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**OBJECTIVES**

* At the end of this session you should be able to:
* Define various types of abortions.
* Outline the causes and management approach for various types of abortions

**FirsTrimesterBleeding
Causes**

**1- Spontaneous abortion / miscarriage 2- Ectopic pregnancy**

**3-Trophoblastic disease**

**4- Cervical polyps**

**5- Friable cervix**

**6- Trauma**

**7- Cervical cancer**

Miscarriage

Definition

Spontaneous miscarriage is defined as the spontaneous loss of a pregnancy prior to viability, taken legally as a gestation date of 23 weeks 6 days. Beyond this, fetal demise is classified as stillbirth. First-trimester miscarriage occurs below 12 weeks’ gestation and accounts for the majority. The overall rate is 20%. Second-trimester miscarriages are less common, accounting for 1–4% of all miscarriages some second-trimester miscarriages can be explained as first-trimester losses where the diagnosis is made in the second trimester, and nevertheless it seems likely that the causes are different.

***Aetiology***

First-trimester miscarriage

Evidence suggests that a significant proportion of miscarriages result from chromosomal abnormalities. It is likely that *abnormal implantation* has a role to play in some cases and this is an area of current research. The frequency of chromosomally abnormal tissue among first-trimester miscarriages is 50–70%. The following chromosomal abnormalities are associated with miscarriage.

• Trisomies: 68%, mainly trisomy 16, 21 and 22.

• Triploidy: 17.1%.

• Monosomy: 9.8% (XO, Turner’s syndrome).

Other implicated causes of first-trimester miscarriage include the following:

• Maternal disease: antiphospholipid syndrome, diabetes, thyroid disease • Drugs: methotrexate, some antiepileptic drugs.

• Uterine abnormalities: the role of fibroids is uncertain but they may be implicated

• Infection: varicella, rubella and other viral illnesses.

Second-trimester miscarriage

• Cervix: cervical injury from surgery, cone biopsy and large loop excision of the transformation zone

• Infection: may occur with or without ruptured membranes. May be local to the genital tract or systemic.

• Thrombophilias.

• Uterine abnormalities: submucous fibroids and congenital distortion of the cavity (uterine septae) may be implicated.

• Chromosomal abnormalities: these too may not become apparent until the second trimester.

**Risk factors**

Independent risk factors for a spontaneous miscarriage include advanced age, extremes of age, feeling stressed, and advanced paternal age.

**Age**

As women mature, the incidence of spontaneous miscarriages increases.Typically, the distribution of miscarriage rates by age occurs as follows: younger than 35 years old, 15% miscarriage rate; 35-39 years old, 20-25% miscarriage rate; 40-42 years old, about 35% miscarriage rate; and older than 42 years old, about 50% miscarriage rate.

Women who conceive using donor eggs have miscarriage rates that are similar to the egg donor's age and not the recipient's age, and it indicates that miscarriages are increased significantly due to aging oocytes rather than due to the aging uterus.

Exogenous factors include the following:

* Tobacco
* Alcohol
* Cocaine
* Caffeine (high doses)
* obesity increases the likelihood of spontaneous abortion, with the risk being highest in the first two months of pregnancy.
* **Pathophysiology**

A spontaneous abortion is a process that can be divided into 4 stages—threatened, inevitable, incomplete, and complete. The 4 stages of abortion form a continuum.

**Threatened abortion**

Threatened abortion consists of any vaginal bleeding during early pregnancy without cervical dilatation or change in cervical consistency. Usually, no significant pain exists, although mild cramps may occur. More severe cramps may lead to an inevitable abortion.

Threatened abortion is very common in the first trimester; about 25-30% of all pregnancies have some bleeding during the pregnancy. Less than one half proceed to a complete abortion. On examination, blood or brownish discharge may be present in the vagina. The cervix is not tender, and the cervical os is closed. No fetal tissue or membranes have passed. The ultrasound shows a continuing intrauterine pregnancy. If an ultrasound was not performed previously, it is required at this time to rule out an ectopic pregnancy, which could present similarly. If the uterine cavity is empty on ultrasound, obtaining a human chorionic gonadotropin (hCG) level is necessary .

