

## Document Control

<b>Title</b>			
<b>Umbilical Cord Prolapse Guideline</b>			
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<b>Version</b>	<b>Date Issued</b>	<b>Status</b>	<b>Comment / Changes / Approval</b>
1.0	Mar 2011	Final	Approved by the Maternity Services Guideline Group in April 2011.
1.1	Aug 2012	Revision	Minor amendments by Corporate Governance to document control report, headers and footers, new table of contents, formatting for document map navigation.
2.0	Feb 2016	Final	Approved by the Maternity Services Guideline Group in February 2016.
2.1	Apr 2019	Revision	Harmonised with Royal Devon & Exeter guideline
3.0	May 2019	Final	Approved by Maternity Specialist Governance Forum meeting on 01.05.2019
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<b>Superseded Documents</b> Nil			
<b>Issue Date</b> May 2019		<b>Review Date</b> May 2022	<b>Review Cycle</b> Three years
<b>Consulted with the following stakeholders: (list all)</b> <ul style="list-style-type: none"> <li>• Senior obstetricians</li> <li>• Senior midwives</li> <li>• Senior management team</li> </ul>			
<b>Filename</b> Umbilical Cord Prolapse Guideline v3. 01May 19.doc			
<b>Policy categories for Trust's internal website (Bob)</b> Maternity Services			<b>Tags for Trust's internal website (Bob)</b> Cord, accidents, prolapse

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## 1. Introduction

- 1.1. This document sets out Northern Devon Healthcare NHS Trust's best practice guidelines for umbilical cord prolapse.

## 2. Purpose

- 2.1. The following general principles can be applied in order to improve:
- Management of umbilical cord prolapse
- 2.2. In accordance with best practice guidance: RCOG Green Top Guideline No.50 – Umbilical Cord Prolapse.
- 2.3. This guideline applies to maternity staff and must be adhered to. Non-compliance with this guideline may be for valid clinical reasons only. The reason for non-compliance must be documented clearly in the patient's notes.

## 3. Definitions

- 3.1. **Cord prolapse** is defined as the descent and passage of the umbilical cord through the cervix alongside (occult), or beyond the fetal presenting part (overt) in the context of ruptured membranes.
- 3.2. **Cord presentation** is defined as the presence of the umbilical cord between the fetal presenting part and the cervix, regardless of whether or not the membranes have ruptured.

## 4. Contact Numbers

- 4.1. If inside the hospital, dial 2222 and ask for obstetric emergency team.
- 4.2. If in the community call labour ward and ambulance.

## 5. General Principles of umbilical cord prolapse guideline

### Significance

- A perinatal mortality rate of 9% (91/1000)
- 5.1. The majority of poor outcomes of cord prolapse are associated with prematurity and congenital malformation in hospital settings as well as birth asphyxia as found in Murphy & Mackenzie' study in 1995. Perinatal death has been described in term babies in the context of home births in part due to time required for hospital transfer. Cord prolapse consistently appears in CEMACH reports.

- 5.2.** Birth asphyxia is the result of cord compression and umbilical artery vasospasm impeding venous and arterial blood flow to and from the fetus. A complication of asphyxia is hypoxic–ischaemic encephalopathy and cerebral palsy. There is a paucity of long-term follow-up data of babies born alive after cord prolapse in both hospital and community settings.

### Incidence

- 0.1-0.6% overall
- 1% with breech presentation
- More common with multiple gestations

### Risk factors

#### Procedure-related

Interventions may result in cord prolapse with half of cases being preceded by obstetric interventions.

- ARM (artificial rupture of membranes) with a high presenting part
- Stabilising IOL (induction of labour)
- ECV (external cephalic version; during the procedure, not after completion)
- Internal podalic version
- Vaginal manipulation of the fetus with ruptured membranes
- Large balloon catheter induction of labour

#### General

- High presenting part
  - Multiparity, malposition, malpresentation, cephalic pelvic disproportion, placenta praevia, fibroids
- Small baby (<2.5kg birth weight)
- Preterm labour (<37 weeks)
- Fetal congenital anomaly
- Transverse, oblique and unstable lie
- Second twin
- Polyhydramnios

- 5.3.** Induction of labour with prostaglandin in itself is not associated with cord prolapse

### Prevention of cord prolapse

- 5.4.** Antenatal diagnosis of cord presentation by routine ultrasound examination is not sufficiently sensitive or specific, however it can be considered for selective screening of women with breech presentation at term who are considering a vaginal birth.

