

Approaches to Abortion: Overview

Fayzah Ahmed Andegani¹, Zuhair Mohammad Al Harbi², Nouf Talal Alsufyani³, Alaa Omar Alahdal⁴, Maha Mohammed Behairi⁵, Amani Hashim Mahdi⁴, Sara Saeed Alzahrani³, Elham Hassan Nami⁶, Ziyad saud rasheed almjlal⁷, Hisham Sami Silsilah⁸, Reham Yousef O Albalawi⁹, Atheer Mansour Alatawi⁹, Ibrahim Mohammed Al Andijani⁸, Yousef Hussain Alharthi⁹

¹King Abdulaziz Hospital, Jeddah, Saudi Arabia

²Al-Shummysi Complex Hospital, Saudi Arabia

³King Abdullah Medical Complex, Jeddah, Saudi Arabia

⁴National Gaurd Hospital, Jeddah, Saudi Arabia

⁵King Fahad Armed Forces Hospital, Jeddah, Saudi Arabia

⁶New Sabya Primary Healthcare, Sabya, Saudi Arabia

⁷Ibn Sina national college For medical studies, Jeddah, Saudi Arabia

⁸King Abdulaziz Hospital, Jeddah, Saudi Arabia

⁹Tabuk University, Tabuk, Saudi Arabia

***Corresponding Author:** Fayzah Ahmed Andegani, Consultant Obstetrics and Gynecology, King Abdulaziz Hospital, Jeddah, Saudi Arabia.

Received: November 16, 2022; **Published:** November 18, 2022

Abstract

Introduction: One of the most common procedures performed among women is abortion. One in five pregnancies in the U.S. ended in abortion in 2014, while one in 4 women have had an abortion in their lifetime. Therefore, it is important for the physician to understand the various approaches and options available for abortion, their safety, restriction and ethical implication, and women's health simultaneously. There are various methods available for abortion which can be broadly classified as medical and surgical abortion. Medical abortion is usually carried out in early pregnancy and later stages require surgical interventions.

Aim of the Study: The present review discusses the various methods and approaches to safe abortion, indications, and contraindications of the various methods and techniques of performing an abortion, along with their possible complications and their management.

Methodology: The review is the comprehensive research of PUBMED from 1983 to 2022.

Conclusion: Overall, abortion is a safe and effective procedure, especially when the laws regarding abortion are less restrictive in countries. Another barrier to safe abortion is the stigma associated with abortion which leads to maternal mortality rates worldwide. To ensure women have better access to reproductive health care, such as modern methods of contraception as well as different methods of abortion, it becomes essential to understand various approaches to abortion. The approaches and techniques used depend on the gestation period. The two widely used methods are medical and surgical abortion. A medical abortion uses two main drugs, namely mifepristone, and misoprostol. Medical abortion usually poses a lower risk of mortality and complication. Surgical methods include surgical aspiration either manually or electrically. With advanced pregnancy, dilation and evacuation or dilation and extraction followed by aspiration become the choice of treatment. Complications associated with surgery increase with gestational age. Vaginal bleeding is the most common complication, with nausea, vomiting, pain, and fever as secondary complications. With proper technique, safe abortion can be attempted.

