Antepartum Haemorrhage (APH)

APH is variously described as "bleeding from the genital tract in pregnancy before the onset of labour after 24 weeks gestation". It effects around 4% of all pregnancies and associated with increases fetal and maternal mortality and morbidity.

Aetiology: the causes of APH can be divided into three main groups are:

1. Placenta previa
2. Placental abruption
3. Others:
   a. Marginal placental bleeding
   b. Show
   c. Friable cervical ectropion or cervical trauma.
   d. Local infection of cervix and vagina.
   e. Genital tract tumours.
   f. Varicosities.
   g. Ruptured vasa previa.

Placenta previa and abruption together account for > 50% of APH cases.

Vasa previa: is the rupture of fetal vessels that migrate through membrane eccentric attachment of cord during artificial rupture of membrane, that associated with high perinatal mortality and morbidity and necessities emergency C/S.

Placenta previa (PP)

PP is defined as a placental partially or wholly situated in the lower uterine segments. It is either minor or major PP.

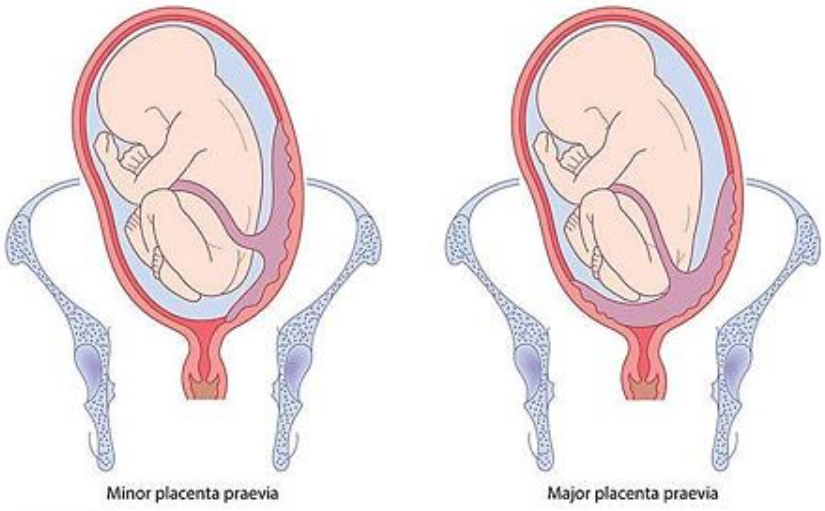
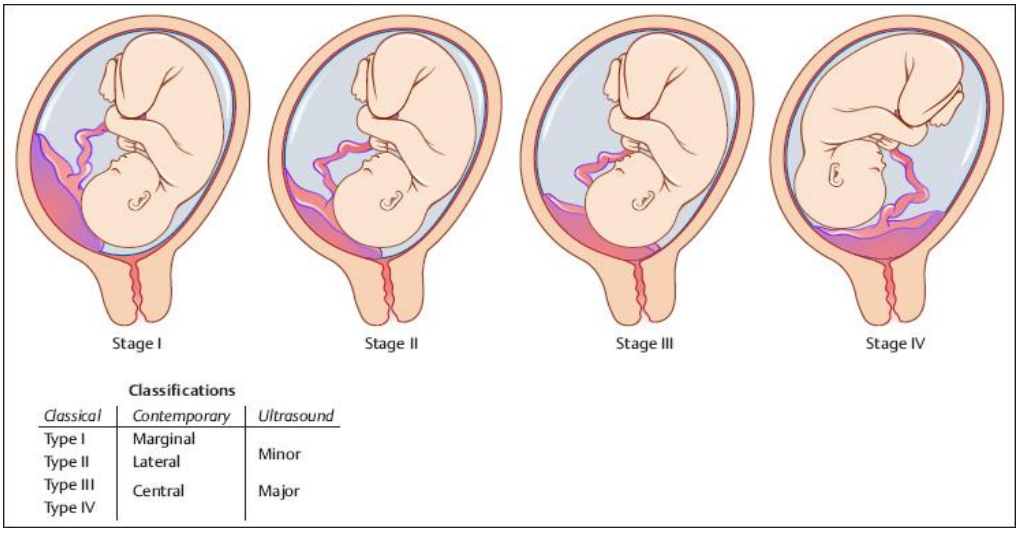


