CORD PROLAPSE

Modified presentation of Dr Chaduvula

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CORD PROLAPSE

Umbilical cord prolapse is abnormal position of the cord in front of the fetal presenting part, so that the fetus compresses the cord during labor, causing fetal hypoxemia.

An obstetric emergency requiring a systematic approach to its management to optimise fetal outcome.
Terminology...

- **Umbilical cord presentation:**
  - Membranes intact...
  - Presence of cord *in front or beside* the presenting part of the baby.

- **Umbilical cord prolapse:**
  - Membranes are ruptured...
  - **Occult prolapse:** Presence of cord *beside* presenting part
  - **Overt prolapse:** Cord lies *in front* of presenting part and is either palpable (in vagina) or visible (beyond vagina)
Cord presentation & prolapse...
Aim of this discussion...

• Identify predisposing risk factors
• Enable prompt diagnosis
• Initiate emergency protocols
• Develop an awareness of the implications for:
  • Baby
  • Mother
Incidence...

- Overall: 0.1 – 0.6%
- Primip: 0.4%
- Multip: 0.6%
- Cephalic presentation: 0.3%
- Breech presentation:
  - Frank: 0.9%
  - Complete: 5.0%
  - Footling: 10%
- Shoulder presentation: 15%
Risk factors...Head NOT engaged...

- High parity (weak muscles)
- Unstable lie
- Malpresentations
- Breech presentations
Risk factors...Uterus/Pelvis...

- Polyhydramnios
- Long umbilical cord
- Low lying placenta
- Contracted pelvis
Risk factors...Fetus...

- Prematurity
- Low birth weight
- Second twin
- Congenital malformation
Risk factors...Procedural intervention...

- ARM with high presenting part
- External cephalic version (ECV)
- Manual rotation of fetal head
- Application of scalp electrode
- Fetal blood sampling (amniscope)
- Internal podalic version (twins)
Risk factors...Other...

- PROM
- Male fetus???
- Uterine anomaly
Diagnosis...

- Overt cord can be seen in or beyond vagina
- Abnormal CTG/FHS indicating fetal distress
  - Atypical decelerations / bradycardia
- Meconium stained liquor
- Identified at the time of procedure…
  - Clinician undertaking a procedure (above) should examine to exclude prolapse when procedure is completed…(VE)
CTG: CORD PROLAPSE
Management...

- Depends on viability of fetus (gestation).
- Obstetric emergency!...activate appropriate protocols and notifications. (code 1 delivery)
- Fetal outcomes are dependant on a timely delivery
  - Operative delivery or Caesarean delivery
- Multidisciplinary approach…
  - Senior clinician should expedite delivery
  - Paediatrician should be present for delivery
Management...

- Stop uterotonic agents (syntocinon)
  - Consider tocolysis?
- Resuscitate mother as appropriate (FM oxygen, IV access)
- C O R D:
  - C all for help
  - O rganise for delivery
  - R elieve pressure on cord
  - D elivery
Algorithm:

1. **Note the time**
2. **Call for assistance**
   - Dial 55 - ask for appropriate Code Blue - Caesarean or Medical as required
3. **Position the women in the exaggerated Sims position**
4. **Perform a vaginal examination**
   - Replace the cord in the vagina
   - Apply digital pressure to elevate the presenting part
   - Assess the cervical dilatation
5. **Monitor the fetal heart**
6. **Prepare for theatre**
   - **Catheterisation**
     - Consider filling the bladder with 500 mL of Normal Saline 0.9% if delay to theatre is expected
7. **Transfer the woman to theatre**
Cord Management...A VE is critical...

- **Cervical dilatation?:**
  - Fully dilated...consider operative delivery
  - NOT fully...caesarean section
- **Cord location?:**
  - @ cervix v. through cervix v. out vagina ???
    - Replace externalised cord into vagina.
- **Fetal cord pulsation?:**
  - If there is NO pulsation do a bedside ultrasound to confirm viability...NO LSCS if baby deceased.
  - If prolapse is confirmed 2 fingers should be used to elevate the head and prevent cord compression...**the hand stays in the vagina until delivery!**
- **Monitor & Document FHR.**
Elevate the presenting part ...
Elevate presenting part...

- Avoid cord compression by:
  - Elevation of presenting part:
    - Digital
    - Hydrostatic (catheter)
      - Fill bladder (IDC) - >500ml
  - Maternal positioning (gravity!)
  - Knee chest position
  - Trendelenburg position
  - Exagerated sims / lateral position
- Advise patient NOT to push
- Tocolysis (?terbutaline)…especially if expected delay in delivery
Elevate the presenting part...
Knee to chest position:
Elevate the presenting part...
Trendelenburg position:
Elevate the presenting part...
Exaggerated sim’s position:

A gloved hand in the vagina pushes the fetus upward and off the cord.

Knee-chest position uses gravity to shift the fetus out of the pelvis. The woman’s thighs should be at right angles to the bed and her chest flat on the bed.

The woman’s hips are elevated with two pillows; this is often combined with the Trendelenburg (head down) position.
Do’s & Don’ts...

DO:
• Replace cord into vagina to prevent vasospasm:
  • handle with warm, moist sponge
• Continuous fetal heart monitoring
• Inform patient of management plan:
  • Verbal consent adequate
  • Reassure/support patient &/or partner.