Keywords: Medical Abortion; Aspiration Abortion; Dilation; Evacuation

Introduction

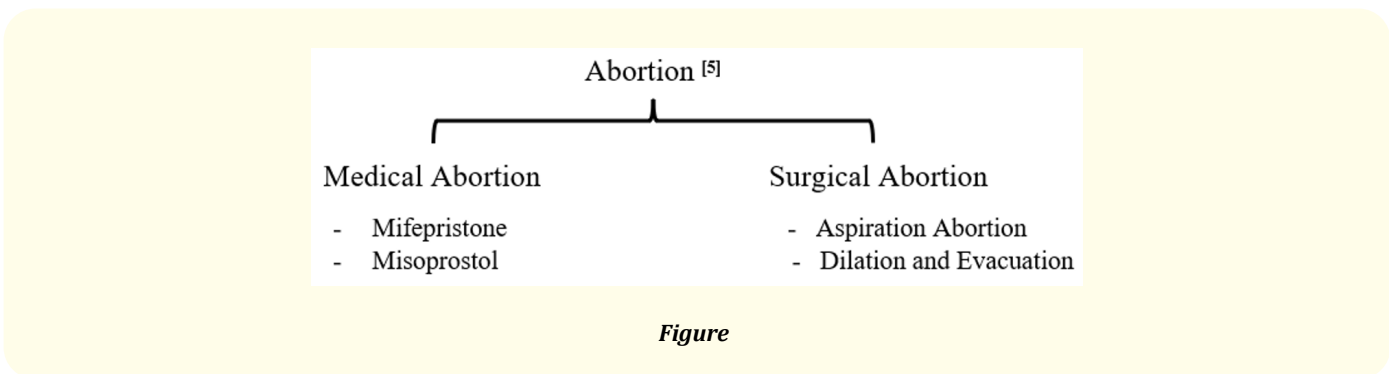
Abortion is a common procedure performed all over the world among women. Globally, one in four pregnancies ends in abortion. Hence, it is important to understand the various options available, the safety, the restrictions and ethics, the prevalence of abortion and the access issues related to abortion to provide safe and good quality of care to the patients [1].

According to a report of 2018 from the National Academies of Sciences, Engineering and Medicine committee stated that all forms of abortion, whether medication or surgical abortion are safe and effective, but the only factor of concern was poor access. Abortion in the first trimester poses no long-term risk of infertility, spontaneous abortion, ectopic pregnancy, or breast cancer [2,3].

Abortion can be completed either with medication and is known as medication abortion, or by surgery which is called surgical abortion or often known as aspiration abortion, which is usually performed in a clinic or hospital under local anesthesia. Terminating a pregnancy may be due to fetal factors such as congenital diseases or abnormalities posing a risk to both mother and fetus or can be a purely maternal factor. Prior to an abortion, a detailed workup is required, which includes various investigations such as a complete blood count, coagulation profile, human chorionic gonadotropin levels, sexually transmitted infection screen, type and crossmatch, and a pelvic ultrasound to confirm intrauterine pregnancy [2,3].

Indication [4]	Contraindication [4]
<ul style="list-style-type: none"> • Early medication abortion is a non-invasive process that avoids the risk of a surgical procedure • It can be done for up to 11 weeks. • Medication abortion after the first trimester • Induced fetal demise in later gestational ages. 	<ul style="list-style-type: none"> • Already placed intrauterine devices - may be removed before the medication abortion • Suspected ectopic pregnancy • Allergy to medication used • Chronic renal failure, especially those on long-term systemic corticosteroid therapy • Inherited porphyria • Hemorrhagic disorders • Anticoagulant therapy, excluding aspirin • Hemodynamic instability

Seizures, obesity, anemia, asthma (patient on steroid inhalers), breastfeeding, HIV or AIDs, and other sexually transmitted infection are not considered contraindications for abortion. Coagulopathy or bleeding disorder, again, is not an absolute contraindication, but care should be taken during the surgical procedure [4].



Figure

Different approaches to abortion: The appropriate approach toward abortion depends on the gestational period and maternal factors [6].

Medical abortion			
Recommendations	Combination regimen (Recommended ^a) Mifepristone → 1-2 days → Misoprostol		Misoprostol-only (Alternate)
Incomplete abortion < 13 weeks	None	Use misoprostol-only regimen	600 µg PO _b or 400 µg SL _b
Incomplete abortion ≥ 13 weeks	None	Misoprostol-only regimen	400 µg B, PV or SL every 3 hours
Intrauterine fetal demise ≥ 14 - 28 weeks	200 mg PO once	400 µg PV or SL every 4 - 6 hours b	400 µg SL (preferred) or PV every 4 - 6 hours b
Induced abortion < 12 weeks	200 mg PO once	800 µg B, PV or SL _b	800 µg B, PV or SL _b
Induced abortion ≥ 12 weeks	200 mg once PO	400 µg B, SL or PV every 3 hours b	400 µg B, SL or PV every 3 hours b
Surgical abortion			
Aspiration Abortion		Gestation time - 5 - 14 weeks	
Dilation and Evacuation		Gestation time - 14 - 28 weeks	
PO: oral; PV: vaginal; SL: sublingual; B: buccal.			
a: Recommended combination regimen for being more effective. b: Repeat doses of misoprostol			

