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Medical and surgical abortion – overview of methods and regimes from 10 weeks

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The global perspective

Every day:

- 100 millions acts of intercourse occurs
 - One millions of women become pregnant
 - 150 000 induced abortion–
among them 60 000 are "unsafe"
 - 1.600 women die in pregnancy related
complications – 25-50% caused by an
unsafe abortion (usually illegal)
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Complications following induced abortion

Second trimester abortion constitute
10-15% of all induced abortions but are
responsible for two thirds of all major
complications.

WHO 1997

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Which women face the highest risk of death caused by an abortion?

- Women having no access to legal abortion
 - Women in Africa, Asia, Latin America
 - The youngest
 - The poorest
 - Unmarried
 - Women with anemia
 - Women with illnesses and/or undernourished
-

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How can the risks be reduced?

- Abortion needs to be prevented
- Abortion needs to be easily accessible to be performed as early as possible
- Safe abortion methods needs to be developed and used

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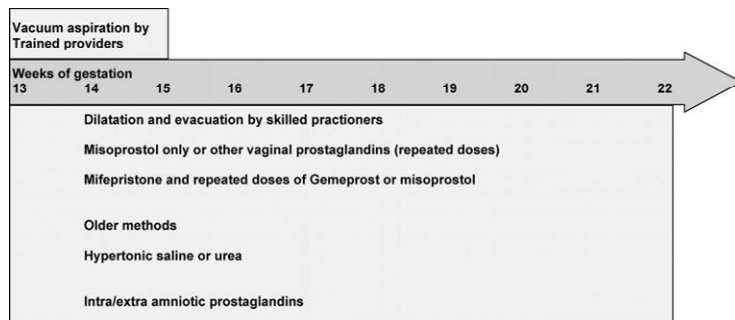
Percentages of abortions in relation to pregnancy week

Year	Pregnancy length (weeks)				Mean
	-12	13 -16	17-20	21- 24	
1964	10%	27,9%	54,9%	7.4%	17.0 weeks
2002	93,3%	6.0%	0,7%		8,1 weeks

Source: Rätten till abort SOU 1971:58 och EPC Socialstyrelsen

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Second trimester methods of abortion



Lalitkumar, S. et al. Hum Reprod Update 2007 13:37-52; doi:10.1093/humupd/dml049

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Outdated methods

- dilatation and curettage, sharp curettage,
- hysterotomy (sectio parva),
- intra-amniotic injection hypertonic saline/hyperosmolar urea,
- intra- or extra-amniotic administration of ethacrydine lactate (Rivanol), parenteral, intra-amniotic or extra-amniotic administration of prostaglandin (PG) analogues
- i.v. or i.m. administration of oxytocin

WHO, 1997, Phillip G. Stubblefield, Carr-Ellis, & Borgatta, 2004

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Outdated methods Side effects

Among the drawbacks of these methods were the need to puncture the amniotic space, infections, septicaemia
long induction-to-abortion intervals requiring hospitalization, gastrointestinal side effects,
the risk of a live birth, and
the frequent need for curettage after expulsion of the fetus

Bygdeman, 1983; Cates, Grimes, Schulz, Ory, & Tyler, 1978

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Induced abortion beyond 63 days

The method used is determined by the duration of pregnancy:

Surgical abortion

- Vacuum aspiration (VA or MVA) up to 13 weeks
After 8 weeks of gestation, the risk of major complications appears to rise by 15–30% for each week of delay (Cates et al., 1979)
- D&E from 13 weeks

Medical abortion

- Mifepristone/ misoprostol
- Misoprostol-alone

With doses adjusted to duration of pregnancy

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Safe Abortion:

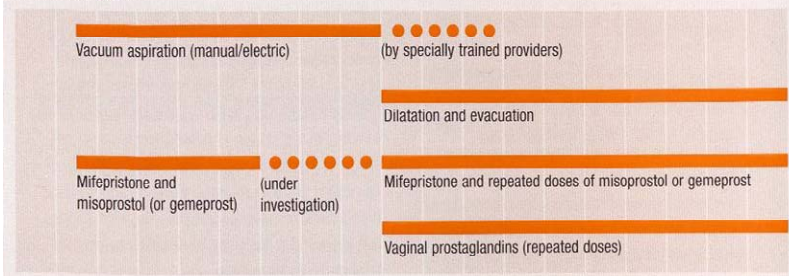
Technical and Policy Guidance for Health Systems

