Antepartum Hemorrhage

Definition
- bleeding from or into the genital tract, occurring from 24+0 weeks of pregnancy and prior to the birth of the baby.
  - The most important causes of APH are placenta previa and placental abruption, although these are not the most common.

Incidence
- APH complicates 3–5% of pregnancies and is a leading cause of perinatal and maternal mortality worldwide
- Up to one-fifth (20%) of very preterm babies are born in association with APH
- Obstetric hemorrhage remains one of the major causes of maternal death in developing countries and is the cause of up to 50% of the estimated 500 000 maternal deaths that occur globally each year.
  - Obstetric haemorrhage encompasses both antepartum and postpartum bleeding

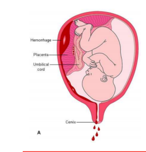
Important notes
- the amount of blood lost is often underestimated and the amount of blood coming from the introitus may not represent the total blood lost (for example in a concealed placental abruption).
  - It is important therefore, when estimating the blood loss, to assess for signs of clinical shock.
- The presence of fetal compromise or fetal demise is an important indicator of volume depletion.
- Recurrent APH is the term used when there are episodes of APH on more than one occasion.

Classification
- Spotting — staining, streaking or blood spotting noted on underwear or sanitary protection
- Minor hemorrhage — blood loss less than 50 ml that has settled
- Major hemorrhage — blood loss of 50-1000 ml, with no signs of clinical shock
- Massive hemorrhage — blood loss greater than 1000 ml and/or signs of clinical shock

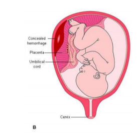
Complications
- Maternal Complications
  - Anaemia
  - Infection
  - Maternal shock
  - Renal tubular necrosis
  - Consumptive coagulopathy
  - Postpartum haemorrhage
  - Prolonged hospital stay
  - Psychological sequelae
  - Complications of blood transfusion
- Fetal Complications
  - Fetal hypoxia
  - Small for gestational age and fetal growth restriction
  - Prematurity (iatrogenic and spontaneous)
  - Fetal death

Etiology

placental abruption (30%)
- Types
  - Revealed placental abruption — blood tracks between the membranes, and escapes through the vagina and cervix.



  - Concealed placental abruption — blood collects behind the placenta, with no evidence of vaginal bleeding



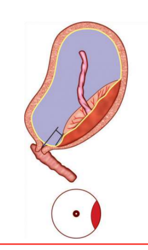
- Risk factors
  - The most predictive is abruption in a previous pregnancy
    - 4.4% incidence of recurrent abruption
    - 19–25% for women who have had two previous pregnancies complicated by abruption
  - Other risk factors :
    1.advanced maternal age, multiparity, low body mass index (BMI),
    2.Chronic hypertension ,preexisting DM
    3.smoking and drug misuse (cocaine and amphetamines) during pregnancy
    4.thrombophilias : significant associations were only observed with heterozygous factor V Leiden and heterozygous prothrombin 20210A mutation
    5.abdominal trauma (both accidental and resulting from domestic violence),
    6.pre-eclampsia
    7.fetal growth restriction
    8.Multiple gestation
    9.polyhydramnios
    10.PROM
    11.First trimester bleeding
    12.intrauterine infection
    13.pregnancy following assisted reproductive techniques
- Pathophysiology

- Presentation

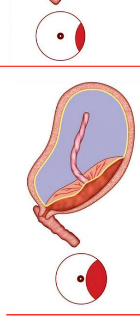
Grade	Description
0	Asymptomatic, a small retroplacental clot detected
1	Vaginal bleeding, uterine irritability, and tenderness present; no signs of maternal or fetal distress
2	Vaginal bleeding, uterine contractions, no signs of maternal shock; signs of fetal distress present
3	Severe bleeding present or concealed, uterine hypertonus, 'wooden-hard' uterus, persistent abdominal pain, maternal shock, and often coagulopathy; fetal distress or death