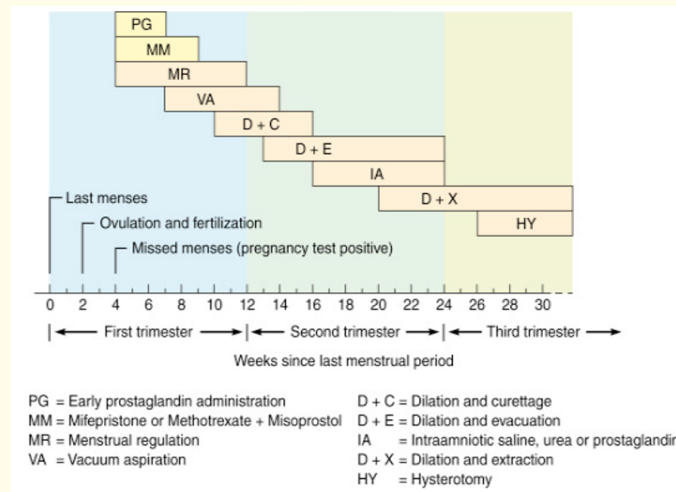


Figure 1: Illustrating the abortion approach in different trimester [7].

Medical abortion

The two most commonly used medications for medical abortion are mifepristone and misoprostol [5].

Mechanism of action of mifepristone - it is an analog of progesterone that has a high affinity for progesterone-binding sites, but it exhibits antiprogesterone effects; these effects prevent further growth and development of the fetus and cause termination of pregnancy. Mifepristone is usually taken by oral route in a clinical setting [5].

Mechanism of misoprostol - it is a prostaglandin that helps in uterine contractions, which in turn aids in the expulsion of the pregnancy. 6 - 72 hours after the consumption of mifepristone, misoprostol is taken by oral, buccal, or vaginal route [5].

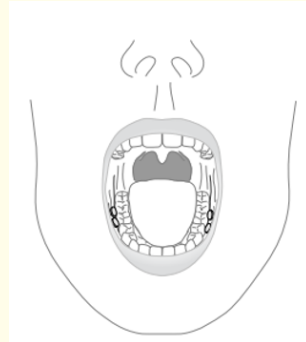


Figure 2: Showing buccal use of misoprostol, the woman places misoprostol between her cheek and gum and leaves it there for 30 minutes. After 30 minutes, she swallows any remaining pill fragments [8].

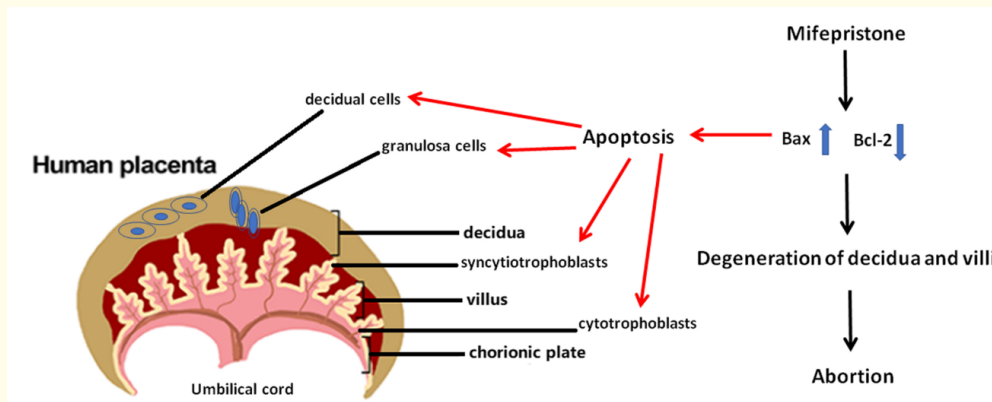


Figure 3: Illustrating the mechanism of medical abortion [9].

Side effects of medical abortion

Misoprostol is mostly associated with all the side effects that include nausea, vomiting, diarrhea, pain, and fever. All the side effects are self-limiting and can be treated with standard painkillers and nausea medicines. Abundant vaginal bleeding, more prolonged than menstrual bleeding, is an indicator of a successful medical abortion, and it usually does not affect hemoglobin levels adversely [10].

