

Surgical versus medical methods for second trimester induced abortion (Review)

Lohr PA, Hayes JL, Gemzell-Danielsson K



**THE COCHRANE
COLLABORATION®**

This is a reprint of a Cochrane review, prepared and maintained by The Cochrane Collaboration and published in *The Cochrane Library* 2008, Issue 3

<http://www.thecochranelibrary.com>



Surgical versus medical methods for second trimester induced abortion (Review)
Copyright © 2008 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

TABLE OF CONTENTS

HEADER	1
ABSTRACT	1
PLAIN LANGUAGE SUMMARY	2
BACKGROUND	2
OBJECTIVES	3
METHODS	3
RESULTS	4
DISCUSSION	6
AUTHORS' CONCLUSIONS	6
ACKNOWLEDGEMENTS	6
REFERENCES	7
CHARACTERISTICS OF STUDIES	8
DATA AND ANALYSES	12
Analysis 1.1. Comparison 1 D&E vs. Intraamniotic PG F2-alpha, Outcome 1 Febrile morbidity.	13
Analysis 1.2. Comparison 1 D&E vs. Intraamniotic PG F2-alpha, Outcome 2 Requirement for additional curettage.	13
Analysis 1.3. Comparison 1 D&E vs. Intraamniotic PG F2-alpha, Outcome 3 Hemorrhage (requiring transfusion).	14
Analysis 1.4. Comparison 1 D&E vs. Intraamniotic PG F2-alpha, Outcome 4 Hemorrhage (not requiring transfusion).	14
Analysis 1.5. Comparison 1 D&E vs. Intraamniotic PG F2-alpha, Outcome 5 Cervico-vaginal injury.	15
Analysis 1.6. Comparison 1 D&E vs. Intraamniotic PG F2-alpha, Outcome 6 Seizure.	15
Analysis 1.7. Comparison 1 D&E vs. Intraamniotic PG F2-alpha, Outcome 7 Prostaglandin reaction.	16
Analysis 1.8. Comparison 1 D&E vs. Intraamniotic PG F2-alpha, Outcome 8 Abortion completed by assigned treatment.	16
Analysis 1.9. Comparison 1 D&E vs. Intraamniotic PG F2-alpha, Outcome 9 Requirement for overnight hospitalization.	17
Analysis 1.10. Comparison 1 D&E vs. Intraamniotic PG F2-alpha, Outcome 10 Readmission to hospital.	17
Analysis 1.11. Comparison 1 D&E vs. Intraamniotic PG F2-alpha, Outcome 11 Combined major complications.	18
Analysis 1.12. Comparison 1 D&E vs. Intraamniotic PG F2-alpha, Outcome 12 Combined minor complications.	18
Analysis 1.13. Comparison 1 D&E vs. Intraamniotic PG F2-alpha, Outcome 13 Combined major and minor complications.	19
Analysis 2.1. Comparison 2 D&E vs. Mifepristone/Misoprostol, Outcome 1 Fever (> 38C).	19
Analysis 2.2. Comparison 2 D&E vs. Mifepristone/Misoprostol, Outcome 2 Requirement for additional curettage.	20
Analysis 2.3. Comparison 2 D&E vs. Mifepristone/Misoprostol, Outcome 3 Number of women experiencing adverse events.	20
Analysis 2.4. Comparison 2 D&E vs. Mifepristone/Misoprostol, Outcome 4 Nausea.	21
Analysis 2.5. Comparison 2 D&E vs. Mifepristone/Misoprostol, Outcome 5 Vomiting.	21
Analysis 2.6. Comparison 2 D&E vs. Mifepristone/Misoprostol, Outcome 6 Diarrhea.	22
Analysis 2.7. Comparison 2 D&E vs. Mifepristone/Misoprostol, Outcome 7 Dizziness.	22
Analysis 2.8. Comparison 2 D&E vs. Mifepristone/Misoprostol, Outcome 8 Fatigue.	23
Analysis 2.9. Comparison 2 D&E vs. Mifepristone/Misoprostol, Outcome 9 Pain in lower abdomen.	23
Analysis 2.10. Comparison 2 D&E vs. Mifepristone/Misoprostol, Outcome 10 Breast tenderness.	24
Analysis 2.11. Comparison 2 D&E vs. Mifepristone/Misoprostol, Outcome 11 Headache.	24
Analysis 2.12. Comparison 2 D&E vs. Mifepristone/Misoprostol, Outcome 12 Abortion completed by assigned treatment.	25
Analysis 2.13. Comparison 2 D&E vs. Mifepristone/Misoprostol, Outcome 13 Requirement for overnight hospitalization.	25
WHAT'S NEW	25
HISTORY	26
CONTRIBUTIONS OF AUTHORS	26
DECLARATIONS OF INTEREST	26
INDEX TERMS	26

[Intervention review]

Surgical versus medical methods for second trimester induced abortion

Patricia A. Lohr¹, Jennifer L Hayes², Kristina Gemzell-Danielsson³

¹bpas Head Office, Stratford Upon Avon, UK. ²Obstetrics, Gynecology, and Reproductive Sciences, University of Pittsburgh, Pittsburgh, USA. ³Dept. of Women and Child Health, Karolinska University Hospital/ Institutet, Stockholm, Sweden

Contact address: Patricia A. Lohr, bpas Head Office, 20 Timothy's Bridge Road, Stratford Enterprise Park, Stratford Upon Avon, CV379BF, UK. patty.lohr@gmail.com. (Editorial group: Cochrane Fertility Regulation Group.)

Cochrane Database of Systematic Reviews, Issue 3, 2008 (Status in this issue: *Edited*)

Copyright © 2008 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

DOI: 10.1002/14651858.CD006714.pub2

This version first published online: 23 January 2008 in Issue 1, 2008. Re-published online with edits: 16 July 2008 in Issue 3, 2008.

Last assessed as up-to-date: 19 September 2007. ([Dates and statuses?](#))

This record should be cited as: Lohr PA, Hayes JL, Gemzell-Danielsson K. Surgical versus medical methods for second trimester induced abortion. *Cochrane Database of Systematic Reviews* 2008, Issue 1. Art. No.: CD006714. DOI: 10.1002/14651858.CD006714.pub2.

ABSTRACT

Background

Determining the optimal method of performing second-trimester abortions is important, since they account for a disproportionate amount of abortion-related morbidity and mortality.

Objectives

To compare surgical and medical methods of inducing abortion in the second trimester of pregnancy with regard to efficacy, side effects, adverse events, and acceptability.

Search strategy

We identified trials using Pub Med, EMBASE, POPLINE, and the Cochrane Central Register of Controlled Trials (CENTRAL). We also searched the reference lists of identified studies, relevant review articles, book chapters, and conference proceedings for additional, previously unidentified studies. We contacted experts in the field for information on other published or unpublished research.

Selection criteria

Randomised trials comparing any surgical to any medical method of inducing abortion at ≥ 13 weeks' gestation were included.

Data collection and analysis

We assessed the validity of each study using the methods suggested in the Cochrane Handbook. Investigators were contacted as needed to provide additional information regarding trial conduct or outcomes. Two reviewers abstracted the data. Odds ratios and 95% confidence intervals were calculated for dichotomous variables using RevMan 4.2. The trials did not have uniform interventions, therefore, we were unable to combine them into a meta-analysis.

Main results

Two studies met criteria for this review. One compared dilation and evacuation (D&E) to intra-amniotic instillation of prostaglandin F_{2α}. The second study compared D&E to induction with mifepristone and misoprostol. Compared with prostaglandin instillation, the combined incidence of minor complications was lower with D&E (OR 0.17, 95% CI 0.04-0.65) as was the total number of minor

and major complications (OR 0.12, 95% CI 0.03-0.46). The number of women experiencing adverse events was also lower with D&E than with mifepristone and misoprostol (OR 0.06, 95% CI 0.01-0.76). Although women treated with mifepristone and misoprostol reported significantly more pain than those undergoing D&E, efficacy and acceptability were the same in both groups. In both trials, fewer subjects randomised to D&E required overnight hospitalisation.

Authors' conclusions

Dilation and evacuation is superior to instillation of prostaglandin $F_{2\alpha}$. The current evidence also appears to favour D&E over mifepristone and misoprostol, however larger randomised trials are needed.

PLAIN LANGUAGE SUMMARY

Abortion after three months of pregnancy can be done by an operation or with medicines. This review looked at which way is better.

We did computer searches to find studies that compared any operation to any medicine used for abortion at this stage of pregnancy. We wrote to researchers and looked through book chapters and other articles to find more studies.

We found two studies. The first compared dilation and evacuation (D&E) to injecting a drug into the pregnant womb. The second compared D&E to drugs taken by mouth and by vagina.

The D&E operation was better than injecting medicines into the womb. Medicines taken by mouth and vagina worked as well and were as acceptable as a D&E, but caused more pain and side effects. More studies with modern medicines used for abortion after 3 months of pregnancy are needed.

BACKGROUND

Worldwide, 10-15% of induced abortions occur in the second trimester of pregnancy (Finer 2005; WHO 1997; Stat. Service 2005). Contributing factors include, among others, late diagnosis of pregnancy or fetal anomalies, logistic and financial barriers to abortion services, ambivalence, and fear of disclosure or of the procedure (Ingham 2007; Drey 2006; Grimes 1998; George 1996). The optimal method of second trimester abortion continues to be debated (Cates 1982; HMSO 1998; Siebert 2005; Stubblefield 2005). Making this determination is important because abortions performed in the second trimester account for a disproportionate amount of abortion-related morbidity and mortality (Bartlett 2004; Grimes 1985; WHO 1997).

Surgical and medical methods of second trimester abortion have both evolved in the past 30 years. Dilation and evacuation (D&E), introduced in the 1970s, has become the preferred surgical technique over dilation and curettage, hysterotomy, and hysterectomy because of its relative safety (Grimes 1985; Cates 1982). Early induction methods, such as intra-amniotic instillation of hypertonic solutions and prostaglandin $F_{2\alpha}$, have largely been replaced by oral or vaginal prostaglandin analogues with or without the antiprogesterin, mifepristone (Stubblefield 2004).

Specialized training and the maintenance of an adequate caseload are required to perform D&E safely. Inexperienced providers are advised to use medical methods (RCOG 2004). The relative fre-

quency of D&E to medical induction, therefore, varies. For example, D&E is used for 96% of abortions performed at ≥ 13 weeks' gestation in the United States and 75% of those in England and Wales (Strauss 2005; Stat. Service 2005). In contrast, in Finland and Sweden virtually all abortions in the second trimester are performed medically (Stakes 2006).

Among the drawbacks of early methods of induction abortion were the need for amniocentesis, long induction-to-abortion intervals requiring hospitalisation, gastrointestinal side effects, and the frequent need for curettage after expulsion of the fetus (Bygdeman 1983; Cates 1978). With the introduction of prostaglandin E and F analogues, the efficacy of induction abortion improved and side effects were reduced. The most frequently employed prostaglandin analogue is misoprostol (Goldberg 2001), which is used alone or in combination with the antiprogesterin, mifepristone.

