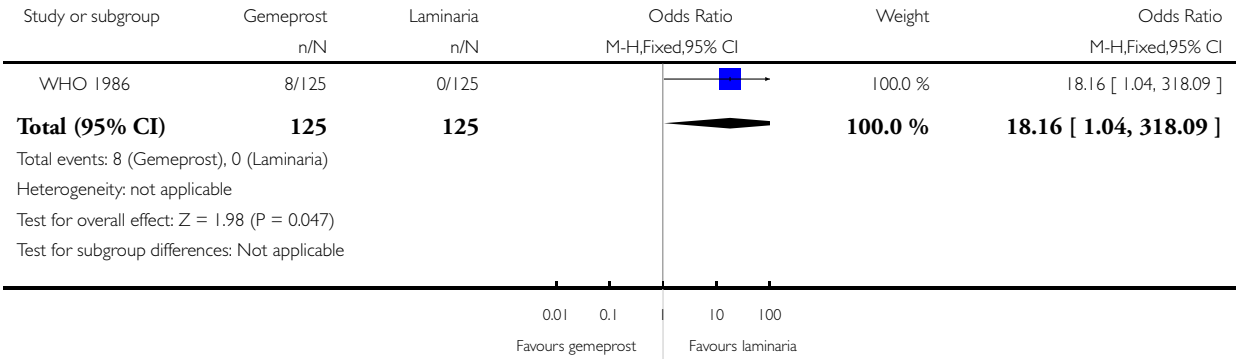


Analysis 16.3. Comparison 16 Gemeprost versus laminaria, Outcome 3 Side-effects: nausea and vomiting.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 16 Gemeprost versus laminaria

Outcome: 3 Side-effects: nausea and vomiting

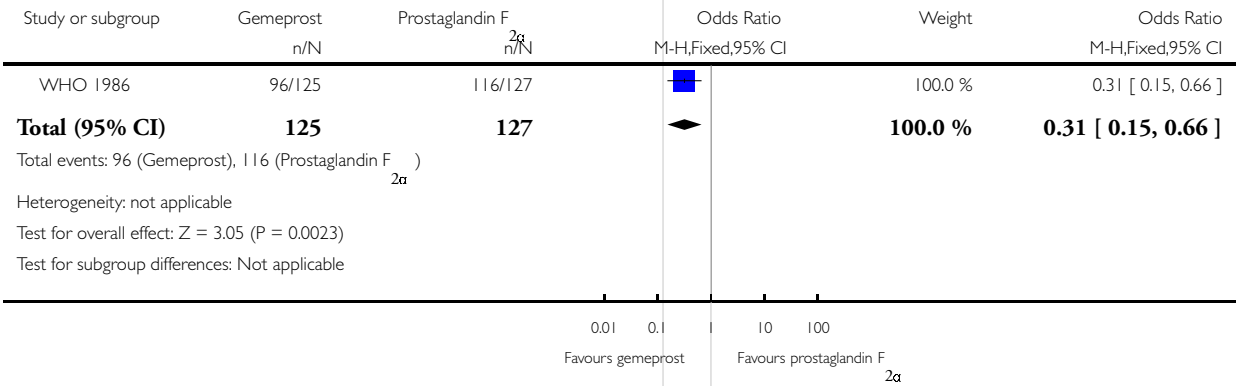


Analysis 17.1. Comparison 17 Gemeprost versus prostaglandin F2α, Outcome 1 Need for additional mechanical dilation.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 17 Gemeprost versus prostaglandin F$_{2\alpha}$

Outcome: 1 Need for additional mechanical dilation

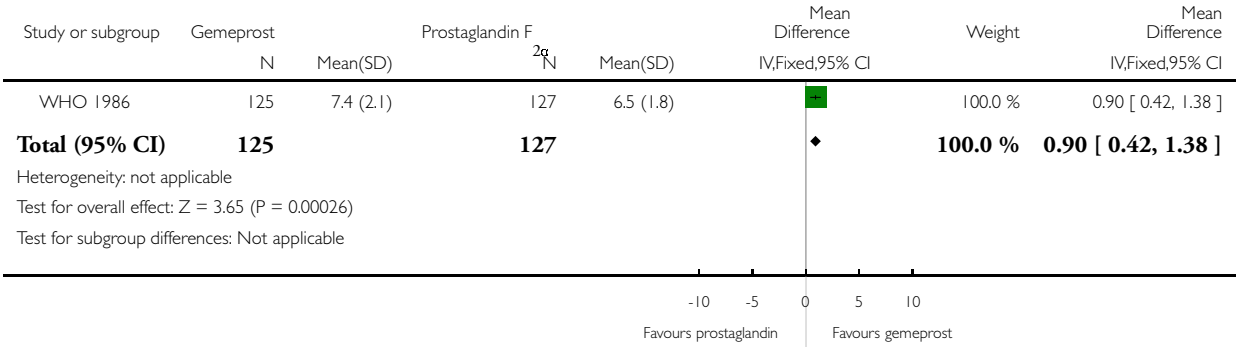


Analysis 17.2. Comparison 17 Gemeprost versus prostaglandin F2α, Outcome 2 Cervical dilation at procedure start.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 17 Gemeprost versus prostaglandin F2α

