Emergency Obstetric Care

Guidelines for Management

Dr. Sadiqua N. Jafarey
Dr. Azra Ahsan
Ms. Imtiaz Kamal

NCMNH
unicef

GENERAL MANAGEMENT

- If shock is present or anticipated begin treatment immediately.
- Rapidly evaluate condition of the woman and fetus and provide supportive care.
- Insert 2 large bore I/V cannula (16 gauge or more), at two different sites.
- From one of the cannula, first collect and send blood for Hb, Total Leucocyte Count, Platelets, Random Blood Sugar, Blood group, Rh status and urgent cross match if caesarean section is anticipated.
- Do not repeat the tests if they have been done recently.
- If ketotic rapidly infuse I/V fluids e.g. Normal Saline or Ringer's Lactate.
- If the urinary bladder is visibly distended encourage the woman to empty her bladder, if she cannot or operative delivery is anticipated catheterize and retain the urinary catheter.
- Test urine for ketones.
- Review partograph if available.
- If operative delivery is anticipated, **Refer** to a health care facility providing comprehensive EmOC.
- Counsel donors for blood transfusion.

- Arrange 2 pints of blood, if operative delivery is anticipated.

SPECIFIC MANAGEMENT

PROLONGED ACTIVE PHASE

Symptoms

- Regular uterine contractions / labour pains, which might become irregular and of shorter duration.

Signs

- Cervix dilates at a rate less than 1 cm/hour.
- Progress to the right of "Alert line" on the partograph.

Investigations (where possible)

If **not** already done, check:

- Hb, Random Blood Sugar.
- Urine for protein, sugar and ketones.
- Blood group and Rhesus (Rh) factor.
- Other tests may be needed in cases with complications.

Management

- If there are **no** signs **of cephalopelvic disproportion or obstruction** and the **membranes are intact,** rupture the

membranes with a Kocher clamp or an amniotic hook if available.

- Assess uterine contractions:

  - **If contractions** are **inefficient** (less than three contractions in 10 minutes, each lasting less than 40 seconds), suspect inadequate uterine activity and augment with oxytocin infusion.

  - **If contractions are efficient** (three contractions in 10 minutes, each lasting more than 40 seconds) suspect cephalopelvic disproportion, obstruction, malposition or malpresentation and manage accordingly (page 78-81).

- General methods of labour support may improve contractions and accelerate progress.

SPECIFIC MANAGEMENT

CEPHALOPELVIC DISPROPORTION

Symptoms

- Prolonged labour.
- Usually regular **efficient** uterine contractions, which may become inefficient later on.

Signs

- Secondary arrest of:
  - Descent of fetal presenting part (head not engaged).
  - Cervical dilatation (at times cervix may be fully dilated).
- Normal sized pelvis with a big baby or a small (contracted) pelvis with an average sized baby.
- Head may be large due to hydrocephalus.

Investigations (where possible)

If **not** already done, check:

- Hb, Random Blood Sugar.
- Urine for protein, sugar and ketones.
- Blood group and Rhesus (Rh) factor.
- Other tests may be needed in cases with complications.

Management

☞ **If cephalopelvic disproportion is confirmed and fetus is alive and normal**, deliver by caesarean section.

☞ **If the baby has hydrocephalus,** perform craniocentesis.

☞ **If the fetus is dead:**

- Deliver by craniotomy if cervix is fully or nearly fully dilated.
- If the **operator is not skilled to perform craniotomy,** deliver by caesarean section.

The best test to determine if a pelvis is adequate is a trial of labour. Clinical pelvimetry is of limited value.

SPECIFIC MANAGEMENT

OBSTRUCTED LABOUR

Symptoms

- Labour may or many not be prolonged.
- Efficient uterine contractions (3 contractions in 10 minutes, each lasting 40 seconds or more).

Signs

- Secondary arrest of:

  - Descent of fetal presenting part.
  - Cervical dilatation.

- Bandl's ring.
- Abnormal lie or presentation e.g. transverse / oblique lie, breech presentation or cephalic presentation with a large baby or a small pelvis.
- Large head / Hydrocephalus.
- Oedema of vulva / vagina / cervix.
- Cervix may be fully dilated.
- Cervix poorly applied to presenting part.
- May have genital tears if instrumental delivery is attempted.
- Maternal and fetal distress.

Note: look for signs of rupture of uterus.

Investigations (where possible)

If **not** already done, check:

- Hb, Random Blood Sugar.
- Urine for protein, sugar and ketones.
- Blood group and Rhesus (Rh) factor.
- Other tests may be needed in cases with complications.

Management

☞ **If the fetus is alive:**

- **The cervix is fully dilated** and the **head is at 0 station or below,** deliver by vacuum extraction / forceps. This situation is rare.

Rupture of an unscarred uterus is usually caused by obstructed labour.

- **The cervix is not fully dilated** or if the **fetal head is too high for vacuum extraction,** deliver by caesarean section.

The lower uterine segment is stretched and thinned out in prolonged / obstructed labour. Beware of extension of uterine incision during caesarean section.

☞ **If the baby has hydrocephalus:**

- Perform Craniocentesis:
  - If the cervix is dilated, drain Cerebro Spinal Fluid (CSF) through the fontanelles or suture lines, by a long wide bore needle.
  - In case of breech presentation, drain CSF through the foramen magnum after the body of the baby is delivered.
  - If the patient is not in labour, drain CSF through the anterior abdominal and uterine walls.

☞ **If the fetus is dead:**

- Deliver by craniotomy.
- If the **operator is not skilled to perform craniotomy,** deliver by caesarean section.

When performing a caesarean section and the cervix is fully dilated, the incision on the lower uterine segment should be a bit higher than usual, so that if extension occurs it will not involve the urinary bladder.

SPECIFIC MANAGEMENT

INADEQUATE UTERINE ACTIVITY

Symptoms

- Prolonged labour
- Inefficient uterine contractions / labour pains.

Signs

- Less than 3 contractions in 10 minutes each lasting less than 40 seconds.
- Slow or arrested progress in labour.

Investigations (where possible)

If **not** already done, check:

- Hb, Random Blood Sugar.
- Urine for protein, sugar and ketones.
- Blood group and Rhesus (Rh) factor.
- Other tests may be needed in cases with complications.

Management

If contractions are inefficient and **cephalopelvic disproportion and obstruction have been excluded,** the most probable cause of prolonged labour is inadequate uterine activity.

Inefficient contractions are less common in a multigravida than in a primigravida. Hence, every effort should be made to rule out disproportion in a multigravida before augmenting with Oxytocin.

- Rupture the membranes with, a Kocher clamp or an amniotic hook if available and augment labour using Oxytocin.

- Reassess progress by vaginal examination 2 hours after strong contractions have been established:

  - If **progress continues,** continue Oxytocin infusion and re-examine after 2 hours. Continue to follow progress carefully.

  - If there is **no progress** between examinations, deliver by caesarean section.

SPECIFIC MANAGEMENT

MALPRESENTATION OR MALPOSITION

Symptoms

- Prolonged first or second stage of labour.
- Contractions may be efficient / inefficient.

Signs

- Longitudinal lie with:
  - Cephalic presentation and malposition, occipito posterior and occipito transverse
  - Face presentation
  - Brow presentation
  - Breech presentation
- Transverse / oblique lie (shoulder presentation) with or without hand / cord prolapse.

Note: Cord may prolapse with any presentation.

Investigations (where possible)

If **not** already done, check:

- Hb, Random Blood Sugar.
- Urine for protein, sugar and ketones.
- Blood group and Rhesus (Rh) factor.
- Other tests may be needed in cases with complications.

Management

- If **Oblique / Transverse lie:**

  - If in early labour & intact membranes, perform **External Cephalic Version (ECV).**

  - If ECV fails, or is not advisable or if there is **hand / cord prolapse**, deliver by caesarean section.

- If the **head is presenting** and there is malposition (occipito posterior, occipito transverse), or malpresentation (face, brow), assess contractions and fetal condition:

- In Occipito **Posterior** position if:

  - Progress of labour is satisfactory and there is no fetal distress, await spontaneous rotation and delivery.
  - Contractions are inefficient; augment labour with Syntocinon.
  - Labour is delayed and / or there is fetal distress:

    - Perform caesarean section if:
      - Cervix is not fully dilated.
      - Head is not engaged.
      - There are signs of obstructed labour.

Perform Caesarean section, if there are signs of obstruction even if there is no fetal distress.

- Deliver by vacuum / forceps if:

  - Cervix fully dilated.
  - Head is engaged.

- In **Occipito Transverse** position: manage as Occipito Posterior position

- If the presentation is **Brow:**

  - The fetus is alive, perform caesarean section.

  - The fetus is dead and:

    - Cervix is not fully dilated, perform caesarean section.
    - Cervix is fully dilated, perform craniotomy.
    - If operator is not skilled to do craniotomy, perform caesarean section.

- If the presentation is **Face:**

  - **Mento Anterior Position**: Delivery of the baby is possible spontaneously or aided with forceps.
  - **Mento Posterior Position**:
    - If cervix is fully dilated perform caesarean section.
    - If cervix is not fully dilated, monitor descent, rotation and progress. If there are signs of obstruction, perform caesarean section.

- If the presentation is **Breech,** consider delivering vaginally, **if:**

  - Fetus is not too big.
  - Pelvis seems adequate on clinical examination.
  - Baby's head is flexed.

- No h/o previous caesarean section for cephalo pelvic disproportion.
- Presentation is flexed or extended breech and not footling.

Breech in Labour:

- In labour monitor progress using a partogram.
- When membranes rupture, examine immediately to exclude cord prolapse.
- Perform caesarean section if:
  - Cord prolapses and delivery is not imminent.
  - There is fetal distress or prolonged labour.
  - In second stage of labour the descent of presenting part is slow, suspect obstruction (avoid augmentation of labour with Oxytocin).

SPECIFIC MANAGEMENT

PROLONGED SECOND STAGE

Symptoms

- Prolonged second stage of labour.

Signs

- Uterine contractions may or may not be inefficient.
- Cervix fully dilated.
- Woman may or may not have the urge to push.
- Slow / no descent of the presenting part.

Investigations (where possible)

If **not** already done, check:

- Hb, Random Blood Sugar.
- Urine for protein, sugar and ketones.
- Blood group and Rhesus (Rh) factor.
- Other tests may be needed in cases with complications.

Management

Maternal expulsive efforts increase fetal risk by reducing the delivery of oxygen to the placenta. Allow spontaneous maternal "pushing", but do not encourage prolonged effort and holding the breath.

- **If malpresentation and obvious obstruction have been excluded,** augment labour with Oxytocin.

- If there is **no descent after augmentation:**

  - If the **head is not more than** 1/5 **above** the symphysis pubis or the leading bony edge of the fetal **head is at or below 0 station,** deliver by vacuum extraction or forceps.

  - If the **head is more than** 2/5 **above** the symphysis pubis or the leading bony edge of the fetal **head is above 0 station,** deliver by caesarean section.

If the descent of the presenting part is progressing well, strict time limits should not be used to diagnose prolonged expulsive phase of second stage of labour.

SPECIFIC MANAGEMENT

SHOULDER DYSTOCIA (STUCK SHOULDERS)

Symptoms

- Baby's head is delivered but the shoulders are stuck. (This is an acute emergency and the baby will die if not delivered quickly).

Signs

- The fetal head is delivered but remains tightly applied to the vulva.
- The chin retracts and depresses the perineum.
- Traction on the head fails to deliver the shoulder, which is caught behind the symphysis pubis.