DON’T:
• Attempt to replace cord into uterus
• Excessive cord handling
• Remove digital elevation until delivery
Complications...

• Neonatal Mortality up to 50%: (10% first world countries)
• Hypoxia due to:
  • cord compression
  • Cord vaso-spasm
    • Delayed delivery…(community v. hospital)

• Operative trauma
• Prematurity

• Maternal morbidity due to:
  • Operative delivery – perineal/vaginal trauma
  • Surgical delivery – caesarean / anaesthetic (GA)
  • Psychological…
Fetal outcomes...

- Poorer outcomes if prolapse in 1\textsuperscript{st} stage of labour
- Poorer outcomes in community setting v. hospital setting.
  - Asphyxia results in hypoxic ischaemic encephalopathy +/- cerebral palsy.
  - Cord gases should be collected at delivery to aid in neonatal resuscitation/management.
Risk Management...

- Ultrasound assessment to identify malpresentation / cord presentation useful BUT NOT sufficiently sensitive/specific to prevent prolapse.
- Consider admitting patients with ‘unstable lie’ >37+6.
- Avoid ARM if head not engaged…if necessary, only undertake when there is immediate access to theatres.
- Controlled ARM if polyhydramnios (+ CTG & ultrasound…theatres!)
- Clinical review (VE) if abnormal CTG / FHS …especially if recent ‘event’ (SROM/intervention).
**Documentation:**

- A ‘scribe’ should document contemporaneously the management of cord prolapse.
- Detailed notes of the incident should be made in the clinical record.
- Quality assurance review (RCA)…improving quality of care.

**Support & Debriefing:**

- Explanation of the management should be given to the woman (& her family) both during and after the incident.
- Debriefing with both patient & staff addresses the high risk of psychological morbidity associated with a traumatic event like cord prolapse.
# CORD PROLAPSE

## Diagnosis

<table>
<thead>
<tr>
<th>Diagnosis made by:</th>
<th>Role</th>
<th>Time of diagnosis:</th>
<th>Cervical dilatation at diagnosis:</th>
<th>cm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location of diagnosis:</td>
<td>Home</td>
<td>Hospital</td>
<td>Primary Unit</td>
<td>Other</td>
</tr>
</tbody>
</table>

## Diagnosis Made at Primary Unit

<table>
<thead>
<tr>
<th>Ambulance call:</th>
<th>Call for Help:</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>By</td>
<td>Role</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Tertiary Unit call:</th>
<th>Obeetric Team Notified:</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>By</td>
<td>Role</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Ambulance:</th>
<th>Anaesthetic Team Notified:</th>
<th>Role</th>
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</thead>
<tbody>
<tr>
<td>Time</td>
<td>By</td>
<td>Role</td>
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</tbody>
</table>

## Arrival at Secondary/Tertiary Unit:

<table>
<thead>
<tr>
<th>Neonatal Team Notified:</th>
<th>Role</th>
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</thead>
<tbody>
<tr>
<td>Time</td>
<td>By</td>
</tr>
</tbody>
</table>

## Staff In Attendance

<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
<th>Time arrived:</th>
<th>Name</th>
<th>Role</th>
<th>Time arrived:</th>
</tr>
</thead>
</table>

## Procedures Performed

<table>
<thead>
<tr>
<th>Change of maternal position</th>
<th>Yes</th>
<th>No</th>
<th>Specify:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual elevation of presenting part</td>
<td>Yes</td>
<td>No</td>
<td>By:</td>
</tr>
</tbody>
</table>

Bladder filled (via catheter)

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>Approx. Volume</th>
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## Mode of Birth

<table>
<thead>
<tr>
<th>Mode of Anaesthesia</th>
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<table>
<thead>
<tr>
<th>Spont.</th>
<th>CS</th>
<th>Forceps</th>
<th>Ventouse</th>
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<tbody>
<tr>
<td>General</td>
<td>Spinal</td>
<td>Epidural</td>
<td>Other/None</td>
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</table>

## Time of Birth

<table>
<thead>
<tr>
<th>Diagnosis to Birth Interval</th>
</tr>
</thead>
</table>

## Neonatal Outcome

<table>
<thead>
<tr>
<th>Apgar Score: 1 min</th>
<th>5min</th>
<th>10min</th>
<th>Weight</th>
<th>Admission to NICU: Yes</th>
<th>No</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Cord Blood Values</th>
<th>pH</th>
<th>Base Excess</th>
<th>Lactate</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Name:</th>
<th>Date:</th>
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<tr>
<th>Signature:</th>
<th>Designation:</th>
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Debriefing...

- **Cochrane review:** “Debriefing for the prevention of psychological trauma in women following childbirth”
  - Reduce risk of PND…improved patient recovery
    - Relationships…baby…family
  - Increased patient satisfaction with care
  - Decreased medico-legal action

- Performed by senior staff (obstetric/paediatric)
  - What happened…review medical record
  - How was the incident managed…
  - The ‘plan’ moving forward…
    - For mother…and baby…
  - An opportunity for the patient to talk….questions/concerns
Summary...

• To recognise the risk factors for cord prolapse
• To diagnose umbilical cord prolapse
• To call for help
• To perform manoeuvres to reduce pressure on the cord
• To make appropriate plans for immediate delivery
• To communicate effectively with the woman and partner during the emergency
• To debrief the patient following the emergency
• To familiarise staff with hospital protocols – QA/training