Figure 14.5 Placenta praevia. From Obstetrics by Ten Teachers 20th-Edition (2017)

Grades:

1. **Grade I:** the placental edge is in the lower uterine segments but does not reach the internal os.
2. **Grade II:** the placental edge reaches but doesn't cover the internal os. Grade I & II represent minor PP
3. **Grade III:** the placenta covers the internal os. and is asymmetrically situated.
4. **Grade IV:** the placenta covers the internal os. and is centrally situated. Grade III & IV represents major PP.



Classifications

Classical	*Contemporary*	*Ultrasound*
Type I	Marginal	Minor
Type II	Lateral	
Type III	Central	Major
Type IV		

Aetiology and risk factors of PP

1. Previous uterine surgery or scar such as C/S, myomectomy, metroplasty, uterine perforation, curettage and others.
2. Advancing maternal age (> 40 years).
3. Multiparity.
4. Multiple pregnancy.
5. Previous history of PP (recurrence rate 10%).
6. Gestational and chronic diabetes.
7. 10% of PP coexists with placenta abruption.
8. Manual removal of placental abruption.

Diagnosis of PP

The presentations of PP are:

1. It usually presents with *painless* bleeding
2. The presenting part is usually *high*, being prevented from engagement and uterus seems to be *large* for its date.
3. The general fetal condition remains good until the maternal blood loss causes fetal comprise or an abruption coexist.

The difficulty of PP diagnosis is remaining until the lower uterine segment begins to form at around 28 weeks gestation.

Many cases of PP are detected on routine ultrasounds at 18 – 23 weeks and 5% of women have low lying placenta at 16 – 18 weeks gestation, but only 0.5% have it at delivery.

So, the diagnosis is by:

1. Ultrasound (TVU)
2. MRI
3. Power Doppler U/S.

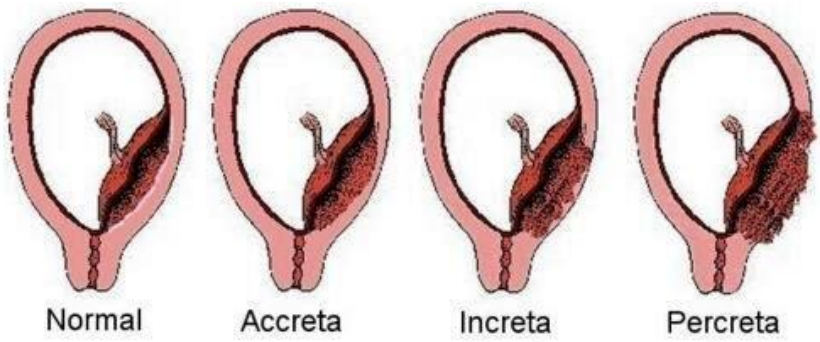
Morbidly adherent placenta (MAP) occurs in around 1 of 200 – 400 deliveries.

Its major risk factors are:

1. Uterine scaring.
2. Manual removal of placenta.
3. Short C/S to conception interval.
4. Uterine curettage.

There are three types of MAP, they are:

1. Placenta accrete (Placenta adheres to upper one-half myometrium).
2. Placenta increta (Placenta adheres to whole myometrium).
3. Placenta percreta (Placenta adheres to perimetrium).



Management of Placenta previa:

The management of Placenta previa depends on its presentation (bleed or non-bleed PP).

*Management of minor bleed or non-bleed PP

1) Hospitalization: non-bleed PP can be managed as outpatient unless:
   a) PP is major.
   b) Women lives away from hospital.
   c) Near term.
   d) Other risk factors (ex: pre-eclampsia, anaemia, … etc).

2) Maternal and fetal surveillance

   I/V **major** Placenta previa, asymptomatic, a rescan at 32 weeks is recommended because of Placenta migration, while **minor** Placenta previa should be rescanned again at 36 weeks gestation.