Bleeding may last for 1 - 2 weeks and can be as long as a month. However, if bleeding is prolonged for a month, then it may require an evaluation and surgical intervention. It is estimated that approximately 1% of women, after medical abortion, intrauterine evacuation of the fetal content and hemostatic control. Infection of endometrial lining or pelvic infections is also uncommon after medical abortion, with an incident date of less than 1%. Serious fatal infections are rarely seen, with an incidence of 1 per 100,000. Five deaths from *Clostridium*

sordellii sepsis have been reported in women who opted for medical abortion with a combination of regimen mifepristone and misoprostol since 2006. Nonetheless, infection of the endometrium can be treated with oral or intravenous antibiotics [11,12].

Surgical abortion

Surgical abortion is an old-known method to terminate pregnancy from the uterus by utilizing sterile instruments. Surgical intervention poses a great risk of maternal infection, injury, or death, even with a skilled clinician, but with the introduction of the vacuum suction method, surgical interventions are now considered one of the safest procedures, with an overall mortality of 0.7 per 100,000 procedures in the U.S alone [13].

For aspiration abortion there are two types of vacuum suction are available:

1. Manual vacuum aspiration (MVA)
2. Electric vacuum aspiration (EVA).

MVA is a quiet procedure that requires no electricity and is used for a gestation period of 5 - 14 weeks pregnancy. The procedure can be done with local anesthesia, general anesthesia, or conscious sedation and typically lasts less than 10 minutes to perform [5,14].

While EVA can be used in first or second-trimester procedures, EVA is nowadays preferred for ten weeks of pregnancy as well. For more advanced pregnancies, higher negative pressures are required for performing abortions. Advanced pregnancy mostly requires dilation and evacuation or dilation and extraction procedure. Most of the complications related to surgical intervention are directly related to increased gestational age, with the highest mortality rate seen at 21 weeks gestation period [5,15].

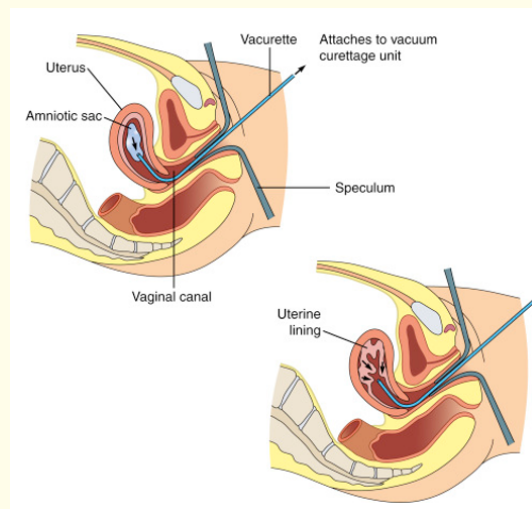


Figure 4: Illustrating the vacuum aspiration technique of abortion [7].

There are no major complications associated with surgical abortion if gestational age is less. The most common complication seen after the intervention is vaginal bleeding for a week, which is no heavier than a menstrual period. While some women, particularly after undergoing early first-trimester manual vacuum aspiration, do not experience bleeding at all [5].

Equipment

Equipment used for aspiration abortion includes [8]:

- Vacuum single valve aspirator/Manual vacuum aspirator plus
- Locking 60 cc syringe
- Cannula
- Specimen cup
- Standard graves speculum
- Single tooth tenaculum
- Ring forceps with cotton
- Small polyp forceps
- Pratt cervical dilators gauze curette.

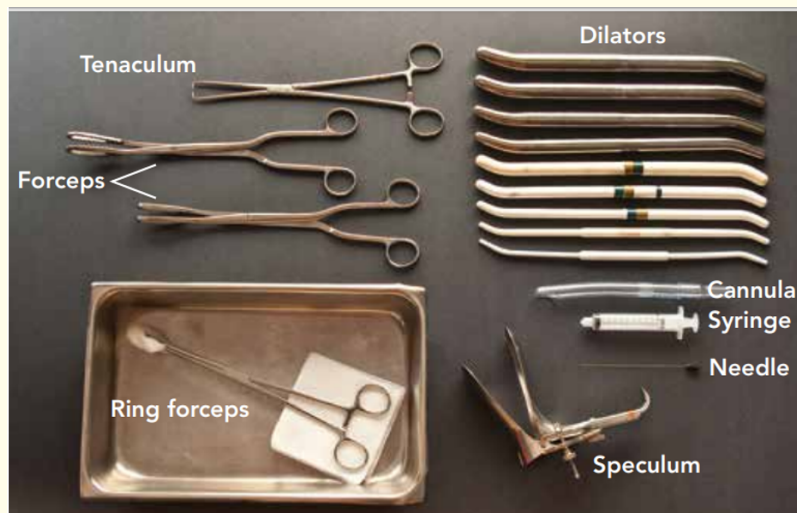


Figure 5: Illustrating different equipment required for a surgical abortion procedure [8].

