

LANDMINE TRAUMA IN PREGNANCY

When a pregnant woman is injured by a landmine, the primary and secondary survey assessment of the patient is made in the same way.

“There is nothing you can do for the foetus except by treating the mother.”

If the injury occurs in the first 1st trimester, there will be no significant difference in the method of assessment and treatment.

In the 2nd trimester, there are no significant physiological differences, but the uterus becomes palpable.

In the 3rd trimester, these differences are important:

Physiology

- Blood volume increases 40-50%; serum volume increases more than red cell mass so Hb is lower, but WCC is increased, rising to 18,000 around the time of labour. A pregnant woman can lose up to 30% of her blood volume before she shows signs of shock, but the foetus is shocked well before that, through splanchnic vaso-constriction. Therefore up to 80% of foetuses will be lost if the mother shows signs of significant shock.
- Respiratory rate increases (action of progestagens) & pCO_2 is lower.
- BP is decreased by about 12mm Hg

Anatomy

The symphysis spreads under the influence of relaxin and may separate by 2cm

At 20 weeks gestation, the uterus is at the level of the umbilicus, then it rises progressively towards the xiphisternum.

Blunt abdominal trauma may therefore rupture the uterus, causing foetal loss in 50% of all cases, regardless of trauma management.

Concentrate on saving the mother, do not let the pregnancy distract you or make you panic.

If shrapnel has penetrated the uterus, a Caesarean removal of the foetus may be indicated. If the foetus is more than 28 weeks gestation, it may survive; if left in the uterus it will almost certainly die. The child may also have a penetrating injury.

If the mother goes into labour (this can happen at any time following the injury) look for perineal injury, and for pelvic fracture with distortion that might impede the vaginal delivery. If necessary, perform a Caesarean. In the 2nd trimester do not do a hysterotomy. It will not affect mother's survival and the child will not survive outside the uterus, but may survive if left inside. One week after injury, it is likely

that the pregnancy will either have been delivered or (if pre-term) have aborted. Fewer than 20% in one small series continued the pregnancy. Because the onset of premature labour in such cases may be delayed, it is wise to keep an injured woman under observation for at least a week.

If the mother needs a laparotomy for bowel injury, and is in labour, a lower segment Caesarean procedure may be possible because the lower segment is visible. In other cases you may be forced to do a classical Caesarean operation.

LANDMINE TRAUMA IN CHILDREN

Landmines often cause more devastating injuries to a small child than to an adult, partly because the child is close to the point of explosion, and partly because of the child's relatively smaller blood volume. Children therefore have a higher mortality rate than do adults from this trauma.

Children may be injured while being carried on an adult's back and will suffer injuries to the perineum or abdomen rather than to the legs.

In taking observations, note that in small children the respiratory rate may be as high as 40/minute without indicating breathing difficulty. The blood pressure will be low – 70-80mmHg systolic; and with increased cranial pressure it may rise only to usual adult levels.

The trachea is short and small, and tracheostomy is a difficult procedure. The child has a kink in the cervical spine which resembles a subluxation in an adult – do not mistake this for a spine injury.

A = Airway

Small children have a large head in comparison to the rest of the body. When a child is injured the head may flex, more readily causing airway obstruction. To open the airway, lift the head forward into a 'sniffing' position.

Do not insert an oro-pharyngeal airway in a conscious child as you would for an adult — it is likely to cause vomiting.

Intubate early, if there is any difficulty maintaining an airway. Nasal intubation should not be attempted; use an endotracheal tube the size of the infant's little finger in diameter, and without a cuff. At the District level you should not expect to perform a tracheostomy on a small child without special training. Inserting even one needle through the crico-thyroid membrane may allow the child to receive enough air flow for a short time, but this can only be short-term – it is difficult to achieve sufficient exchange, and even though oxygen can be run in through a narrow tube, carbon dioxide will accumulate and lead to narcosis and death.

B = Breathing

When a child cries, air is swallowed and there is a risk of aspiration. With chest injury there is less likelihood of a rib fracture because of the flexibility of the cartilaginous skeleton; but there is greater risk of pulmonary contusion and pneumothorax.

C = Circulation

The blood volume of a child is about 80mls/kg body weight. A child will lose up to 45% of blood volume before blood pressure falls. With 25% loss, there is tachycardia and pallor, and these are the signs of shock.

Stop Bleeding

Use the same techniques as for an adult. If the liver or spleen may be damaged, treat conservatively.

Restore Blood Volume

Start an I-V bolus infusion with 20ml/Kg of whatever fluid is to hand – Ringers Solution or half-strength Darrows. It should assist a reduction in tachycardia, and can be repeated up to twice over the next hour.

If blood or packed cells are available give 10ml/Kg.

The Route for Venous Access

In an emergency, you can access the fontanelle into the sagittal sinus. If using the posterior fontanelle, go in at an acute angle to the skull surface.

The intra-osseous route is suitable for children up to 9 years of age. It requires an aseptic technique, but may be easier and quicker than finding a vein in the cubital fossa or doing a cut-down.

D = Disability

As for adults.

E = Environment

It is important to keep the child warm. A child has a relatively large surface area compared with body weight. A lot of heat may be lost through the head, so remember to cover the head as well as the body.