   All types of Placenta previa should be delivered by C/S except Grade I, anterior PP, prepared for vaginal delivery.

3) Tocolysis: it is unsafe to give tocolytic in patient with cardiovascular instability or fetal compromised. Oxytocin antagonists would be probable the best choice. If PP, is associated with uterine contractions away from term until lung maturity is achieved.
4) Correction of anaemia.
5) Steroid.
6) Observation and follow of maternal and fetal conditions.

Management of symptomatic PP:

1. Inpatient management (Admission).
2. ABC measures.
3. Blood aspirated, sent for investigations & cross match of at least 2 - 3 L\ of blood.
4. Double seat examination at theatre room.

This is done by two teams at theatre one of them prepared for emergency C/S and other team prepared for vaginal examination in undiagnosed APH.

The patient should be placed in **lithotomy** position, the bladder should be **empty** to allow full careful examination of head engagement.

Vaginal examination is performed to palpate in each fornix as the placenta felt as sponginess between fetal head and fornix. If the fetal head palpated without apparent placenta and no vaginal bleeding, ARM should be done and Oxytocin started if the labour has not already begun.

If cervix is so unfavourable as not to allow ARM. Delivery by C/S is the safest option for symptomatic placenta previa, by next team, with achievement of active management of 3rd stage of labour to prevent primary PPH.

Complications of placenta previa:

1. Maternal death.
2. Primary PPH.
3. DIC
4. C/S hysterectomy (If there is MAP).
5. Reoccurrence in around 10% of cases.

Abruptio placenta

Definition

Abruptio placenta, or premature separation of the normally implanted placenta, complicate 0.5 - 1.5% of all pregnancies (1 in 120 births). Abruption severe enough to result in fetal death occurs in 1 per 500 deliveries.

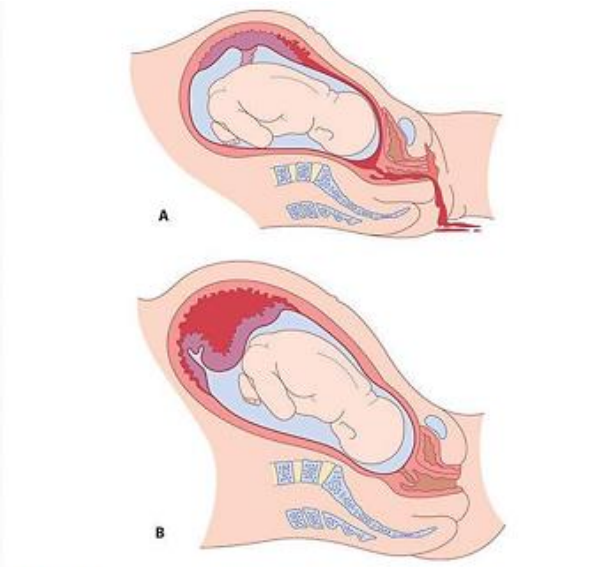


Figure 14.4 (A) Placental abruption with revealed haemorrhage; (B) placental abruption with concealed haemorrhage.
From Obstetrics by Ten Teachers 20th-Edition (2017)

Predisposing factors

1. Maternal hypertension
2. Placental abruption in prior pregnancy.
3. Trauma (ECV, cordocentesis, Road traffic accident).
4. Polyhydramnios with rapid decompression (DM, multiple pregnancy).
5. Premature rupture of membrane (PROM).
6. Short umbilical cord.
7. Tobacco use and smoking.
8. Folate deficiency.
9. Anaemia.
10. Increased maternal age.

The most common of these risk factors is *maternal hypertension*, either chronic or as a result of pre-eclampsia.

The risk of recurrent abruption is high: 10% after one abruption and 25% after two abruptions.

Approximately 50% of placenta abruptio cases severe enough to cause fetal death are associated with hypertension.