- 5.5. In the event of transverse, oblique or unstable lie, elective admission to the antenatal ward after 37+0 weeks of gestation should be offered. Of note, VTE risk should be considered as this may present a greater risk to their health than cord prolapse.
- 5.6. Admission should be offered in cases of preterm, pre-labour rupture of membranes for non-cephalic presentations.
- 5.7. If the presenting part is noted to be high and/or mobile, an ARM should be avoided. If however it becomes necessary to rupture the membranes, senior advice should be sought prior to the ARM. Furthermore, the procedure should be performed in theatre with staff in place for immediate progression to caesarean section.
- 5.8. Vaginal examination in the context of ruptured membranes and a non-engaged presenting part carries a risk of upward displacement and a subsequent cord prolapse. Upward pressure on the presenting part should be kept to a minimum and the use of an assistant to apply fundal stabilisation should be considered. Lastly, a vaginal examination in the presence of ruptured membranes, should only be carried out by, or in the presence of, a senior (SAS grade or Consultant) Obstetrician.
- 5.9. ARM should not be undertaken when the cord is palpated underneath the presenting part

### Diagnosis of Cord Prolapse

- 5.10. Cord presentation or prolapse may be present without any outward physical signs and with a normal fetal heart rate pattern. Therefore it should be excluded at each vaginal examination in labour and following spontaneous rupture of membranes if risks factors are present.
- 5.11. In addition to the national guidance for fetal heart rate monitoring in labour, the fetal heart rate should be auscultated after every vaginal examination in labour and after spontaneous membrane rupture.
- 5.12. Cord prolapse should be suspected where an abnormal fetal heart rate pattern commences soon after spontaneous or artificial rupture of membranes. This includes variable or late decelerations, not just bradycardia.

Speculum and/or digital vaginal examination should be performed when cord prolapse is suspected. **PROMPT VAGINAL EXAMINATION IS THE MOST IMPORTANT ASPECT OF DIAGNOSIS.**

Mismanagement and non-diagnosis of abnormal fetal heart rate is the most common root cause of substandard care in the management of cord prolapse (7th CEMACH, 2000). In a series of 89 cases, all had some trace abnormality: 66% variable decelerations and 34% had a prolonged deceleration of more than one minute or a persistent bradycardia (Koonings et al, 1990).

### Mode of birth with cord prolapsed

- 5.13. When cord prolapse is confirmed, patient should be transferred to theatre unless the delivery is imminent.
- 5.14. Caesarean section is the recommended mode of delivery in the event of a cord prolapsed when a vaginal birth is not imminent.
- 5.15. A category 1 caesarean section should be advised if the cord prolapse is associated with a suspicious or pathological trace. Aim for a decision to delivery interval of <30minutes, but evaluate any risk to the mother.
- 5.16. A category 2 Section can be considered when the CTG is normal. Continuous assessment of the trace is essential. There should be a low threshold for re-categorisation should the trace become abnormal.
- 5.17. If vaginal delivery is imminent, operative vaginal delivery can be attempted at full dilatation using standard techniques and taking care to avoid impingement of the cord where possible
- 5.18. Verbal consent (documented as such in the notes) is considered satisfactory in cases of extreme emergency where written consent would delay matters.
- 5.19. A discussion with the anaesthetist is warranted in order to select the appropriate mode of anaesthesia. Regional anaesthesia is acceptable only if it will provide minimal delay or the fetal heart rate is reassuring.
- 5.20. Breech extraction may be suitable under some circumstances for instance following internal podalic version for a second twin.

### Management of cord prolapse in hospital

- 5.21. Rapid delivery with due regard to maternal safety is the optimal management.
  - 1. Use the emergency bell to summon help. The obstetric emergency bleep should be activated. Attendees should be:
    - a. Obstetric Staff Grade
    - b. Obstetric SHO
    - c. Anaesthetist On-Call
    - d. Paediatrician On-Call

- e. Other team members (e.g. ODP, Scrub Nurse).
2. Where relevant, stop the Oxytocin (Syntocinon) infusion.
3. Perform a vaginal examination to assess the degree of cervical dilatation and identify the presenting part and station
4. Auscultate the fetal heart rate
5. Displace the presenting part from the cord using manual elevation whilst transferring the patient to theatre. If the diagnoses-to-birth interval is likely to be prolonged, elevation through bladder filling may be a more practical option.

Minimise handling of the cord to prevent vasospasm.

It is not advised to replace the cord if protruding from the introitus as it can provoke vasospasms and subsequent fetal bradycardia. The minimal handling of loops of cord lying outside the vagina is advised.

