UMBILICAL CORD PROLAPSE

All staff involved in maternity care should receive at least annual training in the management of obstetric emergencies including umbilical cord prolapse

DEFINITION
Descent of umbilical cord through cervix alongside (occult) or past presenting part (overt) in the presence of ruptured membranes

Background
- Incidence of cord prolapse is between 0.1–0.6%
- 50% of cases are preceded by obstetric manipulation
- Cord prolapse carries a perinatal mortality rate of 91/1000
  - in hospital settings, mortality is largely secondary to prematurity and congenital malformations
- Cord prolapse is also associated with birth asphyxia
  - asphyxia, predominantly caused by cord compression and umbilical arterial vasospasm, can result in long-term morbidity because of hypoxic ischaemic encephalopathy (see Staffordshire, Shropshire & Black country Newborn network Hypoxic ischaemic encephalopathy guideline) and cerebral palsy

RECOGNITION AND ASSESSMENT

Symptoms and signs
- Cord presentation and prolapse may occur with no outward physical signs and with a normal fetal heart rate pattern
- Abnormal fetal heart rate pattern (e.g. bradycardia, variable decelerations, prolonged deceleration of >1 min – particularly if soon after membrane rupture)
- Cord seen or felt at vaginal examination

Investigations
- Auscultate fetal heart soon after rupture of membranes
- Routine vaginal examination is not indicated if liquor clear with spontaneous rupture of membranes in the presence of normal fetal heart rate and absence of risk factors

Cord prolapse suspected
- Suspect where there is an abnormal fetal heart rate pattern (e.g. bradycardia, variable decelerations), particularly if such changes occur soon after membrane rupture, spontaneously or with amniotomy
- Perform speculum and/or digital vaginal examination (even at preterm gestation)
- Do not perform ultrasound examination to predict increased probability of cord prolapse

Table 1: Risk factors associated with cord prolapse

<table>
<thead>
<tr>
<th>General risk factors</th>
<th>Procedure related</th>
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<tbody>
<tr>
<td>Low birth weight (&lt;2.5 kg)</td>
<td>Artificial rupture of membranes</td>
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<tr>
<td>Prematurity (&lt;37 wk)</td>
<td>Vaginal manipulation of fetus with ruptured membranes</td>
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<td>Fetal congenital anomalies</td>
<td>External cephalic version (during procedure)</td>
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<td>Breech presentation</td>
<td>Internal podalic version</td>
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<tr>
<td>Transverse, oblique and unstable lie</td>
<td>Stabilising induction of labour</td>
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<td>Second twin</td>
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<td>Polyhydramnios</td>
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<td>Unengaged presenting part</td>
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<td>Low-lying placenta, other abnormal placentation</td>
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IMMEDIATE TREATMENT

Ensure a practitioner competent in newborn resuscitation is present at all deliveries with umbilical cord prolapse

- Follow flowchart and General principles below

Umbilical cord prolapse

Fetal heart rate pattern normal
- If extreme prematurity, consider expectant management

Vaginal delivery imminent
- Consider operative vaginal delivery – see Operative vaginal delivery guideline

Vaginal delivery not imminent
- Consider tocolysis

Suspicious/pathological/unavailable fetal heart rate pattern
- Elevate presenting part
- If in community, urgent transfer to hospital

In-utero death confirmed by ultrasound
- See Fetal loss guideline

Caesarean section
- Is regional anaesthesia appropriate?
- Category 1 or 2 depending on fetal heart rate pattern. See Delivery below
General principles
- To prevent vasospasm, minimise handling of loops of cord lying outside vagina
- Manual replacement of prolapsed cord above presenting part is not recommended
- Wrapping cord in swabs soaked in warm sodium chloride 0.9% is of no proven benefit
- Attempt to prevent cord compression by:

Manual elevation of presenting part

Contraindications
- Procedure resulting in unnecessary delay in delivery

Procedure
- Insert gloved hand or 2 fingers into vagina and apply pressure to presenting part pushing it upwards
- Once presenting part above pelvic brim, apply suprapubic pressure upwards

Complications
- Excessive displacement of presenting part may result in more cord prolapsing

Bladder filling to elevate presenting part

Indications
- Decision-to-delivery interval likely to be prolonged and/or involve ambulance transfer

Contraindications
- Procedure resulting in unnecessary delay in delivery

Procedure
- Catheterise woman with appropriate Foley catheter
- Insert end of a blood-giving set into end of Foley catheter and, once 500–750 mL sodium chloride 0.9% instilled, clamp catheter
- Empty bladder just before any delivery attempt
- woman adopting knee-chest position or head-down tilt (preferably in left-lateral position)
- While preparing for caesarean section, consider tocolysis if fetal heart rate abnormalities persist after attempts to prevent compression and when delivery is likely to be delayed
- do not allow above to cause unnecessary delay

Gestational age at the limits of viability
- In cases of cord prolapse complicating pregnancies with gestational age at the limits of viability:
  - counsel mother on continuation and termination of pregnancy

Delivery
- When vaginal delivery not imminent, caesarean section
- Category 1 (caesarean section performed with the aim of delivering within <30 min) if cord prolapse associated with suspicious or pathological fetal heart rate pattern – providing maternal safety is not unduly risked
- Category 2 if fetal heart rate pattern normal
- If vaginal birth imminent, vaginal birth is preferable to caesarean section
  - if quick and safe delivery anticipated, attempt vaginal birth (in most cases operative) at full dilatation
  - In some circumstances (e.g. internal podalic version for a second twin) breech extraction may be performed
  - Cord blood samples for pH and base excess measurement – see Umbilical cord sampling guideline

SUBSEQUENT MANAGEMENT
- Offer mother postnatal debriefing
- Local clinical incident procedure for all cases of umbilical cord prolapse