The ideal regimen of misoprostol administration for induction abortion has not been determined. Studies have included doses ranging from 100-800 μg using a variety of routes and dosing intervals (Caliskan 2005; Jain 1999; Ngai 2003; Stubblefield 2004). The median induction time for misoprostol-alone regimens ranges from 12-45 hours (Ngai 2003). Mifepristone is an antiprogesterin which softens the cervix and increases uterine sensitivity to prostaglandins (Bygdeman 1985; Norman 1991; Swahn 1988). The addition of mifepristone shortens the induction interval to a median of 7-9 hours, and decreases the dose of prostaglandin re-

quired and the need for analgesia (Urquhart 1989; Rodger 1990; Thong 1992; Ashok 2004; Goh 2006).

The safety and efficacy of D&E by experienced hands has been reported mainly in cohort studies and case series reports. Early cohort studies demonstrated that D&E is safer than instillation abortion (Grimes 1977; Kafrissen 1984), but comparisons with more modern induction protocols are limited. A recent retrospective cohort study comparing D&E to misoprostol demonstrated a lower complication rate with D&E, however selection bias was evident (Autry 2002). Because the comparative safety and acceptability of surgical and medical abortion remains unresolved, this review evaluates all randomised controlled trials comparing these two approaches to second-trimester abortion.

OBJECTIVES

To determine the optimal method of induced abortion in the second trimester of pregnancy by comparing surgical and medical techniques with regard to efficacy, side effects, adverse events, and acceptability.

METHODS

Criteria for considering studies for this review

Types of studies

We included only randomised controlled trials in this review.

Types of participants

Women undergoing induced abortion at ≥ 13 weeks' gestation. Inclusion and exclusion criteria of each study are listed in the table of trial characteristics.

Types of interventions

We sought to identify trials comparing any surgical to any medical method of inducing abortion in the second trimester of pregnancy.

Types of outcome measures

1. Major complications (e.g., haemorrhage requiring blood transfusion, any complication requiring unintended major surgery)
2. Minor complications (e.g., haemorrhage not requiring transfusion, requirement for additional curettage)
3. Side effects
4. Pain (as reported by women or measured by use of analgesics)
5. Abortion completed with intended method
6. Time to completed abortion
7. Requirement for overnight hospitalisation

8. Hospital readmission

9. Satisfaction and acceptability

Search methods for identification of studies

See: Fertility Regulation Group methods used in reviews.

See: Cochrane Fertility Regulation Group search strategy.

We identified trials using Pub Med, EMBASE, POPLINE, and the Cochrane Central Register of Controlled Trials (CENTRAL) using the following strategies:

Pub Med

(abortion, induced OR abortion, legal OR abortion, therapeutic OR labor, induced OR pregnancy termination OR termination of pregnancy) AND (mid-trimester OR midtrimester OR second trimester OR second-trimester OR pregnancy trimester, second OR gestational age) AND ((dilat* AND evac*) OR "D&E" OR (dilat* AND extract*) OR "D&X" OR dilatation and curettage OR curettage OR vacuum aspiration OR suction aspiration OR suction evacuation OR "D&C" OR (dilat* AND curet*) OR hysterotomy OR hysterectomy) AND (oxytocin OR saline OR saline solution, hypertonic OR sodium chloride OR urea OR iodine OR ethacridine lactate OR ethacridine OR antiprogestosterone OR mifepristone OR mifegyne OR RU 486 OR prostaglandins OR misoprostol OR methotrexate OR dinoprost* OR carboprost OR sulprostone OR nalador OR gemeprost OR meteneprost OR abortifacient OR abortifacient agents OR abortifacient agents, non-steroidal OR abortifacient agents, steroidal) AND (randomised controlled trial [pt] OR controlled clinical trial [pt] OR randomised 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]))

EMBASE

(Abortion OR Induced abortion OR Therapeutic abortion OR Hormonal abortion OR Labor induction)AND (Second trimester abortion OR Gestational age) AND

(Abortive agent OR Mifepristone OR Misoprostol OR Prostaglandin OR Sodium chloride OR Urea OR Oxytocin OR Ethacridine OR Iodine) AND

(Randomised controlled trial OR Controlled study OR Clinical trial OR Randomisation 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 "latin square" OR Placebo* OR Random* OR control* OR Prospectiv* OR Volunteer*) AND Human

POPLINE

(Abortion & Pregnancy, second trimester) & (studies / clinical trials)

CENTRAL

Abortion AND (mid-trimester OR midtrimester OR second trimester OR second-trimester OR pregnancy trimester, second OR gestational age)

There were no date or language restrictions in our search for trials. We searched the reference lists of identified studies, relevant review articles, book chapters, and conference proceedings for additional, previously unidentified trials. We contacted experts in the field for information on other published or unpublished trials.

Data collection and analysis

All of the trials that were identified were independently evaluated by the reviewers. The methodological quality of each study was assessed using the guidelines in the Cochrane Reviewers' Handbook (Higgins 2005). Two reviewers (PL and JH) extracted the data. Discrepancies or disagreements about the inclusion of studies or the abstracted data were resolved by discussion with all authors. Researchers were contacted to obtain additional information about study methods and outcome measures.

The data were entered into RevMan 4.2 which was used to calculate odds ratios with 95% confidence intervals for dichotomous variables. The trials did not have uniform interventions, therefore, we were unable to combine them into a meta-analysis.

RESULTS

Description of studies

See: [Characteristics of included studies](#); [Characteristics of excluded studies](#).

Two trials met criteria for this review. The first study (Grimes 1980) randomised 100 women with pregnancies of 13-18 weeks gestation to D&E or a standard protocol using intra-amniotic prostaglandin $F_{2\alpha}$. The primary outcome was the total complication rate. The second trial (Grimes 2004) aimed to randomise 60 women at 13.9-19.9 weeks gestation to D&E or induction using the Aberdeen regimen (Ashok 1999) of oral mifepristone (200 mg) and misoprostol (800 mcg vaginally followed by 400 mcg orally every 3 hours). The primary outcome was the feasibility of recruitment into a randomised trial of surgical versus medical abortion in the second trimester in the United States.

One unpublished study (Philips 1974) could not be obtained for review despite multiple attempts to acquire the manuscript and to contact the primary author. An available abstract stated that the study was a double-blind comparison of prostaglandin $F_{2\alpha}$ instillation, hysterotomy, and induction with hypertonic saline. Randomisation was not mentioned in the abstract.

Risk of bias in included studies

Both trials used an appropriate method of generating the randomisation sequence, either manual shuffling of envelopes (Grimes 1980) or computer-generated (Grimes 2004). The primary author confirmed that concealment was maintained using sequentially-numbered, sealed, opaque envelopes in both trials. Each study described an a priori hypothesis and an appropriate sample size calculation.

In the comparative trial of D&E and prostaglandin instillation (Grimes 1980), 6 subjects in the prostaglandin arm discontinued from the trial while awaiting treatment. These subjects were excluded from the analysis; no intent-to-treat analysis was performed. Side-effect data could not be analysed as mean numbers of episodes of a given side effect (e.g., vomiting and diarrhoea) were reported, but standard deviations were not included. Communication with the primary author revealed that raw data was no longer available.

In the study comparing D&E to mifepristone and misoprostol (Grimes 2004), recruitment was stopped after one year due to slow enrolment, as required by the trial's stopping rules. Eighteen women were randomised, 9 per group.

Effects of interventions

D&E vs. Prostaglandin $F_{2\alpha}$: More subjects undergoing D&E completed the abortion by their assigned method largely due to early discontinuations in the prostaglandin group (OR 17.41, 0.97-313.73). All subjects randomised to prostaglandin required overnight hospitalisation compared to 2 randomised to D&E.

The incidence of minor complications, defined by the authors as haemorrhage not requiring transfusion, febrile morbidity, cervico-vaginal trauma and prostaglandin reaction, was lower in subjects randomised to D&E as compared to those undergoing prostaglandin instillation (OR 0.17, 0.04-0.65). There was also a lower incidence of major complications, which included seizure and haemorrhage requiring transfusion, in the D&E group (OR 0.12, 0.01-2.34). The combined incidence of minor and major complications was significantly lower in the D&E group (OR 0.12, 0.03-0.46). With the exception of cervico-vaginal trauma, there was a trend toward fewer individual complications in the D&E group.

Gastrointestinal side effects were reported by mean numbers of episodes. Twenty-four subjects (55%) in the prostaglandin group experienced a mean of 2.4 episodes of vomiting compared with 6 (12%) in the D&E group who experienced a mean of 1.8 episodes. Eight subjects (18%) in the prostaglandin group had a mean of 2.9 episodes of diarrhoea compared with none in the D&E group. D&E vs. Mifepristone/Misoprostol: One subject assigned to D&E underwent labor after laminaria placement and aborted spontaneously. As a result, 8 of 9 women randomised to D&E completed the abortion by assigned method compared to 9 of 9 women assigned to induction with mifepristone and misoprostol (OR

0.30, 0.01-8.35). No subjects randomised to D&E required an overnight stay in the hospital.

The total number of women experiencing one or more adverse events was lower in the D&E group (OR 0.06, 95% CI 0.07-0.76). In the mifepristone and misoprostol group, 3 subjects experienced a fever of > 38°C, one of whom was treated with antibiotics. Four subjects undergoing induction required an unintended surgical intervention; 3 needed extraction of a retained placenta and one had a delayed presentation of retained products of conception. One subject in the D&E group received superficial burns to her abdomen from a heating pad that was used to control labor pains after laminaria placement.

Side effects (e.g., nausea, vomiting, diarrhoea) were more frequent in the induction group, however none of the comparisons was statistically significant. Pain, emotional discomfort, satisfaction, and acceptability (as rated by likelihood of repeating the same method in the future and recommendation to a friend) were reported using a 5-point Likert scale (Table 1). Overall pain was significantly higher in the mifepristone and misoprostol group (3 vs. 2, $p=0.03$) but there were no substantial differences in other indicators of acceptability and satisfaction.

Table 1. Opinions regarding treatment by treatment group. Median (interquartile range).

Opinion	Mife/Miso (n=9)	D&E (n=9)
Overall satisfaction (a)	1 (1-1)	1 (1-1)
Recommend to a friend (b)	1 (1-1)	1 (1-1)
Repeat same method in future (b)	1 (1-1)	1 (1-1)
Overall physical pain (c)	3 (3-3)*	2 (1-2)
Emotional discomfort (c)	2 (1-3)	1 (1-2)

(a) Five-point scale: 1=very satisfied, 5=very dissatisfied

(b) Five point scale: 1=yes, highly agree, 5=no, highly disagree

(c) Five-point scale: 1=none, 5=extreme

* $p=0.03$ by Mann-Whitney U test

DISCUSSION

The largest studies comparing D&E to second trimester medical abortion utilized cohort data collected by the Joint Program for the Study of Abortion under the Population Council and the Centers for Disease Control (JPSA/CDC) between 1970-1978 (Grimes 1977; Grimes 1985; Kafrissen 1984). Compared to D&E, instillation of prostaglandin $F_{2\alpha}$ between 13 and 24 weeks gestation was associated with a higher risk of serious complications (RR 1.9, 95% CI 1.2-3.1). One randomised trial in this review (Grimes 1980) confirms the JPSA/CDC findings with regard to the overall safety of D&E compared with intra-amniotic prostaglandin.