 A gestational sac should be visualized by 5.5 weeks' gestation; a gestational sac should be visualized with an hCG level of 1500-2400 mIU/mL for transvaginal ultrasound or with an hCG level over 3000 mIU/mL for a transabdominal ultrasound. If the hCG level is higher than the discriminatory zone and no gestational sac is visualized in the uterus, then consider that an [ectopic pregnancy](http://emedicine.medscape.com/article/2041923-overview) may be present.

**Inevitable abortion**

Inevitable abortion is an early pregnancy with vaginal bleeding and dilatation of the cervix. Typically, the vaginal bleeding is worse than with a threatened abortion, and more cramping is present. No tissue has passed yet. On ultrasound, the products of conception are located in the lower uterine segment or the cervical canal.

**Incomplete abortion**

Incomplete abortion is a pregnancy that is associated with vaginal bleeding, dilatation of the cervical canal, and passage of products of conception. Usually, the cramps are intense, and the vaginal bleeding is heavy. Patients may describe passage of tissue, or the examiner may observe evidence of tissue passage within the vagina. Ultrasound may show that some of the products of conception are still present in the uterus.

**Complete abortion**

Complete abortion is a completed miscarriage. Typically, a history of vaginal bleeding, abdominal pain, and passage of tissue exists. After the tissue passes, the patient notes that the pain subsides and the vaginal bleeding significantly diminishes. The examination reveals some blood in the vaginal vault; a closed cervical os; and no tenderness of the cervix, uterus, adnexa, or abdomen. The ultrasound demonstrates an empty uterus.

**Missed abortion**

A fifth term that does not follow the continuum but is important to be aware of is missed abortion. A missed abortion is a nonviable intrauterine pregnancy that has been retained within the uterus without spontaneous abortion. Typically, no symptoms exist besides amenorrhea, and the patient finds out that the pregnancy stopped developing earlier when a fetal heartbeat is not observed or heard at the appropriate time. An ultrasound usually confirms the diagnosis. No vaginal bleeding, abdominal pain, passage of tissue, or cervical changes are present.

 [**Recurrent early pregnancy loss**](http://emedicine.medscape.com/article/260495-overview)

 Defined as 2-3 consecutive losses of clinical pregnancies, affects about 1% of all couples.

**. SEPTIC ABORTION**

An abortion complicated by infection

**Symptoms**

* + Abdominal pain
	+ Fever
	+ Vaginal discharge (foul smelling)

**Signs**

* + Sick looking, febrile or jaundiced
	+ Tender uterus
	+ Offensive vaginal discharge or bleeding
	+ Cervix is usu. soft and may be dilated

**Complications of septic abortions (Immediate cpx**)

* Haemorrhage
* Peritonitis
* Pelvic abscess, endometritis,
* Septicemia,
* Septic/haemorrhagic shock

**Late cpx**

* PID
* Pelvic adhesions
* 2° Infertility
* Chronic LAP

**Management**

1. Resuscitation
	* IV fluids: RL, NS
2. Insert urethral catheter
	* Monitor Input/output
3. Blood grouping & Cross matching
4. Antibiotics:
	* Preferably cephalosporins, if not available ampicilin and metronidazole
5. Evacuation
6. Haematenics

Induced abortion

The medical or surgical termination of pregnancy before the time of fetal viability

Therapeutic abortion

Termination of pregnancy before of fetal viability for the purpose of saving the life of the mother

Elective (voluntary) abortion

Interruption of pregnancy before viability at the recquest of the women,

 but not for reasons of impaired maternal health or fetal disease

**Diagnosis**

Examination in women with suspected early pregnancy loss includes the following:

**History**•

 LMP: remember to confirm length of cycle, regularity, and use of contraception around time of conception,

Patients with spontaneous complete abortion usually present with a history of vaginal bleeding, abdominal pain, and passage of tissue. After the tissue passes, the vaginal bleeding and abdominal pain subsides.