Outcome: 2 Cervical dilation at procedure start

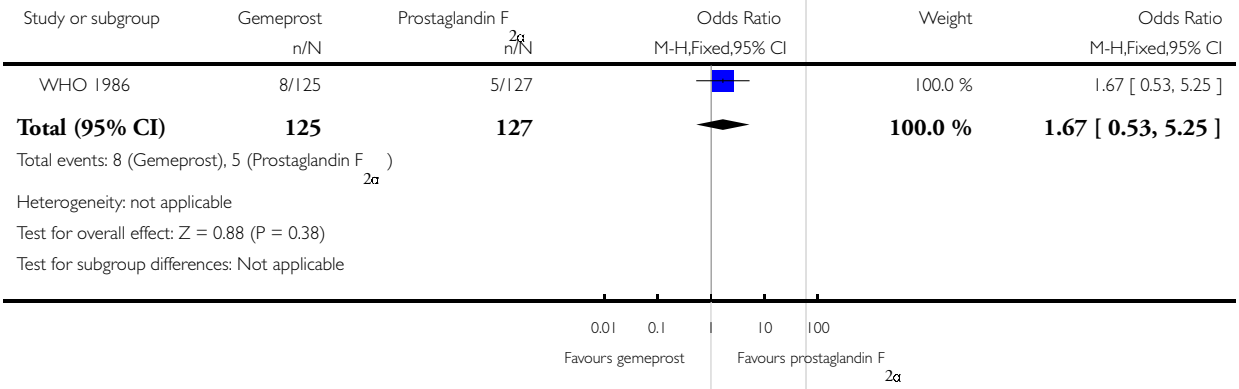


Analysis 17.3. Comparison 17 Gemeprost versus prostaglandin F2α, Outcome 3 Side-effects: nausea and vomiting.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 17 Gemeprost versus prostaglandin F2α

Outcome: 3 Side-effects: nausea and vomiting

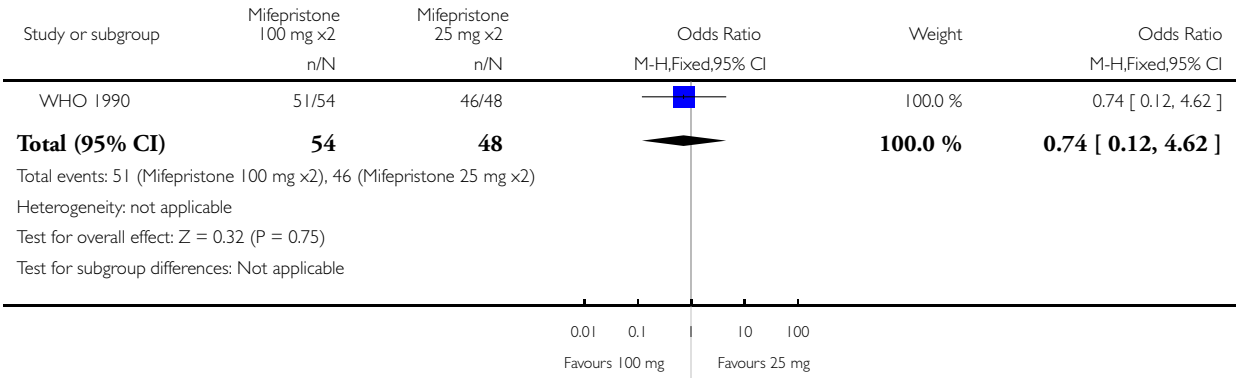


Analysis 18.1. Comparison 18 Dose of mifepristone, Outcome 1 Need for additional mechanical dilation.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 18 Dose of mifepristone