Instillation techniques are rarely used in modern abortion care. Few studies compare D&E to current methods. Autry and colleagues (Autry 2002) retrospectively evaluated D&E (n=139) and induction with misoprostol (n=125). Women treated with misoprostol had a higher overall rate of complications compared to those undergoing D&E (22% vs. 4%, $p<0.001$). However, selection bias was evident as subjects in the induction group were of significantly higher gestational age (20.3 \pm 2 weeks vs. 18.4 \pm 2.2 weeks, $p<0.001$).

The second trial in this review (Grimes 2004) prospectively compared D&E to induction with mifepristone and misoprostol. Both methods were effective and acceptable. However, more women undergoing induction experienced adverse events. These were limited to fever $> 38^{\circ}\text{C}$ and the need for curettage. Transient fever is a known side-effect of misoprostol (Stubblefield 2004). The incidence of fever from prostaglandin administration varies by dose, route, and frequency of administration (Tang 2000). Four of 9 women assigned to induction required curettage. This is higher than has been reported by centres experienced with this regimen. In a retrospective case-series of 999 inductions using the Aberdeen protocol, Ashok and colleagues (Ashok 2004) reported that 8.1% of subjects required surgical evacuation of the uterus. Using a similar dosing protocol with mifepristone and vaginal misoprostol, Goh, et al. (Goh 2006) found a 5% incidence of curettage among 386 consecutive subjects.

Minimizing side effects, pain, and procedure duration are all important aspects of abortion care. Side effects were higher with both induction methods, and mifepristone and misoprostol was associated with significantly more pain than D&E. The need for hospitalisation also differed. All subjects randomised to prostaglandin instillation and 55% of those treated with mifepristone and misoprostol required overnight hospitalisation (Grimes 1980; Grimes 2004). Some type of intervention is required in the day or two prior to abortion with either D&E or induction which also adds time to the procedure. Cervical preparation with osmotic dilators is typically undertaken 24-48 hours prior to surgery in order to decrease the incidence of procedure-related complications (Grimes

1984; Schulz 1983). Mifepristone is given 24-48 hours before administration of misoprostol which shortens the induction time (Ashok 2004). While these interventions reduce the time spent in the hospital for all subjects, subjects who undergo D&E are likely to spend less time in the hospital overall.

The study by Grimes and colleagues (Grimes 2004) demonstrates the difficulty of recruiting subjects into randomised trials of surgical and medical abortion methods in the United States. Another randomised trial of first trimester abortion methods performed at a different U.S. site encountered the same difficulty; 24 months were required to recruit 50 participants (Creinin 2000). This may not be as much of a barrier elsewhere. Ashok and colleagues in Scotland (Ashok 2002) successfully performed a partially randomised trial comparing vacuum aspiration to induction with mifepristone and misoprostol in women between 10-13 weeks' gestation. In their trial, only 18% of women recruited declined random allocation.

In the two randomised trials in this review, D&E resulted in fewer adverse events than induction for second trimester abortion. Induction with mifepristone and misoprostol, however, appears to be effective and acceptable. This conclusion is consistent with that of the Royal College of Obstetricians and Gynaecologists (RCOG) which has assigned D&E a category "A" recommendation (RCOG 2004). Induction abortion is ascribed a category "B" recommendation based on the status of the available evidence. The sample sizes were small in these studies, therefore the results are imprecise. Larger trials, which include gestations up to 24 weeks, are still needed to improve the precision of outcomes estimates, especially for rare complications such as uterine perforation, infection, or haemorrhage. To achieve an adequate sample size, it may be necessary to perform these studies in areas where induction abortion is more acceptable than in the United States.

AUTHORS' CONCLUSIONS

Implications for practice

Dilation and evacuation is preferable to prostaglandin $F_{2\alpha}$ instillation for second trimester abortion. Dilation and evacuation also appears to be associated with fewer overall adverse events, side effects, and pain than induction with mifepristone and misoprostol. However, induction with mifepristone and misoprostol appears to be effective and acceptable.

Implications for research

Trials of adequate power are needed to compare currently used medical and surgical methods of abortion in the second trimester.

ACKNOWLEDGEMENTS

Ahlam Saleh MD, MLS for assistance in designing the search strategies.

REFERENCES

References to studies included in this review

Grimes 1980 *{published data only}*

Grimes DA, Hulka JF, McCutchen ME. Midtrimester abortion by dilatation and evacuation versus intra-amniotic instillation of prostaglandin F2a: A randomized clinical trial. *American Journal of Obstetrics and Gynecology* 1980;**137**:785–90.

Grimes 2004 *{published data only}*

Grimes DA, Smith SM, Witham AD. Mifepristone and misoprostol versus dilation and evacuation for midtrimester abortion: a pilot randomized controlled trial. *BJOG: an International Journal of Obstetrics and Gynaecology* 2004;**111**:148–53.

References to studies excluded from this review

Philips 1974 *{published data only (unpublished sought but not used)}*

Philips FS, Ghouse N, Sundaravalli A. Comparative study of prostaglandin F2 alpha, hypertonic saline, and hysterotomy in the termination of mid-trimester pregnancies in Government Erskine Hospital from February 1st 1973 to October 31st 1973. Unpublished 20.

Additional references

Ashok 1999

Ashok PW, Templeton A. Nonsurgical mid-trimester termination of pregnancy: a review of 500 cases. *British Journal of Obstetrics and Gynaecology* 1999;**106**:706–10.

Ashok 2002

Ashok PW, Kidd A, Flett GMM, Fitzmaurice A, Graham W, Templeton A. Randomized comparison of efficacy, acceptability and cost of medical versus surgical abortion. *Human Reproduction* 2002;**17**:92–8.

Ashok 2004

Ashok PW, Templeton A, Wagaarachchi PT, Flett GMM. Midtrimester medical termination of pregnancy: a review of 1002 consecutive cases. *Contraception* 2004;**69**:51–8.

Autry 2002

Autry AM, Hayes EC, Jacobson GF, Kirby RS. A comparison of medical induction and dilation and evacuation for second-trimester abortion. *American Journal of Obstetrics and Gynecology* 2002;**187**:393–7.

Bartlett 2004

Bartlett LA, Berg CJ, Shulman HB, Zane SB, Green CA, Whitehead S, Atrash HK. Risk factors for legal induced abortion-related mortality in the United States. *Obstetrics and Gynecology* 2004;**103**:729–37.

Bygdeman 1983

Bygdeman M. Interruption of gestation: The state of the art and prospects for the future. Research on the regulation of human fertility. Needs of developing countries and priorities for the future. Stockholm: Scriptor, 1983:528–43.

Bygdeman 1985

Bygdeman M, Swahn ML. Progesterone receptor blockage. Effect on uterine contractility and early pregnancy. *Contraception* 1985;**32**:45–51.

Caliskan 2005

Caliskan E, Dilbaz D, Doger E, Ozeren S, Dilbaz B. Randomized comparison of 3 misoprostol protocols for abortion induction at 13–20 weeks of gestation. *The Journal of Reproductive Medicine* 2005;**50**:173–80.

Cates 1978

Cates W Jr, Grimes DA, Schulz KF, Ory HW, Tyler CW Jr. World health organization studies of prostaglandins versus saline as abortifacients. *Obstetrics and Gynecology* 1978;**52**:493–8.

Cates 1982

Cates W Jr, Schulz KF, Grimes DA, Horowitz AJ, Lyon FA, Kravitz FH, et al. Dilatation and evacuation procedures and second-trimester abortions. The role of physician skill and hospital setting. *Journal of the American Medical Association* 1982;**248**:559–63.

Creinin 2000

Creinin MD. Randomized comparison of efficacy, acceptability and cost of medical versus surgical abortion. *Contraception* 2000;**62**:117–24.

Drey 2006

Drey EA, Foster DG, Jackson RA, Lee SJ, Cardenas LH, Darney PD. Risk factors associated with presenting for abortion in the second trimester. *Obstetrics and Gynecology* 2006;**107**:128–135.

Finer 2005

Finer LB, Henshaw SK. Estimates of U.S. abortion incidence in 2001 and 2002. http://www.guttmacher.org/pubs/2005/05/18/ab_incidence.pdf (accessed 29 August 2006).

George 1996

George A, Randall S. Late presentation for abortion. *British Journal of Family Planning* 1996;**22**:12–15.

Goh 2006

Goh SE, Thong KJ. Induction of second trimester abortion (12–20 weeks) with mifepristone and misoprostol: a review of 386 consecutive cases. *Contraception* 2006;**73**:516–9.

Goldberg 2001

Goldberg AB, Greenberg MB, Darney PD. Misoprostol and pregnancy. *New England Journal of Medicine* 2001;**344**:38–47.

Grimes 1977

Grimes DA, Schulz KF, Cates W Jr, Tyler CW Jr. Mid-trimester abortion by dilatation and evacuation: a safe and practical alternative. *New England Journal of Medicine* 1977;**296**:1141–5.

Grimes 1984

Grimes DA, Schulz KF, Cates W Jr. Prevention of uterine perforation during curettage abortion. *Journal of the American Medical Association* 1984;**251**:2108–11.

