Note:
This guideline provides advice of a general nature. This statewide guideline has been prepared to promote and facilitate standardisation and consistency of practice, using a multidisciplinary approach. The guideline is based on a review of published evidence and expert opinion.

Information in this statewide guideline is current at the time of publication.

SA Health does not accept responsibility for the quality or accuracy of material on websites linked from this site and does not sponsor, approve or endorse materials on such links.

Health practitioners in the South Australian public health sector are expected to review specific details of each patient and professionally assess the applicability of the relevant guideline to that clinical situation.

If for good clinical reasons, a decision is made to depart from the guideline, the responsible clinician must document in the patient's medical record, the decision made, by whom, and detailed reasons for the departure from the guideline.

This statewide guideline does not address all the elements of clinical practice and assumes that the individual clinicians are responsible for discussing care with consumers in an environment that is culturally appropriate and which enables respectful confidential discussion. This includes:

- The use of interpreter services where necessary,
- Advising consumers of their choice and ensuring informed consent is obtained,
- Providing care within scope of practice, meeting all legislative requirements and maintaining standards of professional conduct, and
- Documenting all care in accordance with mandatory and local requirements.

Explanation of the aboriginal artwork:
The aboriginal artwork used symbolises the connection to country and the circle shape shows the strong relationships amongst families and the aboriginal culture. The horse shoe shape design shown in front of the generic statement symbolises a woman and those enclosing a smaller horse shoe shape depicts a pregnant women. The smaller horse shoe shape in this instance represents the unborn child. The artwork shown before the specific statements within the document symbolises a footprint and demonstrates the need to move forward together in union.

Australian Aboriginal Culture is the oldest living culture in the world yet Aboriginal people continue to experience the poorest health outcomes when compared to non-Aboriginal Australians. In South Australia, Aboriginal women are 2-5 times more likely to die in childbirth and their babies are 2-3 times more likely to be of low birth weight. The accumulative effects of stress, low socio economic status, exposure to violence, historical trauma, culturally unsafe and discriminatory health services and health systems are all major contributors to the disparities in Aboriginal maternal and birthing outcomes. Despite these unacceptable statistics the birth of an Aboriginal baby is a celebration of life and an important cultural event bringing family together in celebration, obligation and responsibility. The diversity between Aboriginal cultures, language and practices differ greatly and so it is imperative that perinatal services prepare to respectively manage Aboriginal protocol and provide a culturally positive health care experience for Aboriginal people to ensure the best maternal, neonatal and child health outcomes.

Purpose and Scope of PPG
This guideline provides clinicians with information on risk factors, prevention, diagnosis and management of cord prolapse and/or presentation.
Cord Presentation and Prolapse

Flowchart I: Management of cord prolapse/presentation

Cord presentation / prolapse diagnosed
> And associated with signs of fetal compromise

Help
> Immediate assistance required
> Obstetrician, anaesthetist and paediatrician
> Expedite delivery

Cord pulsating

First stage of labour
> Immediate delivery by caesarean
> IV access, G & S, O₂ via facemask, continuous CTG until delivery, discontinue oxytocin infusion if in progress
> Reduce the risk of cord compression:
  > Maternal position: Place the woman in a deep knee/chest position or on her left side with head down, elevate the foot of the bed
  > Manual elevation of the presenting part off the cord by vaginal insertion of fingers
  > Consider tocolysis
  > Consider bladder filling
  > Minimise handling of the cord
> Cord blood gases immediately after delivery

Second stage of labour
> If the presenting part is at or below spines a suitably trained medical officer should prepare for immediate delivery using vacuum extraction or an instrumental delivery
> If no medical officer is available the woman should be encouraged to push vigorously while waiting for the medical support
> If immediate vaginal delivery is not feasible prepare for caesarean delivery
> Cord gases immediately after delivery

Cord not pulsating

Confirm fetal death
> Confirm fetal death by ultrasound
> Proceed with vaginal birth

Counselling
> The woman and her family must have an ongoing explanation of events to ensure emergency management occurs quickly and with cooperation
> It is important to communicate and support the woman’s family and support people if the woman is required to have general anaesthesia
> Staff involved should follow up the woman in the postnatal period to answer questions and provide support
Summary of Practice Recommendations

> Risk of cord presentation / prolapse is increased after artificial rupture of the membranes or sudden spontaneous rupture of the forewaters with malpresentation or high presenting part
> Perform a vaginal examination to exclude or confirm the presence of cord presentation / prolapse if sudden appearance of large fetal variable decelerations or prolonged fetal bradycardia
> Once cord presentation / prolapse is diagnosed, treat as an obstetric emergency
> If cervix is fully dilated, expedite vaginal birth
> If cervix not fully dilated, the priority is to relieve pressure on the cord by elevating the presenting part while preparations are made for emergency caesarean section
> If the cord is not pulsating, confirm fetal death with ultrasound and plan for vaginal birth
Cord Presentation and Prolapse

Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ed.</td>
<td>Edition</td>
</tr>
<tr>
<td>EFM</td>
<td>External fetal monitoring</td>
</tr>
<tr>
<td>e.g.</td>
<td>For example</td>
</tr>
<tr>
<td>et al.</td>
<td>And others</td>
</tr>
<tr>
<td>g</td>
<td>Gram(s)</td>
</tr>
<tr>
<td>&gt;</td>
<td>Greater than</td>
</tr>
<tr>
<td>IDC</td>
<td>Indwelling urinary catheter</td>
</tr>
<tr>
<td>IV</td>
<td>Intravenous</td>
</tr>
<tr>
<td>mg</td>
<td>Milligram(s)</td>
</tr>
<tr>
<td>mL</td>
<td>Millilitre(s)</td>
</tr>
<tr>
<td>%</td>
<td>Percent</td>
</tr>
<tr>
<td>+/-</td>
<td>Plus or minus</td>
</tr>
</tbody>
</table>