Placental abruption may also be associated with :

1. Fetal abnormality: ↑ maternal serum α-fetoprotein, ↑ recurrence of abruption ??
2. Poor placentation (↓ adhesiveness).
3. Thrombophilia: factor V Leiden, prothrombin gene, protein C & S deficiency, antiphospholipid syndrome and homocysteinaemia.
4. Chorioamnionitis.

Classification

1. **Complete** separation: no vaginal bleeding.
2. **Partial** separation: vaginal bleeding will be apparent.
3. **Marginal** separation: vaginal bleeding will be apparent.

Grades

- Asymptomatic: retroplacental clot see after placental delivery.
- Mild: vaginal bleeding (revealed) + uterine tenderness; visible retroplacental clot after placental delivery.
- ± revealed bleeding; enough placental separation production **fetal compromise** and visible retroplacental clot after placental delivery.
- ± revealed bleeding with **maternal sign** (uterine tetany, hypovolaemia, abdominal pain) and late stage fetal compromise or fetal death. 30% of these women will develop DIC.

If placental location is **higher** in the uterus, or if the bleeding is more **central** and the margins of placenta remain attached to the underling uterus, blood may be not escape into the vagina. Those the amount of vaginal bleeding is extremely variable, from **non to heavy**.

Pathophysiology

Placental separation is initiated by haemorrhage into decidua basalis with formation of decidual haematoma. The resulting separation of the decidua from the basal plate predisposes to further separation and bleeding, as will as compression and destruction of placental tissue.

The inciting case of placental separation is unknown. It has been postulated that is may be due to inherent weakness or anomaly in the spiral arterioles. Blood may be either dissect upward toward the fundus, resulting in a **concealed haemorrhage** or extended downward toward the cervix, resulting in an external or **revealed haemorrhage.**

Concealed haemorrhage. Retained or concealed haemorrhage is likely when:

1. There is an effusion of blood behind the placenta but its margin still remains adherent.
2. The placenta is completely separated yet the membrane retains these attachments to the uterine wall.
3. Blood gains excess to the amniotic cavity after breaking through the membrane,
4. The fetal head is so closely applied to the lower uterine segment that the blood cannot make its way past it.

Most often, however, the membranes are gradually *dissected* off the uterine wall, and the blood sooner or later escapes.

Diagnosis and management

Clinically, the diagnosis of a placental abruption is entertained if a patient present with ***painful*** vaginal bleeding association with uterine ***tenderness***, hyperactivity, and increase tone.

The signs and symptoms of placental abruption are, however, variable. The most common finding is vaginal bleeding, seen in 80% of case. Abdominal pain and uterine tenderness are seen in 66% of cases, fetal distress in 60%, uterine hyperactivity and increase uterine tone in 34%, and fetal demise in 50%.

The diagnosis of placental abruption is primarily a *clinical* one.

Ultra-sonography may detect only 2% of abruption. Because placental abruption may coexist with a placenta previa, the reason for doing an initial ultrasonic examination is to exclude the latter diagnosis.

<u>Diagnosis of placenta abruption</u>

Clinical presentation:

- Bleeding: revealed/concealed, so clinical picture is important.
- Pain on the uterus and this increases in severity.
- Signs of shock (hypovolemia): fainting and collapse.
- Hard tender uterus (uterine tetany).
- Difficult to palpate the fetal parts and hear the fetal heart.
- **The diagnosis is clinical.**
- U/S: is to confirm fetal viability, assess fetal growth and normality, measure liquor, do umbilical artery doppler velocities and to exclude placenta previa.

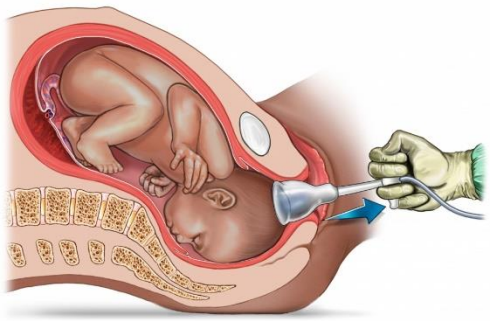
Management of patient with an abruption includes careful maternal haemodynamic monitoring, fetal monitoring, serial evaluation of the haematocrit and coagulation profile, and delivery.

