

Emergencies in Pregnancy

Position Responsible: Medical Director
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Related Documents	Adult Cardiac Life Support Paediatric Life Support 4.2 Emergency Childbirth Pre-hospital Emergency Anaesthesia JRCALC/UK Ambulance Service Practice Guidelines 2016 PAM 2 – Peri-mortem Caesarean Section Ectopic pregnancy and miscarriage: diagnosis and initial management, NICE, December 2012 Antepartum Haemorrhage, RCOG, November 2011 Postpartum Haemorrhage, Prevention and Management, RCOG, December 2016 WHO Recommendation on tranexamic acid for the treatment of postpartum haemorrhage, WHO, 2017 Umbilical Cord Prolapse, RCOG, November 2014 Hypertension in pregnancy: diagnosis and management, NICE, January 2011 Epilepsy in Pregnancy, RCOG, June 2016
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1.0 Background

1.1 The pregnant patient rarely presents to enhanced care teams, however the ability to manage obstetric emergencies is an important area of pre-hospital practice and should be within the capabilities of a pre-hospital team.

1.2 Pregnant patients are likely to present with a condition either directly related to pregnancy such as eclamptic seizures or as a consequence of another incident such as road traffic collision.

1.3 The aim of this SOP is to consider the management of problems directly related to pregnancy and the additional steps required in the management of pregnant patients presenting in the context of another problem such as trauma.

1.4 This SOP will cover the following areas:

1. Assessment of the pregnant patient
2. Blunt trauma in the pregnant patient
3. Penetrating trauma in the pregnant patient
4. Postpartum haemorrhage
5. Antepartum haemorrhage
6. Prolapsed umbilical cord
7. Maternal seizures
8. Maternal cardiac arrest

1.5 Clinical priority remains with the mother unless enough resources are on scene to allow safe care for both the mother and any newborn infant.

2.0 Assessment and General Management of the Pregnant Patient

2.1 Assessment and general management should follow the standard A to E approach with the following additions and considerations:

- A. All pregnant patients should be considered to have a difficult airway due to the higher rates of failed intubation in this group.
- B. The reduction in functional residual capacity (FRC) and increased oxygen demand will lead to rapid desaturation in the context of PHEA. Consider pregnancy related disorders in the context of those patients presenting with breathing difficulty (higher risk of pulmonary embolism, amniotic fluid embolism etc.).
- C. There is compression of the inferior vena cava by the gravid uterus (beyond 20 weeks gestation) so patients should be positioned in the left lateral position or the uterus should be manually displaced to the left when in the supine position. Increased circulating volume will lead to late presentation of shock with hypotension being a *very* late sign of decompensation. The patient should be assessed for vaginal blood loss but this may be absent as significant haemorrhage can be concealed in-utero – the uterus may feel woody and hard with reduced fetal movements.
- D. Consider eclampsia in the fitting patient.
- E. Palpate the fundal height to assess gestation and gain an obstetric history as situation allows. Drugs can be given as normal but beware of the effects on the newborn infant if delivery is imminent, in particular respiratory depression with the use of opioids.

3.0 Blunt Trauma

3.1 Trauma is an important cause of maternal death and accounts for around 5% of all maternal deaths. Most common mechanisms include road traffic collisions and domestic violence.

3.2 Be aware of the higher diaphragm due to increased abdominal volume in a patient with advanced gestation. Access to the thorax via a thoracostomy should be at a higher intercostal space than in a standard patient to avoid inadvertent intraperitoneal access.

3.2 All patients with abdominal injury (including those caused by a seat belt) should be presumed to have significant injury with occult bleeding and transferred to an appropriate Emergency Department for evaluation.

3.3 Consider placental abruption in all patients with blunt abdominal trauma (this can have a delayed presentation 3 to 4 days after the initial insult). Presenting features include abdominal pain, vaginal bleeding (only 75%), premature labour, shock and a hard and tender uterus. If this is suspected, continue standard trauma management with the addition of left lateral tilt/manual uterus displacement, be attentive to subtle signs of shock and transfer rapidly to an appropriate Emergency Department.

3.4 Traumatic uterine rupture is a rare but significant event. Presentation will include abdominal pain, shock, vaginal bleeding and more easily palpable foetal parts. These patients are likely to be significantly shocked and will require aggressive resuscitation and rapid transfer to an appropriate Emergency Department.

3.5 Pelvic fractures in pregnancy are associated with a high maternal and foetal mortality. Use standard pelvic splints as normal.

4.0 Penetrating Trauma

4.1 The gravid uterus and foetal-placental unit provides a degree of protection to the mother from penetrating injury at the expense of the foetus. Management should follow as per Section 2.1 and include rapid transfer to an Emergency Department for evaluation.