**DO NOT** surround the cord with warm wet swabs (unproven benefit).

6. Assist the mother into a knee-chest position allowing the fetus to gravitate towards the diaphragm and relieving compression of the cord. If the mother has a dense epidural in situ, place her into the left-lateral position preferably with head down and a pillow under the left hip.
7. Obtain i.v. access and send emergency bloods (FBC and Group and Save: contact the lab to ensure these are processed).
8. Consider the use of tocolytics (terbutaline 0.25mg SC) whilst preparing for caesarean section if fetal heart abnormalities persist despite mechanical attempts to prevent compression of the cord.
9. Ensure **RAPID** transfer to theatre: ensure **NOTHING** delays this transfer.
10. Assess and deliver by quickest means – caesarean section is the treatment of choice; however it may be possible for assisted vaginal delivery.
11. If the bladder is filled it **MUST BE EMPTIED** prior to the caesarean section
12. The Obstetrician should ensure paired arterial and venous cord blood samples are successfully taken and analysed.
13. The neonate should be assessed/resuscitated by a Paediatrician. Neonates born alive after cord prolapse are highly likely to require resuscitation with 21% having low APGAR at 1 minute and 7% and 5 minutes.

## Optimal community management

### 5.22.

1. Women with known cord prolapsed should be advised by telephone to assume the knee-chest face-down position whilst awaiting hospital transfer.
2. Inform the labour ward Co-ordinator and prepare for immediate transfer to labour ward. **Dial 999** and **STRESS THE URGENCY OF TRANSFER**.
3. Arrange to elevate the presenting part.
  - Manual elevation can be performed initially by inserting two fingers of a gloved hand into the vagina and pushing the presenting part upwards.
  - Elevation due to bladder filling is a more appropriate method where delay >5 minutes is anticipated: Insert a 16g Foley's catheter – inflate the balloon as normal to retain the catheter.
    - ⇒ A 1L bag of N saline 0.9% is run through a giving set. The end of the giving set is then inserted inside the end of the catheter which normally fits onto a catheter bag.
    - ⇒ Instil 500ml of the 0.9% N Saline and then clamp the giving set closed. The giving set remains attached until delivery when the bladder will need to be drained.
    - ⇒ Advise the woman that this may cause discomfort and a sensation of urgency (a desire to void).
4. Once the bladder has been filled there is no further benefit to continued manual displacement of the presenting part.
5. Do not handle or attempt to replace loops of cord.
6. When being transferred in ambulance encourage a left-lateral position as safer for the mother than all-fours.

- 5.23.** Perinatal mortality increases 10-fold where cord prolapse occurs outside of the hospital setting.

## Optimal Management at the Threshold of Viability

- 5.24.** Expectant management should be discussed for cord prolapse complicating pregnancies with a gestational age at the threshold of viability (23+0 to 24+6 weeks)
- 5.25.** Clinicians should be aware that there is no evidence for cord replacement to improve outcomes for expectant management.
- 5.26.** Women should be counselled on both continuation and the termination of pregnancy at the threshold of viability.

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## Clinical Governance

- 5.27. The woman should be offered the chance to discuss the delivery with a Consultant Obstetrician.
- 5.28. An incident form should be completed.
- 5.29. Junior staff should have the opportunity to reflect upon and discuss the event with their seniors
- 5.30. MDT discussion may be considered

## 6. Training

- 6.1. Responsibility for education and training lies with the Lead Clinician for Labour Ward. It will be provided through formal study days: all maternity service staff should undertake annual skills drills training in the management of cord prolapse. Competencies will be assessed and written confirmation issued.

## 7. Consultation, Approval, Review and Archiving Processes

- 7.1. The author consulted with all relevant stakeholders. Please refer to the Document Control Report.
- 7.2. Final approval was given by the Maternity Services Guideline Group in April 2011.
- 7.3. The guidelines will be reviewed every 3 years. The author will be responsible for ensuring the guidelines are reviewed and revisions approved by the Maternity Services Guideline Group in accordance with the Document Control Report.
- 7.4. All versions of these guidelines will be archived in electronic format by the author within the Maternity Team policy archive.
- 7.5. Any revisions to the final document will be recorded on the Document Control Report.
- 7.6. To obtain a copy of the archived guidelines, contact should be made with the Labour Ward Lead/author.

## 8. Monitoring Compliance and Effectiveness

- 8.1. Monitoring of implementation, effectiveness and compliance with these guidelines will be the responsibility of the Lead Clinician for Labour Ward. Where non-compliance is found, it must have been documented in the patient's medical notes.

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## 9. Bibliography

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## 10. Appendix 1: Management of Cord Prolapse in hospital setting