Figure 2.1 Methods of abortion

Completed weeks since last menstrual period

4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

Preferred methods



www.who.int/reproductive-health/publications/safe_abortion/safe_abortion.html

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Standard method of II-trimester induced abortion

- D&E is the standard method of II-trimester surgical abortion in many parts of the world.
- In the US, 2000, D&E was used for 99% of abortions 13-15 weeks, 94.6%; 16-20 weeks, and 85% at 21 weeks or later (Elam-Evans et al., 2003).
- Medical abortion standard method in Scandinavia (100%) and increasingly common in Europe

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Development of medical abortion

The non-surgical methods to terminate 2nd trimester abortion have shown a considerable development during the last 30 years

70ies Prostaglandin analogues

Highly effective

High incidence of side effects

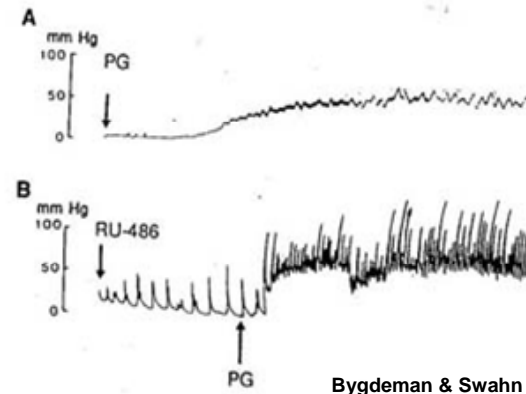
80ies RU 486, Mifepristone (Roussel Uclaf/ Exelgyn),

60-80 % efficacy in the 1st trimester

Herrman et al., 1982, Kovacs et al., 1984

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Mifepristone, PG and uterine contractility



Bygdeman & Swahn 1985

Combined regimen highly effective, approved for medical abortion
1988 France (7 weeks) UK, Sweden -91,92 (9 weeks)

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Medical abortion

- Optimal mifepristone dose
- Optimal PG type, dose, route
- Duration of pregnancy-efficacy
- Acceptability

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Medical abortion

Mifepristone

- Mifepristone - alone is not sufficiently effective (60-80%)
- Mifepristone primes the cervix, increases contractility and increases the sensitivity of the myometrium to PG
- Non-linear pharmacokinetics. Low side effects
- Provided the dose is enough for priming of the cervix and the myometrium –increasing the dose doesn't increase efficacy and cannot compensate for an insufficient prostaglandin analogue/ dose/ route

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Prostaglandin analogues

Gemeprost (Cervagem®)

- Expensive
- High incidence of side effects

Misoprostol (Cytotec®)

- Increased flexibility (dose, route)
- Inexpensive
- Oral use
- Widely available



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Medical abortion

Misoprostol

- Misoprostol– alone highly effective
- Side effects mild and dose dependent
- Priming with mifepristone increases efficacy, allows lower dose and less side effects
- Route of administration more important than the dose
- Oral misoprostol is not effective beyond 49-56 days. Cannot be compensated for by:
 - An increased dose of mifepristone
 - An increased dose of oral misoprostol
 - Repeated doses of oral misoprostol

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Medical abortion

Recommended regimen up to 63 days

Recommended by WHO, RCOG, FARG:

mifepristone 200 mg +
misoprostol 800 mcg vaginally

(A repeated dose of 400mcg misoprostol p.o after 3-4h if needed)

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Medical abortion

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Can medical abortion be used beyond 63 days?