Investigations (where possible)

- There is no time to order investigations. Relevant investigations can be done once the baby is delivered e.g. Hb, Random Blood Sugar, blood group and Rhesus (Rh) factor.

Management

- Be prepared for shoulder dystocia at all deliveries, especially if a large baby is anticipated.
- Have several persons available to help.

- Bring the patient to the edge of the table / bed.
- Make an adequate episiotomy to reduce soft tissue obstruction and to allow space for manipulation.
- With the woman on her back, ask her to flex both thighs, bringing her knees as far up as possible towards her abdomen (see below). Ask two assistants to push her flexed knees firmly up onto her abdomen.
- Apply firm, continuous traction downwards on the fetal head to move the shoulder that is anterior under the symphysis pubis.

Note: Avoid excessive traction on the head as this may result in brachial plexus injury.

- Have an assistant simultaneously apply suprapubic pressure downwards to assist delivery of the shoulder.

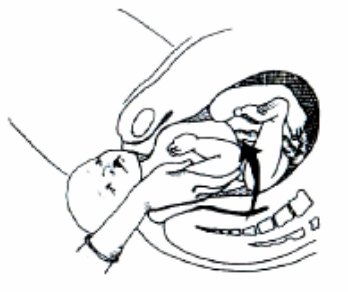
Note: Do not apply fundal pressure. This will further impact the shoulder and can result in uterine rupture.

If the shoulder is still not delivered:

- Insert a hand into the vagina.
- Apply pressure to the shoulder that is anterior in the direction of the baby's sternum to rotate the shoulder and decrease the shoulder diametre.
- If needed and possible, apply pressure to the shoulder that is posterior in the direction of the sternum.

If the shoulder is still not delivered despite the above measures:

- Insert a hand into the vagina and grasp the humerus of the arm that is posterior and, keeping the arm flexed at the elbow, sweep the arm across the chest. This will provide room for the shoulder that is anterior to move under the symphysis pubis (see below).



Grasping the Humerus of the Arm that is Posterior and Sweeping the Arm Across the Chest

If all of the above measures fail to deliver the shoulder, other options include:

- Fracture the clavicle (cleidotomy) to decrease the width of the shoulders and free the shoulder.
- Apply traction with a hook in the axilla to extract the arm that is posterior.

GENERAL MANAGEMENT

- **If shock is present or anticipated**, immediately begin treatment.

- Insert large bore I/V cannula (16 gauge or more). Insert 2 cannula, at different sites, if in shock.

- From one of the cannula collect blood for estimation of Hb, Total Leucocyte Count, Platelet Count, Random Blood Sugar, Blood group and Rh status and cross match.

- Ensure adequate hydration by mouth or I/V infusions using Normal Saline or Ringer's Lactate. In severe cases, it is necessary to give intravenous fluids at first. If the woman is conscious and there is no indication for the need of a general anaesthetic in the next few hours, she should be given oral fluids. In mild cases, increase oral fluid intake.

- If patient is conscious and alert, give Paracetamol, 500 mg, by mouth, every 4-6 hours, to minimize pain and or lower temperature.

Note: These patients might need to be taken to the operation theatre for surgical procedures, therefore give these tablets only with a sip of water.

- Use a fan or tepid sponge to help decrease temperature.

- In seriously ill patients catheterize the urinary bladder to accurately monitor the urine output.

- Monitor temperature, pulse, blood pressure, urine output and fluids given orally or intravenously.

- Maintain accurate fluid balance chart.
- Keep accurate records of medicines given.
- Prevent the spread of infection and cross infection.
- Prescribe and give antibiotics according to the clinical situation.
- If there is a possibility that the woman was exposed to tetanus (cow dung, mud or herbs were inserted in the vagina), and there is uncertainty about her vaccination history, then give her Tetanus toxoid and anti tetanus serum.
- Encourage bed rest.
- Counsel blood donors, if blood is required.

- Arrange 2-3 units of blood, if severely anaemic and transfuse as necessary. Use packed cells, if available.

SPECIFIC MANAGEMENT

PUERPERAL SEPSIS

Symptoms

- Fever / chills.
- Usually light vaginal bleeding.
- Lower abdominal pain.
- Purulent, foul-smelling lochia.

Signs

- Tender uterus.
- Size of the uterus bigger than expected.
- Shock (In cases with bacteraemia & septicaemia).

Investigations (where possible)

- Hb, Total Leucocyte Count, Platelets and Erythrocyte Sedimentation Rate (ESR), bedside clotting test.
- Blood group and Rhesus (Rh) factor.
- High Vaginal Swab / Urine / Blood for culture and sensitivity in appropriate cases.
- Ultrasound to detect retained pieces of placenta / pelvic abscess.
- Other tests may be needed in cases with complications.

Management

☞ If the woman is not very sick **(mild infection)** (e.g. there is no or mild fever, pulse is not very rapid and patient is alert), prescribe oral antibiotics like:

- Co-Amoxiclav (Augmentin), 375mg/625mg, every 8 hours, for 7 days

OR

- Amoxicillin, 1g, stat, followed by 500 mg, every 8 hours, for 7 days

PLUS

- Metronidazole, 400 or 500 mg, every 8 hours, for 7 days

☞ If the woman is very sick **(severe infection)** (e.g. very high fever, rapid pulse, confused), often more than one kind of bacteria is involved.

- Refer

- A combination of antibiotics should be given to provide as broad coverage as possible **until the woman is fever-free for 48 hours:**
  - Ampicillin, 1g, I/V, every 6 hours

    PLUS
  - Gentamicin, 80 mg, I/V, every 8 hours

    PLUS
  - Metronidazole, 500 mg, I/V, every 8 hours

Continue oral antibiotics (Ampicillin and Metronidazole) for at least 5 days.

- If fever is still present 48 hours after initiating antibiotics, re-evaluate and revise diagnosis / treatment.

- If there is a possibility that the woman was exposed to tetanus (cow dung, mud or herbs were inserted in the vagina), and there is uncertainty about her vaccination history, then give her Tetanus Toxoid (TT), 0.5ml, I/M and Anti Tetanus Serum, 1500 units, I/M. Repeat TT after 4 weeks for future protection.

- **If retained placental fragments** are suspected, (Uterus soft, bigger than expected with heavy lochia or blood clots), perform a digital exploration of the uterus to remove clots and large pieces of products of conception. Use ovum forceps or a large curette, if required. Give at least one dose of combination antibiotics I/V before the procedure and continue for 5 days.

- If there is **no improvement** with conservative measures and there are **signs of general peritonitis** (fever, rebound tenderness, abdominal pain), perform a laparotomy to drain the pus.

- If the uterus is **necrotic and septic,** perform subtotal / total hysterectomy.

SPECIFIC MANAGEMENT

PELVIC ABSCESS

Symptoms

- Lower abdominal pain and distension.
- Persistent spiking fever / chills.
- Foul smelling lochia.
- Diarrhoea

Signs

- Tender uterus
- On vaginal examination, bulge is felt in pouch of Douglas.
- Poor response to antibiotics.

Investigations (where possible)

- Hb, Total Leucocyte Count, Platelets and Erythrocyte Sedimentation Rate (ESR), bedside clotting test.
- Blood group and Rhesus (Rh) factor.
- Send High Vaginal Swab / Urine / Blood for culture and sensitivity in appropriate cases.
- Ultrasound to detect retained pieces of placenta / pelvic abscess.
- Other tests may be needed in cases with complications.

Management

- Give at least one dose of a combination of I/V antibiotics before draining the abscess and continue until the woman is fever-free for 48 hours:
  - Ampicillin, 1 g, I/V, every 6 hours

    PLUS
  - Gentamicin, 80 mg, I/V, every 8 hours

    PLUS
  - Metronidazole, 500 mg, I/V, every 8 hours

  Continue oral antibiotics (Ampicillin and Metronidazole) for at least 5 days.

- If the abscess is **fluctuant in the cul-de-sac:**
  - Drain the pus through the cul-de-sac (colpotomy).
  - If the **spiking** fever continues, perform a laparotomy to drain the pus and peritoneal lavage if needed (wash out).

SPECIFIC TREATMENT

PERITONITIS

Symptoms

- Loss of appetite.
- Nausea / vomiting.
- Low-grade fever / chills.
- Lower abdominal pain.

Signs

- Abdominal distension.
- Genralised abdominal tenderness.
- Rebound tenderness.
- Absent bowel sounds.
- Shock (In cases with bacteraemia & septicaemia).

Investigations (where possible)

- Hb, Total Leucocyte Count, Platelets and Erythrocyte Sedimentation Rate (ESR).
- Urea, Creatinine & Electrolytes.
- Bedside clotting test.
- Blood group and Rhesus (Rh) factor.
- Send High Vaginal Swab / Urine / Blood for culture and sensitivity in appropriate cases.
- Ultrasound to detect retained pieces of placenta / pelvic abscess.
- Other tests may be needed in cases with complications.

Management

- Do not allow oral fluids or diet.
- Pass naso-gastric tube and aspirate contents of the stomach by suction.
- Infuse I/V fluids.
- Give a combination of antibiotics until the woman is fever-free for 48 hours:
  - Ampicillin, 1 g, I/V, every 6 hours

  PLUS

  - Gentamicin, 80 mg, I/V, every 8 hours

  PLUS

  - Metronidazole, 500 mg, I/V, every 8 hours
- Continue oral antibiotics (Ampicillin and Metronidazole) for at least 5 days.

If not responding in 48-72 hours perform laparotomy for peritoneal lavage (wash-out).

The Asphyxiated Baby

Assessment

Check

- **Airway:**
  - Clear or not?
- **Breathing:**
  - Is the baby breathing?
  - What is the respiratory rate?
  - Is the breathing regular?
  - Is there indrawing of the chest?
  - Is the baby grunting?
- **Circulation:**
  - What is the heart rate?
  - What is the colour of the baby?

Blue / Pale: Is it central or peripheral? Most of the babies have some peripheral cyanosis of their fingers or toes, but central cyanosis, for example if the tongue, tip of the nose are blue then it requires immediate intervention.

Immediate Management

The following situations require immediate management: no breathing / gasping / breathing with difficulty and cyanosis (blueness) / pallor.

No Breathing / Gasping / Breathing with Difficulty and / or Cyanosis / Pallor

General Management

- Dry the baby, remove the wet cloth and wrap the baby in a dry, warm cloth.
- Clamp and cut the cord immediately if not already done.
- Move the baby to a firm, warm surface under a radiant heater, if available, for resuscitation.
- Observe standard infection prevention practices when caring for and resuscitating a newborn.

Resuscitation

Box 1: Resuscitation Equipment

To avoid delays during an emergency situation, it is vital to **ensure that the equipment is in good working condition:**

- Heat source and light source (Infant Warmer – if available)
- Suction source – Wall / mobile / Mucous extractors – Bulb suction
- Oxygen source – Wall / Oxygen cylinder
- Appropriate size masks according to the expected size of the baby (size 1 for a normal weight newborn and size 0 for a small newborn) and an appropriate self-inflating bag with a pressure release valve.
- Airway sizes 000, 00, 0.

In order to check that the mask is working, block the mask by making a tight seal with the palm of your hand and squeeze the bag:

- If you feel pressure against your hand, the bag is generating adequate pressure.
- If the bag reinflates when you release the grip, the bag is functioning properly.

Clear The Airway

- Positioning the newborn (Fig. 1, below):

  - Place the baby on its back.

  - Position the head in a slightly extended position to straighten the airway.

  - Keep the baby wrapped or covered, except for the face and upper chest.