Outcome: 1 Need for additional mechanical dilation

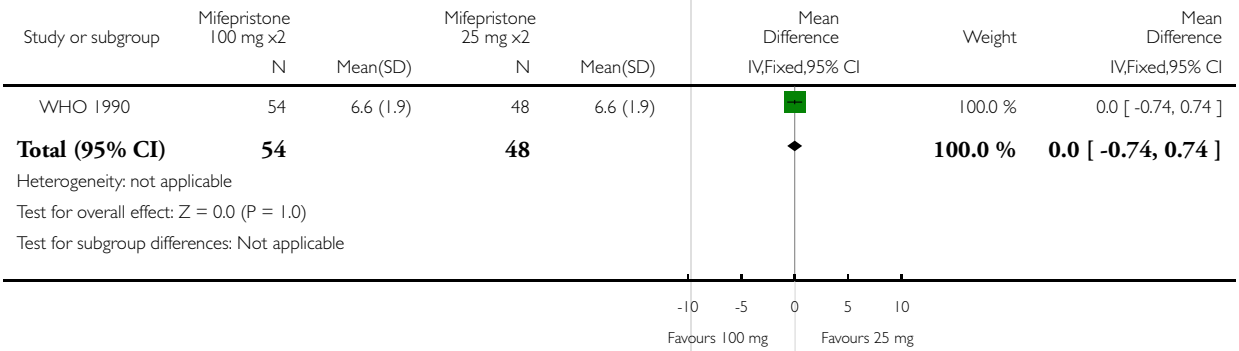


Analysis 18.2. Comparison 18 Dose of mifepristone, Outcome 2 Cervical dilation at procedure start.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 18 Dose of mifepristone

Outcome: 2 Cervical dilation at procedure start



Analysis 19.1. Comparison 19 Laminaria versus prostaglandin F2α, Outcome 1 Cervical dilation at procedure start.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 19 Laminaria versus prostaglandin F2α

Outcome: 1 Cervical dilation at procedure start

Study or subgroup	Laminaria N	Mean(SD)	Prostaglandin F2α N	Mean(SD)	Mean Difference IV,Fixed,95% CI	Weight	Mean Difference IV,Fixed,95% CI
Morris 1986	20	8.1 (0)	20	6.5 (0)			Not estimable
Total (95% CI)	**20**		**20**				**Not estimable**

Heterogeneity: not applicable

Test for overall effect: not applicable

Test for subgroup differences: Not applicable

Analysis 19.2. Comparison 19 Laminaria versus prostaglandin F2α, Outcome 2 Unplanned expulsion prior to procedure.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 19 Laminaria versus prostaglandin F2α

Outcome: 2 Unplanned expulsion prior to procedure

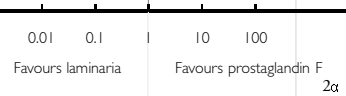
Study or subgroup	Laminaria n/N	Prostaglandin F2α n/N	Odds Ratio M-H,Fixed,95% CI	Weight	Odds Ratio M-H,Fixed,95% CI
Morris 1986	0/20	5/20		100.0 %	0.07 [0.00, 1.34]
Total (95% CI)	**20**	**20**		**100.0 %**	**0.07 [0.00, 1.34]**

Total events: 0 (Laminaria), 5 (Prostaglandin F2α)

Heterogeneity: not applicable

Test for overall effect: Z = 1.77 (P = 0.077)

Test for subgroup differences: Not applicable



Analysis 20.1. Comparison 20 Laminaria versus sulprostone, Outcome 1 Cervical dilation at procedure start.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 20 Laminaria versus sulprostone

Outcome: 1 Cervical dilation at procedure start

Study or subgroup	Laminaria N	Mean(SD)	Sulprostone N	Mean(SD)	Mean Difference IV,Fixed,95% CI	Weight	Mean Difference IV,Fixed,95% CI
WHO 1986	125	6.9 (1.5)	126	7.7 (2.2)		100.0 %	-0.80 [-1.27, -0.33]
Total (95% CI)	**125**		**126**			**100.0 %**	**-0.80 [-1.27, -0.33]**

Heterogeneity: not applicable

Test for overall effect: Z = 3.37 (P = 0.00076)

Test for subgroup differences: Not applicable

Analysis 20.2. Comparison 20 Laminaria versus sulprostone, Outcome 2 Need for additional mechanical dilation.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 20 Laminaria versus sulprostone

Outcome: 2 Need for additional mechanical dilation

Study or subgroup	Laminaria n/N	Sulprostone n/N	Odds Ratio M-H,Fixed,95% CI	Weight	Odds Ratio M-H,Fixed,95% CI
WHO 1986	107/125	90/126		100.0 %	2.38 [1.26, 4.47]
Total (95% CI)	**125**	**126**		**100.0 %**	**2.38 [1.26, 4.47]**

Total events: 107 (Laminaria), 90 (Sulprostone)

Heterogeneity: not applicable

Test for overall effect: Z = 2.69 (P = 0.0072)

Test for subgroup differences: Not applicable

Analysis 20.3. Comparison 20 Laminaria versus sulprostone, Outcome 3 Side-effects: nausea and vomiting.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 20 Laminaria versus sulprostone

Outcome: 3 Side-effects: nausea and vomiting

Study or subgroup	Laminaria n/N	Sulprostone n/N	Odds Ratio M-H,Fixed,95% CI	Weight	Odds Ratio M-H,Fixed,95% CI
WHO 1986	0/125	18/126		100.0 %	0.02 [0.00, 0.39]
Total (95% CI)	**125**	**126**		**100.0 %**	**0.02 [0.00, 0.39]**