  - Vaginal bleeding
  - Abdominal pain
  - Uterine contractions– abruptions can occur in labor or stimulate labor to begin
  - Fetal distress or intrauterine death
  - Disseminated intravascular coagulopathy -non-clotting vaginal bleeding, bleeding from drip sites and skin bruising.
  - Maternal circulatory shock
- Managment
  - If fetal death is diagnosed, vaginal birth is the recommended mode of delivery for most women (provided the maternal condition is satisfactory), but caesarean birth will need to be considered for some.
  - If the fetus is compromised, a caesarean section is the appropriate method of delivery with concurrent resuscitation of the mother.
    - Women with APH and associated maternal and/or fetal compromise are required to be delivered immediately
  - The optimum timing of delivery of women presenting with unexplained APH prior to 37 wks (preterm) and no associated maternal and/or fetal compromise is not established. A senior obstetrician should be involved in determining the timing and mode of birth of these women
  - If the woman presents after 37+0 weeks of gestation, it is important to establish if the bleeding is an APH or blood stained 'show'; if the APH is spotting or the blood is streaked through mucus it is unlikely to require active intervention.
  - in the event of a minor or major APH, induction of labor with the aim of achieving a vaginal delivery should be considered in order to avoid adverse consequences potentially associated with a placental abruption

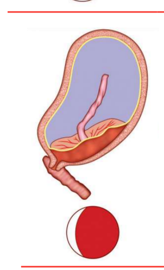
Placenta previa (20%)
- Definition — a placenta developing within the lower uterine segment and graded according to the relationship and/or the distance between the lower placental edge and the internal os of the uterine cervix.
- Incidence — at term is 1 in 200 pregnancies
- Classification



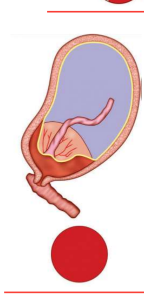
  - Grade I or low lying placenta — A lower edge inside the lower uterine segment less than 20 mm from the os



  - grade II or marginal praevia — Alower edge reaching the internal os



  - grade III or partial previa — The placenta partially covers the cervix



  - grade IV or complete previa — The placenta completely covers the cervix
- Risk factors
  - Previous placenta praevia (adjusted OR 9.7) 45-47
  - Previous caesarean sections
    - previous caesarean section OR 2.2
    - Two previous caesarean sections OR 4.1
    - Three previous caesarean sections OR 22.4
  - Deficient endometrium due to presence or history of
    - endometritis
    - manual remove al of placenta
    - curettage
    - submucous fibroid
  - -Previous termination of pregnancy
    -Multiparity
    -Advanced maternal age (>40 years)
    -Multiple pregnancy
    -Smoking
    -Assisted conception
- Presentation
  - 1.Vaginal bleeding
    o Painless (contrast with abruptio placenta)
    o Bright red (the blood is still oxygenated)
    o Variable in amount from 'spotting' to torrential/life-threatening
    o May be recurrent
    o Provoked by sexual intercourse or the onset of labour
  - 2, Malpresentation 35% of cases(e.g. breech or transverse)
  - 3.The fetus is usually well and in good condition
- Diagnosis
  - The midpregnancy routine fetal anomaly scan should include placental localization thereby identifying women at risk of persisting placenta previa or a low-lying placenta
  - Transvaginal ultrasound scan is superior to transabdominal and transperineal approaches and is safe.

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- Delivery
  - timing should be tailored according to antenatal symptoms and, for women presenting with uncomplicated placenta previa, delivery via elective cesarean section should be considered between 36+0 and 37+0 weeks of gestation.
  - Late preterm (34+0to 36+6 weeks of gestation) delivery should be considered for women presenting with placenta praevia or a low-lying placenta and a history of vaginal bleeding or other associated risk factors for preterm delivery
  - Indications for delivery before 37 weeks
    o Onset of labour
    o Fetal distress
    o Severe growth restriction
    o Intrauterine death
    o Severe vaginal bleeding/maternal jeopardy