Cervical preparation

Adequate cervical preparation is a key factor for performing a successful dilation and evacuation procedure. It decreases the risk of complications associated with surgical procedures. No single standard regimen is present for the preparation of the cervix. The choice of cervix preparation is often dictated by the clinician and his skills, the gestational age, the cost and availability of the method, and the convenience of the woman. Cervical preparation mostly includes osmotic dilators (laminaria or synthetic osmotic dilators) and medication misoprostol and mifepristone; either dilator is used alone or in combination, which depends on the gestational age [16,17].

Approaches to cervical preparation by gestational age [8]

Gestational Age	Method	Dosing
13 - 16 weeks	Mifepristone	Orally 24 - 48 hours prior to D&E
13 - 18 weeks	Misoprostol	400 mcg, buccal or vaginal, 3 hours prior to D&E
13 - 20 weeks	Mifepristone and misoprostol	Mifepristone 200mg, orally, 24 - 48 hours prior to D&E followed by Misoprostol 400 mcg, buccal or vaginal, 3 hours prior to D&E.
13 - 24 weeks	Osmotic dilators	Laminaria dilators placed 12 - 24 hours before D&E, Synthetic osmotic dilator placed 2 - 24 hours before D&E
13 - 24 weeks	Osmotic dilators and misoprostol	Osmotic dilator (see timing, above) followed by 400 mcg, buccal or vaginal, 3 hours prior to D&E
19 - 24 weeks	Mifepristone and osmotic dilators	Mifepristone 200 mg, orally, with concurrent placement of osmotic dilators the day prior to D&E

Technique for dilation and evacuation

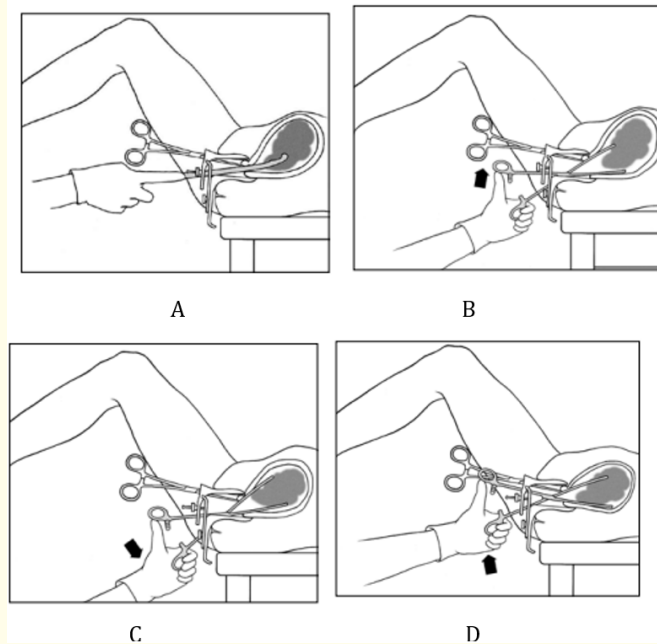


Figure 6: Illustrating the technique of D&E A. Aspirate the amniotic fluid, B. Open the forceps inside the uterus, C. Pull the forceps handle down so graspers are in the anterior lower-uterine segment, D. Evacuate from the lowest section of the uterine cavity [8].

- Prior to the procedure, intravenous painkillers or anti-anxiolytics are administered, and all the oral drugs should be given in advance.
- After placing the speculum, the cervix is cleaned with an antiseptic solution, such as povidone-iodine.