Intensive monitoring of both the mother and the fetus is essential because rapid deterioration of either one's condition can occur. Blood products for replacement should always be available, and a large-bore (16 to 18 Gauge) intravenous cannula must be secured.

Red blood cells should be given liberally if indicated.

Management of placental abruption

Principles of management:



1. Early delivery (50% of abruption present in labour).
2. Adequate blood transfusion.
3. Adequate analgesia.
4. Detailed maternal and fetal monitoring.
5. Coagulation profile (30% develop DIC)
6. **C/S:** distress baby, severe bleeding, alive baby and not in advanced labour. Perinatal mortality rate is 15-20%.
7. **Vaginal delivery:** very low gestation, dead baby, cervix is fully dilated (Ventouse delivery).
8. **Conservative:** small abruption, well mother and fetus, if the gestational age < 34 weeks, give steroids.

   Conservative: time taken to achieve delivery depends on:

   a) Rate of the bleeding.
   b) The rate of change in the clotting studies.
   c) The clinical condition of the mother and fetus.

9. **CTG**: twice/day
10. Serial U/S and umbilical artery Doppler waveform.
11. No conservative after 38 weeks gestation.
12. Anti-D if the mother is rhesus negative ??
13. Anticipate PPH.
14. In case of previous C/S, discuss hysterectomy.

Maternal-Fetal risk

Abruption places the fetus at significant risk of hypoxia and, ultimately, death.

The perinatal mortality rate due to placental abruption is presently 35%, and the condition accounts for 15% of 3rd trimester still-births.

15% of live-born infants have significant neurologic impairment.

Placenta abruption is the *most common* cause of DIC in pregnancy. This result from release of thromboplastin from the disrupted placenta and the sub-placental decidua into the maternal circulation, causing a consumptive coagulopathy. Clinically significant DIC complicate 20% of cases and is most commonly seen when the abruption is massive or fetal death has occurred.

Coagulation abnormalities:

1- Hypofibrinogenemia
2- Increasing levels of fibrin degradation products.
3- Decreasing platelet count.
4- Increasing prothrombin time (PT) and partial thromboplastin time (PTT).
5- Decreasing other serum clotting factors.

Placenta abruption is the most common cause of consumptive coagulopathy in pregnancy.

Prevent coagulopathy by:

1- Restored blood volume by IV fluid (Normal saline or Ringer lactate).
2- Treat the possible cause of coagulation failure.
   - Try to avoid C/S.
   - Treat PE or eclampsia.
3- Give fresh blood or blood products for example FFP (15 mL/kg body weight); (Normal saline or Ringer lactate) to replaced clotting factor;s or packed or sedimented RBC for RBC replacement; or Cryoprecipitate to replace fibrinogen; or platelet concentrates if platelets is less than 20,000/μL

Whole blood helps to replace not only volume but also oxygen carrying capacity. Fresh whole blood may replace RBCs and all procoagulants, but often difficult to obtain. Many experts recommend component therapy.

Complications of Placenta abruption (Summary)

1. Premature delivery.
2. Fetal distress and death.
3. Haemorrhagic shock.
4. Acute renal failure: acute tubular or cortical necrosis.
5. DIC (release of tissue thromboplastin).
6. Uterine atony (Couvelaire uterus).
7. PPH

Follow up after delivery

1. Check P.R., B.P. every 30 min for two hours then hourly for six hours then every 4 hours.
2. Preform gentle uterine massage every 30 min to prevent PPH.
3. Check for vaginal bleeding.
4. Check U.O. every 2 hours.

Bleeding of unknown aetiology

In many cases of antepartum haemorrhage, no definite case is ever found. The bleeding is usually minimal in amount. This diagnosis can be made only after exclusion of all other causes.

Antepartum Haemorrhage

- Exclude abruption uterine, uterine rapture, placenta praevia with labour
  Is she stable? -BP, pulse.
- Check abdomen – previous C/S scar, fundal height and uterine tenderness.
- Check FH – Vaginal examination and ARM.