5.0 Antepartum Haemorrhage

5.1 Bleeding can be early (≤ 22 weeks) or late (> 22 weeks).

5.2 If bleeding is early in pregnancy, consider miscarriage (may be unknown or expected if already seen and diagnosed by hospital) or ectopic pregnancy and transfer to hospital in the standard way.

5.3 If bleeding is life threatening AND there is confirmed diagnosis of miscarriage then uterotonic agents (such as oxytocin, syntometrine or misoprostol) can be administered but be aware of standard contraindications.

5.4 If bleeding is late in pregnancy consider placenta praevia or placental abruption. Placenta praevia features painless vaginal bleeding with a soft and non-tender uterus. Features of abruption are considered in section 3.3. Arrange transfer to an appropriate hospital with standard management en-route.

5.5 Consider Tranexamic Acid 1g IV if bleeding is massive.

6.0 Postpartum Haemorrhage (PPH)

6.1 PPH can be defined as primary (blood loss > 500 ml within 24 hours of delivery) or secondary (excessive bleeding between 24 hours and 12 weeks following delivery). Or any loss which affects the mothers haemodynamic status.

6.2 Consider the "4 Ts of PPH":

- Tone - uterine atony is the most common cause of primary PPH
- Trauma - direct trauma to the genital tract including tears
- Tissue - retained products of conception
- Thrombin - and other disorders of clotting

6.3 Give Tranexamic Acid 1g to all women with PPH within 3 hours of birth. It should be noted that the earlier it is given the larger the clinical effect.

6.4 Management of massive PPH is a standard A to E approach with aggressive resuscitation. Clinical symptoms of shock may not be apparent until blood loss of > 1000 ml has occurred. Lay the mother flat and aim to keep her warm. Apply direct pressure to any obvious bleeding points. Warmed IV crystalloid, in titrated boluses, can be given to maintain circulating volume. Rapid transfer to the nearest obstetrician led unit should be arranged with a pre-alert call.

6.5 In addition the following should be attempted:

- A. If uterine atony is likely, palpate the uterine fundus and rub it to stimulate contractions (beware if the placenta has not yet delivered as it may provoke partial separation of the placenta).
- B. Place a urinary catheter (if midwife present) to empty the bladder.
- C. Consider the use of uterotonics such as Oxytocin 5 IU by slow intravenous injection (can be repeated once) or Oxytocin 5 IU/Ergometrine 500mcg [Syntometrine] by slow intravenous injection or intramuscular injection (if not hypertensive).
- D. Misoprostol 800mcg sublingual (or per rectum) is a further option.
- E. If bleeding is ongoing have a low threshold for bimanual compression of the uterus (see figure 1):
 - I. Insert a gloved hand into the vagina and apply pressure to the anterior vaginal wall within the anterior vaginal fornix.

- II. Place a second hand deep into the abdomen over the posterior aspect of the uterine fundus and apply pressure over the posterior wall compressing the uterus between the two hands.
- III. Continue to apply pressure to control haemorrhage whilst transporting to the nearest obstetric unit.

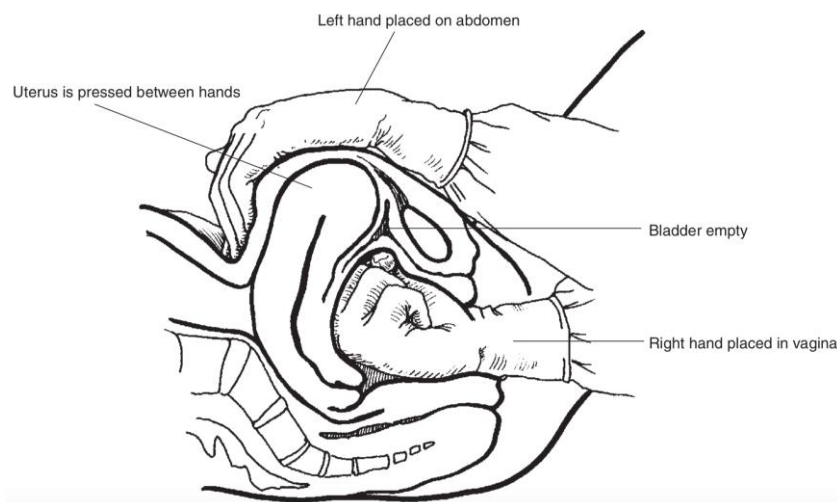


Figure 1

7.0 Prolapsed Umbilical Cord

7.1 A prolapsed cord can be occult (alongside the presenting part) or overt (beyond the presenting part). The cord can also prolapse out of the vagina.

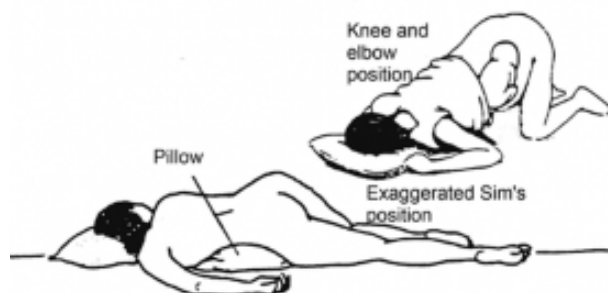
7.2 The management aim is to reduce compression on the cord and allow rapid transfer to the nearest obstetric unit.