- Grimes 1985**
Grimes DA, Schulz KF. Morbidity and mortality from second-trimester abortions. *The Journal of Reproductive Medicine* 1985;**30**:505–14.
- Grimes 1998**
Grimes, DA. The continuing need for late abortions. *Journal of the American Medical Association* 1998;**280**:747–50.
- Higgins 2005**
Higgins JPT, Green S, editors. Cochrane Handbook for Systematic Reviews of Interventions 4.2.5 [updated May 2005]. *Cochrane Database of Systematic Reviews* 2005, Issue 3.
- HMSO 1998**
Department of Health, Welsh Office, Scottish Office Department of Health, and Department of Health and Social Services, Northern Ireland. *Why Mothers Die. Report on Confidential Enquiries into Maternal Deaths in the United Kingdom, 1994/1996*. London: The Stationery Office, 1998.
- Ingham 2007**
Ingham R, Lee E, Clements S, Stone N. Second trimester abortion in England and Wales. <http://www.psychology.soton.ac.uk/cshr>, accessed August 14, 2007 2007.
- Jain 1999**
Jain JK, Kuo J, Mishell DR Jr. A comparison of two dosing regimens of intravaginal misoprostol for second-trimester pregnancy termination. *Obstetrics and Gynecology* 1999;**93**:571–5.
- Kafrissen 1984**
Kafrissen ME, Schulz KF, Grimes DA, Cates W Jr. Midtrimester abortion. Intra-amniotic instillation of hyperosmolar urea and prostaglandin F2 alpha v dilatation and evacuation. *Journal of the American Medical Association* 1984;**251**:916–9.
- Ngai 2003**
Ngai SW, Tang OS, Ho PC. Prostaglandins for induction of second-trimester termination and intrauterine death. *Best Practice & Research Clinical Obstetrics & Gynaecology* 2003;**17**:765–75.
- Norman 1991**
Norman JE, Thong KJ, Baird DT. Uterine contractility and induction of abortion in early pregnancy by misoprostol and mifepristone. *Lancet* 1991;**338**:1233–6.
- RCOG 2004**
Royal College of Obstetricians and Gynaecologists. *The Care of Women Requesting Induced Abortion*. London: RCOG Press, 2004.
- Rodger 1990**
Rodger MW, Baird DT. Pretreatment with mifepristone (RU-486) reduces interval between prostaglandin administration and expulsion in second trimester abortion. *British Journal of Obstetrics and Gynaecology* 1990;**97**:41–5.
- Schulz 1983**
Schulz KF, Grimes DA, Cates W Jr. Measures to prevent cervical injury during suction curettage abortion. *Lancet* 1983;**1**:1182–5.
- Siebert 2005**
Siebert JR, Kapur RP, Resta RG, Luthy D. Methods for induced abortion [letter]. *Obstetrics and Gynecology* 2005;**105**:221.
- Stakes 2006**
STAKES. Official statistics of Finland. Induced abortions and sterilisations 2005. Statistical summary 2006.
- Stat. Service 2005**
Government Statistical Service. Abortion statistics, England and Wales: 2005. Statistical Bulletin 2006/01 July 4, 2006.
- Strauss 2005**
Strauss LT, Herndon J, Chang J, Parker WY, Bowens SV, Berg CJ. Abortion surveillance--United States, 2002. *Morbidity and Mortality Weekly Report* 2005;**54**:1–31.
- Stubblefield 2004**
Stubblefield PG, Carr-Ellis S, Borgatta L. Methods for induced abortion. *Obstetrics and Gynecology* 2004;**104**:174–85.
- Stubblefield 2005**
Stubblefield PG, Carr-Ellis S, Borgatta L. Methods for induced abortion [letter]. *Obstetrics and Gynecology* 2005;**105**:221–2.
- Swahn 1988**
Swahn ML, Bygdeman M. The effect of the antiprogesterin RU 486 on uterine contractility and sensitivity to prostaglandin and oxytocin. *British Journal of Obstetrics and Gynaecology* 1988;**95**:126–34.
- Tang 2000**
Tang OS, Ho PC. Medical abortion in the second trimester. *Best Practice & Research Clinical Obstetrics and Gynaecology* 2000;**16**:237–46.
- Thong 1992**
Thong KJ, Baird DT. A study of gemeprost alone, dilapan or mifepristone in combination with gemeprost for the termination of second trimester pregnancy. *Contraception* 1992;**46**:11–7.
- Urquhart 1989**
Urquhart DR, Bahzad C, Templeton AA. Efficacy of the antiprogesterin mifepristone (RU 486) prior to prostaglandin termination of pregnancy. *Human Reproduction* 1989;**4**:202–3.
- WHO 1997**
Medical methods for termination of pregnancy. Report of a WHO Scientific Group. World Health Organization Technical Report Series. Geneva: World Health Organization, 1997; Vol. 871.
- * Indicates the major publication for the study

CHARACTERISTICS OF STUDIES

Characteristics of included studies [ordered by study ID]

Grimes 1980

Methods	Randomised controlled trial. Random allocation by means of “shuffling, selecting, and numbering” sealed envelopes containing treatment allocation cards. Single operator blinded to cumulative number of subjects assigned to each group.
Participants	100 women requesting termination of pregnancy. Inclusion criteria: any age, race, or gravidity, 13-18 weeks gestation by last menstrual period, willing to accept allocation, “reasonable expectation” of obtaining follow-up information. Exclusion criteria: evidence of abortion that had already been initiated spontaneously or artificially, anticipation of concurrent sterilization or other operation at the time of termination, preexisting medical or surgical condition thought to be incompatible with either treatment.
Interventions	Surgical method: Dilation and evacuation (D&E) performed under intravenous sedation with intracervical block (20 cc 1% lidocaine with epinephrine 1:100,000). All subjects received cervical preparation with laminaria placement one day prior to abortion. Medical method: Prostaglandin F2-alpha (PGF2a) intra-amniotic instillation with indwelling catheter. Initial dose of 40 mg with additional 20 mg doses at 24 and 36 hours as needed. Cervical preparation not performed. Curettage performed if placenta not expelled within 2 hours of fetus and for all subjects routinely after expulsion of placenta. Neither oxytocics or prophylactic antibiotics used in either group. All subjects given thermometer to monitor temperature twice daily for 5 days post-abortion. Follow-up scheduled for 2 weeks after abortion.
Outcomes	Primary outcome: total complication rate including major (seizure, hemorrhage requiring transfusion) and minor (febrile morbidity, trauma to cervix or vagina, prostaglandin reaction) complications. Other outcomes: Delay in completion of abortion, abortion completed by allocation group, time/need for hospitalization, side effects (nausea, vomiting, diarrhea), and treatment of complications (curettage, antibiotics, blood transfusion, surgical repair of cervical or vaginal injury), hospital re-admissions.
Notes	Subjects treated with PGF2a required delay in treatment until gestational age was greater than or equal to 16 weeks by hospital protocol. Six subjects discontinued participation in study due to delay. Failure of PGF2a instillation defined as failure to expel fetus within 48 hours after instillation of initial dose. D&E subjects monitored 1 1/2 hours after surgery. Post-procedure hematocrit not checked. PGF2a subjects observed for a minimum of 4 hours after completion of abortion and hematocrit determined prior to discharge.

Risk of bias

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

Grimes 2004

Methods	Randomised controlled trial. 1:1 random allocation using computer-generated permuted blocks. Concealment maintained with sequentially numbered, opaque, sealed envelopes. Envelopes prepared by epidemiologist not associated with the trial.
Participants	18 women requesting termination of pregnancy. Inclusion criteria: any race or ethnic group, age 18 years or older, English speaking, gestational age

Grimes 2004 (Continued)

determined by ultrasound to be 13.9-19.9 weeks by biparietal diameter. Subjects with fetal death or anomalous fetuses were included.

Exclusion criteria: prior cesarean delivery or myomectomy, medical conditions contraindicating mifepristone or misoprostol use, known transportation difficulties relating to abortion visits, subjects unwilling to be contacted by telephone or letter for follow-up at 2 weeks.

Interventions	<p>Surgical method: D&E performed under "light general anesthesia without intubation." All subjects received cervical preparation with laminaria insertion 1-2 days prior to abortion.</p> <p>Medical method: 200 mg oral mifepristone followed 48 hours later by 800 mcg vaginal misoprostol. Each subject received additional doses of 400 mcg oral misoprostol every 3 hours to a maximum of 4 oral doses until abortion occurred. Placental removal performed if spontaneous expulsion did not occur within 2 hours of passage of fetus.</p> <p>All subjects received prophylactic doxycycline.</p>
Outcomes	<p>Primary outcome: feasibility of randomising U.S. women to two methods of abortion.</p> <p>Other outcomes: time to completion of medical abortion, need for hospitalization beyond one day, need for unanticipated curettage or removal of placenta.</p> <p>Acceptability, satisfaction, adverse events, side effects such as vomiting or diarrhea, best and worst features of treatment assessed with self-administered questionnaire prior to discharge and 2 weeks after treatment.</p>
Notes	<p>Planned enrolment of 60 subjects. Stopping rules established based on rates of enrolment: if 20 patients could not be enrolled within 12 months or 40 within 24 months. Enrolment stopped after 12 months.</p>

Risk of bias

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

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

Study	Reason for exclusion
Philips 1974	Unpublished; only abstract available for review; unable to obtain manuscript or contact authors despite multiple attempts.

DATA AND ANALYSES

Comparison 1. D&E vs. Intraamniotic PG F2-alpha

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Febrile morbidity	1	94	Odds Ratio (M-H, Fixed, 95% CI)	0.20 [0.02, 1.90]
2 Requirement for additional curettage	1	94	Odds Ratio (M-H, Fixed, 95% CI)	0.88 [0.05, 14.46]
3 Hemorrhage (requiring transfusion)	1	94	Odds Ratio (M-H, Fixed, 95% CI)	0.17 [0.01, 3.60]
4 Hemorrhage (not requiring transfusion)	1	94	Odds Ratio (M-H, Fixed, 95% CI)	0.07 [0.00, 1.32]
5 Cervico-vaginal injury	1	94	Odds Ratio (M-H, Fixed, 95% CI)	0.88 [0.12, 6.49]
6 Seizure	1	94	Odds Ratio (M-H, Fixed, 95% CI)	0.29 [0.01, 7.23]
7 Prostaglandin reaction	1	94	Odds Ratio (M-H, Fixed, 95% CI)	0.29 [0.01, 7.23]
8 Abortion completed by assigned treatment	1	100	Odds Ratio (M-H, Fixed, 95% CI)	17.41 [0.97, 313.73]
9 Requirement for overnight hospitalization	1	94	Odds Ratio (M-H, Fixed, 95% CI)	Not estimable
10 Readmission to hospital	1	94	Odds Ratio (M-H, Fixed, 95% CI)	0.88 [0.05, 14.46]
11 Combined major complications	1	94	Odds Ratio (M-H, Fixed, 95% CI)	0.12 [0.01, 2.34]
12 Combined minor complications	1	94	Odds Ratio (M-H, Fixed, 95% CI)	0.17 [0.04, 0.65]
13 Combined major and minor complications	1	94	Odds Ratio (M-H, Fixed, 95% CI)	0.12 [0.03, 0.46]