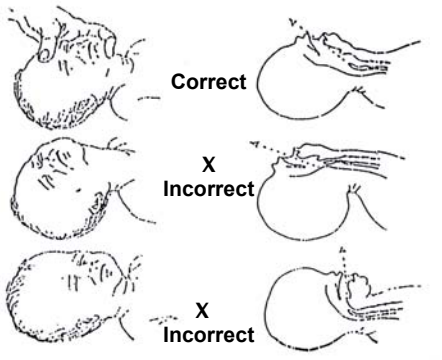


Fig. 1: Positioning the Head for Resuscitation

- Clear the airway by suctioning first the mouth and then the nostrils.

If blood or meconium is in the baby's mouth or nose, suck it out immediately to prevent aspiration.

Note: Do not apply suction deep in the throat as this may cause the baby's heart to slow or the baby may stop breathing. If using a suction machine, do not exceed suction pressure of more than 100 cm of water.

Stimulate Breathing

- Provide stimulation by drying the baby.
- Provide additional stimulation by flicking the baby's sole or rubbing the skin (see below).

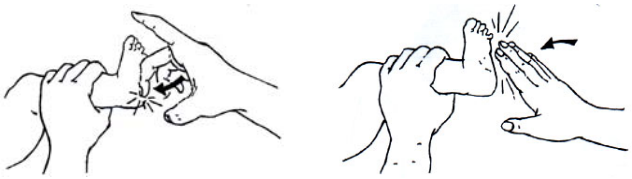


Fig. 2: Flicking and Rubbing the Sole

- Provide oxygen 1 – 2L/min.

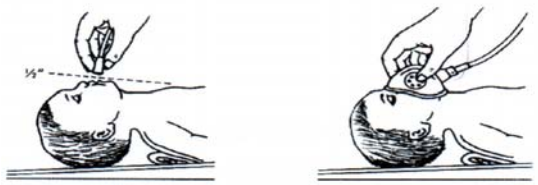


Fig. 3: Giving Oxygen by Tube and Face Mask

Every obstetric care provider must be trained to provide basic neonatal resuscitation.

Reassess the baby:

- If the **newborn starts crying or breathing,** no further immediate action is needed. Proceed with initial care of the newborn.

- If the **baby is still not breathing** (apnoeic), or gasping, and remains cyanosed, or has heart rate below 100/min, start Positive Pressure Ventilation (PPV) with bag and mask.

Ventilate the Newborn with Bag and Mask

- It is possible to resuscitate the baby with a bag and mask (even without oxygen), for as long as 30 minutes.

- Recheck the newborn's position. The neck should be slightly extended (Fig. 1, page 99).

- Connect the bag to an oxygen source.

  - Place an adequate size airway (Fig. 4, below).

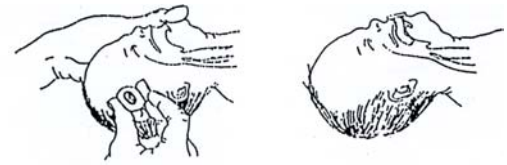


Fig. 4: Insertion of Airway

- Place the mask on the newborn's face. It should cover the chin, mouth and nose (Fig. 5, below).

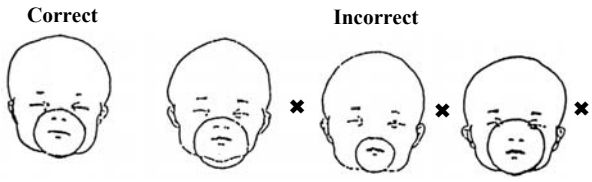


Fig. 5: Choice and Positioning of Face Mask

- Form a seal between the mask and the baby's face, to prevent leakage of air or oxygen (Fig. 6, below)

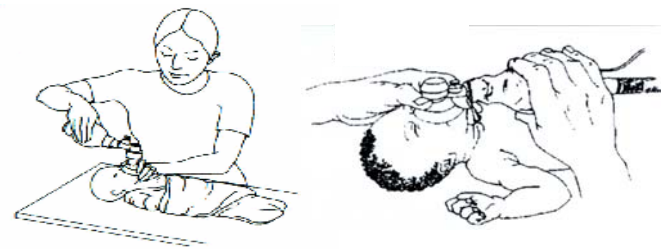


Fig. 6: Ventilation with Bag and Mask

- Check the seal by ventilating twice and observing the rise of the chest.
- Squeeze the bag with a thumb and two fingers only (Fig 7, page 103)

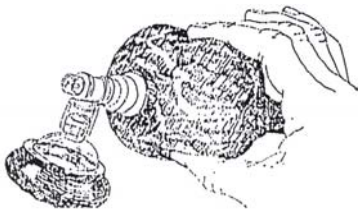


Fig. 7: Finger Tip Pressure for Insufflation

- Once the seal is ensured and chest movement is present, ventilate the newborn. Maintain the correct rate (approximately 40 breaths per minute) and the correct pressure (observe the chest for an easy rise and fall):
  - If the **baby's chest is rising,** ventilation pressure is probably adequate.
  - If the baby's chest is not rising:
    - Recheck and correct, if necessary, the position of the newborn (Fig. 1, page 99).
    - Reposition the mask on the baby's face to improve the seal between mask and face.
    - Repeat suction of mouth and nose to remove mucus, blood or meconium from the airway.
    - Ensure there is an adequate sized airway in place.

If the **mother of the newborn has received Pethidine or Morphine** prior to delivery, and the baby has respiratory depression, administer Naloxone (Box 2, page 106)

- **Provide Positive Pressure Ventilation (PPV) for 1 minute** and then stop and quickly **assess** if the newborn is breathing spontaneously:

  - **No further PPV is needed if:**

    - Breathing is spontaneous (30-60 breaths per minute) and regular.
    - No indrawing of the chest and no grunting.
    - No cyanosis.
    - Heart rate is above 100/minute.

- If the **newborn remains pink,** continue observing breathing for 1 - 2 minutes:

  - **No further resuscitation is needed if:**

    - Breathing is normal (30-60 breaths per minute).
    - No indrawing of the chest.
    - No grunting for 1 minute.
    - Heart rate more than 100 per minute.

- If there is **no spontaneous** / **regular breathing and the baby is cyanosed**, continue ventilating.

- **Provide chest compressions.**

- **Check the heart rate:**

  - If heart rate is below 60 or between 60-80 and not increasing, **start external cardiac compressions** (Fig. 8, page 105).

- Exert pressure over mid sternum with both the thumbs (Fig. 8, below) at a ratio of 3:1 (3 cardiac compressions to 1 breath). Continue resuscitating (PPV) by mouth to mouth or bag and mask ventilation.

Fig. 8: Oxygenation by Bag & Mask and External Cardiac Massage

- **If the newborn is not breathing regularly and heart rate is not improving after 20 minutes of ventilation and cardiac compressions:**

  - Transfer the baby to the most appropriate facility for the care of sick newborns.

  - During the transfer, keep the newborn warm and ventilated.

- If there is **no gasping or breathing at all after 20 minutes of ventilation**, stop ventilating, as the baby is dead. Provide emotional support to the family.

Box 2:

Counteracting Respiratory Depression in the Newborn Caused by Narcotic Drugs

If the **mother has received Pethidine or Morphine,** the newborn may have **respiratory depression**. **Naloxone is the antidote** for this.

Note: If the mother is a known narcotic drug addict, do not administer Naloxone to the newborn.

- If there are **signs of respiratory depression,** begin resuscitation immediately:

  - After vital signs have been established, give Naloxone, 0.1 mg/kg body weight, I/V to the newborn i.e. 0.25 to 0.3 mg to an average sized baby.

  - **If the infant has adequate peripheral circulation,** Naloxone may be given I/M after successful resuscitation. Repeated doses may be required to prevent recurrent respiratory depression.

- If there are **no** signs **of respiratory depression,** but **Pethidine or Morphine was given within 4 hours of delivery,** observe the baby for signs of respiratory depression and treat as above if they occur.

Box 3: Oxygen for Neonates

When using oxygen, remember:

- Supplemental oxygen should only be used for difficulty in breathing or cyanosis.
- If the baby is having **severe indrawing of the chest, is gasping for breath or is persistently cyanotic,** give oxygen by a tube close to the baby's face (Fig. 3, page 100) (do not insert into the mouth or nose) or by a face mask or oxygen hood.

Note: Indiscriminate use of supplemental oxygen for premature infants has been associated with the risk of blindness.

In community settings with no facilities, neonatal resuscitation is possible by:

- **Cleaning the mouth and the nose** (Fig. 9).
- **Employing postural drainage of secretions** (Fig. 10).
- **Mouth to mouth resuscitation** (Fig. 11).

Fig. 9: Cleaning the Mouth and Nose

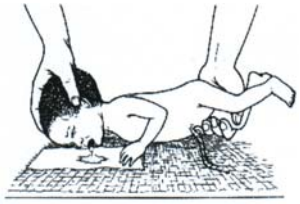


Fig. 10: Postural Drainage of Secretions

Fig. 11: Mouth to Mouth Resuscitation

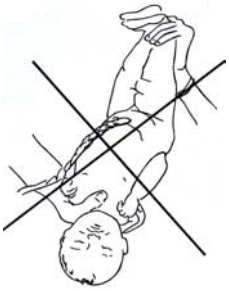


Fig. 12: Do Not Turn the Baby Up Side Down

DO NOTs of Resuscitation:

- Do not persist in unnecessary and aggressive pharyngeal suctioning as it may induce reflex bradycardia (slowing of the heart rate).
- Do not slap the baby; gentle flicking of the soles and rubbing of the skin is enough.
- Do not turn the baby upside down (Fig. 12, page 108)
- Do not blow too hard when performing mouth-to-mouth resuscitation (Fig. 11, page 108). Just the air in the mouth is sufficient.
- Do not give intravenous bicarbonate until after respiration is well established.
- Do not let the baby get cold during resuscitation.
- Do not hesitate to call for help.

Preface

This pocket book on Emergency Obstetric Care (EmOC) is meant to serve as a guide for the management of major obstetric complications which result in maternal and/or neonatal death and disability. It can be used for quick and easy reference by family physicians, residents, postgraduate students, midwives and nurses.

The information given here has been taken from the Manual on EmOC developed by a team of obstetricians, midwives, neonatologists and anaesthetists from all over the country. For details of each condition and management at higher levels of care you will need to refer to the EmOC Manual. The page numbers in the Manual where you will find the management details have been listed in the Reference Table at the end of this pocket book.

You will note single and double lines, as shown below, that interrupt the text.

(Single line)

(Double lines)

These lines signify management limitations depending on the skills of the health care provider and/or facilities available for carrying out the emergency procedures. Above the single line, are steps to provide basic obstetrical care and to stabilize the woman's condition before referral (if required) to the next level of care. It can be given at the primary care level and even at home. For management between single and double

lines, a higher level of competence and facilities are needed to treat the condition. Below the double lines, tertiary or specialized skills and facilities are required.
We hope that this pocket book will provide you the help you need to save maternal and newborn lives.

Sadiqua Jafarey **Azra Ahsan** **Imtiaz Kamal**

GENERAL MANAGEMENT

- If shock is present or anticipated, immediately begin treatment. Even if signs of shock are not present, keep shock in mind as you evaluate the woman further, because her condition may worsen rapidly.

- Assess the amount of blood loss.

- If the woman is in shock without obvious heavy bleeding consider ectopic pregnancy.

- If bleeding heavily or in cases of suspected ectopic pregnancy, insert two large bore I/V cannulas (16 gauge or the largest available), at different sites.

- From one of the cannula, first collect blood for estimation of Haemoglobin (Hb), and blood Grouping and cross matching.