- A paracervical block is performed to achieve anesthesia, after which the tenaculum is placed.
- Traction is applied to the tenaculum to bring the cervix down the vagina.
- Cervix is dilated mechanically to the desired amount.
- Uterine aspiration (electric or manual vacuum aspiration) is performed with the largest cannula to aspirate the amniotic fluid.
- A closed forceps is passed through the cervix in the vertical direction, but the jaw of the Bierer or Sopher forceps should remain open.
- Forcep is close around the fetal tissue and rotated 90 degrees to perform disarticulation of the fetus and withdrawn and is repeated until fetal removal is completed.
- Lastly, suction aspiration is performed after the removal of all fetal tissue to ensure no tissue remains. The fetal tissues are examined to ensure that evacuation is complete by identifying fetal parts such as the spine, thorax, calvarium, all four extremities, and placenta in pregnancy above 14 weeks [8].

Conclusion

To ensure women have better access to reproductive health care, such as modern methods of contraception as well as different methods of abortion, it becomes essential to understand various approaches to abortion. The approaches and techniques used depend on the gestation period. The two widely used methods are medical and surgical abortion. A medical abortion uses two main drugs, namely mifepristone, and misoprostol. Medical abortion usually poses a lower risk of mortality and complication. Surgical methods include surgical aspiration either manually or electrically. With advanced pregnancy, dilation and evacuation or dilation and extraction followed by aspiration become the choice of treatment. Complications associated with surgery increase with gestational age. Vaginal bleeding is the most common complication, with nausea, vomiting, pain and fever as secondary complications. With proper technique, safe abortion can be attempted.

Bibliography

1. Jones RK and Jerman J. "Population group abortion rates and lifetime incidence of abortion: United States, 2008-2014". *American Journal of Public Health* 112.9 (2022): 1284-1296.
2. White K., et al. "Complications from first-trimester aspiration abortion: a systematic review of the literature". *Contraception* 92.5 (2015): 422-438.
3. Vayssière C., et al. "Elective abortion: Clinical practice guidelines from the French College of Gynecologists and Obstetricians (CNGOF)". *European Journal of Obstetrics and Gynecology and Reproductive Biology* 222 (2018): 95-101.
4. Costescu D., et al. "Medical abortion". *Journal of Obstetrics and Gynaecology Canada* 38.4 (2016): 366-389.
5. Swica Y. "Modern Methods of Abortion". *NEJM Journal Watch Women's Health* (2009).
6. World Health Organization. "Medical management of abortion". *World Health Organization* (2019).
7. Jones RE and Lopez KH. "Human reproductive biology". Academic Press (2013).

8. Edelman A and Kapp N. Dilatation and Evacuation (D and E) Reference Guide: Induced abortion and postabortion care at or after 13 weeks gestation ('second trimester') (2018).
9. Tian F, *et al.* "The effects of mifepristone on the structure of human decidua and chorion and Bax and Bcl-2 expression at early stage of pregnancy". *BMC Pharmacology and Toxicology* 23.1 (2022): 1-11.
10. Rodger MW and Baird DT. "Blood loss following induction of early abortion using mifepristone (RU 486) and a prostaglandin analogue (gemeprost)". *Contraception* 40.4 (1989): 439-447.
11. El-Refaey H, *et al.* "Induction of abortion with mifepristone (RU 486) and oral or vaginal misoprostol". *New England Journal of Medicine* 332.15 (1995): 983-987.
12. Shannon C, *et al.* "Infection after medical abortion: a review of the literature". *Contraception* 70.3 (2004): 183-190.
13. Grimes DA and Creinin MD. "Induced abortion: an overview for internists". *Annals of Internal Medicine* 140.8 (2004): 620-626.
14. Bartlett LA, *et al.* "Risk factors for legal induced abortion-related mortality in the United States". *Obstetrics and Gynecology* 103.4 (2004): 729-737.
15. Strauss LT, *et al.* "Abortion surveillance-United States, 2002". *Morbidity and Mortality Weekly Report* 54 (2005).
16. Peterson WF, *et al.* "Second-trimester abortion by dilatation and evacuation: an analysis of 11,747 cases". *Obstetrics and Gynecology* 62.2 (1983): 185-190.
17. Fox MC and Krajewski CM. "Cervical preparation for second-trimester surgical abortion prior to 20 weeks' gestation". *Contraception* 89.2 (2014): 75-84.

Volume 18 Issue 12 December 2022

All rights reserved by Fayzah Ahmed Andegani, *et al.*