Comparison 2. D&E vs. Mifepristone/Misoprostol

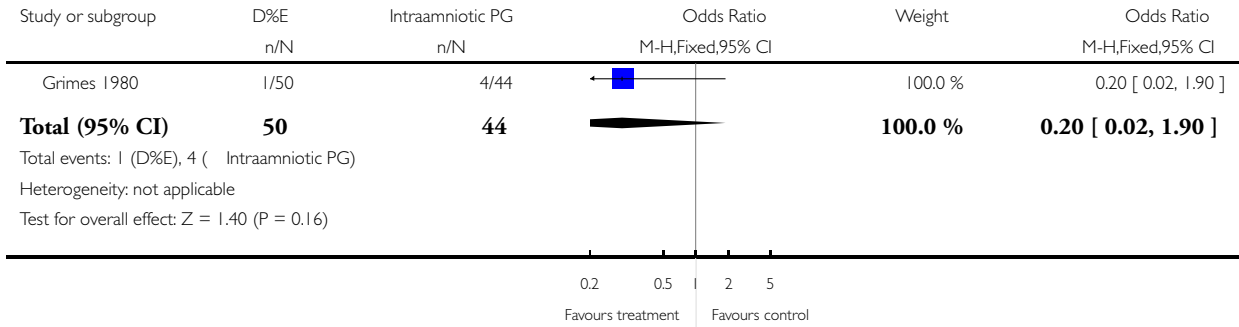
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Fever (> 38C)	1	18	Odds Ratio (M-H, Fixed, 95% CI)	0.10 [0.00, 2.23]
2 Requirement for additional curettage	1	18	Odds Ratio (M-H, Fixed, 95% CI)	0.06 [0.00, 1.43]
3 Number of women experiencing adverse events	1	18	Odds Ratio (M-H, Fixed, 95% CI)	0.06 [0.01, 0.76]
4 Nausea	1	18	Odds Ratio (M-H, Fixed, 95% CI)	0.05 [0.06, 2.70]
5 Vomiting	1	18	Odds Ratio (M-H, Fixed, 95% CI)	0.36 [0.05, 2.77]
6 Diarrhea	1	18	Odds Ratio (M-H, Fixed, 95% CI)	Not estimable
7 Dizziness	1	18	Odds Ratio (M-H, Fixed, 95% CI)	0.16 [0.01, 1.83]
8 Fatigue	1	18	Odds Ratio (M-H, Fixed, 95% CI)	0.26 [0.04, 1.77]
9 Pain in lower abdomen	1	18	Odds Ratio (M-H, Fixed, 95% CI)	0.57 [0.07, 4.64]
10 Breast tenderness	1	18	Odds Ratio (M-H, Fixed, 95% CI)	0.16 [0.01, 3.81]
11 Headache	1	18	Odds Ratio (M-H, Fixed, 95% CI)	0.16 [0.01, 1.83]
12 Abortion completed by assigned treatment	1	18	Odds Ratio (M-H, Fixed, 95% CI)	0.30 [0.01, 8.35]

Analysis 1.1. Comparison 1 D&E vs. Intraamniotic PG F2-alpha, Outcome 1 Febrile morbidity.

Review: Surgical versus medical methods for second trimester induced abortion

Comparison: 1 D&E vs. Intraamniotic PG F2-alpha

Outcome: 1 Febrile morbidity

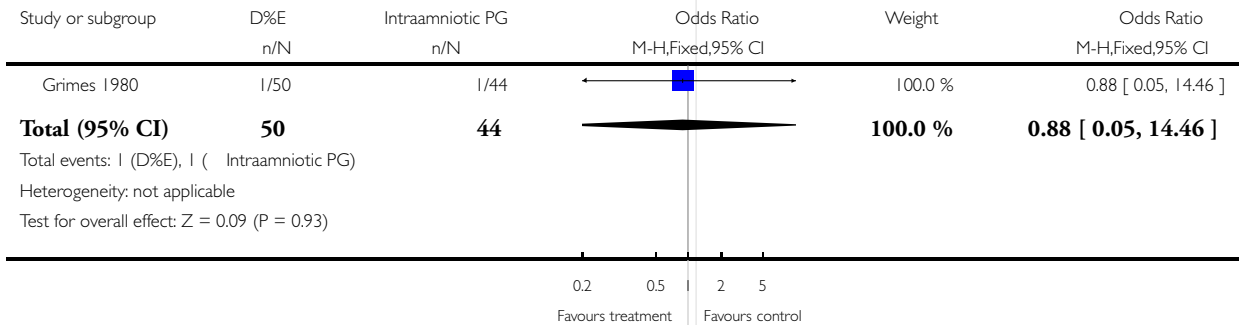


Analysis 1.2. Comparison 1 D&E vs. Intraamniotic PG F2-alpha, Outcome 2 Requirement for additional curettage.

Review: Surgical versus medical methods for second trimester induced abortion

Comparison: 1 D&E vs. Intraamniotic PG F2-alpha

Outcome: 2 Requirement for additional curettage

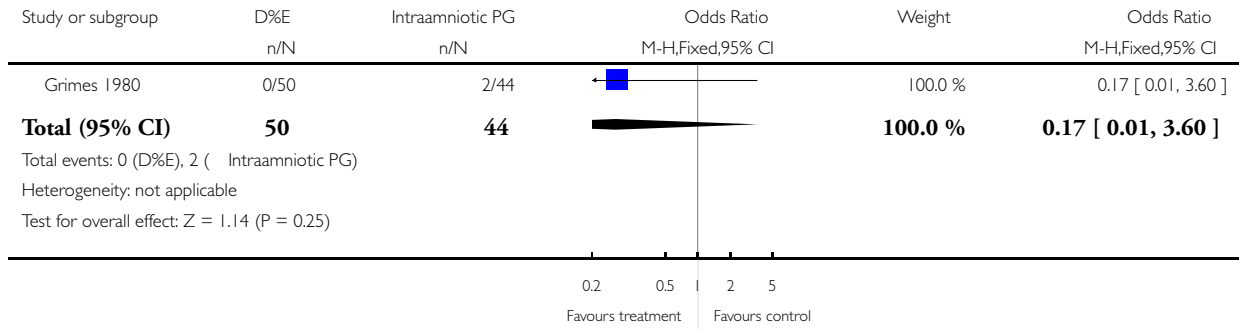


Analysis 1.3. Comparison 1 D&E vs. Intraamniotic PG F2-alpha, Outcome 3 Hemorrhage (requiring transfusion).

Review: Surgical versus medical methods for second trimester induced abortion

Comparison: 1 D&E vs. Intraamniotic PG F2-alpha

Outcome: 3 Hemorrhage (requiring transfusion)

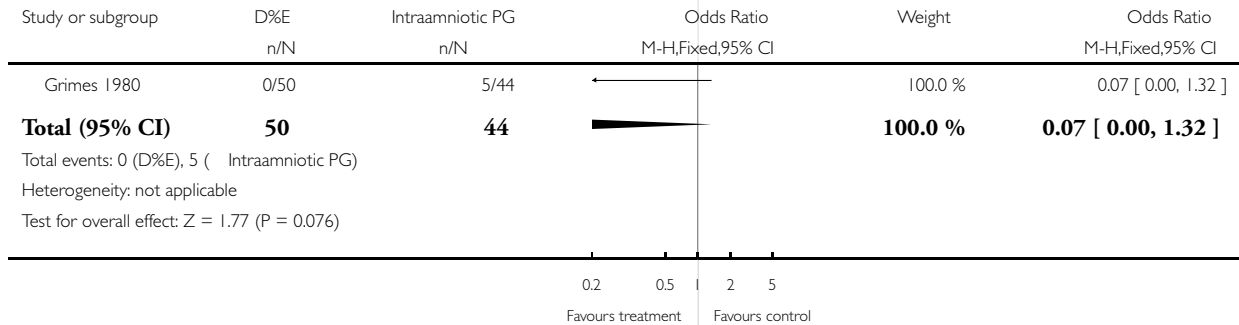


Analysis 1.4. Comparison 1 D&E vs. Intraamniotic PG F2-alpha, Outcome 4 Hemorrhage (not requiring transfusion).

Review: Surgical versus medical methods for second trimester induced abortion

Comparison: 1 D&E vs. Intraamniotic PG F2-alpha

Outcome: 4 Hemorrhage (not requiring transfusion)

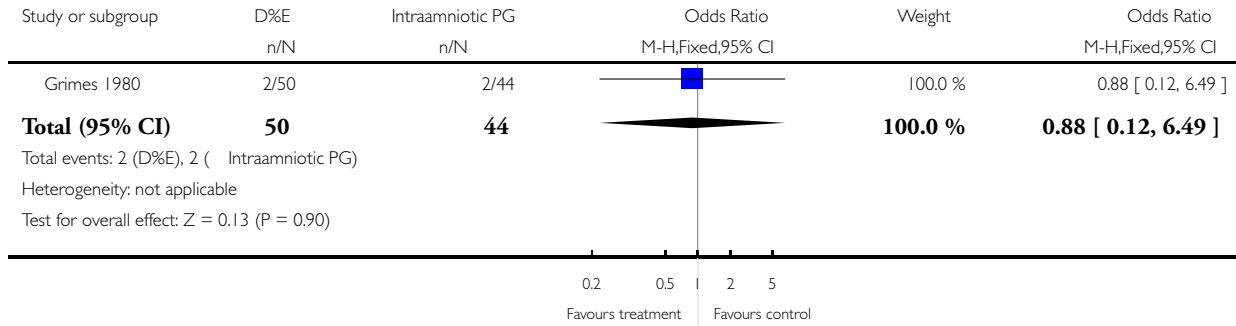


Analysis 1.5. Comparison 1 D&E vs. Intraamniotic PG F2-alpha, Outcome 5 Cervico-vaginal injury.

Review: Surgical versus medical methods for second trimester induced abortion

Comparison: 1 D&E vs. Intraamniotic PG F2-alpha

Outcome: 5 Cervico-vaginal injury

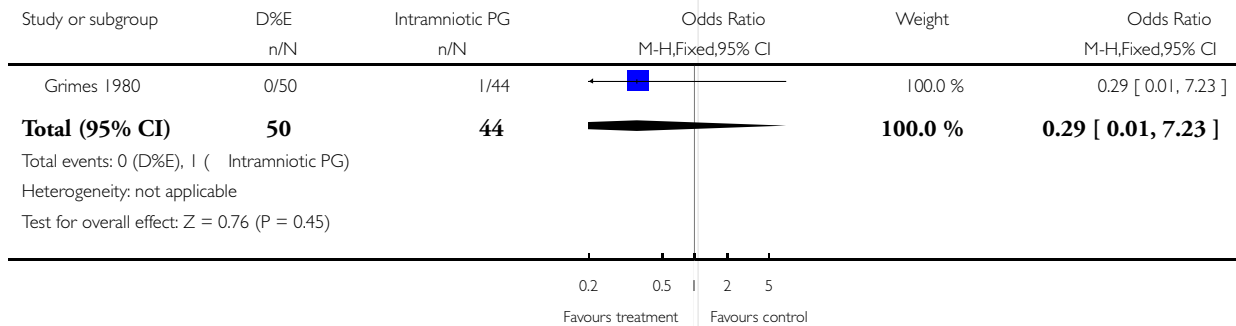


Analysis 1.6. Comparison 1 D&E vs. Intraamniotic PG F2-alpha, Outcome 6 Seizure.

Review: Surgical versus medical methods for second trimester induced abortion

Comparison: 1 D&E vs. Intraamniotic PG F2-alpha

Outcome: 6 Seizure

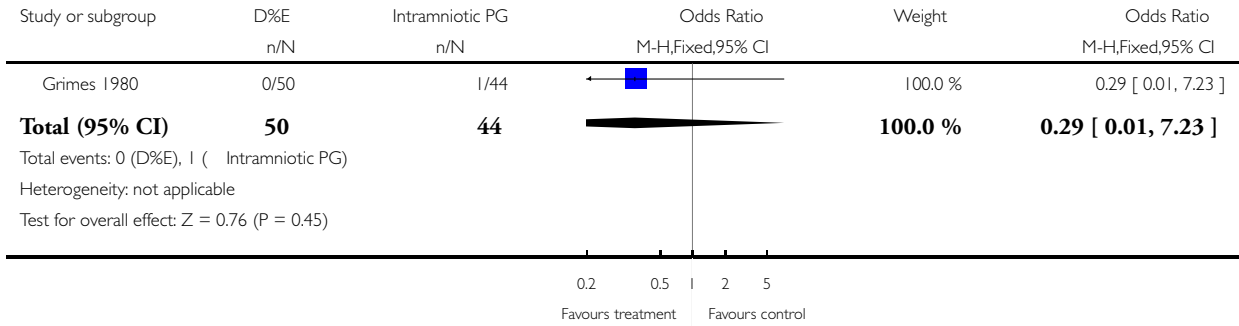


Analysis 1.7. Comparison 1 D&E vs. Intraamniotic PG F2-alpha, Outcome 7 Prostaglandin reaction.