- Infuse Normal Saline or Ringer's Lactate solution. Infuse rapidly if in Shock.

- If in pain, give Pethidine, 50-100 mg, I/M **OR** Nalbuphine Hydrochloride (Nubain), 10-20 mg, I/M **OR** Diclofenac, 75 mg, I/M **OR** Diclofenac, 100 mg, rectal suppository.

- Examine to determine the type of Abortion & manage accordingly.

- Exclude the presence of complications.

- Perform bedside clotting test in cases with suspicion of coagulopathy.

- If clinically indicated & facilities are available, perform ultrasound scan to confirm diagnosis.

- Arrange 2-4 units of blood, if bleeding heavily.
- Transfuse blood if indicated. In emergencies and life saving situations, consider transfusing uncross matched O negative blood or ABO group specific uncross matched blood.

If the woman is stable, not bleeding heavily and there are no life threatening complications, oxygen and I/V fluids are **not** required.

- If possible, check woman's blood group to determine Rhesus (Rh) status in all cases of abortion. If she is Rh – (negative) and pregnancy is less than 20 weeks, give 250 i.u. of anti D immunoglobulins, I/M, within 72 hours of abortion. (After 20 weeks, give 500 i.u). This will prevent formation of Rh antibodies, which can have harmful effects on subsequent babies.
- Arrange follow up.
- If appropriate, advise regarding family planning, including emergency contraception.

SPECIFIC MANAGEMENT

INEVITABLE ABORTION

Symptoms

- History of amenorrhoea.
- Usually heavy vaginal bleeding.
- Cramping / lower abdominal pain.
- No expulsion of products of conception.

Signs

- Shock may or may not be present / pallor.
- Heavy bleeding.
- Dilated cervix.
- Uterus corresponds to dates.
- Tender uterus.

Investigations (where Possible)

- Haemoglobin.
- Blood group and Rhesus (Rh) factor.

Management

☞ If pregnancy is **less than 12–14 weeks,** arrange for evacuation of uterus. Meanwhile:

- Give Ergometrine, 0.2 mg, I/M **OR** Ergometrine, 0.2 mg, + Syntocinon, 5 units, (Syntometrine), I/M.
- If bleeding continues start Syntocinon, 40 units added to 1 litre of Normal Saline or Ringer's Lactate, I/V infusion at 40 drops/min **or** give Misoprostol (available as Cytotec), 400 mcg (4 tabs of 100 mcg or 2 tabs of 200 mcg each), orally / rectally. Repeat once in 4 hours if needed.
- If products of conception (POC) are seen or felt in the vagina or cervix, remove it with fingers or sponge forceps.

- Perform evacuation of uterus.
- If facilities to perform evacuation of uterus do not exist, transfer to a facility providing comprehensive EmOC.

☞ If pregnancy is **more than 12 –14 weeks:**

- Give Ergometrine, 0.2 mg, I/M **OR** Ergometrine, 0.2 mg + Syntocinon, 5 units, (Syntometrine), I/M.
- Await expulsion of products of conception. To help expulsion of products of conception, start Syntocinon infusion as described above **or** give Misoprostol, 200 mcg (2 tabs of 100 mcg each or 1 tablet of 200 mcg), orally / rectally (repeat in 4-6 hours if needed to a maximum of 800 mcg).

- If needed, evacuate the uterus to remove any remaining products of conception.

SPECIFIC MANAGEMENT

INCOMPLETE ABORTION

Symptoms

- History of amenorrhoea.
- Usually heavy vaginal bleeding.
- Cramping / lower abdominal pain.
- Partial expulsion of products of conception.

Signs

- Shock may or may not be present / pallor.
- Heavy vaginal bleeding.
- Dilated cervix.
- Uterus smaller than dates.

Investigations (where Possible)

- Haemoglobin.
- Blood group and Rhesus (Rh) factor.

Management

In addition to general measures assess vaginal bleeding and arrange to evacuate the uterus.

- Give Ergometrine, 0.2 mg, I/M **OR** Ergometrine, 0.2 mg + Syntocinon 5 units, (Syntometrine), I/M.

- If bleeding is heavy, start Syntocinon infusion (Add 40 units of Syntocinon to a litre of Normal Saline or Ringer's Lactate and start at 40 drops / min) **or** give Misoprostol, 400 mcg (4 tabs of 100mcg each or 2 tabs of 200mcg each), (available as Cytotec), orally / rectally. Repeat once in 4 hours if needed.
- If products of conception are seen or felt in vagina or cervix, remove it with fingers or sponge forceps.

- Evacuate the uterus to remove products of conception, preferably by manual vacuum aspiration or by sponge forceps and if necessary curettage.

SPECIFIC MANAGEMENT

SEPTIC ABORTION

Symptoms

- Amenorrhoea / ±h/o induced abortion.
- Foul-smelling vaginal discharge / bleeding.
- Fever with or without rigors.
- Lower abdominal pain.
- May or may not give h/o passing products of conception.
- Malaise

Signs

- Shock may or may not be present.
- Restless / anxious / toxic looking / dehydrated.
- Tender / rigid abdomen.
- Rebound abdominal tenderness.
- Tender, soft uterus.
- Purulent cervical discharge / os may be open.
- Tenderness in the fornices and on moving the cervix.

Investigations (where Possible)

- Haemoglobin, Total Leucocyte Count, Platelet Count, Random Blood Sugar.
- Blood group and Rhesus (Rh) factor.
- Pelvic and Abdominal Ultrasound.

- Culture and sensitivity of High Vaginal Swab (HVS) / Cervical Swab / Urine.
- In cases of severe infection, blood should also be sent for culture and sensitivity.

Management

- Give treatment of shock if present or anticipated.

- Simultaneously obtain relevant history specially history of induced abortion and by whom.

- If bleeding is heavy, give Ergometrine, 0.2 mg, I/M **OR** Ergometrine 0.2 mg + Syntocinon 5 units, (Syntometrine), I/M and start Syntocinon infusion (Add 40 units of Syntocinon to a litre of Normal Saline or Ringer's Lactate and start at 40 drops / min).

- Look for evidence of retained products of conception (clinical / ultrasound). Remove if seen or felt in the vagina or cervical os.

- Look for the presence of foreign body in the vagina e.g. herbs, local medications and caustic substances, remove the foreign body and clean the vagina with antiseptics, like Chlorhexidine solution.

- Look for evidence of injury to genital tract, bowels, urinary bladder etc.

In cases of **mild infection**, prescribe oral antibiotics for 5-7 days:

- Co-Amoxiclav, (Augmentin), 375 mg, every 8 hours

PLUS

- Metronidazole, 400 mg, every 8 hours

- If there is evidence of **severe infection** start I/V antibiotics such as:

  - Ampicillin, 1g, I/V, every 6 hours

  PLUS

  - Gentamycin, 80 mg, I/V, every 8 hours

  PLUS

  - Metronidazole, 500 mg, I/V, every 8 hours

Continue I/V antibiotics till fever free for 48 hours, and then continue oral antibiotics for the next 5-7 days.

- If there is a possibility that the woman was exposed to tetanus, and there is uncertain history of vaccination give Tetanus Toxoid (TT), 0.5 ml, I/M **and** Anti tetanus serum, 1500 units, I/M. (Repeat TT after 4 weeks for future protection).

- Perform evacuation of uterus after stabilizing the patient and giving I/V antibiotics.

- Repair any cervical or vaginal tears.

- In cases with suspicion of Gas gangrene, refer to a tertiary health facility.

- If there is evidence of injury to the uterus, urinary bladder or bowels, laparotomy should be done in the health facility, where the help of a surgeon, if needed, is available to deal with injuries of the bowels, bladder etc. Suction evacuation of the uterus should be done at the same time.

- If the couple's family is complete, discuss and perform tubal ligation, at the time of laparotomy.

- If uterus is necrotic or beyond repair perform subtotal / total hysterectomy. Conserve the ovaries if healthy.

If Unsafe Abortion is suspected, examine for signs of infection or uterine, vaginal or bowel injury.

SPECIFIC MANAGEMENT

ECTOPIC PREGNANCY (RUPTURED / UNRUPTURED)

Symptoms

- History of amenorrhoea.
- Slight vaginal bleeding.
- Abdominal / shoulder pain.
- ±Fainting / syncope.

Signs

- ±Shock
- Pallor
- ±Abdominal distension / Free fluid in abdomen.
- Rebound abdominal tenderness.
- Uterus slightly larger and softer than normal.
- Closed cervix.
- Cervical motion tenderness.
- ±Tender adnexal mass (examine gently as unruptured ectopic pregnancy might rupture).

Investigations (where Possible)

- Haemoglobin, Random Blood Sugar.
- Blood group and Rhesus (Rh) factor.
- Serum B- Human Chorionic Gonadotrophin (B-HCG) / Urine pregnancy test.
- Pelvic and Abdominal Ultrasound.
- Culdocentesis

Management

Immediate Management:

- Cross-match blood and arrange for immediate laparotomy.

Do not wait for blood before performing surgery.

- At surgery, inspect both ovaries and fallopian tubes:
  - If there is **extensive damage to the tubes,** perform **salpingectomy (**the bleeding tube and the products of conception are excised together). This is the treatment of choice in most cases.
  - If there is **little tubal damage,** perform **salpingostomy** (the products of conception can be removed and the tube conserved. This should be done only when the conservation of fertility is very important to the woman, as the risk of another ectopic pregnancy is high.

Normal ovaries should not be removed.

Subsequent Management and Follow Up:

- Prior to discharge counsel the woman about:

  - Prognosis for fertility.
  - Increased risk of future ectopic pregnancy.
  - Family planning.

- Correct anaemia with Ferrous Sulfate **or** Ferrous Fumerate, 60 mg, by mouth, daily, for 6 months.

Schedule a follow-up visit at 4 weeks.

Ectopic pregnancy is a great deceiver. In any woman of reproductive age with unusual abdominal complaints, "think ectopic".

SPECIFIC MANAGEMENT

MOLAR PREGNANCY

Symptoms

- Amenorrhoea
- Light or heavy vaginal bleeding.
- Cramping / lower abdominal pain.
- Expulsion of products of conception which resemble grapes
- / Or there may be no expulsion of products of conception.
- Nausea / vomiting.

Signs

- Uterus larger than dates.
- Uterus softer than normal.
- Dilated / closed cervix.
- May have bilateral ovarian cysts.
- Early onset of pre-eclampsia.
- Usually no evidence of a fetus.

Investigations (where Possible)

- Haemoglobin, Total Leucocyte Count, Platelet Count, Random Blood Sugar.
- Blood group and Rhesus (Rh) factor.
- Quantitative urine pregnancy test / Serum B- Human Chorionic Gonadotrophin (B-HCG).
- Pelvic Ultrasound Scan.

Management

- If the diagnosis of molar pregnancy is certain, evacuate the uterus:
  - If cervical dilatation is needed, use a paracervical block.
  - Use vacuum aspiration. Manual vacuum aspiration is safer and associated with less blood loss. More than one syringe will be required to aspirate the contents quickly. Great care should be taken to prevent perforation of uterus, if aspiration is done with a metal cannula and electric suction.
- Infuse Oxytocin, 20 units in 1litre I/V fluids (Normal Saline or Ringer's Lactate), at 60 drops per minute, to prevent haemorrhage, once evacuation is under way.

Subsequent Management and Follow Up:

- Recommend a hormonal family planning method for at least 1 year, to prevent pregnancy. Tubal ligation may be offered, if the woman has completed her family.
- Follow up every 8 weeks for at least 1 year with urine pregnancy tests / Serum B-HCG because of the risk of persistent trophoblastic disease or choriocarcinoma. If the urine pregnancy test is not negative, or serum B-HCG is not within normal limits after 8 weeks, or becomes positive again within the first year, refer the woman to a tertiary care centre for further follow-up and management.