Consider any reproductive-aged woman presenting with vaginal bleeding to be pregnant until proven otherwise.

Other symptoms, such as fever or chills, are more characteristic of infection, such as in a septic abortion

Quantification of the amount of bleeding is very important because life-threatening hemorrhage may occur. The patient may be able to quantify the number of pads or tampons used over a specified time and qualify the amount that each pad is soaked. This is just an estimate; yet, soaking a pad or more an hour suggests significant and worrisome amounts of bleeding that require prompt attention. These patients should be sent to the emergency department.

The presence of blood clots suggests heavy bleeding. The presence of blood clots also may be confused with passage of tissue.

Examining the passed material helps clarify whether the material is clot or tissue. If the material is tissue, then the type of abortion may be identified. If the tissue is evaluated and appears complete, then a complete abortion is confirmed.

The pain usually is in the suprapubic area, but reports of pain in one or both lower quadrants are not uncommon. The pain may radiate to the lower back, buttocks, genitalia, and perineum.

If the pain is occurring only on one side, consider an ectopic pregnancy or a ruptured ovarian cyst as possible causes.

**Physical**

Patients who are pregnant and bleeding vaginally need immediate evaluation.

 **General examination**

A general examination to assess the immediate well-being of the patient is mandatory. Young women can mask blood loss and significant decompensation is a late sign; therefore attention should be given to the subtle sign of blood loss in addition to pulse and blood pressure, respiratory rate, pallor, reduced consciousness, and capillary return. Peritoneal distension may also result in bradycardia.

**Abdominal palpation**

• Determine the fundal height: the uterus generally becomes palpable above the pelvic brim at 12 weeks’ gestation, although this will be affected by multiple pregnancy and the presence of uterine fibroids.

• Examine for evidence of other pelvic masses, which may explain the presence of pain (e.g. ovarian torsion, degenerating fibroids

 • Look for evidence of intra-abdominal bleeding or generalized tender distension of the abdomen. • Confirm location of pain.

**Vaginal examination**

Vaginal examination will reveal whether the cervix is open or if products of conception are identifiable at the cervical os. If so, the relevant tissue should be removed and sent for histopathological diagnosis, as on rare occasions a decidual cast (in the presence of an ectopic pregnancy) can mimic products of conception. Products of conception cannot be confirmed on macroscopic inspection unless fetal parts are seen. Speculum examination of the vagina is also a good opportunity to inspect the cervix and vagina to exclude local causes of blood loss in addition to the quantity of loss at presentation as patient description can be misleading

Differential diagnosis

Hydatidiform mole is a relatively rare but important complication of pregnancy that should be considered in all cases of miscarriage and, where possible, tissue sent for

histological confirmation of products of conception. It is clear, however, that in the presence of spontaneous miscarriage at home that this is not possible. It is likely that

in these cases, where there is clinically significant molar change, women will present with ongoing bleeding and the diagnosis considered at this stage.

## Laboratory Studies

### **Complete blood count (CBC) with differential**

* A CBC will help document the amount of blood loss and whether anemia is present. If the hemoglobin and hematocrit are very low and the patient is symptomatic then transfusions would be warranted. The CBC also will provide evidence regarding an infection, which, in the case of infection.

### Beta-hCG

* Beta-hCG is important to confirm the pregnancy and distinguish it from dysfunctional uterine bleeding or bleeding from another etiology. The hCG level is also important to help distinguish a complete abortion from a threatened abortion or ectopic pregnancy.
* If the hCG level is above 1500-2000 mIU/mL, then transvaginal ultrasonography should detect a viable intrauterine pregnancy. A level over 3000 mIU/mL should enable one to visualize a viable intrauterine pregnancy by transabdominal ultrasonography. However, if the hCG level is elevated, no history of passing tissue is present, and the ultrasonography demonstrates an empty uterus, one must assume that an ectopic pregnancy is present until proven otherwise.