7.3 Place the woman into knee-chest face-down position whilst awaiting an ambulance (see figure 2).

7.4 There should be *minimal* handling of the cord. ONE gentle attempt at cord replacement into the vagina can be attempted. If not possible cover with dry padding to prevent further prolapse.

7.5 The presenting part should be manually lifted off the cord to reduce compression. The bladder can be catheterized and filled to elevate the presenting part.

7.6 During transfer place the mother into the exaggerated Sims position, left lateral with pillow under the hip (see Figure 2).



8.0 Maternal Seizures

8.1 The most likely cause for seizure should be determined. The two most common reasons for seizure in the pregnant patient are eclampsia and underlying epilepsy. Other less common causes can also occur such as intra-cranial haemorrhage and these should also be considered.

8.2 Seizures of unknown cause in the pregnant patient > 20 weeks gestation should be assumed to be eclampsia until proven otherwise.

8.3 Give 4g magnesium sulphate IV over 5 minutes in no more than 50ml total volume in addition to standard interventions.

8.4 Consider benzodiazepines only if magnesium sulphate fails to control seizure or if epileptic seizures are the likely cause.

8.5 Arrange rapid transfer to hospital for further management and investigation.

8.6 Minimal IV fluids in pre-eclampsia and eclampsia and only if required.

9.0 Maternal Cardiac Arrest

9.1 Manage as per standard Advanced Life Support guidelines. Call for early back up, including extra enhanced care team support, as there is the imminent possibility of two critically unwell patients.

9.2 In addition consider the following:

- A. Early intubation as risk for aspiration is high and chest wall compliance is reduced.
- B. Consider early NG tube for gastric emptying as this may help reduce splinting of the diaphragm (already significant due to gravid uterus).
- C. Hand position for chest compressions may need to be higher and there should be manual displacement of the gravid uterus to the left to reduce IVC compression. Uterine displacement or tilt should be performed as early as possible.

Consider pregnancy specific causes of maternal cardiac arrest such as amniotic fluid embolism or concealed haemorrhage from placental abruption.

9.3 Aim to perform a resuscitative hysterotomy within 15 minutes of arrest and delivery of infant within 1 minute of commencement of this. This should be attempted if the uterine fundus is palpable above the umbilicus (equivalent to 20 weeks gestation).

9.4 The procedure is given below:

1. Vertical midline incision from the xiphisternum to pubis
2. Continue down through the abdominal wall to the peritoneum
3. Open the peritoneum and extend the incision using scissors to the xiphisternum and pubis
4. The gravid uterus should be visible. Move bowel/bladder out of the way
5. Use a scalpel to open the uterus from the bottom in the vertical plane (less thick in this area)
6. Use scissors to extend the incision to the fundus of the uterus
7. Aim to find the foetal head and deliver it. External pressure to the uterus may aid this
8. Clamp and cut the cord immediately and hand the foetus to a second clinician for resuscitation
9. Remove the placenta and membranes from the uterus with a hand

10. Give a uterotonic such as Oxytocin 5 iu IV or Oxytocin 10 iu/Ergometrine 500mcg [Syntometrine] IV
11. Pack abdomen with Celox and gauze dressings
12. Continue Advanced Life Support (ALS).

9.5 If return of spontaneous circulation (ROSC) occurs the patient is likely to require a PHEA and/or maintenance of anaesthesia. Major haemorrhage may occur so be prepared to manage and arrange rapid transfer to the nearest Emergency Department.

9.6 The newly delivered foetus is also likely to require support from the pre-hospital team. This is ethically a grey area as once they are 'born' it cannot be said that the full priority is to mother any more. There will need to be consideration of gestational age, predicted outcomes for both patients and the available resources.

PAM 2 – PERI-MORTEM CAESAREAN

INDICATIONS

Confirmed MATERNAL CARDIAC ARREST with NO RESPONSE TO ALS IN 4 MINUTES and gestational age > 20 weeks (fundal height at or above umbilicus).

EQUIPMENT

Scalpel	Celox gauze
Clamp x 2	Large dressings
Tough cut shears	Cling film

LANDMARKS AND TECHNIQUE

- Vertical incision: xiphisternum to pubis
- Continue down through abdominal wall and peritoneum.

- Push bowel out of the way.
- 4cm vertical incision of uterus.
- Blunt extension of incision using fingers.

- Deliver foetus.
- Clamp and cut umbilical cord.

- Remove placenta and membranes.

Pack abdomen with celox gauze and dressing. Wrap with cling film.

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