GENERAL MANAGEMENT

- **Get all possible help.** Urgently mobilize all available personnel, as team management improves patient care.

- Rapidly evaluate general condition of the woman including blood pressure, pulse, respiration, and temperature. Assess the fetal condition and estimate the amount of blood loss (visible / hidden).

Do not do a vaginal examination at this stage.

- If **Shock is present or anticipated,** immediately begin treatment. Remember her status may worsen rapidly.

- Insert two large bore I/V cannula (gauge 16 or more), each at different site.

- From one of the cannula, first collect blood for estimation of Hb, Random Blood Sugar, Blood Group and cross match.

- Perform bedside clotting test if coagulopathy is suspected.

- Infuse I/V fluids like Normal Saline or Ringer's Lactate. Infuse rapidly if in shock.

- If in pain give Pethidine, 50-100 mg, I/M **OR** Nalbuphine Hydrochloride (Nubain), 10-20 mg, I/M.

- If bleeding is heavy, pass a Foley's catheter and monitor urine output.

- Keep a record of the infused fluids and maintain a strict fluid balance chart.
- If any surgical intervention is anticipated, do not allow any fluids or food orally.
- Monitor blood pressure, pulse, respiration, temperature, fetal condition and the amount of blood loss every 15-30 minutes.
- If there is heavy bleeding or evidence of fetal distress, urgent delivery will be necessary.
- If comprehensive EmOC facilities are not available**, Refer.**
- Counsel donors for blood transfusion.

- Arrange at least 2 – 4 units of blood, if there is heavy bleeding.
- Transfuse blood if indicated. In emergencies and life saving situation, consider transfusing uncross matched O negative blood or ABO group specific uncross matched blood.

SPECIFIC MANAGEMENT

ABRUPTIO PLACENTAE

Symptoms

- Vaginal bleeding after 28 weeks gestation.
- Intermittent or constant abdominal pain.
- Decreased / absent fetal movements.
- There may be h/o high blood pressure, external version or trauma to the abdomen.

Signs

- Shock may be out of proportion to the amount of visible blood loss.
- Tense / tender uterus.
- Fetal presenting part may be engaged.
- Fetal distress or absent fetal heart sounds.

Investigations (where possible)

- Hb, Platelets, Random Blood Sugar, Urea, Creatinine and Electrolytes.
- Blood group and Rhesus (Rh) factor.
- Urine for protein & sugar.
- Ultrasound to check placental site, fetal maturity etc if the bleeding is not life threatening.
- Other tests may be needed in cases with complications.

Management

- Assess clotting status using a bedside clotting test. Failure of a clot to form after 7 minutes, or a soft clot that breaks down easily suggests coagulopathy.

- Transfuse as necessary.

☞ **If bleeding is heavy / moderate** (visible or hidden), delivery should take place as soon as possible (baby is usually dead):

- If the patient is obviously in **second stage** of labour with presenting part on the perineum, deliver by vacuum extraction or forceps.

- **If she does not seem to be in labour:**

- Examine in the operation theatre in the presence of a team who can perform caesarean section.

- **If the patient is in labour:**

- If the **cervix is fully dilated,** deliver by vacuum extraction /forceps.

- If the cervix is not fully dilated, rupture the membranes and augment labour with Syntocinon infusion.

- **If patient is not in labour,** but ARM is possible, rupture the membranes using Kocher forceps or an amnihook if available. Augment labour with Syntocinon infusion.

- Deliver by caesarean section, if:

  - The patient continues to bleed heavily.

  - Progress of labour is not satisfactory.

  - The cervix is unfavourable (rupture of membranes not possible).

Examination of the placenta after its expulsion shows a zone in which the clot remains fixed to the maternal surface and is older in appearance than the fresh clot that forms during the delivery of the baby.

☞ **If bleeding is light** (the mother is not in immediate danger), the course of action depends on the fetal heart sounds and whether the cervix is favourable or unfavourable:

- If fetal **heart rate is** normal or absent and the cervix is favourable or even if unfavourable, but ARM is possible, rupture the membranes with a Kocher clamp or an amnihook, if available.

- **If contractions are poor,** augment labour with Syntocinon infusion.

- If the **cervix is unfavourable** (firm, thick, closed) and ARM is not possible, deliver by caesarean section.

- **If fetal heart rate is abnormal** (less than 100 or more than 160 beats per minute):

  - Perform rapid vaginal delivery.

  - If vaginal **delivery is not** possible, deliver by immediate caesarean section.

In every case of AntePartum Haemorrhage (APH), anticipate and be prepared to deal with PostPartum Haemorrhage (PPH).

APH weakens and PPH kills

Complications of Abruptio Placentae

- Haemorrhagic Shock
- Clotting Defect
- Kidney Failure
- Maternal Death
- Fetal Asphyxia and Death

SPECIFIC MANAGEMENT

PLACENTA PRAEVIA

Symptoms

- Vaginal bleeding after 28 weeks gestation.
- Usually there is **No** pain.
- h/o previous small "warning bleeds".
- Bleeding may be precipitated by intercourse.

Signs

- Shock in proportion to the amount of visible blood loss.
- Relaxed soft, non-tender uterus.
- Fetal presenting part not in the pelvis / lower uterine pole feels empty.
- Fetus may be in oblique / transverse lie.
- Usually there is no fetal distress.

Investigations (where possible)

- Hb, Random Blood Sugar.
- Blood group and Rhesus (Rh) factor.
- Bedside clotting test if coagulopathy is suspected.
- Ultrasound to check placental site, fetal maturity etc if the bleeding is not life threatening.
- Other tests may be needed in cases with complications.

Management

Warning:

- **Do not perform a vaginal examination, unless facilities for caesarean section exist and preparations have been made for immediate caesarean section.**

- If placenta praevia is diagnosed or suspected, **refer** to a health care facility providing comprehensive EmOC.

- Once placenta praevia is excluded and bleeding has stopped, a careful speculum examination may be performed to rule out other causes of bleeding such as cervicitis, trauma, cervical polyps or cervical malignancy. The presence of these, however, does not rule out placenta praevia.

- Assess the amount of bleeding:

  - **If bleeding is heavy and continuous,** arrange for caesarean delivery irrespective of fetal maturity.

  - **If bleeding is light or if it has stopped** and the **fetus is alive but premature** (less than 37 weeks of gestation)**,** consider **expectant management** until delivery or heavy bleeding recurs.

Expectant Management

- Keep the woman in the hospital until delivery.

- Correct anemia with Ferrous Sulfate **or** Ferrous Fumerate, 60 mg, by mouth, daily.
- Ensure that 2 pints of screened and cross-matched blood is available at all times for transfusion, if required.
- If the fetus is less than 34 weeks of gestation, to improve fetal lung maturity, give Dexamethasone, 12 mg, I/M, and repeat in 12 hours (2 doses only).
- **If bleeding recurs,** decide management after weighing benefits and risks for the woman and fetus of further expectant treatment versus delivery.
- When the baby is mature, reassess and deliver according to the management guidelines as given below.

Confirming the Diagnosis

- If **a reliable ultrasound examination** can be performed, localize the placenta. **If Placenta Praevia (type III or IV) is confirmed and the fetus is mature,** perform caesarean section. **If type I or II Placenta Praevia is confirmed** examine in **double set up** as below and manage accordingly.
- If **ultrasound is not available** or the report is unreliable and the **pregnancy is less than 37 weeks,** manage as placenta praevia until 37 weeks (expectant management).
- If **ultrasound is not available** or the report is unreliable and the **pregnancy is 37 weeks or more,** examine under **double set-up** to exclude placenta praevia.

The double set-up prepares for either vaginal or caesarean delivery, as follows:

- I/V lines are running and cross-matched blood is available.
- The woman is in the operating theatre with the surgical team present.
- A sterile vaginal speculum is used to see the cervix.

- If the **cervix is partly dilated and placental tissue is visible** (rarely seen), placenta praevia is confirmed, perform caesarean section.
- If the **cervix is not dilated,** cautiously palpate the vaginal fornices:
  - **If the feeling is "spongy",** placenta praevia is confirmed, perform caesarean section.
  - **If a firm fetal head is felt,** major placenta praevia is ruled out and proceed to deliver by induction of labour.
- If a **diagnosis of placenta praevia is still in doubt, and the cervix is partly dilated** cautiously insert the fingers in the cervical os.
  - If soft **tissue is felt within the cervix,** placenta praevia is confirmed, perform caesarean section.
  - **If membranes and fetal parts** are **felt** both centrally and marginally, rule out placenta praevia and proceed to deliver by induction.

There is no place for expectant management in a health centre, where facilities for blood transfusion and caesarean section do not exist.

Delivery

- **Plan delivery if:**
  - The fetus is mature.
  - The fetus is dead or has an anomaly not compatible with life (e.g. anencephaly).
  - The woman's life is at risk because of excessive blood loss.
- If there is **low placental implantation (Type I, II)** and bleeding is **light,** vaginal delivery may be possible. Otherwise, deliver by caesarean section.

Women with placenta praevia are at a high risk of having placenta accreta / increta / percreta, (common at the site of a previous caesarean scar). Be prepared for severe PPH and perform hysterectomy if required.

- **If delivered by caesarean section and there is bleeding from the placental site, the following actions can be taken:**
  - Under-run the bleeding sites with sutures.
  - Give Ergometrine, 0.2 mg, I/M **and / or** Syntocinon, 10 units, I/M or slow I/V.

- Infuse Syntocinon, 20-30 units in 1 L I/V fluids (Normal Saline or Ringer's Lactate), at 60 drops per minute.
- Inject Syntocinon, 10 units, directly into the myometrium.
- Inject Prostin F2 alpha (Dinoprost), 5 mg, I/M or directly into the myometrium.
- Insert Misoprostol (Cytotec), 1000 mcg, (5 tabs of 200 mcg) rectally.
- Insert Prostaglandin E2 (Dinoprostone) vaginal pessary, 3 mg, rectally (available as Prostin / Glandin).
- Pack the uterine cavity with gauze pack, taking care not to include it in the sutures.
- If bleeding does not stop, uterine / internal iliac artery ligation or hysterectomy may be necessary.

- If bleeding occurs during the postpartum period, initiate appropriate management. This may include use of Oxytocics as above and uterine / utero-ovarian / internal iliac artery ligation or hysterectomy.

SPECIFIC MANAGEMENT

RUPTURED UTERUS

Symptoms

- Vaginal bleeding.
- Strong intermittent uterine contractions replaced by continuous pain.
- Prolonged / obstructed labour in current pregnancy.
- ± h/o inappropriate use of oxytocic drugs.
- ± h/o of being managed by an untrained health care provider.
- May give history of previous caesarean section.

Signs

- Shock may be out of proportion to the amount of visible blood loss.
- Abdominal distension / free fluid.
- Abnormal uterine shape.
- Tender abdomen.
- Easily palpable fetal parts.
- Absent fetal movements and fetal heart sound.

Investigations (where possible)

- Hb, Total Leucocyte Count, Platelets, Random Blood Sugar, Urea, Creatinine and Electrolytes, Urine for albumin & sugar.
- Blood group and Rhesus (Rh) factor.

- Bedside clotting test if coagulopathy is suspected.
- Other tests may be needed in cases with complications.

Management

Bleeding from a ruptured uterus may occur vaginally, unless the fetal head blocks the birth canal. Bleeding may also occur intra-abdominally and blood may be present in the urine. Rupture of the lower uterine segment into the broad ligament, however, will not release blood into the abdominal cavity.