### Blood type and screen

* Blood type and screen (possible cross match) is important to determine whether treatment with Rho immmunoglobulin is appropriate. An Rh-negative woman should receive Rho within 72 hours of miscarriage or ectopic pregnancy to avoid the possibility that the pregnancy has exposed the patient to a positive antigen. If the father of the baby is also Rh negative then the patient can foregot the immunoglobulin therapy. It is also important in cases where transfusions are necessary.

### Possible DIC profile

* A DIC profile is necessary only in those cases with significant bleeding. The DIC profile usually consists of a platelet count, fibrinogen level, prothrombin time (PT), and activated partial prothrombin time (aPTT). When significant bleeding occurs and the patient is consuming these factors faster then she can make them, then the initiating event needs to be treated (ie, D&C, hysterectomy) and platelets, coagulation factors (usually administered in the form of fresh frozen plasma or cryoprecipitate), or fibrinogen in addition to packed red blood cells may need to be replaced when transfusing a patient. Whole blood may be transfused as another alternative.

### Urinalysis

* Urinalysis is important to rule out a urinary tract infection. Pregnant women are prone to urinary tract infections due to the progesterone effect on the smooth muscle of the ureters, which causes mild physiologic hydroureters. A cystitis or renal stone also could be present with bleeding but from a urinary source.

**Imaging Studies**

Ultrasonography of the pelvis using a vaginal probe should be performed to rule out an ectopic pregnancy, retained products of conception, hematometra, or other etiologies.

**Guidelines for assessing prenatal viability**

In October 2013, the Society of Radiologists in Ultrasound published new guidelines on using ultrasonography to assess prenatal viability.The guidelines are designed to help avoid the possibility of physicians causing inadvertent harm to a potentially normal pregnancy.

Diagnostic criteria for nonviability include the following:

* A crown–rump length of ≥7 mm and no heartbeat
* A mean sac diameter of ≥25 mm and the absence of an embryo

Presence of one or more of these findings should prompt further investigation into the pregnancy's viability. Rescan after one week to confirm the diagnosis.

The ultrasound landmarks visible on transvaginal scan are as follows.

• Week 5: visible gestation sac.

• Week 6: visible yolk sac.

• Week 6: visible embryo.

• Week 7: visible amnion.

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**Management**

* A complete abortion usually needs no further treatment, medically or surgically, no medication is likely to be needed. Usually, the uterus contracts well after expelling the entire contents and the cervix is closed. The risk for infection is minimal. Immune globulins (eg, Rho (D) immune globulin) should be given for RH negative non sensitized woman.
* . Patients with threatened abortions need an ultrasonographic evaluation to confirm the diagnosis and for reassurance.A possible treatment for threatened miscarriage is the use of progestogen. Limited evidence suggests that the use of progestogen can reduce the rate of spontaneous miscarriage. Treatment with progestogens did not increase the occurrence of congenital abnormalities in the newborns

 With missed, incomplete, or inevitable abortion present before 13 weeks' gestation, treatment may include misoprostol(medical) as an alternative to surgery.

. The patient should be counseled regarding the risks and benefits of both. The advantages of medical therapy is that no surgical procedures are needed if it is successful. Passage of tissue should happen within a few days of receiving medical therapy. If it is not successful, then a surgical approach may follow. The risks for medical therapy include bleeding, infection, possible incomplete abortion, and possible failure of the medication to work. The advantage of a suction D&C is that the procedure is scheduled and occurs at a known time. The risks of a D&C include bleeding, infection, possible perforation of the uterus and possible Asherman syndrome(intrauterine adhesion) after the procedure.

**Large blood loss**

In the situation in which a considerable amount of blood loss has occurred, aggressive hydration, iron therapy or transfusions may be indicated.

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*Surgical option*

Surgical intervention may include the following:

* Complete abortion: None
* Inevitable and incomplete abortions: Suction dilation and curettage
* Septic abortion: Broad spectrum antibiotic therapy and suction dilation and curettage
* If a boggy uterus is noted with active bleeding during a D&C, then methylergonovine maleate (Methergine) (0.2 mg IM) may be given to contract the uterus. This will also decrease the likelihood that clots will be retained in the uterus.

