POSTPARTUM HAEMORRHAGE

- Primary postpartum haemorrhage is defined as bleeding from the genital tract in excess of 500 ml at any time following the baby's birth up to 24 hours postpartum.
- A loss of 500–999 ml in a healthy woman is considered a mild PPH, and severe haemorrhage is deemed to be a loss of greater than 1000 ml.

Primary postpartum haemorrhage

Causes

- There are several reasons why a PPH may occur, including atonic uterus, retained placenta, trauma and blood coagulation disorder.

Atonic uterus

- This is a failure of the myometrium at the placental site to contract and retract and to compress torn blood vessels and control blood loss by a living ligature action.

Incomplete placental separation

- If placental tissue remains partially embedded in the spongy decidua, efficient contraction and retraction are interrupted.

Retained placenta, cotyledon, placental fragment or membranes

- These will similarly impede efficient uterine action

Precipitate labour

- When the uterus has contracted vigorously and frequently, resulting in a duration of labour that is less than 1 hour, then the muscle may have insufficient opportunity to retract.

Prolonged labour

- In a labour where the active phase lasts >12 hours uterine inertia (sluggishness) may result from muscle exhaustion.

Polyhydramnios, macrosomia or multiple pregnancy

- The myometrium becomes excessively stretched and therefore less efficient.

Placenta praevia

- The placental site is partly or wholly in the lower segment where the thinner muscle layer contains few oblique fibres: this results in poor control of bleeding.

Placental abruption

- Blood may have seeped between the muscle fibres, interfering with effective action.
- At its most severe this results in a Couvelaire uterus

Induction or augmentation of labour with oxytocin

- In the case of induction or augmentation of labour, that continues over a prolonged period without establishing efficient uterine contractions, physical and emotional fa-

tigue of the mother, and uterine fatigue or inertia may occur.

- This inertia inhibits the uterine muscle from providing strong, sustained contraction and retraction of the empty uterus that aids in the prevention of a postpartum haemorrhage.

Episiotomy, and need for perineal sutures

- Blood loss from perineal trauma, in addition to even a normal blood loss from the uterus, can together equal a mild PPH.

General anaesthesia

Anaesthetic agents may cause uterine relaxation, in particular the volatile inhalational agents, for example halothane.

Mismanagement of the third stage of labour

- 'Fundus fiddling' or manipulation of the uterus may pre-

cipitate arrhythmic contractions so that the placenta only partially separates and retraction is lost.

A full bladder

- If the bladder is full, its proximity to the uterus in the abdomen on completion of the second stage may interfere with uterine action.

Aetiology unknown

- A precipitating cause may never be discovered.
- There are in addition a number of factors that do not directly cause a PPH, but do increase the likelihood of excessive bleeding.

Previous history of PPH or retained placenta

- There may be a risk of recurrence in subsequent pregnancies, depending on the cause of the PPH in the previous

Anaemia

- Women who enter labour with reduced haemoglobin concentration (below 10 g/dl) may feel a greater effect of any subsequent blood loss, however small.

HIV/AIDS

- Women who have HIV/AIDS are often in a state of severe immunosuppression, which lowers the platelet count to such a degree that even a relatively minor blood loss may cause severe morbidity or death.

Ketosis

- There is a significant relationship between ketosis and the need for oxytocin augmentation, instrumental delivery and PPH when labour lasted more than 12 hours.

Caesarean section

- There is increased risk of intraoperative or postoperative bleeding following Caesarean section.

- A lack of routine observation of vital signs in the postoperative period, or failure on the part of staff to notice that bleeding occurring, is key failures in care.

Predisposing factors that might increase the risks of postpartum haemorrhage

- Previous history of postpartum haemorrhage or retained placenta
- Presence of fibroids
- Maternal anaemia
- Ketoacidosis
- Multiple pregnancy
- HIV/AIDS
- Caesarean section
- *Fibroids (fibromyomata).*These are normally benign tumours consisting of muscle and fibrous tissue, which may impede efficient uterine action.

Signs of PPH

- Visible bleeding
- Maternal collapse.

However, more subtle signs may present, such as:

- Pallor
- Rising pulse rate
- Falling blood pressure
- Altered level of consciousness; the mother may become restless or drowsy
- An enlarged uterus as it fills with blood or blood clot; it feels 'boggy' on palpation (i.e. Soft and distended and lacking tone); there may be little or no visible loss of blood.