- If suspected **stabilize**, and **refer immediately** to a health care facility providing comprehensive EmOC.

- When stable, immediately perform laparotomy and deliver baby and placenta.

- If possible **repair the uterus, as this involves less operative time and blood loss** than hysterectomy.

- If the **edges of the tear are necrotic**, excise the necrotic areas and repair the uterus. If there are big necrotic areas and excision is not possible, perform hysterectomy.

After the uterus is repaired, there is an increased risk of uterine rupture in subsequent pregnancies and labour. The option of tubal ligation should be discussed with the woman before surgery.

- If the **uterus cannot be repaired,** perform subtotal / total hysterectomy**.** If the **tear extends through the cervix,** total hysterectomy will be required.

Do not remove normal ovaries.

- Tubal ligation should be performed in a multiparous woman after counseling the woman (if conscious) and the husband. If tubal ligation is not performed, it may be performed as an interval procedure later.
- If tubal ligation is not performed, in subsequent pregnancies, the woman should be delivered by elective caesarean section, in a tertiary health care facility.

SPECIFIC MANAGEMENT

COAGULOPATHY (CLOTTING FAILURE)

Symptoms

- Vaginal bleeding after 28 weeks of pregnancy.

Signs

- Blood fails to clot.
- Easy bruising.
- Bleeding from needle puncture sites.
- Haematuria

Investigations (where possible)

- Bedside clotting test.
- Hb, Platelets, Random Blood Sugar, Urea, Creatinine and Electrolytes, Urine for albumin & sugar.
- Blood group and Rhesus (Rh) factor.
- Prothrombin Time (PT), Activated Partial Thromboplastin Time (APTT), Fibrin Degradation Products (FDP).
- Ultrasound to check placental site, fetal maturity etc if the bleeding is not life threatening.
- Other tests may be needed in cases with complications.

Management

- Treat the possible cause of coagulation failure e.g.:

- Abruptio Placentae
- Eclampsia
- Intrauterine Death
- Hydatidiform Mole

In many cases of acute blood loss, the development of coagulopathy can be prevented if blood volume is restored promptly by infusion of I/V fluids (Normal Saline or Ringer's Lactate).

- Use blood products to help control haemorrhage:
  - Give **fresh** whole blood, if available (screened if possible), to replace clotting factors and red cells.
  - If fresh **whole blood is not available,** choose one of the following **depending on availability:**
    - Fresh Frozen Plasma, for replacement of clotting factors (15 ml/kg body weight).
    - Packed (or sedimented) red cells, for red cell replacement.
    - Cryoprecipitate, to replace fibrinogen.
    - Platelet concentrates (if bleeding continues and the platelet count is less than 20,000).

In conditions leading to coagulopathy, laboratory tests if available, will show:

- Reduced coagulation factors (so all clotting tests are prolonged).
- Low fibrinogen.
- Low platelet count.
- Fragmented red cells on the blood film.

GENERAL MANAGEMENT

- **CALL FOR HELP**. Urgently mobilize all available personnel.

- **All actions should be taken simultaneously.**

- Make a rapid evaluation of the general condition of the woman, including vital signs (pulse, blood pressure, respiration, temperature), colour, consciousness, uterine tone and estimate of blood already lost.

- If shock is present or anticipated, immediately begin treatment.

- Massage the uterus to expel blood and blood clots. Blood clots trapped in the uterus will inhibit effective uterine contractions.

- Insert 2 large bore I/V cannula (gauge 16 or more), at two different sites.

- From one of the cannula, collect blood to check Haemoglobin, Platelet count, Random Blood Sugar, blood Group, Rhesus factor and urgent cross match.

- Start an I/V infusion and infuse rapidly (e.g. Dextrose Saline / Normal Saline / Ringer's Lactate).

- Give Ergometrine, 0.2 mg, I/M and Syntocinon, 10 units, I/M or slow I/V.

- Add 20-30 units of Syntocinon to 1 litre of Dextrose Saline / Ringer's Lactate and infuse at 60 drops per minute.

- Check to see if the placenta has been expelled and **examine the placenta if available to ensure that it is complete**.

- If bleeding continues in spite of a well-contracted uterus examine the cervix, vagina and perineum for tears.

- Catheterize the bladder, if unable to pass urine.

- Monitor level of consciousness, blood loss, blood pressure, pulse, urinary output and fluid intake.

- Maintain strict fluid balance chart.

- Keep accurate records of vital signs, medications & fluids given and urine output.

- Anticipate early the need for blood and transfuse as necessary .In matters of life and death consider transfusing uncross matched O negative or group specific ABO blood.

- 24 hours **after** the bleeding is controlled check Haemoglobin or Haematocrit.

SPECIFIC MANAGEMENT

ATONIC UTERUS

An Atonic Uterus Fails to Contract After delivery

After the placenta is expelled, vessels at the site of placental implantation are constricted by the uterine contraction, favoring the blood to clot. Contraction of the uterus stops bleeding, relaxation permits it to continue. Any condition that interferes with uterine contraction, such as a retained placenta, uterine over distension e.g. due to multiple pregnancy and hydramnios leading to poor contractility of uterus will predispose to atonic bleeding.

Symptoms

- Excessive vaginal bleeding within the first 24 hours after childbirth.

Signs

- Patient may be in shock.
- Uterus soft, not contracted.

Investigations (where possible)

- Hb, Platelet Count.
- Blood group and Rhesus (Rh) factor.
- Bedside clotting test (if needed).

Management

- Continue to massage the uterus.
- Try putting the baby to breast or use nipple stimulation if the baby will not suckle.
- Use oxytocic drugs, which can be given together, or one after the other (Table 1, below).

TABLE 1: USE OF OXYTOCIC DRUGS

	Oxytocin (Available as Syntocinon)	**Ergometrine/ Methyl-ergometrine**	**15- methyl Prostaglandin F_{2a}**	**Misoprostol (Cytotec)**
Dose and Route	10 units, I/M or slow I/V* I/V: Infuse 20 – 30 units in 1 L I/V fluids, at 60 drops per minute.	0.2 mg, I/M*	0.25 mg, I/M*	1000 mcg, (5 tablets of 200 mcg each), orally/rectally
Continuing Dose	I/V: Infuse 20 -30 units in I L I/V fluids, at 40 drops per minute.	Repeat 0.2 mg, I/M, after 15 minutes if required. Repeat 0.2 mg, I/M or I/V slowly if required, every 4 hours.	0.25 mg, every 15 minutes	
Maximum Dose	Not more than 3 L of I/V fluids containing Oxytocin.	5 doses (Total 1.0 mg)	8 doses (Total 2 mg)	
Precautions/ Contraindic-ations	Do not give as fast I/V bolus	Pre- eclampsia, Hypertension, Heart disease	Asthma	

* If this doesn't work, then same dose can be given directly in the myometrium.

Prostaglandins should not be given intravenously. They may be fatal.

- If **the uterus fails to contract and bleeding continues** in spite of above management:
  - Perform Bimanual Compression of the Uterus.
    - External Bimanual Compression.
    - Internal Bimanual Compression.
  - Alternatively, Compress the Aorta.
- **If bleeding continues:**
  - Assess clotting status using a bedside clotting test**.** Failure of a clot to form after 7 minutes or a soft clot that breaks down easily suggests coagulopathy.
  - Check placenta again for completeness.
  - If there are **signs of retained placental fragments** (absence of a portion of maternal surface or torn membranes with vessels), explore the uterus to remove remaining placental tissue.

- If **bleeding still continues:**
  - Pack the uterine cavity and the vagina. Before packing the uterus, ensure that the placenta is completely delivered and there are no blood clots in the uterine cavity. Sterile vaginal pack should be ready at all times.
- If **bleeding still continues:**
  - Perform B-Lynch Suture
- If **bleeding still continues:**
  - Perform uterine and utero - ovarian artery ligation / bilateral internal iliac artery ligation, seek help of a general surgeon, if required.
  - If **life-threatening bleeding continues** after ligation of arteries, perform subtotal / total hysterectomy.

SPECIFIC MANAGEMENT

TEARS OF CERVIX, VAGINA OR PERINEUM

Tears of the birth canal are the second most frequent cause of PPH. Tears may coexist with atonic uterus. Postpartum bleeding with a contracted uterus is usually due to a cervical or vaginal tear.

Symptoms

- Excessive vaginal bleeding within the first 24 hours after childbirth. This occurs usually immediately after delivery.

Signs

- Bleeding is bright red.
- Uterus is contracted.
- Complete placenta.

Investigations (where possible)

- Hb, Platelet Count.
- Blood group and Rhesus (Rh) factor.
- Bedside clotting test (if needed).

Management

- Examine the perineum, vagina and cervix carefully and **repair tears** wherever identified.

High vaginal and cervical tears may require referral to high level facility.

- If **bleeding continues**, assess clotting status using a bedside clotting test.
  Failure of a clot to form after 7 minutes or a soft clot that breaks down easily suggests coagulopathy.

Tears of genital tract may coexist with an atonic uterus.

SPECIFIC MANAGEMENT

RETAINED PLACENTA

Symptoms

- Excessive vaginal bleeding after childbirth (Bleeding will not be excessive if the placenta is not separated).
- Placenta is not expelled.

Signs

- Placenta not expelled within 30 minutes after childbirth.
- Uterus usually not well contracted.

Investigations (where possible)

- Hb, Platelet Count.
- Blood group and Rhesus (Rh) factor.
- Bedside clotting test (if needed).

Management

There will be no bleeding with retained placenta if the placental separation has not started.

- If **you can see the placenta** at the vulva, ask the woman to push it out. If **you can feel the placenta** in the vagina, remove it.

- Ensure that the bladder is empty. Catheterize the bladder, if necessary.
- If the **placenta is not expelled**, give Syntocinon, 10 units, I/M **or** slowly I/V, if not already given for active management of the third stage. Start Syntocinon infusion as (page 36).

Do not give Ergometrine because it causes tonic uterine contraction, which may delay expulsion.

- If the **placenta is undelivered after 30 minutes of Oxytocin** stimulation and the **uterus is contracted**, attempt controlled cord traction (CCT). Attempt CCT early if there is heavy bleeding.

Note: Avoid forceful cord traction and fundal pressure as they may cause uterine inversion.

- If controlled **cord traction is unsuccessful,** perform Pipingas technique for removal of retained placenta.
- If **Pipingas technique is unsuccessful,** perform manual removal of placenta.

Note: Very adherent tissue may be placenta accreta. Efforts to extract a placenta that does not separate easily may result in heavy bleeding or uterine perforation, which usually requires hysterectomy.

- If **bleeding continues after complete removal of placenta**, assess clotting status using a bedside clotting test. Failure of a clot to form after 7 minutes or a soft clot that breaks down easily suggests coagulopathy.
- If **there are signs of infection** (fever, foul- smelling vaginal discharge), give antibiotics.

SPECIFIC MANAGEMENT

RETAINED PLACENTAL FRAGMENTS

When a portion of the placenta – one or more lobes – is retained, it prevents the uterus from contracting effectively. It can cause both primary and secondary PPH.

Symptoms

- Excessive vaginal bleeding anytime within the first 6 weeks after childbirth.

Signs

- Portion of placenta is missing or torn membranes with vessels indicating a missing lobe of placenta.
- Uterus may or may not be contracted.

Investigations (where possible)

- Hb, Platelet Count.
- Blood group and Rhesus (Rh) factor.
- Bedside clotting test (if needed).