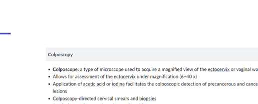
Uterine rupture (rare)
- Definition — full-thickness loss of integrity of the uterine wall and visceral peritoneum
- Incidence
  - unscarred uterus 0.5-2.0 / 10,000
  - VBAC (depend on the previous uterine scar)
  - Classical C/S 5% LUSCS 0.5%
- Risk factors
  - High parity
  - Previous uterine surgery
  - Induction or augmentation of labour
  - Hyperstimulation
  - Malpresentation
  - Macrosomia
  - Uterine abnormalities
  - Trauma including RTA & obstetric manoeuvres
  - 5% risk of recurrence
- Clinical features
  - Symptoms are often non-specific
  - Abdominal pain between uterine contractions
  - +/- bleeding
  - Loss of station(fetal head)
  - Inability to identify uterine contractions
  - Haematuria and blood-stained liquor
  - CTG abnormalities/ Lost FHR
- Management
  - Uterine Repair
  - hysterectomy

Vasa Previa (rare)

- Definition — Fetal vessels crossing the internal cervical os through the free placental membranes
- Incidence
  - 1/3000 deliveries
  - 60% of women with vasa previa at delivery have placenta previa or low-lying placenta identified during the second-trimester ultrasound scan
- Major risk factors
  - Velamentous cord
  - Accessory placental lobe
- Clinical features
  - Classic triad of
    - Membrane rupture
    - Painless vaginal bleeding
    - Fetal bradycardia
- Diagnosis — Transabdominal and transvaginal color Doppler ultrasonography
- Delivery — Urgent CS

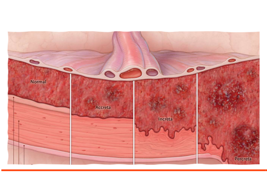
others
- Local causes cervical ectropion, polyp/ trauma
- Genital tract tumors
- Unknown origin

Managment
- clinical assessment to establish whether urgent intervention is required to manage maternal or fetal compromise.
- History
  - The process of triage includes history taking to assess
    - Coexisting symptoms such as pain
    - The extent of vaginal bleeding
    - The cardiovascular condition of the mother
    - Fetal wellbeing
  - ***IF THERE IS NO MATERNAL COMPROMISE A FULL HISTORY SHOULD BE TAKEN***
  - Ask about pain associated with the hemorrhage
    - Placental abruption should be considered when the pain is continuous
    - Labor should be considered if the pain is intermittent
  - Risk factors for abruption and placenta previa should be identified
  - The woman should be asked about her awareness of fetal movements and attempts should be made to auscultate the fetal heart
  - If the APH is associated with spontaneous or iatrogenic rupture of the fetal membranes, bleeding from a ruptured vasa previa should be considered
  - Previous cervical smear history may be useful in order to assess the possibility of a neoplastic lesion of the cervix as the cause of bleeding
- Examination
  - The primary survey should follow the structured approach of airway (A), breathing (B) and circulation (C).
  - Following initial assessment and commencement of resuscitation, causes for hemorrhage should be sought.
  - Treatment according to the cause
  - Abdominal palpation
    - assess for tenderness or signs of an acute abdomen.
    - The tense or 'woody' feel to the uterus on abdominal palpation indicates a significant abruption
    - assess for uterine contractions
    - A soft, non-tender uterus may suggest a lower genital tract cause or bleeding from placenta or vasa previa
  - Speculum examination
    - can be useful to identify cervical dilatation or visualize a lower genital tract cause for the APH.
    - If the woman presents with a clinically suspicious cervix, she should be referred for colposcopic evaluation