Total events: 0 (Laminaria), 18 (Sulprostone)

Heterogeneity: not applicable

Test for overall effect: Z = 2.61 (P = 0.00911)

Test for subgroup differences: Not applicable

Analysis 21.1. Comparison 21 Laminaria versus PGE2, Outcome 1 Cervical dilation at procedure start.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 21 Laminaria versus PGE2

Outcome: 1 Cervical dilation at procedure start

Study or subgroup	Laminaria N	Mean(SD)	9 deoxo-16, 16-dimethyl-9-methylene PGE2 N	Mean(SD)	Mean Difference IV,Fixed,95% CI	Weight	Mean Difference IV,Fixed,95% CI
WHO 1986	125	6.9 (1.5)	124	7.3 (1.8)		100.0 %	-0.40 [-0.81, 0.01]
Total (95% CI)	**125**		**124**			**100.0 %**	**-0.40 [-0.81, 0.01]**

Heterogeneity: not applicable

Test for overall effect: Z = 1.90 (P = 0.057)

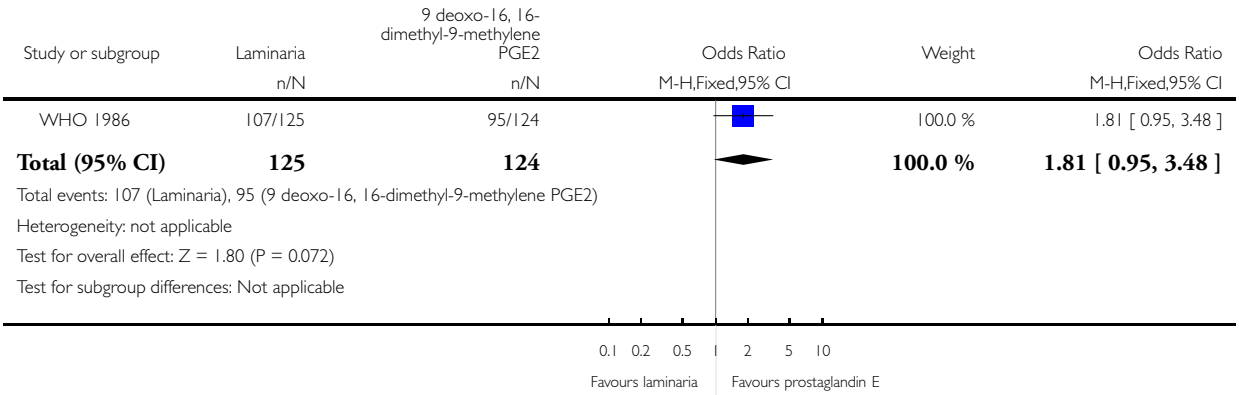
Test for subgroup differences: Not applicable

Analysis 21.2. Comparison 21 Laminaria versus PGE2, Outcome 2 Need for additional mechanical dilation.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 21 Laminaria versus PGE2

Outcome: 2 Need for additional mechanical dilation

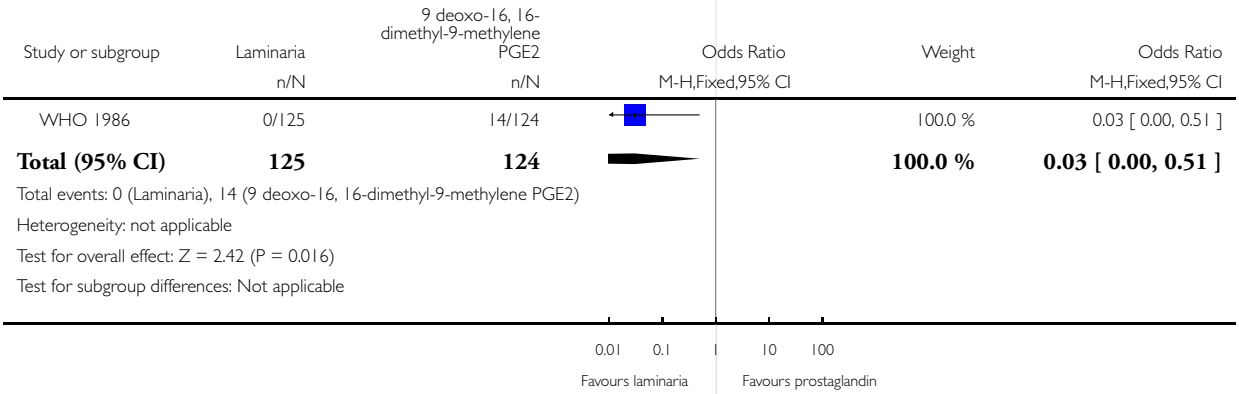


Analysis 21.3. Comparison 21 Laminaria versus PGE2, Outcome 3 Side-effects: nausea and vomiting.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 21 Laminaria versus PGE2