Management

☞ **In case of Primary PPH:**

- Feel inside the uterus for placental fragments. Manual exploration of the uterus is similar to the technique described for removal of the retained placenta.
- Remove placental fragments by hand, sponge forceps or large curette.

Note: Very adherent tissue may be placenta accreta. Efforts to extract fragments that do not separate easily may result in heavy bleeding or uterine perforation, which usually requires hysterectomy.

- If **bleeding continues**, assess clotting status using a bedside clotting test. Failure of a clot to form after 7 minutes or a soft clot that breaks down easily suggests coagulopathy.

☞ **In case of Secondary PPH, refer, as evacuation of uterus is required.**

There may be no immediate bleeding with retained placental fragments.

SPECIFIC MANAGEMENT

INVERSION OF UTERUS

The uterus is inverted when it turns inside out during delivery of the placenta. The uterus may or may not be seen at the vulva and therefore vaginal examination is necessary to exclude uterine inversion. **Repositioning of the uterus should be performed immediately by the person conducting the delivery**. With the passage of time the constricting ring around the inverted uterus becomes more rigid and the uterus more engorged with blood and hence repositioning of the uterus becomes difficult and requires general anaesthesia.

Symptoms

- Excessive vaginal bleeding within the first 24 hours after childbirth (At times there may be very little bleeding).
- Shock may be out of proportion to the amount of bleeding.

Signs

- Uterine fundus not felt on abdominal palpation.
- Slight or intense pain.
- Inverted uterus may or may not be seen at vulva.

Investigations (where possible)

- Hb, Platelet Count, Random Blood Sugar.
- Blood group and Rhesus (Rh) factor.
- Bedside clotting test (if needed).

Management

- If the **woman is in severe pain**, give Pethidine, 50- 100 mg, I/M or I/V, slowly **or** give Nalbuphine Hydrochloride (Nubain), 10-20 mg, I/M or I/V, slowly.

Note: Do not give oxytocic drugs until the inversion is corrected.

- Reposition the uterus.

- If **bleeding continues,** assess clotting status using a bedside clotting test. Failure of a clot to form after 7 minutes or a soft clot that breaks down easily suggests coagulopathy.

- Give prophylactic antibiotics for at least 5 days after correcting the inverted uterus:

  - Ampicillin, 1 g, I/V **PLUS** Metronidazole, 500 mg, I/V

  OR

  - Cefazolin, 1 g, I/V **PLUS** Metronidazole, 500 mg, I/V

- If **there are signs of infection** (fever, foul- smelling vaginal discharge), give antibiotics in therapeutic doses.

- In neglected cases if **necrosis is suspected**, perform vaginal hysterectomy. This will require referral to a tertiary care health facility.

SPECIFIC MANAGEMENT

RUPTURED UTERUS

Bleeding is usually intra-abdominal and **may or may not be associated with excessive vaginal bleeding.** There may be severe pain with impending rupture of uterus and once the uterus ruptures the pain may decrease. In obstructed labour the strong intermittent pain due to strong uterine contractions is replaced by continuous pain after rupture. **Think of ruptured uterus in women with prolonged / obstructed labour, previous surgery on the uterus e.g. Caesarean Section and inappropriate use of the oxytocic drugs.**

Symptoms

- Vaginal bleeding within the first 24 hours after childbirth, it may or may not be excessive.
- Abdominal pain, may be severe.

Signs

- Bleeding is intra abdominal and / or vaginal.
- Abdominal distension / Evidence of free fluid in the peritoneal cavity.
- Pallor
- Tender abdomen
- ± Shock
- Haematuria

Investigations (where possible)

- Hb, Platelet Count, Random Blood Sugar.
- Blood group and Rhesus (Rh) factor.

Management

- Perform laparotomy.
- Repair the uterus if possible. Perform tubal ligation if indicated.
- Alternatively perform subtotal / total hysterectomy. If the tear extends low down in the cervix perform total hysterectomy.

Do not remove normal ovaries.

SPECIFIC MANAGEMENT

BLEEDING DUE TO COAGULATION DEFECT (DISSEMINATED INTRA VASCULAR COAGULATION - DIC)

Failure of the blood to clot due to deficiency of clotting factors in the blood. This may be due to massive obstetric haemorrhage, pregnancy induced hypertension, eclampsia, prolonged fetal death, amniotic fluid embolism etc.

Symptoms

- Excessive vaginal bleeding immediately or anytime until 6 weeks after childbirth.

Signs

- Blood fails to clot.
- Bleeding from needle puncture sites.
- Bruising
- ± Haematuria

Investigation (where possible)

- Bedside clotting test.
- Hb, Total Leucocyte Count, Platelet Count, Random Blood Sugar.
- Blood group and Rhesus (Rh) factor.
- If facilities exist check:
  - Prothrombin Time (PT)
  - Activated Partial Thromboplastin Time (APTT)
  - Fibrinogen
  - Fibrin Degradation Products (FDP's)

Management

- Perform bedside clotting test.

- Transfuse blood, Fresh Frozen Plasma (FFP), Platelet concentrate as and when necessary.

In many cases of acute blood loss, the development of coagulopathy can be prevented if blood volume is restored promptly by infusion of I/V fluids (Normal Saline or Ringer's Lactate).

- Use blood products to help control haemorrhage:
  - Give **fresh** whole blood, (screened if possible), if available, to replace clotting factors and red cells.
  - If fresh whole blood is not available, choose one of the following based on availability:
    - Fresh frozen plasma, for replacement of clotting factors (15 ml/kg body weight).
    - Packed (or sedimented) red cells, for red cell replacement.
    - Cryoprecipitate to replace fibrinogen.
    - Platelet concentrates (if bleeding continues and the platelet count is less than 20,000).

In conditions leading to coagulopathy laboratory tests if available, will
show:

- Reduced coagulation factors (so all clotting tests are prolonged).
- Low fibrinogen
- Low platelet count
- Fragmented red cells on the blood film.

SPECIFIC MANAGEMENT

DELAYED ("SECONDARY") POSTPARTUM HAEMORRHAGE

Bleeding may be slight or heavy, continuous or irregular. Discharge may be foul smelling. Uterus is soft and larger than expected. Normally, after delivery the uterus is at the level or just below the umbilicus; by the end of first week, it is felt just above the symphysis pubis, at 14 days it is not palpable per abdomen and at six weeks it is back to normal size.

Symptoms

- Excessive vaginal bleeding after first 24 hours and until 6 weeks after childbirth.

Signs

- Uterus softer & larger than expected.
- Uterus may be tender.
- Foul smelling discharge, may or may not be present.

Investigations (where possible)

- Hb, Total Leucocyte Count, Platelet Count, Random Blood Sugar.
- Blood group and Rhesus (Rh) factor.
- High Vaginal Swab / Cervical Swab / Blood for Culture and Sensitivity.
- Ultrasound to exclude retained products of conception.
- Bedside clotting test.

Management

- If **anaemia is severe** (haemoglobin less than 7 g/dL or haematocrit less than 20%), arrange for blood transfusion.
- If **there are signs of infection** (fever, foul- smelling vaginal discharge), give antibiotics as for puerperal sepsis (page 90).

Delayed PPH or persistent bleeding may be a sign of Puerperal Sepsis.

- Give oxytocic drugs (page 36).
- If the **cervix is dilated**, explore by hand to remove large clots and placental fragments. Manual exploration of the uterus is similar to the technique described for removal of the retained placenta.
- If the **cervix is not dilated**, dilate the cervix and evacuate the uterus to remove placental fragments.
- If trophoblastic disease is suspected check serum B-Human Chorionic Gonadotrophin (B-HCG).

- Rarely, if **bleeding continues**, consider uterine, utero-ovarian and internal iliac artery ligation or hysterectomy.
- Wherever possible, send curettings or hysterectomy specimen, for histologic examination, to rule out trophoblastic tumour.

SPECIFIC MANAGEMENT

MODERATE TO SEVERE PRE-ECLAMPSIA

Symptoms

- Headache, (unrelieved by analgesics).
- Nausea, vomiting.
- Blurring of vision.
- Upper abdominal pain (epigastrium or right upper quadrant).
- Oliguria (passing less than 400 ml urine/24 hours or less than 30 ml/ hour).
- Oedema specially of hands and face.

Note: All symptoms / signs may or may not be present in all cases.

Signs

- Diastolic BP more than 100 mm Hg
- Proteinuria 1+
- Hyperreflexia (exaggerated tendon reflexes).
- Clonus
- Pulmonary oedema (collection of fluid in the lungs).

Investigations (where possible)

- Hb, Platelets, Serum Uric Acid.
- Urine analysis (specially to check Proteinuria)
- Blood group and Rhesus (Rh) factor.
- Urea, Creatinine & Electrolytes, Liver Function Tests.
- Bedside clotting test, PT, APTT, FDPs if coagulopathy is suspected.
- Ultrasound to check fetal maturity, viability, presentation & placental site.
- Other tests may be needed in cases with complications.

Management

The Strategies for Management are:

- Prevent convulsion.
- Control hypertension to prevent complications (page 63)
- Deliver as soon as possible, either vaginally or by caesarean section.
- If there are symptoms or signs such as headache, blurred vision, vomiting, upper abdominal pain, oliguria (less than 400 ml/24 hours or less than 30 ml / hour) or exaggerated deep tendon reflexes, manage as under Eclampsia (page 55).
- If there is none of the above symptoms or signs and the pregnancy is less than 37 weeks **expectant management** may be considered until the fetus is mature (37 weeks).

Expectant Management

- Give antihypertensives to the mother to reduce the diastolic blood pressure to 90 – 100 mm Hg.

- Give steroids to the mother to improve fetal lung maturity. (Dexamethasone, 12 mg, 2 doses, I/M, 12 hours apart).

- Stop expectant management if the maternal condition worsens and expedite delivery.

Diuretics are harmful in pregnancy, the only indications for their use in pre-eclampsia are:

- Pulmonary Oedema
- Congestive Heart Failure
- Acute Renal Failure.

SPECIFIC MANAGEMENT

ECLAMPSIA

Symptoms

- History of **fits.**
- All or some of the symptoms of severe pre eclampsia may be present.

Signs

- All or some of the signs of severe pre-eclampsia may be present.
- **Convulsions**

Investigations (where possible)

- Hb, Total Leucocyte Count, Platelets, Serum Uric Acid.
- Urine analysis (specially to check proteinuria).
- Urea, Creatinine & Electrolytes, Liver Function Tests.
- Blood group and Rhesus (Rh) factor.
- Bedside clotting test, PT, APTT, FDPs if coagulopathy is suspected.
- Other tests may be needed in cases with complications.

Management

Severe pre-eclampsia and eclampsia are managed similarly with the exception that delivery should occur within 12 hours of onset of convulsions in eclampsia.

The strategies in managing a case of Eclampsia include:

- To stop convulsions and prevent further convulsions.
- Control hypertension.
- Stabilize the patient.
- Deliver as soon as possible, either vaginally or by caesarean section.

In a community setting if a patient has convulsions and is in coma:

- Turn her on her side.
- Insert a handle of the spoon covered with cloth in the mouth to prevent the tongue falling back.
- Give Diazepam, 10 mg, I/M, stat.
- Transfer to the hospital urgently.

In hospital settings, if comprehensive EmOC facilities are not available, stabilize the patient and **refer** within 2 hours of admission.