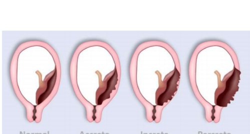


  - Digital vaginal examination
    - can provide information on cervical dilatation if APH is associated with pain or uterine activity
    - If placenta previa is a possible diagnosis (for example, a previous scan shows a low placenta, there is a high presenting part on abdominal examination or the bleed has been painless)
      - ***DIGITAL VAGINAL EXAMINATION SHOULD NOT BE PERFORMED UNTIL AN ULTRASOUND HAS EXCLUDED PLACENTA PREVIA***
- Investigations
  - Ultrasound scan
    - to confirm or exclude placenta praevia if the placental site is not already known
    - The sensitivity of ultrasound for the detection of retroplacental clot (abruption) is poor
    - ultrasonography will fail to detect three-quarters of cases of abruption. However, when the ultrasound suggests an abruption, the likelihood that there is an abruption is high
    - to establish fetal heart pulsation if fetal viability cannot be detected using external auscultation
  - Maternal Investigation
    - to assess the extent and physiological consequences of the APH. The maternal investigations performed will depend on the amount of bleeding
    - The Keilhauer test should be performed in rhesus D (RhD)-negative women to quantify fetomaternal hemorrhage (FMH) in order to gauge the dose of anti-D immunoglobulin (anti-D Ig) required.
    - In cases of massive hemorrhage
      - full blood count and coagulation screen and 4 units of blood cross-matched.
      - Urea, electrolytes and liver function tests .
      - The initial haemoglobin may not reflect the amount of blood lost .
      - The platelet count, if low, may indicate a consumptive process seen in relation to significant abruption; this may be associated with a coagulopathy.
    - In cases of minor hemorrhage
      - full blood count and group and save should be performed. A coagulation screen is not indicated unless the platelet count is abnormal.
  - Fetal Investigation
    - An assessment of the fetal heart rate should be performed, usually with a cardiotocograph (CTG) in women presenting with APH once the mother is stable or resuscitation has commenced, to aid decision making on the mode and timing of delivery
- Further Managment
  - Women presenting with spotting who are no longer bleeding and where placenta previa has been excluded can go home after a reassuring initial clinical assessment
  - All women with APH heavier than spotting and women with ongoing bleeding should remain in hospital at least until the bleeding has stopped
    - Each woman must be assessed on an individual basis and sound clinical judgment applied
  - Clinicians should offer a single course of antenatal corticosteroids to women between 24+0 and 34+6 weeks of gestation at risk of preterm birth.
  - In women presenting with spotting, where the most likely cause is lower genital tract bleeding, where imminent delivery is unlikely, corticosteroids are unlikely to be of benefit, but could still be considered
  - Antenatal corticosteroids are associated with a significant reduction in rates of neonatal death, respiratory distress syndrome and intraventricular hemorrhage
  - Should women presenting with APH who are RhD negative be given anti-D Ig?
    - Anti-D Ig should be given to all non-sensitised RhD-negative women after any presentation with APH, independent of whether routine antenatal prophylactic anti-D has been administered.
    - In the non-sensitised RhD-negative woman in the event of recurrent vaginal bleeding after 20+0 weeks of gestation, anti-D Ig should be given at a minimum of 6-weekly intervals.
    - In the non-sensitised RhD-negative woman for all events after 20+0 weeks of gestation, at least 500 iu anti-D Ig should be given followed by a test to identify FMH greater than 4 ml red blood cells; additional anti-D Ig should be given as require

Morbidly adherent placenta
- Definition — Abnormal invasive placentation that can be categorized by depth of invasion
- Types



  - Placenta accreta — chorionic villi attach directly to the myometrium in the absence of decidua
  - Placenta increta — placental villi invade deeper into the myometrium, but do not extend to the outermost layers of the uterus



  - Placenta percreta — chorionic villi penetrate through the myometrium up to the serosa
- Risk factors
  - history of accreta in a previous pregnancy
  - previous caesarean delivery and other uterine surgery
    - This risk rises as the number of prior caesarean sections increases
- Diagnosis
  - Previous caesarean delivery and the presence of an anterior low-lying placenta or placenta previa should alert the antenatal care team of the higher risk of placenta accreta spectrum
    - Ultrasound imaging is highly accurate when performed by a skilled operator with experience in diagnosing placenta accreta spectrum
    - MRI may be used to complement ultrasound imaging to assess the depth of invasion and lateral extension of myometrial invasion, especially with posterior placentation and/or in women with ultrasound signs suggesting parametrial invasion
- Delivery
  - In the absence of risk factors for preterm delivery in women with placenta accreta spectrum, planned delivery at 35+0 to 36+6 weeks of gestation provides the best balance between fetal maturity and the risk of Delivery unscheduled delivery
    - Caesarean section hysterectomy with the placenta left in situ is preferable to attempting to separate it from the uterine wall

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