Outcome: 3 Side-effects: nausea and vomiting

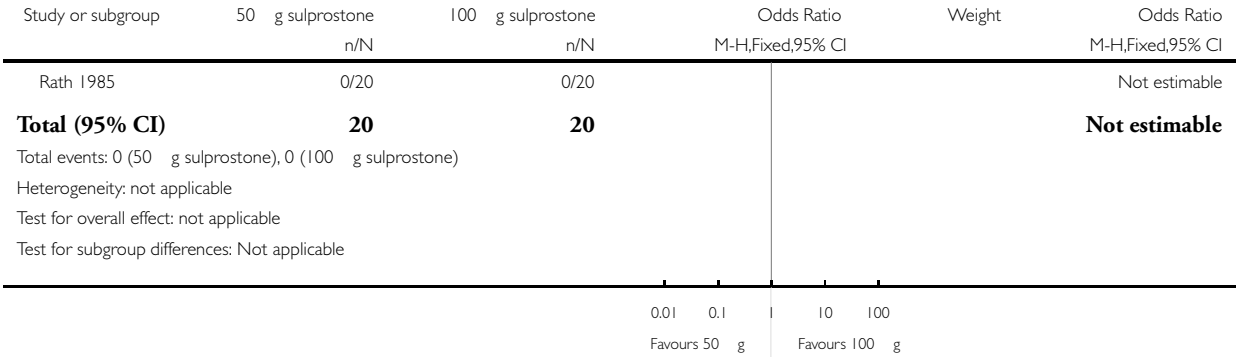


Analysis 22.1. Comparison 22 Sulprostone versus sulprostone (intracervical doses), Outcome 1 Need for additional mechanical dilation.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 22 Sulprostone versus sulprostone (intracervical doses)

Outcome: 1 Need for additional mechanical dilation

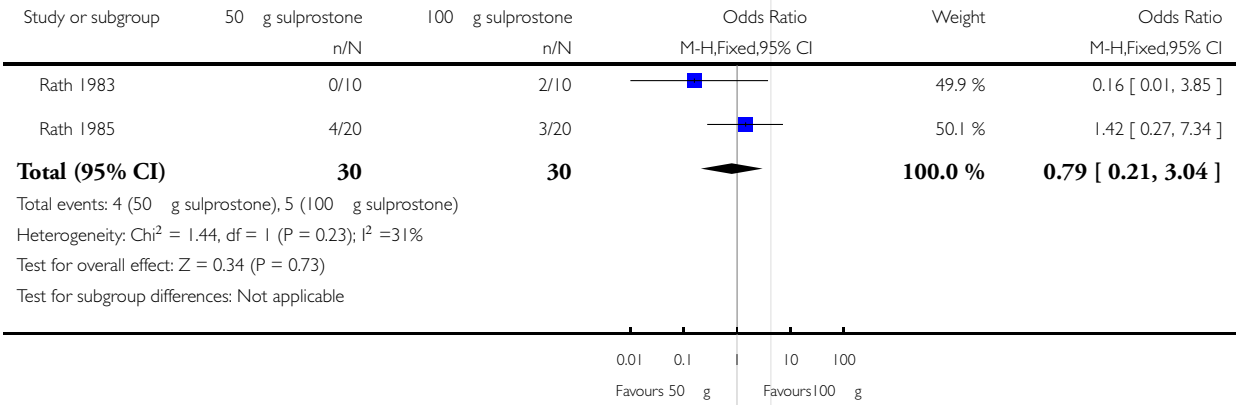


Analysis 22.2. Comparison 22 Sulprostone versus sulprostone (intracervical doses), Outcome 2 Side-effects: nausea and vomiting.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 22 Sulprostone versus sulprostone (intracervical doses)

Outcome: 2 Side-effects: nausea and vomiting



Analysis 22.3. Comparison 22 Sulprostone versus sulprostone (intracervical doses), Outcome 3 Unplanned expulsion prior to procedure.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 22 Sulprostone versus sulprostone (intracervical doses)

Outcome: 3 Unplanned expulsion prior to procedure

Study or subgroup	50 g sulprostone n/N	100 g sulprostone n/N	Odds Ratio M-H,Fixed,95% CI	Weight	Odds Ratio M-H,Fixed,95% CI
Rath 1983	0/10	7/10		57.1 %	0.02 [0.00, 0.50]
Rath 1985	0/20	5/20		42.9 %	0.07 [0.00, 1.34]
Total (95% CI)	**30**	**30**		**100.0 %**	**0.04 [0.00, 0.37]**

Total events: 0 (50 g sulprostone), 12 (100 g sulprostone)

Heterogeneity: Chi^2 = 0.27, df = 1 (P = 0.61); I^2 =0.0%

Test for overall effect: Z = 2.86 (P = 0.0042)