- 10 -13 weeks
- II-trimester
- III-trimester

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Medical abortion 9 -13 weeks

1076 consecutive cases

- 200 mg Mifepristone
- Vaginal misoprostol 800 mcg after 36-48 h (sublingual 600 µg (10%))
- Misoprostol repeated if required

- Results:
 - 95.8% complete abortions
 - 70% analgesia
 - Induction-to-abortion interval 4.4 h

Ashok et al. 1998, 2002,

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Induced abortion at 10 to 13 weeks Sugical vs medical abortion

- Partial randomised study - Medical vs. Surgical abortion
- 188 vs. 180 women/ group
- VA vs. mifepristone-misoprostol (recommended regimen)
- Side effects more common with medical abortion but
- No difference in major complications**

Hamoda et al., 2005

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Can medical abortion be used beyond 63 days?

- 10 -13 weeks
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- III-trimester

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Mifepristone abortion in Sweden

- 1992: up to 63 days
- 1994: II-trimester abortion
 - 600 mg mifepristone followed by gemeprost 1mg/ 3h
 - 2003: 600 mg mifepristone followed by “a suitable prostaglandin analogue” (misoprostol)

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The Care of Women Requesting Induced Abortion

Evidence-based Clinical Guideline Number 7
Royal College of Obstetricians and Gynaecologists

September 2004

For mid-trimester abortion (13–24 weeks of gestation) medical abortion with mifepristone followed by prostaglandin is an appropriate method and has been shown to be safe and effective.

Surgical evacuation of the uterus is not required routinely following mid-trimester medical abortion. It should only be undertaken if there is clinical evidence that the abortion is incomplete.

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II-trimester abortion

Development of the regimen

Oral misoprostol vs gemeprost: similar or higher efficacy (El Refaey et al., 1993, Ho et al., 1996, Dickinson et al., 1998, Nuutila et al., 1997, Wong et al., 1996)

Misoprostol 3h vs. 6h intervals: Shorter interval – higher efficacy (Wong et al., 2001)

Oral vs. vaginal misoprostol

Vaginal treatment more effective, less side effects;

- 200 mg mifepristone followed 48h later by misoprostol 400 µg p.v/ 3h
82% preferred the oral route (Ngai et al. 2000)
- 200 mg mifepristone followed 48h later by misoprostol 400 µg p.v/ 3h
- vs. an initial higher dose p.v and repeated oral doses of 400 µg / 3h: similar efficacy (El-Refaeay & Templeton 1995)

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Effect of the time interval between mifepristone and misoprostol

- Shorter interval to avoid bleeding and abortion at home
- No difference in induction to abortion time with mifepristone administered 24, 36 or 48 h prior to the prostaglandin
Urquhart and Templeton 1990
- More incomplete abortions with an interval of 24 vs. 48 h
Heikinheimo et al.,
- Ist trimester abortion no difference between 24 and 48 h interval
Schaff et al
- Mifepristone effect on uterine contractility maximal at 36 to 48h.
Bygdeman & Swahn 1985, Rådestad et al 1988
- Ripening effect on cervix, more pronounced at 36 to 48 h

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Late Medical abortion

Recommended regimen, RCOG, FARG

Mifepristone 200 mg followed after (24) to 48 h by

Misoprostol 800 mcg vaginally + 400 mcg po/3h to max 4 doses

Alt: Sublingual 600 mcg + 400 mcg repeated sublingual

- No difference in acceptance women or staff
- Sign more opiate im injections in the sublingual group
- 97% efficacy
- median dose of misoprostol: 1200 µg
- median induction-to-abortion interval: 5.2 - 6.5 h.
- <10% curettage, > 75 % day cases

Ashok & Templeton 1999, 2004, Hamoda et al., 2005

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Surgical vs. Medical methods

- No randomized or comparative studies mifepristone + PG vs. D&E
- One trial stopped after 1 year because of slow enrolment (Grimes et al., 2004). The women declined the method of abortion in both groups.
- The safety and efficacy of D&E by experienced hands has been evaluated primarily in cohort and case-control studies (Grimes & Schulz, 1985; Grimes et al., 1977).
- D&E was demonstrated to have superior safety over instillation abortion at 13-16 weeks, the risks were comparable at 17-20 weeks. (Grimes et al., 1980)
- No studies comparing surgical methods to modern protocols using prostaglandin analogues.
- A retrospective cohort study comparing D&E to misoprostol-alone demonstrated no difference in complication rate but more incomplete treatment in the medical group (Autry et al., 2002)

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Induced second trimester abortion surgical vs medical abortion