### [Methylergonovine (Methergine)](http://reference.medscape.com/drug/methylergonovine-343129)

* Acts directly on uterine smooth muscle, causing a sustained tetanic uterotonic effect that reduces uterine bleeding
* Administer IM after a D&C. Also may be administered IV over no less than 60 sec, but should not be administered routinely because it may provoke hypertension or a stroke. Monitor blood pressure closely when administering IV

Medical intervention

Misoprostol, a prostaglandin agent, has been recently reported as safe and effective medical treatment for missed abortion, inevitable abortion, or incomplete abortion. misoprostol will increase uterine smooth muscle contractions and soften the cervix to allow passage of products of conception Administered orally or vaginally. Comes in 200 mcg tablets.

## Mortality/Morbidity

A complete abortion is unlikely to cause any significant risk of mortality unless significant blood loss or infection occurs. Morbidity would be increased if anemia or infection develops. Patients who are pregnant may bleed quickly and significantly. Distinguishing the causes of bleeding during pregnancy is important.

Incomplete and inevitable abortions are a cause for concern when significant bleeding or infection occurs. If treatment is not performed in a timely manner, significant morbidity and mortality may occur. Retained products of conception may occur after a spontaneous abortion or after a suction D&C.

Patients with retained products usually return for medical care with symptoms of increased bleeding, increased cramping, and/or infection. Caring for these patients quickly with intravenous antibiotics is important, and, after the antibiotics are administered, then a suction D&C is performed. These patients are at risk for developing Asherman syndrome, which consists of adhesions within the uterine cavity. Patients who develop Asherman syndrome may present with amenorrhea or decreased menstrual flow. Asherman syndrome may compromise future fertility.

A complication of D&C is perforation of the uterus, which may be handled by observation. If the patient shows signs of uncontrolled bleeding, then proceeding to a laparoscopy or laparotomy to control the bleeding may be necessary. The choice for laparoscopy or laparotomy depends on the stability of the patient. Occasionally, the perforation is in the area of the uterine vessels or other area where the bleeding is difficult to control and a hysterectomy or uterine artery embolization may be necessary.

When bleeding is severe, the patient can easily go into [hypovolemic shock](http://emedicine.medscape.com/article/760145-overview) or [disseminated intravascular coagulopathy](http://emedicine.medscape.com/article/199627-overview) (DIC). Both of these situations need prompt attention and treatment.

Spontaneous miscarriages and induced abortions accounted for about 4% of pregnancy-related deaths

## Further Inpatient Care

* Patients do not need to remain in the hospital when a diagnosis of complete abortion is made. These patients are usually sent home.
* If there are concerns about significant blood loss, then the patient may need to stay for 24-hour observation and receive blood transfusions.
* If there are concerns regarding significant infection, IV antibiotic therapy may be needed for a short time until fever/symptoms resolve.

## Prevention

* Contraceptive counseling is warranted. Patients should avoid intercourse or use contraception until the hCG levels have become negative. Patients may wish to continue contraception until they are emotionally ready to try again to become pregnant.
* Psychological counseling or grief counseling should be offered for those with early pregnancy loss. Support groups can also be helpful.
* The prognosis for early pregnancy loss is excellent. After one complete abortion, no increased risk exists for another one. Patients need reassurance
* Patient Education

The patient needs to hear that one miscarriage does not put her at increased risk for another miscarriage. Her next pregnancy is likely to last to term if she is young and has no other risk factors.

Advise the patient to return to the emergency department if any of the following symptoms occur:

* Profuse vaginal bleeding
* Severe pelvic pain
* Temperature greater than 100°F

Patients may experience intermittent menstrual-like flow and cramps during the following week. The next menstrual period usually occurs in 4-5 weeks.

Patients may resume regular activities when able, but they should refrain from intercourse and douching for approximately 2 weeks.

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