Review: Surgical versus medical methods for second trimester induced abortion

Comparison: 1 D&E vs. Intraamniotic PG F2-alpha

Outcome: 7 Prostaglandin reaction

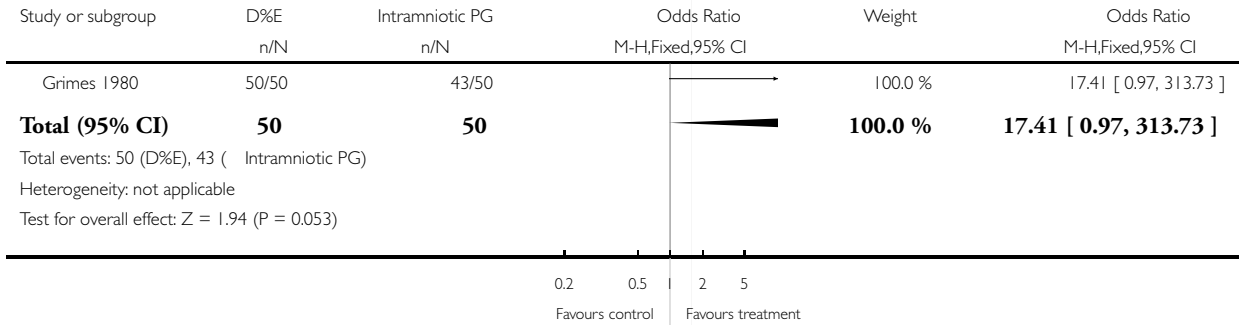


Analysis 1.8. Comparison 1 D&E vs. Intraamniotic PG F2-alpha, Outcome 8 Abortion completed by assigned treatment.

Review: Surgical versus medical methods for second trimester induced abortion

Comparison: 1 D&E vs. Intraamniotic PG F2-alpha

Outcome: 8 Abortion completed by assigned treatment

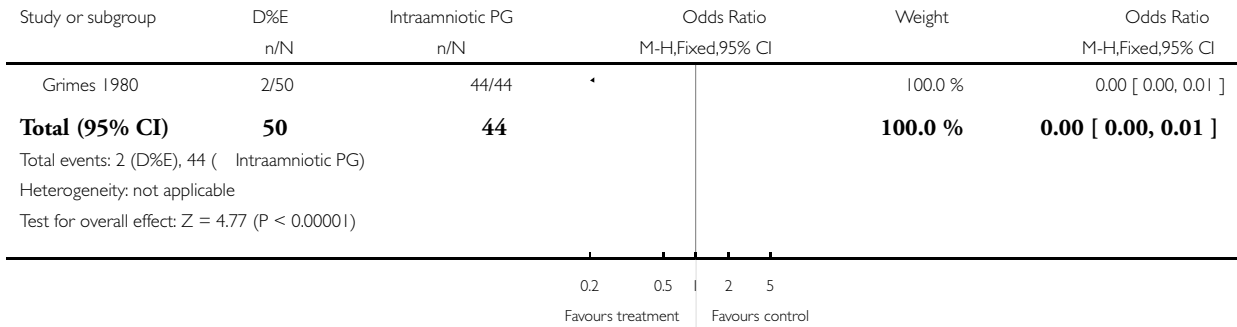


Analysis I.9. Comparison I D&E vs. Intraamniotic PG F2-alpha, Outcome 9 Requirement for overnight hospitalization.

Review: Surgical versus medical methods for second trimester induced abortion

Comparison: I D&E vs. Intraamniotic PG F2-alpha

Outcome: 9 Requirement for overnight hospitalization

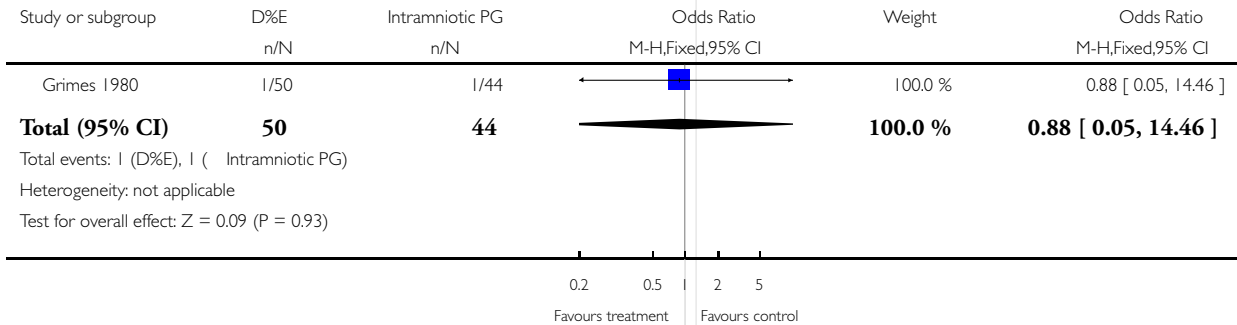


Analysis I.10. Comparison I D&E vs. Intraamniotic PG F2-alpha, Outcome 10 Readmission to hospital.

Review: Surgical versus medical methods for second trimester induced abortion

Comparison: I D&E vs. Intraamniotic PG F2-alpha

Outcome: 10 Readmission to hospital

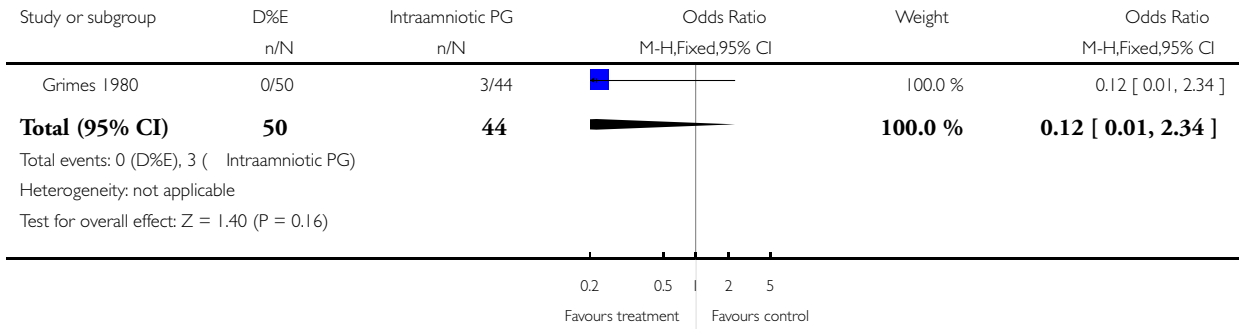


Analysis 1.11. Comparison 1 D&E vs. Intraamniotic PG F2-alpha, Outcome 11 Combined major complications.

Review: Surgical versus medical methods for second trimester induced abortion

Comparison: 1 D&E vs. Intraamniotic PG F2-alpha

Outcome: 11 Combined major complications

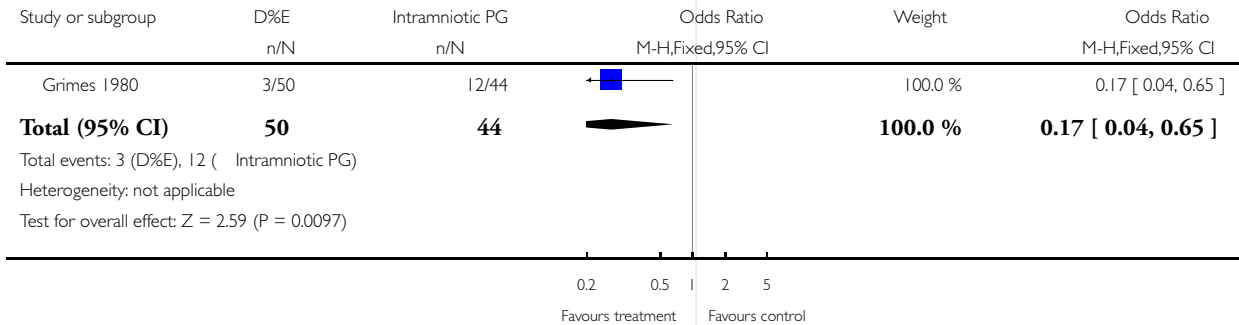


Analysis 1.12. Comparison 1 D&E vs. Intraamniotic PG F2-alpha, Outcome 12 Combined minor complications.

Review: Surgical versus medical methods for second trimester induced abortion

Comparison: 1 D&E vs. Intraamniotic PG F2-alpha

Outcome: 12 Combined minor complications

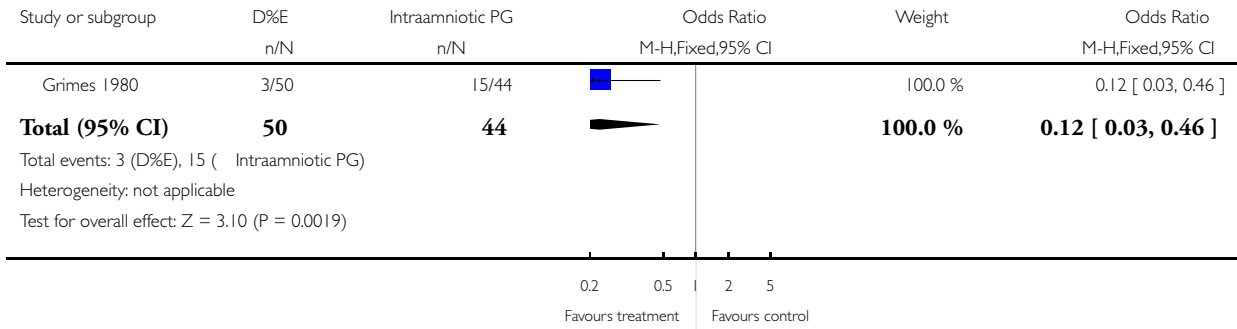


Analysis 1.13. Comparison 1 D&E vs. Intraamniotic PG F2-alpha, Outcome 13 Combined major and minor complications.