- Cervical injury is more frequent with D&E in the second trimester, and hence, preoperative cervical priming reduces the complications
- Specialized training and the maintenance of an adequate caseload are required to perform D&E safely.
- “The appropriateness of D&E as a method of terminating second-trimester pregnancy is questionable when safe and effective medical alternatives exist”

Report of Confidential Enquires into Maternal Deaths (UK 1994–1996);

Schulz et al., 1983.; Grimes et al., 1984

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II to III-trimester abortion >24 weeks

Mifepristone 200 mg after 36-48 h followed by misoprostol

- > 24 weeks: 200 mcg p.v. followed by 200 mcg p.o/ 3h up to x 4
- > 34 weeks: 100 mcg p.v. followed by 100 mcg p.o/ 3h up to x 4

N= 96,1993-1999, IUFD 24-41.3 weeks

mean induction-to-delivery interval 8.5 h, shorter with increasing gestation,

7.2% manual removal of placenta

Hamoda et al, 2002

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II- and III- trimester abortion

- Caution should be shown in case of previous c-section. Few available studies
- Women with a prior delivery have a shorter and less painful abortion while younger age, more advanced pregnancy and repeated misoprostol is correlated to increased need for analgesics

Gemzell & Östlund 2002, Ashok & Templeton 1999, 2004

Hamoda et al., 2005

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Pain prophylaxis

- Diclofenac 100 mg and Paracetamol + codein co-administered with misoprostol
- NSAID does't affect uterine contractility, cervical ripening or the induction-to-abortion interval
- Prophylactic pain treatment with NSAID leads to a shorter induction-to abortion interval among nulliparous women and reduces the need for opiate injections

Li et al., Norman et al., Fiala et al., 2005

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Feticide before late abortion

- "A legal abortion must not be allowed to result in a live birth. At terminations after 21 weeks, the method chosen should ensure that the fetus is not born alive" (RCOG, 1996).
- Some local guidelines demand resuscitation if the fetus is born alive (despite malformation).
- Agents used :
 - hypertonic saline, 1% lidocaine and potassium chloride

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Misoprostol alone

Less effective than the combined regimen

97% vs. 73-81% at 24 h

With a longer induction to abortion interval

5-7 h vs. 15-24 h

Recommended regimen (Bellagio consensus 2007):

400 µg of vaginal misoprostol every 3 h for 5 doses up to

24 weeks thereafter reduced doses

Wong et al., 1998, 2000, Tang et al., 2004, Ashok et al. 1998, 2002

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Conclusion

- Concerning the choice of a method for second trimester abortion, WHO does not indicate a preference between a surgical or a medical method. http://www.who.int/reproductive-health/publications/safe_abortion/safe_abortion.pdf :
- “The preferred medical method for abortions after 12 completed weeks since last menstrual period is mifepristone followed by repeated doses of a PG such as misoprostol or gemeprost.
- The preferred surgical method is dilatation and evacuation (D&E), using vacuum aspiration and forceps.”
- WHO indicates that using hypertonic solutions or intra/extra-amniotic prostaglandins are *not* preferred methods for second trimester abortion
- D&E can safely be undertaken by gynaecologists who have been trained in the procedure, have the necessary instruments and have a caseload sufficient to maintain their skills.

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Conclusion

- Medical abortion is an option also beyond 63 days.
- 10 – 13 weeks; side effects more common with medical abortion but
No difference in major complications
- Beyond the 1st trimester: The combined vaginal-oral or the sublingual regimens are as effective as repeated vaginal misoprostol
- The dose of misoprostol should be reduced from (22) 24 weeks
- Caution should be shown in case of previous c-section
- The need for analgetics is correlated to pregnancy length
- The combined regimen with mifepristone is more effective than misoprostol alone

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Medical abortion beyond 63 days

Currently recommended regimens

Recommended by RCOG 9-13 weeks and RCOG, WHO, II-trimester :

- Mifepristone 200 mg + misoprostol 800 mcg vaginal after (24-)48h.
(misoprostol 600 mcg sublingual)
- Additional dose (s) of 400 mcg misoprostol p.o (subl) every 3h.

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