Prevention

- During the antenatal period a thorough and accurate his-

tory of previous obstetric experiences will identify possible risk factors.

- Arrangements for birth can be discussed with the woman, and the necessity for birth to take place in a unit where facilities for dealing with emergencies are available can be explained.
- The early detection and treatment of anaemia will help ensure that women enter labour with a haemoglobin level, ideally, in excess of 10 g/dl.
- Women more prone to anaemia should be closely monitored, e.g. those with multiple pregnancies.
- During labour, good management practices during the first and second stages are important to prevent prolonged labour and ketoacidosis.
- A mother should not enter the second or third stage with a full bladder.
- AMTSL is recommended for all women at high risk of PPH, and will reduce blood loss for women of mixed risk.

- Two units of cross-matched blood should be kept available for any woman known to have a placenta praevia or other major predisposing risk factors for PPH.

Treatment of PPH

- Three basic principles of care should be applied immediately upon observation of excessive bleeding, using the mnemonic ABC:
  - ✓Call for medical **A**id.
  - ✓Stop the **B**leeding by rubbing up a contraction, giving a uterotonic and emptying the uterus.
  - ✓Resus**C**itate the mother as necessary.

***1. Call** for medical aid*

- An obstetric emergency team summoned or ambulance transfer arranged.

2. Stop the bleeding

- The initial action is always the same, regardless of whether bleeding occurs with the placenta in situ or later.

3. *Rub up a contraction*

- The fundus is first felt gently with the fingertips to assess its consistency.
- If it is soft and relaxed, the fundus is massaged with a smooth, circular motion, applying no undue pressure. When a contraction occurs, the hand is held still.

4. Give a uterotonic to sustain the contraction

- In many instances, oxytocin 5 units or 10 units, or combined ergometrine/oxytocin 1 ml, has already been administered and this may be repeated.
- Administration of prostaglandins used in cases of uterine atony. Misoprostol (Cytotec) or carboprost (Hemabate) are the most common prostaglandin drugs used to increase uterine contractility for the treatment of PPH.

- The baby may be put to the breast to enhance the physiological secretion of oxytocin from the posterior lobe of the pituitary gland, thus stimulating a contraction.

5. Empty the uterus

- Once the midwife is satisfied that it is well contracted, she should ensure that the uterus is emptied.
- If the placenta is still in the uterus, it should be delivered; if it has been expelled, any clots should be expressed by firm but gentle pressure on the fundus.

6. Resuscitate the mother

- An intravenous infusion should be commenced while peripheral veins are easily negotiated.
- This will provide a route for an oxytocin infusion or fluid replacement.
- As an emergency measure, the mother's legs may be lifted up in order to allow blood to drain from them into the cen-

tral circulation.

- It is usually expedient to catheterize the bladder to ensure that a full bladder is not impeding uterine contraction and thus precipitating further bleeding, and to minimize trauma should an operative procedure be necessary.
- On no account must a woman in a collapsed condition be moved prior to resuscitation and stabilization.
- If the above measures are successful in controlling any further loss, administration of oxytocin, 40 units in 1 litre of intravenous solution (e.g. Hartmann's or saline) infused slowly over 8–12 hours, will ensure continued uterine contraction.
- This will help to minimize the risk of recurrence.
- Before the infusion is connected, 10 ml of blood should be withdrawn for haemoglobin estimation and for cross-matching compatible blood.
- If bleeding continues uncontrolled, the choice of further action will depend largely upon whether the placenta re-

mains undelivered.

A. Placenta delivered

- If the uterus is atonic following birth of the placenta, light fundal pressure may be used to expel residual clots while a contraction is present.
- If an effective contraction is not maintained, 40 units of Syntocinon in 1 litre of intravenous fluid should be started.
- The placenta and membranes must be re-examined for completeness because retained fragments are often responsible for uterine atony and may need to be removed manually, under anaesthetic.

B. Bimanual compression

- If bleeding continues, bimanual compression of the uterus may be necessary in order to apply pressure to the placental site.