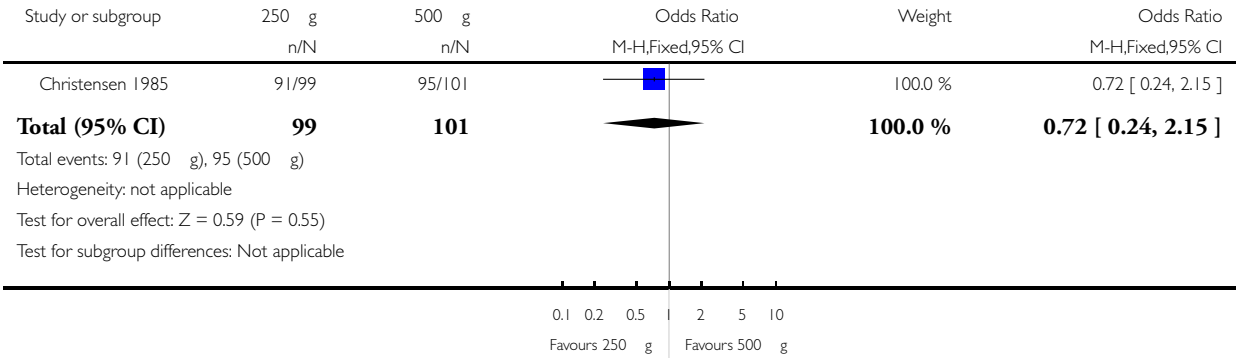
Test for subgroup differences: Not applicable

Analysis 23.1. Comparison 23 Sulprostone versus sulprostone (intramuscular doses), Outcome 1 Need for additional mechanical dilation.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 23 Sulprostone versus sulprostone (intramuscular doses)

Outcome: 1 Need for additional mechanical dilation

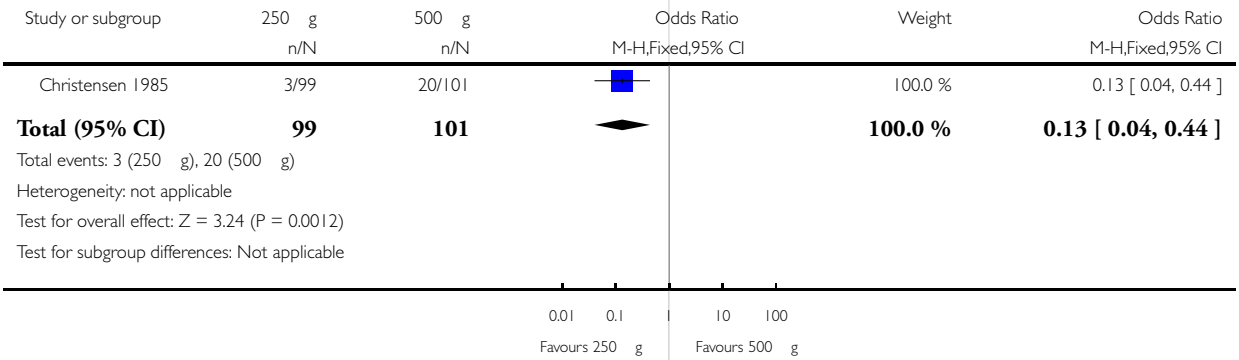


Analysis 23.2. Comparison 23 Sulprostone versus sulprostone (intramuscular doses), Outcome 2 Side-effects: nausea and vomiting.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 23 Sulprostone versus sulprostone (intramuscular doses)

Outcome: 2 Side-effects: nausea and vomiting

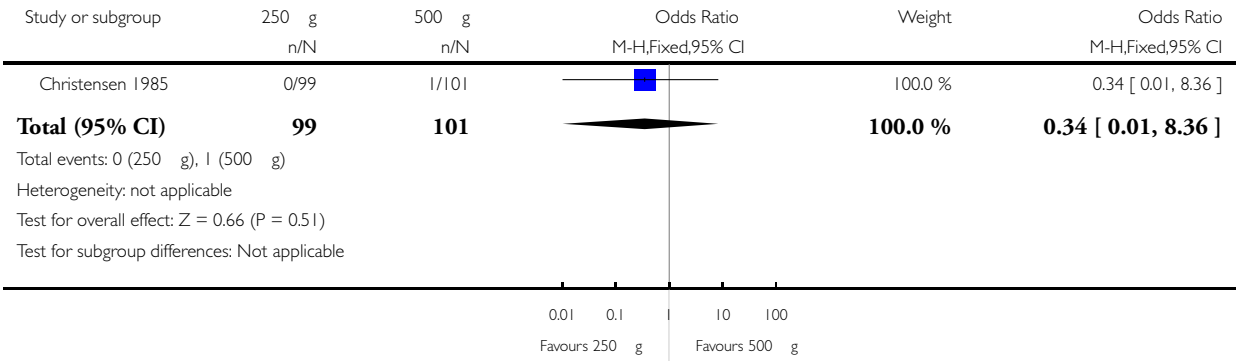


Analysis 23.3. Comparison 23 Sulprostone versus sulprostone (intramuscular doses), Outcome 3 Unplanned expulsion prior to procedure.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 23 Sulprostone versus sulprostone (intramuscular doses)