Review: Surgical versus medical methods for second trimester induced abortion

Comparison: 1 D&E vs. Intraamniotic PG F2-alpha

Outcome: 13 Combined major and minor complications

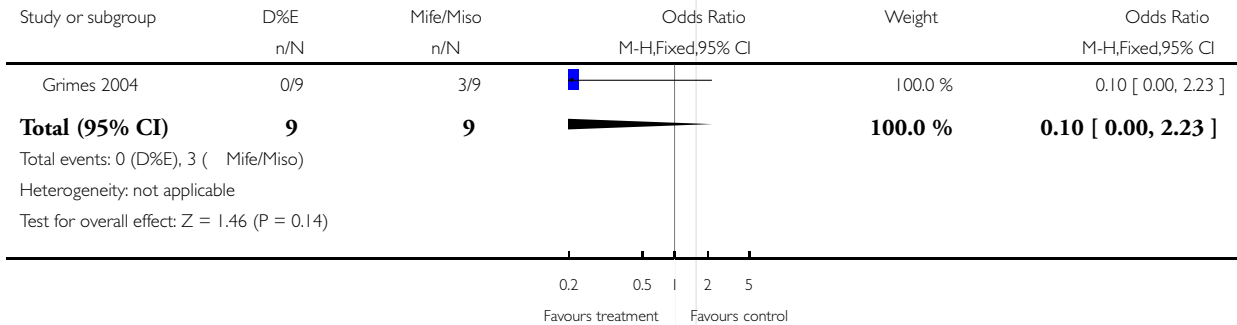


Analysis 2.1. Comparison 2 D&E vs. Mifepristone/Misoprostol, Outcome 1 Fever (> 38C).

Review: Surgical versus medical methods for second trimester induced abortion

Comparison: 2 D&E vs. Mifepristone/Misoprostol

Outcome: 1 Fever (> 38C)

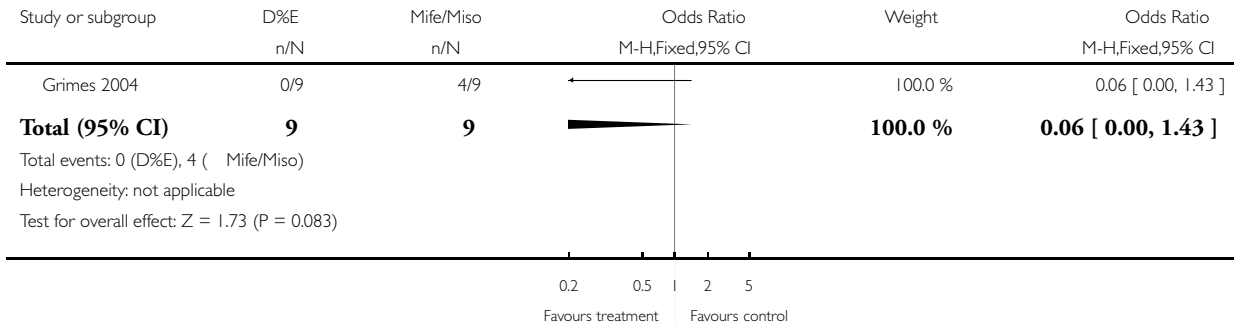


Analysis 2.2. Comparison 2 D&E vs. Mifepristone/Misoprostol, Outcome 2 Requirement for additional curettage.

Review: Surgical versus medical methods for second trimester induced abortion

Comparison: 2 D&E vs. Mifepristone/Misoprostol

Outcome: 2 Requirement for additional curettage

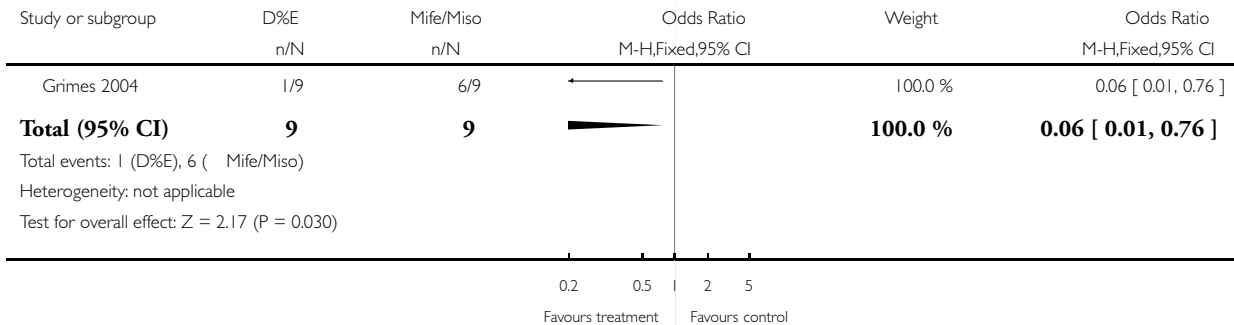


Analysis 2.3. Comparison 2 D&E vs. Mifepristone/Misoprostol, Outcome 3 Number of women experiencing adverse events.

Review: Surgical versus medical methods for second trimester induced abortion

Comparison: 2 D&E vs. Mifepristone/Misoprostol

Outcome: 3 Number of women experiencing adverse events

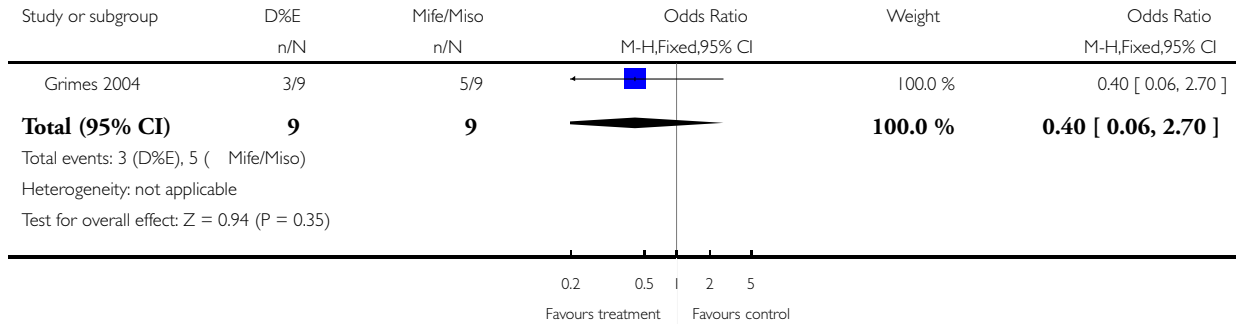


Analysis 2.4. Comparison 2 D&E vs. Mifepristone/Misoprostol, Outcome 4 Nausea.

Review: Surgical versus medical methods for second trimester induced abortion

Comparison: 2 D&E vs. Mifepristone/Misoprostol

Outcome: 4 Nausea

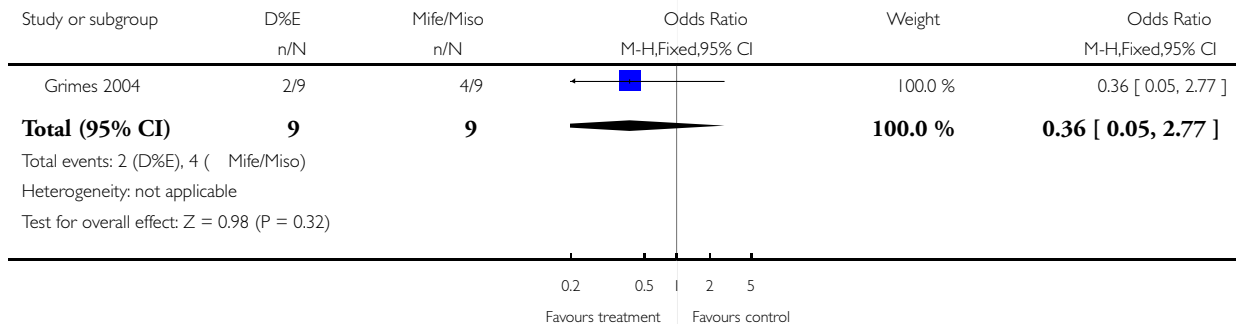


Analysis 2.5. Comparison 2 D&E vs. Mifepristone/Misoprostol, Outcome 5 Vomiting.

Review: Surgical versus medical methods for second trimester induced abortion

Comparison: 2 D&E vs. Mifepristone/Misoprostol

Outcome: 5 Vomiting

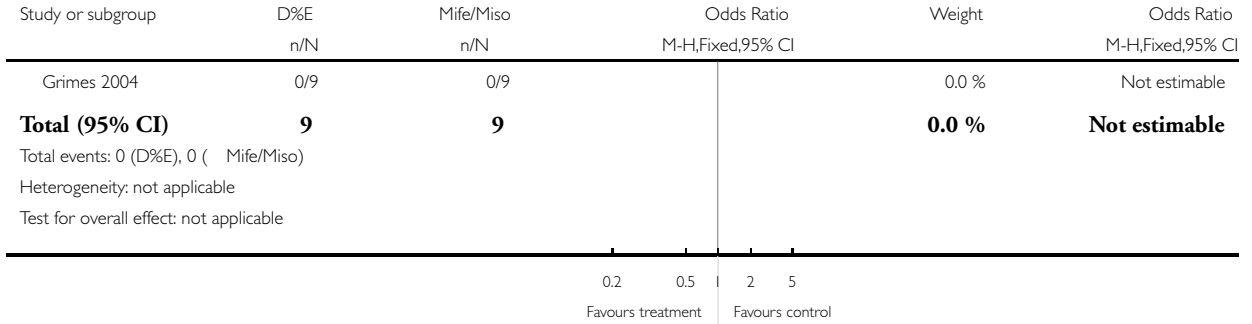


Analysis 2.6. Comparison 2 D&E vs. Mifepristone/Misoprostol, Outcome 6 Diarrhea.

Review: Surgical versus medical methods for second trimester induced abortion

Comparison: 2 D&E vs. Mifepristone/Misoprostol

Outcome: 6 Diarrhea

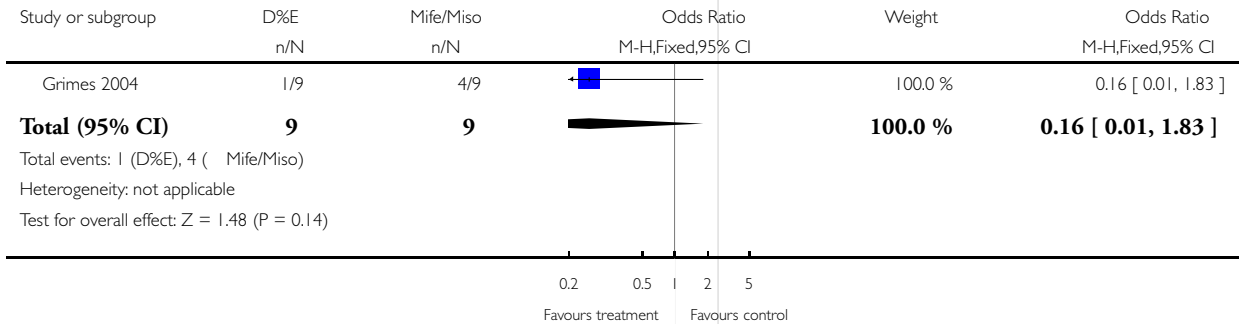


Analysis 2.7. Comparison 2 D&E vs. Mifepristone/Misoprostol, Outcome 7 Dizziness.