- It is desirable for an intravenous infusion to be inprogress.
- The fingers of one hand are inserted into the vagina like a cone; the hand is formed into a fist and placed into the anterior vaginal fornix, the elbow resting on the bed.
- The other hand is placed behind the uterus abdominally, the fingers pointing towards the cervix.
- The uterus is brought forwards and compressed between the palm of the hand positioned abdominally and the fist in the vagina.
- If bleeding persists, a clotting disorder must be excluded before exploration of the vagina and uterus is performed under a general anesthetic
- Compression balloons may also be used to provide pressure on the placental site and if bleeding continues, ligation of the uterine arteries or hysterectomy may be considered.

C. Placenta undelivered

- The placenta may be partially or wholly adherent.

i. *Partially adherent*

- When the uterus is well contracted, an attempt should be made to deliver the placenta by applying CCT.
- If this is unsuccessful a doctor will be required to remove it manually.

ii. *Wholly adherent*

- Bleeding does not usually occur if the placenta is completely adherent. However, the longer the placenta remains in situ the greater is the risk of partial separation, which may give rise to profuse haemorrhage.

iii. *Retained placenta*

- This diagnosis is reached when the placenta remains undelivered after a specified period of time.
- The conventional treatment is to separate the placenta from the uterine wall digitally, effecting a manual remov-

al.

iv. *Breaking of the cord*

- If the placenta remains adherent, no further action should be taken before a doctor is notified.
- It is possible that manual removal may be indicated.
- If the placenta is palpable in the vagina, it is probable that separation has occurred and when the uterus is well contracted then maternal effort, with a fully upright posture, may be encouraged.
- As a last resort, if the woman is unable to push effectively then gentle fundal pressure may be used, following administration of a uterotonic drug.
- Great care is exercised to ensure that placental separation has already occurred and the uterus is well contracted.
- The woman should be relaxed as the midwife exerts downward and backward pressure on the firmly contracted fundus.

Manual removal of the placenta

- An intravenous infusion must first be sited and an effective anaesthetic in progress.
- If an effective epidural anaesthetic is already in progress, a top-up may be given in order to avoid the hazards of general anaesthesia.
- A spinal anaesthetic offers an alternative but where time is an urgent factor a general anaesthetic will be initiated.

Management

- Manual removal is performed with full aseptic precautions and, unless in a dire emergency situation, should not be undertaken prior to adequate analgesia being ensured for the woman.
- With the left hand, the umbilical cord is held taut while the right hand is coned and inserted into the vagina and uterus following the direction of the cord.
- Once the placenta is located the cord is released so that the left hand may be used to support the fundus abdom-

inally, to prevent rupture of the lower uterine segment.

- The operator will feel for a separated edge of the placenta.
- The fingers of the right hand are extended and the border of the hand is gently eased between the placenta and the uterine wall, with the palm facing the placenta.
- The placenta is carefully detached with a side-ways slicing movement.
- When it is completely separated, the left hand rubs up a contraction and expels the right hand with the placenta in its grasp.
- The placenta should be checked immediately for completeness, so that any further exploration of the uterus may be carried out without delay.
- A uterotonic drug is given upon completion.
- In very exceptional circumstances, when no doctor is available to be called, a midwife would be expected to carry out a manual removal of the placenta.

- Once she has diagnosed a retained placenta as the cause of PPH, the midwife must act swiftly to reduce the risk of onset of shock and exsanguination.
- It must be remembered that the risk of inducing shock by performing a manual removal of the placenta is greater when no anaesthetic is given.

Morbid adherence of placenta

- Very rarely, the placenta remains morbidly adherent; this is known as placenta accreta.
- If it is totally adherent, then bleeding is unlikely to occur and it may be left in situ to absorb during the puerperium.
- If, however, only part of the placenta remains embedded then the risks of fatal haemorrhage are high and an emergency hysterectomy may be unavoidable.

Trauma as a cause of PPH

- If bleeding occurs despite a well-contracted uterus, it is almost certainly the consequence of trauma to the uterus, vagina, perineum or labia, or a combination of these.
- external injuries are easily identified and torn vessels may be clamped with artery forceps prior to ligation.
- Internal trauma to the vagina, cervix or uterus more commonly occurs following instrumental or manipulative delivery.
- If bleeding persists when the uterus is well contracted and no evidence of trauma can be found, uterine rupture must be suspected.
- Following a laparotomy this is repaired, but if bleeding remains uncontrolled a hysterectomy may become inevitable.