Outcome: 3 Unplanned expulsion prior to procedure

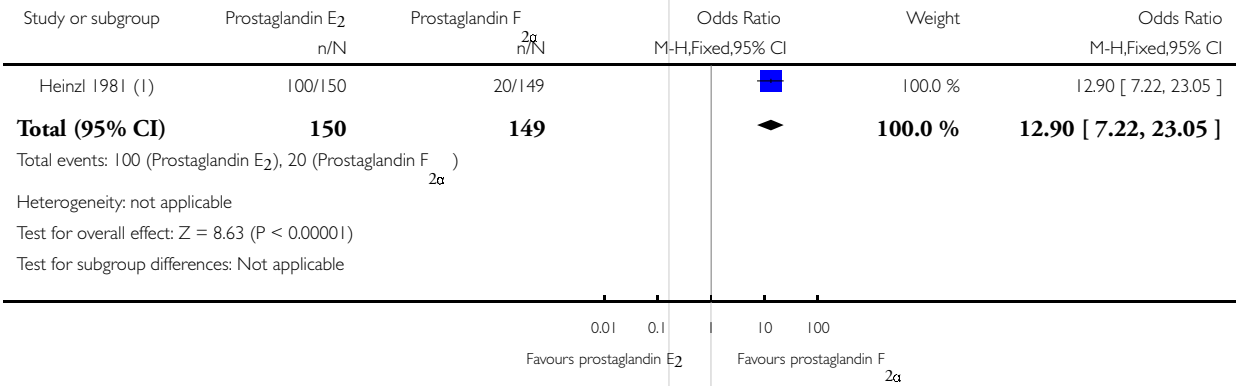


Analysis 24.1. Comparison 24 Prostaglandin E2 versus prostaglandin F2α, Outcome 1 Need for additional mechanical dilation.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 24 Prostaglandin E_2 versus prostaglandin $F_{2\alpha}$

Outcome: 1 Need for additional mechanical dilation



(1) 1 mg oral prostaglandins E_2 was compared with 2.5 mg intracervical $F_{2\alpha}$

Analysis 24.2. Comparison 24 Prostaglandin E2 versus prostaglandin F2α, Outcome 2 Side-effects: nausea and vomiting.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 24 Prostaglandin E_2 versus prostaglandin $F_{2\alpha}$

Outcome: 2 Side-effects: nausea and vomiting

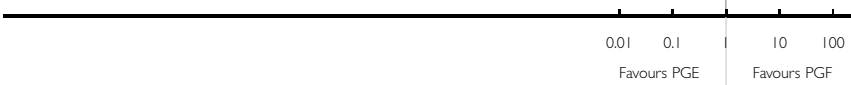
Study or subgroup	Prostaglandin E_2 n/N	Prostaglandin $F_{2\alpha}$ n/N	Odds Ratio M-H,Fixed,95% CI	Weight	Odds Ratio M-H,Fixed,95% CI
Heinzl 1981	2/150	11/149		100.0 %	0.17 [0.04, 0.78]
Total (95% CI)	**150**	**149**		**100.0 %**	**0.17 [0.04, 0.78]**

Total events: 2 (Prostaglandin E_2), 11 (Prostaglandin $F_{2\alpha}$)

Heterogeneity: not applicable

Test for overall effect: Z = 2.28 (P = 0.023)

Test for subgroup differences: Not applicable



Analysis 24.3. Comparison 24 Prostaglandin E2 versus prostaglandin F2α, Outcome 3 Unplanned expulsion prior to procedure.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 24 Prostaglandin E_2 versus prostaglandin $F_{2\alpha}$

Outcome: 3 Unplanned expulsion prior to procedure

Study or subgroup	Prostaglandin E_2 n/N	Prostaglandin $F_{2\alpha}$ n/N	Odds Ratio M-H,Fixed,95% CI	Weight	Odds Ratio M-H,Fixed,95% CI
Heinzl 1981	0/150	28/149		100.0 %	0.01 [0.00, 0.23]
Total (95% CI)	**150**	**149**		**100.0 %**	**0.01 [0.00, 0.23]**

Total events: 0 (Prostaglandin E_2), 28 (Prostaglandin $F_{2\alpha}$)

Heterogeneity: not applicable

Test for overall effect: Z = 2.97 (P = 0.0029)

Test for subgroup differences: Not applicable

Analysis 25.1. Comparison 25 Lamicel versus synthetic sponge without MgSO4, Outcome 1 Unplanned expulsion prior to procedure.