Review: Surgical versus medical methods for second trimester induced abortion

Comparison: 2 D&E vs. Mifepristone/Misoprostol

Outcome: 7 Dizziness

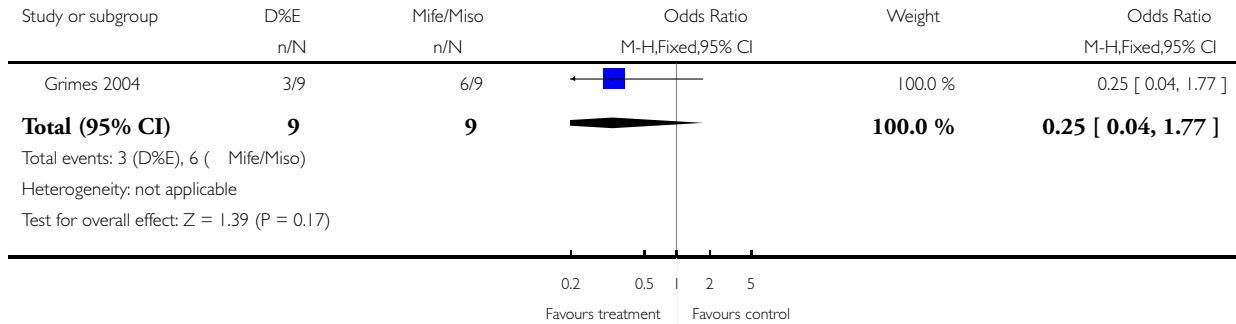


Analysis 2.8. Comparison 2 D&E vs. Mifepristone/Misoprostol, Outcome 8 Fatigue.

Review: Surgical versus medical methods for second trimester induced abortion

Comparison: 2 D&E vs. Mifepristone/Misoprostol

Outcome: 8 Fatigue

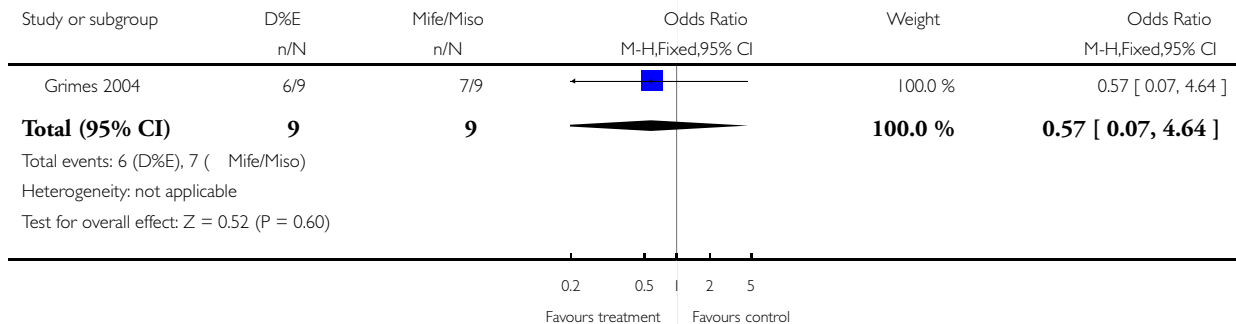


Analysis 2.9. Comparison 2 D&E vs. Mifepristone/Misoprostol, Outcome 9 Pain in lower abdomen.

Review: Surgical versus medical methods for second trimester induced abortion

Comparison: 2 D&E vs. Mifepristone/Misoprostol

Outcome: 9 Pain in lower abdomen

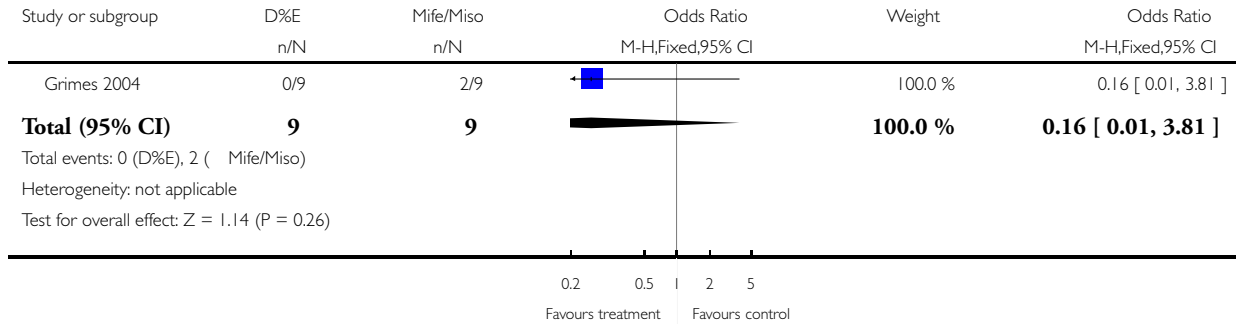


Analysis 2.10. Comparison 2 D&E vs. Mifepristone/Misoprostol, Outcome 10 Breast tenderness.

Review: Surgical versus medical methods for second trimester induced abortion

Comparison: 2 D&E vs. Mifepristone/Misoprostol

Outcome: 10 Breast tenderness

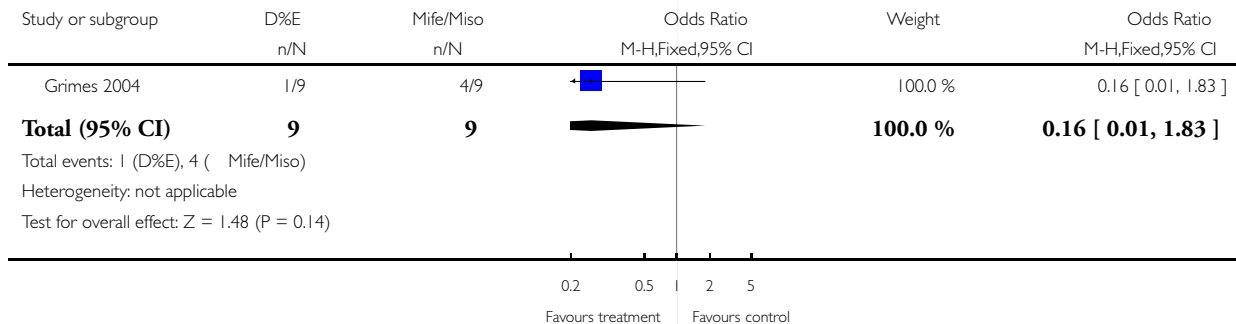


Analysis 2.11. Comparison 2 D&E vs. Mifepristone/Misoprostol, Outcome 11 Headache.

Review: Surgical versus medical methods for second trimester induced abortion

Comparison: 2 D&E vs. Mifepristone/Misoprostol

Outcome: 11 Headache

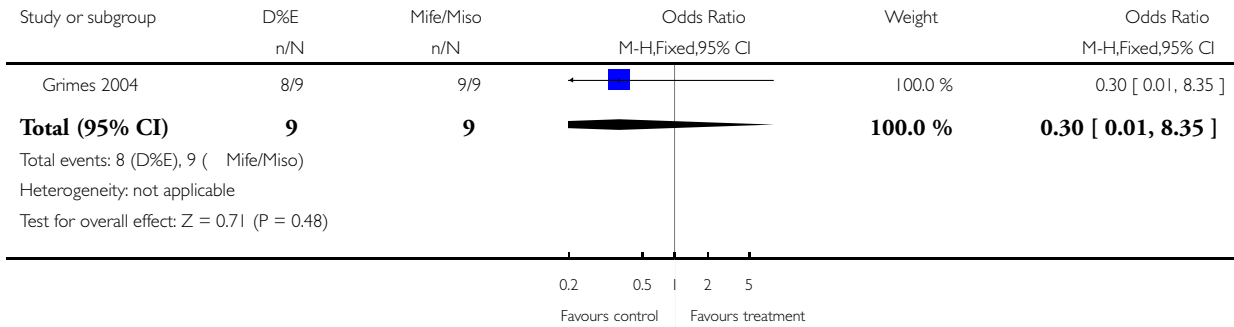


Analysis 2.12. Comparison 2 D&E vs. Mifepristone/Misoprostol, Outcome 12 Abortion completed by assigned treatment.

Review: Surgical versus medical methods for second trimester induced abortion

Comparison: 2 D&E vs. Mifepristone/Misoprostol

Outcome: 12 Abortion completed by assigned treatment

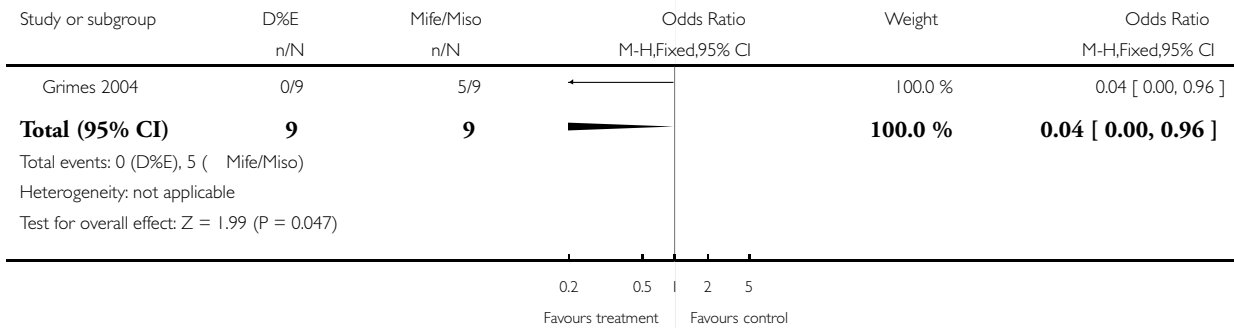


Analysis 2.13. Comparison 2 D&E vs. Mifepristone/Misoprostol, Outcome 13 Requirement for overnight hospitalization.

Review: Surgical versus medical methods for second trimester induced abortion

Comparison: 2 D&E vs. Mifepristone/Misoprostol

Outcome: 13 Requirement for overnight hospitalization



WHAT'S NEW

Last assessed as up-to-date: 19 September 2007

Date	Event	Description
15 April 2008	Amended	Converted to new review format.

HISTORY

Protocol first published: Issue 3, 2007

Review first published: Issue 1, 2008

Date	Event	Description
20 September 2007	New citation required and conclusions have changed	Substantive amendment

CONTRIBUTIONS OF AUTHORS

Data extraction - PL and JH

Data entry - PL

Methodological quality assessment, analysis, and writing - all reviewers

DECLARATIONS OF INTEREST

All authors provide medical and surgical abortions in clinical practice.

INDEX TERMS

Medical Subject Headings (MeSH)

*Abortifacient Agents [adverse effects]; Abortion, Induced [adverse effects; *methods]; Dilatation and Curettage [adverse effects; methods]; Dinoprost; Mifepristone; Misoprostol; *Pregnancy Trimester, Second; Randomized Controlled Trials as Topic

MeSH check words

Female; Humans; Pregnancy