General Measures

- Admit the woman to the hospital for observation and further management.
- If a woman is unconscious or convulsing, CALL FOR HELP. Urgently mobilize all available personnel.
- Rapidly evaluate the general condition of the woman, including vital signs (blood pressure, pulse, respiration), while simultaneously inquiring about the history of her present and past illnesses, either from her, or from persons accompanying the patient.
- Gather equipment (airway, suction, mask and bag, oxygen)
- If she is **not breathing or her breathing is shallow:**
  - Check airway.
  - Assist ventilation using Ambu bag and facemask.
  - Give oxygen by facemask, at 4-6 L per minute.
  - Intubate if required and give oxygen at 4-6 L per minute, via endotracheal tube.

- If she **is breathing:**
  - Give oxygen at 4-6 L per minute, by mask or nasal cannula.

- If she is **unconscious:**
  - Insert airway (or use handle of the spoon covered with cloth) in the mouth to prevent the tongue falling back.
  - Check airway.
  - Position her on her left side.
  - Check temperature.
  - Check for neck rigidity.

- If she is **convulsing:**
  - Position her on her side to reduce the risk of aspiration of secretions, vomit and blood.
  - Insert an I/V cannula and infuse I/V fluids.

- If severe pre-eclampsia or eclampsia is diagnosed, give Magnesium Sulfate (Box 1, page 60-61)

- Catheterize the bladder to monitor urine output and to check proteinuria. **If urine output is less than 30 ml per hour,** withhold Magnesium Sulfate and infuse I/V fluids (Dextrose Saline or Ringer's Lactate) at the rate of 1 L in 8 hours.

If the **cause of convulsions has not been determined,** manage as eclampsia and continue to investigate other causes.

- Monitor the amount of fluids administered and urine output to ensure that there is no fluid overload.

- Maintain a strict fluid balance chart.

- Monitor for the development of pulmonary oedema. Auscultate the lung bases hourly for crepitations indicating pulmonary oedema. If crepitations are heard, withhold fluids and give Frusemide, 40 mg, I/V, once.

- **Never leave the woman alone**. A convulsion followed by aspiration of vomit may cause death of the woman and fetus.

- Nurse the woman in a quiet well-lit area and **NOT** in a dark room, so that she can be monitored constantly.

- Observe vital signs, reflexes and fetal heart rate every 30 minutes or more frequently if required.

- Assess clotting status with a bedside clotting test.

- Protect her from injuries (fall), but do not tie her hands and feet to the bed.

- After every convulsion, aspirate the mouth and throat as necessary.

Controlling Fits:

Anticonvulsive Drugs

- A key factor in anticonvulsive therapy is adequate administration of anticonvulsive drugs.
- Convulsions in hospitalized women are most frequently caused by under-treatment.
- **Magnesium Sulfate is the drug of choice for preventing and treating convulsions in severe pre-eclampsia and eclampsia.** Administration is outlined in **Box** on page 60 and 61.
- If Magnesium Sulfate is **not** available, Diazepam may be used, although there is a greater risk for neonatal respiratory depression because Diazepam passes the placenta freely.

  - A single dose of Diazepam to abort a convulsion seldom causes neonatal respiratory depression.

  - Long-term continuous I/V administration increases the risk of respiratory depression in babies who may already be suffering from the effects of utero-placental ischaemia and preterm birth.

Protocol for Magnesium Sulfate should be followed strictly.

Box 1:

Magnesium Sulfate Schedules for Severe Pre-eclampsia and Eclampsia

Loading Dose:

- Magnesium Sulfate 20% solution, 4 g, I/V, over 5 minutes (8 ml of 50 % Magnesium Sulfate solution + 12 ml of Distilled Water).
- Follow promptly with Magnesium Sulfate 50% solution, 10 g, [5 g (10 ml)], in each buttock as deep I/M injection with Lignocaine 2%, 1 ml in the same syringe. Ensure that aseptic technique is practiced when giving Magnesium Sulfate deep I/M injection. Warn the woman that a feeling of warmth will be felt when Magnesium Sulfate is given.
- If **convulsions recur after 15 minutes,** give Magnesium Sulfate, 2 g (4 ml of 50% solution), I/V, over 5 minutes.

Maintenance Dose:

- Magnesium Sulfate 50% solution, 5 g (10 ml) + Lignocaine 2%, 1 ml, I/M every 4 hours into alternate buttocks.
- Continue maintenance dose of Magnesium sulfate for 24 hours after delivery or the last convulsion, whichever occurs last.

Magnesium Sulfate Schedules for Severe Pre-eclampsia and Eclampsia

Box 1 (Continued)

Before Repeat Administration, Ensure That:

- Respiratory rate is at least 16 per minute.
- Patellar reflexes are present.
- Urinary output is at least 30 ml per hour over preceding 4 hours.

WITHHOLD OR DELAY DRUG IF:

- Respiratory rate falls below 16 per minute.
- Patellar reflexes are absent.
- Urinary output falls below 30 ml per hour over preceding 4 hours.

Keep Antidote Ready

- In case of respiratory arrest:

- Assist ventilation (mask and bag, intubation, anaesthesia apparatus).
- To antagonize the effects of Magnesium Sulfate give Calcium Gluconate, 1g, (10 ml of 10% solution), I/V, slowly until respiration begins.

Diazepam Schedules for Severe Pre-eclampsia and Eclampsia

Note: Use Diazepam ONLY if Magnesium Sulfate is NOT available.

Intravenous Administration
Loading Dose:

- Diazepam, 10 mg, I/V, slowly over 2 minutes.
- **If convulsions recur,** give Diazepam, 5 – 10 mg, I/V slowly, over 2 minutes.

Maintenance Dose:

- Diazepam, 40 mg in 500 ml I/V fluids (Normal Saline or Ringer's Lactate), titrated to keep the woman sedated but arousable.
- Maternal respiratory depression may occur when dose exceeds 30 mg in 1 hour:

  - Assist ventilation (bag and mask, anaesthesia apparatus, intubation), if necessary.

  - Do not give more than 100 mg in 24 hours.

Rectal Administration

- Give Diazepam, rectally when I/V access is not possible. The loading dose is 20 mg, filled in a 10 ml syringe. Remove the needle, lubricate the barrel and insert the syringe into the rectum to half its length. Discharge the contents and leave the syringe in place, holding the buttocks together for 10 minutes to prevent expulsion of the drug. Alternatively, the drug may be instilled in the rectum through a catheter.
- **If convulsions are not controlled within 10 minutes,** administer an additional 10 mg per hour or more, depending on the size of the woman and her clinical response.

Controlling Hypertension:

Antihypertensive Drugs

If the **diastolic pressure is 110 mm Hg or more,** give antihypertensive drugs. The goal is to keep the diastolic pressure between 90 mm Hg and 100 mm Hg to prevent cerebral haemorrhage. **Hydralazine (Available as Apresoline)** is the drug of choice.

- Give Hydralazine, 5mg, I/V slowly, every 5 minutes until blood pressure is lowered. Repeat hourly as needed or give Hydralazine, 12.5 mg, I/M, every 2 hours as needed.

- **If Hydralazine is not available,** give:

    - **Labetolol (Available asTrandate),** l0 mg, I/V:

        - If response **is inadequate** (diastolic blood pressure remains above 110 mm Hg) after 10 minutes, give Labetalol, 20 mg, I/V.

        - Increase the dose to 40 mg and then 80 mg if satisfactory response is not obtained after 10 minutes of each dose.

OR

        - **Nifedipine (available as Adalat),** 5 mg, under the tongue:

(Puncture the capsule and administer the drops under the tongue.)

    - **If response is inadequate** (diastolic pressure remains above 110 mm Hg) after 10 minutes, give an additional 5 mg, under the tongue.

Note: There is concern regarding a possibility for an interaction with Magnesium Sulfate that can lead to hypotension.

- **Methyldopa (available as Aldomet)**. In case the above drugs to control hypertension are **not** available, Methyldopa may be used, though it is not as effective and slow to act (4 hours).

    - 250-500 mg in 100 ml of Dextrose Water, given as slow I/V infusion over 30-60 minutes. Repeat after 6 hours, if necessary.

Stabilize the Patient

Once the fits are controlled and the diastolic blood pressure is between 90-100 mm of Hg, make appropriate plans to deliver the patient **or refer** to a facility providing comprehensive EmOC.

Delivery

Delivery should take place as soon as the woman's condition has stabilized. Delaying delivery to increase fetal maturity will risk the lives of both the woman and the fetus. Delivery should occur regardless of the gestational age.

In severe pre-eclampsia, delivery should occur within 24 hours of the onset of symptoms. In eclampsia, delivery should occur within 12 hours of the onset of convulsions.

- Assess the cervix.

- If the **cervix is favourable** (soft, thin, partly dilated), rupture the membranes with a Kocher clamp or an amniotic hook if available and induce labour by Oxytocin or Prostaglandins.

- **Deliver by Caesarean Section**, **IF:**

  - There is a slow progress of labour and **if vaginal delivery is not anticipated** within 12 hours (for eclampsia) or 24 hours (for severe pre-eclampsia).

  - There are **fetal heart rate abnormalities** (less than 100 or more than 160 beats per minute).

  - The **cervix is unfavourable** (firm, thick, closed) and the **fetus is alive.**

- **Aim for Vaginal Delivery:**

  - If safe anaesthesia is not available for caesarean section.

  - If the fetus is dead or too premature for survival.

- If the **cervix is unfavourable** (firm, thick, closed), and the aim is to deliver vaginally, ripen the cervix using Misoprostol / Prostaglandins / Foley's catheter.

Do not give Ergometrine to women with pre-eclampsia, eclampsia or high blood pressure because it increases the risk of convulsions and cerebrovascular accidents.

Note: If caesarean section is performed**,** ensure that:

- Coagulopathy has been ruled out.

- Safe general anaesthesia is available.

Note: Do not use local anaesthesia or Ketamine in women with pre-eclampsia or eclampsia**.**

Postpartum Care:

Continue to monitor the woman intensively for at least 48 hours after delivery.

- Anticonvulsive therapy should be maintained for 24 hours after delivery or the last convulsion, whichever occurs last.
- Continue antihypertensive therapy as long as the diastolic pressure is 110 mm Hg or more.
- Continue to monitor urine output.
- Repeat some investigations as required.

Referral for Tertiary Level Care

Consider referral of women who have:

- Oliguria that persists for 48 hours after delivery.
- Coagulation failure, or HELLP Syndrome (**H**aemolysis, **E**levated **L**iver enzymes and **L**ow **P**latelets).
- Persistent coma lasting more than 24 hours after convulsion.

Complications of Pregnancy Induced Hypertension

Complications may cause adverse perinatal and maternal outcomes. Because complications are often difficult to treat, efforts should be made to prevent them by early diagnosis and proper management. Health care providers should be aware that management can also lead to complications. Manage complications as follows:

- **If fetal growth restriction is** severe, expedite delivery.

- If there is **increasing drowsiness** or coma, suspect cerebral haemorrhage:

  - Reduce blood pressure slowly to reduce the risk of cerebral haemorrhage.

  - Provide supportive therapy.

- If heart, kidney or liver failure is suspected, provide therapy and observe.

- If a clotting test shows failure of a clot to form after or a soft clot that breaks down easily, suspect coagulopathy and manage accordingly.

- If the **woman has I/V lines and indwelling catheters,** she is prone to infection. Use proper infection prevention techniques and closely monitor for signs of infection.

- If the **woman is receiving I/V fluids**, she is at risk of circulatory overload. Maintain a strict fluid balance chart and monitor the amount of fluids administered and urine output.

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NCMNH
Address: 36 – C, 14th Street, off. Khayaban-e-Shamsheer, Phase V, DHA, Karachi 75500
Telephone: 92-21-5341597 – 98, Fax: 92-21-5341505
E-mail: ncmh@cyber.net.pk