Blood coagulation disorders causing PPH

- It can occur following severe pre-eclampsia, antepartum haemorrhage, massive PPH, amniotic fluid embolus, in-

trauterine death or sepsis.

- Fresh blood is usually the best treatment, as this will contain platelets and the coagulation factors V and VIII.
- The expert advice of a haematologist will be needed in assessing specific replacement products such as fresh frozen plasma and fibrinogen.

Maternal observation following PPH

- Once bleeding is controlled, the total volume lost must be measured and/or estimated as accurately as possible.
- Maternal pulse and blood pressure are recorded every 15 minutes and the temperature taken every 4 hours.
- The uterus should be palpated frequently to ensure that it remains well contracted and lochia lost must be observed.
- Intravenous fluid replacement should be carefully calculated to avoid circulatory overload.
- Monitoring the central venous pressure will provide an accurate assessment of the volume required, especially if

blood loss has been severe.

- Fluid intake and urinary output are recorded as indicators of renal function.
- The output should be accurately measured on an hourly basis by the use of a self-retaining urinary catheter.
- The woman may need high dependency care if closer monitoring is required, until her condition is stable.
- All records should be meticulously completed and signed contemporaneously.
- Continued vigilance will be important for 24–48 hours.
- As this woman will need a period of recovery, she will not be suitable for early transfer home.

SECONDARY POSTPARTUM HAEMORRHAGE

- Secondary postpartum haemorrhage is any abnormal or excessive bleeding from the genital tract occurring between 24 hours and 12 weeks postnatally.
- Bleeding is usually due to retention of a fragment of the

pla- centa or membranes, or the presence of a large uterine blood clot.

Signs and symptoms

- Typically occurring during the second week, the lochia is heavier than normal and will have changed from a serous pink or brownish loss to a bright red blood loss.
- The lochia may also be offensive if infection is a contributory factor.
- Sub involution, pyrexia and tachycardia are usually present.

Management

The following steps should be taken:

- call a doctor
- reassure the woman and her support person(s)
- rub up a contraction by massaging the uterus if it is still palpable

- express any clots
- encourage the mother to empty her bladder
- give a uterotonic drug either by the intravenous or intramuscular route.
- keep all pads and linen to assess the volume of blood lost.
- if bleeding persists, discuss a range of treatment options with the woman and, if appropriate, prepare her for theatre.
- If the bleeding occurs at home and the woman has telephoned the hospital, midwife or her GP, she should be told to lie down flat until professional assistance arrives (the front door should be left unlocked if the woman is alone).
- If the loss is severe or uncontrolled, the nearest emergency obstetric unit will be called and the mother and baby prepared for transfer to hospital.
- The doctor, midwife or paramedic who attends will start an intravenous infusion and ensure that the mother's

condition is stable first.

- Careful assessment is usually undertaken prior to the uterus being explored under general anaesthetic.
- The use of ultrasound as a diagnostic tool is invaluable in minimizing the number of mothers who have operative intervention.
- Ultrasound scsan to assess presence of products of conception. If retained products of conception cannot be seen on a scan, the mother may be treated conservatively with antibiotic therapy and oral ergometrine.
- The haemoglobin should be estimated prior to discharge.
- If it is below 9 g/dl, options for iron replacement should be discussed with the woman.
- The severity of the anaemia will assist in determining the most appropriate care, which may be dependent on whether or not the woman is symptomatic (e.g. feeling faint, dizzy, short of breath).
- Management may vary from increased intake of iron-rich

foods, iron supplements or, in extreme cases, blood transfusion.

- It is also important to discuss the common symptoms that may be experienced as a result of anaemia following PPH, including extreme tiredness and general malaise.
- Encourage the woman to seek assistance and stress the importance of making an appointment to see her GP to have her general health and haemoglobin levels checked.

Haematoma formation

- PPH may also be concealed as the result of progressive haematoma formation. This may be obvious at such sites as the perineum or lower vagina, but it is more difficult to diagnose if it occurs into the broad ligament or vault of the vagina.
- A large volume of blood may collect insidiously (up to 1 litre).
- Involution and lochia are usually normal, the main symp-

tom being increasingly severe maternal pain.

- This is often so acute that the haematoma has to be drained in theatre under a general anaesthetic.
- Secondary infection is a strong possibility.