Review: Cervical preparation for first trimester surgical abortion

Comparison: 25 Lamicel versus synthetic sponge without $MgSO_4$

Outcome: 1 Unplanned expulsion prior to procedure

Study or subgroup	Lamicel n/N	Synthetic sponge n/N	Odds Ratio M-H,Fixed,95% CI	Weight	Odds Ratio M-H,Fixed,95% CI
Radestad 1989	1/19	0/22		100.0 %	3.65 [0.14, 94.97]
Total (95% CI)	**19**	**22**		**100.0 %**	**3.65 [0.14, 94.97]**

Total events: 1 (Lamicel), 0 (Synthetic sponge)

Heterogeneity: not applicable

Test for overall effect: Z = 0.78 (P = 0.44)

Test for subgroup differences: Not applicable

ADDITIONAL TABLES

Table 1. Placebo versus misoprostol

Study	Treatment	N	Cervical dilation (mm)
Inal 2003	placebo	60	5.9
	200 μg oral misoprostol	30	6.5
	200 μg vaginal misoprostol	30	6.6
Wiebe 1998	placebo	47	6.2
	700 μg vaginal misoprostol	46	6.8
Okanlomo 1999	placebo	66	nulli 2.5 multi 3.9
	600 μg vaginal misoprostol 12 h prior + 400 μg misoprostol 4 h prior	70	nulli 6.0 multi 6.6

Table 2. Placebo versus $PGF_{2\alpha}$

Study	Treatment	N	Cervical dilation (mm)
Wang 1989	placebo	30	4.3
	1 mg supp. $PGF_{2\alpha}$	30	6.6
Morris 1986	placebo	20	4.9
	20 mg $PGF_{2\alpha}$ gel	20	6.5

Table 3. Misoprostol administrative routes

Study	Treatment	N	Cervical dilation (mm)
Oral (or) vs vaginal (v)			
Ashok 2003	400 μg or.	32	7.0
	800 μg v.	32	7.0
Carbonell 2001	400 μg or.	450	8.1
	400 μg v.	450	8.5

Table 3. Misoprostol administrative routes (*Continued*)

Inal 2003	200 μg or.	30	6.5
	200 μg v.	30	6.5
Oppegaard 2006	400 μg or.	163	6.5
	400 μg v.	158	6.2
Vaginal (v) vs sublingual (s)			
Hamoda 2004	400 μg v.	37	7.5
	400 μg s.	37	8.0

Table 4. Misoprostol versus gemeprost

Study	Treatment	N	Cervical dilation (mm)
El-Rafaey 1994	600 μg misoprostol	30	8.0
	1 mg gemeprost	30	8.0

Table 5. $PGF_{2\alpha}$ versus laminaria

Study	Treatment	N	Cervical dilation (mm)
Morris 1986	20 mg $PGF_{2\alpha}$ gel	20	6.5
	Laminaria	20	8.1

Table 6. Sulprostone doses

Study	Treatment	N	Cervical dilation (mm)
Rath 1983	0.05 sulprostone gel	10	10
	0.1 mg sulprostone gel	10	>10

Table 7. Lamicel versus synthetic sponge

Study	Treatment	N	Cervical dilatation (mm)
Radestad 1989	Lamicel (3mm)	19	4.4
	Synthetic sponge (no $MgSo_4$)	22	4.1

WHAT'S NEW

Last assessed as up-to-date: 9 October 2009.

Date	Event	Description
3 February 2010	Amended	text improved

HISTORY

Protocol first published: Issue 3, 2008

Review first published: Issue 2, 2010

CONTRIBUTIONS OF AUTHORS

JH had the idea and NK wrote the review and conducted the analyses. NK and TN extracted and entered the data. All authors read, edited and advised on the text of the review.

DECLARATIONS OF INTEREST

Two authors (JH and PL) provide abortions in clinical practice.

SOURCES OF SUPPORT

Internal sources

- Department of Reproductive Health and Research, World Health Organization, Switzerland.

External sources

- No sources of support supplied

DIFFERENCES BETWEEN PROTOCOL AND REVIEW

Addition of the authors Nathalie Kapp and Thoai Ngo.

INDEX TERMS

Medical Subject Headings (MeSH)

Abortifacient Agents, Nonsteroidal [*administration & dosage; adverse effects]; Abortion, Induced [*methods]; Alprostadil [administration & dosage; analogs & derivatives]; Cervical Ripening [*drug effects]; Dinoprost [administration & dosage]; Dinoprostone [administration & dosage; analogs & derivatives]; Mifepristone [administration & dosage]; Misoprostol [administration & dosage]; Pregnancy Trimester, First

MeSH check words

Female; Humans; Pregnancy