Definitions

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cord presentation</td>
<td>Occurs when a loop of cord lies below the presenting part of the fetus in the presence of intact membranes²</td>
</tr>
<tr>
<td>Cord prolapse</td>
<td>Occurs when the umbilical cord descends below the presenting part in the presence of ruptured membranes (usually during labour)³</td>
</tr>
<tr>
<td>Occult cord prolapse</td>
<td>Occurs when a loop of cord lies beside the presenting part and is often related to unexplained signs of fetal compromise (deep variable decelerations of the fetal heart) in labour²</td>
</tr>
</tbody>
</table>

Introduction

- Presentation and prolapse of the umbilical cord may occur in any situation where the presenting part does not "fit" well in the maternal pelvis
- With cord presentation or prolapse, blood flow through the umbilical vessels may be compromised from compression of the cord between the fetus and the uterus, cervix or pelvic inlet
- Cord presentation and cord prolapse are life threatening obstetric emergencies that may result in fetal asphyxia or death
- Caesarean section is the safest delivery option for the viable fetus, especially in the first and early second stage of labour

Literature review

- The incidence of cord prolapse varies between 0.1 – 0.6 %¹,⁸,⁹
- In South Australia in 2010, cord prolapse occurred in 0.2 % of all confinements⁴
- One large study reported a perinatal mortality rate of 91 / 1,000. Preterm birth and congenital malformations accounted for the majority of adverse outcomes in the hospital setting and birth asphyxia was also associated with cord prolapse⁴
- Asphyxia may also result in hypoxic-ischaemic encephalopathy and cerebral palsy¹
- A finding of cord presentation on ultrasound is associated with an increased risk of cord prolapse; however, the majority of sonographic cord presentations are not followed by cord prolapse⁵
- A recent retrospective study reported a higher incidence of cord prolapse among women who undergo induction of labour (artificial rupture of the membranes)⁶
- Cord presentation / prolapse is more likely to occur after artificial rupture of the membranes or sudden spontaneous rupture of the forewaters (with malpresentation or high presenting part) than in association with a hindwater leak⁷
Cord Presentation and Prolapse

Risk factors
> Breech and other malpresentations e.g. shoulder presentation
> Multiple gestation (usually the second born twin)
> Preterm labour + / - low birth weight < 2,500 g
> Transverse, oblique and unstable lie (where the longitudinal axis of the fetus is changing repeatedly)
> High head at onset of labour + / - artificial rupture of the membranes
> Grand multiparity
> Polyhydramnios
> Abnormal placentation
> Fetal congenital anomalies
> Abnormally long umbilical cord

Procedure related
> Artificial rupture of the membranes
> Vaginal manipulation of the fetus with ruptured membranes
> External cephalic version

Prevention
> Identify risk factors
> Intrapartum: Controlled artificial rupture of the membranes (ARM) by senior medical or midwifery staff in the following situations:
  > High, ill-fitting presenting part
  > Unstable lie
  > Polyhydramnios
> Ensure emergency theatre is available and consider the need to exclude cord presentation on ultrasound before ARM

Diagnosis
> The presence of cord should be excluded during all routine vaginal examinations in labour and after spontaneous rupture of membranes where risk factors are present or if fetal heart rate abnormalities commence soon thereafter
  > Diagnosis is usually made during a vaginal examination when the examiner feels a soft, usually pulsatile structure
  > On examination, the cord may be presenting (alongside the presenting part), or prolapsed (in the vagina or in the introitus)

Management

Antepartum
> Speculum or vaginal examination immediately after rupture of the membranes for women with a high risk of cord prolapse
> If cord presentation or prolapse is diagnosed, call for immediate medical assistance
  > Immediate assessment of clinical circumstances: gestation, presentation, cervical dilatation, fetal wellbeing
  > Obstetric emergency management will depend on gestation and viability and discussion with the woman
> If no cord pulsation or fetal heart heard, confirm presence or absence of fetal heart with portable ultrasound
> In cases of viability, expedite birth and manage as below
Cord Presentation and Prolapse

Intrapartum

> The sudden appearance of large fetal variable decelerations or prolonged fetal bradycardia on the cardiotocograph in labour or after spontaneous rupture of the membranes is an indication to perform a vaginal examination to exclude or confirm the presence of cord presentation / prolapse
>
> Once cord presentation / prolapse is diagnosed, treat as an obstetric emergency and call for immediate medical assistance (obstetrician, anaesthetist, neonatologist) to expedite birth
>
> Discontinue oxytocin infusion if in progress
>
> The mode of delivery will depend on whether a fetal heart is present or absent and the stage of labour
>
> Explain findings to the woman and support persons including the emergency measures that may be needed
>
> Aim to maintain the fetal circulation by preventing / minimising cord compression until birth occurs (see below)
>
> Note time of diagnosis of cord presentation / prolapse and maintain a contemporaneous record of events until birth occurs

Cord pulsating

> Determine stage of labour by vaginal examination

Cervix is not fully dilated

>
> Ensure intravenous access in place
>
> Obtain and send group and save
>
> Administer O₂ via non-rebreathing mask at 8 litres per minute
>
> Ensure continuous CTG until in theatre and commencing caesarean section or until after vaginal birth
>
> Obtain arterial and venous cord blood gases immediately after delivery
>
> The priority is to relieve pressure on the cord by elevating the presenting part while preparations are made for emergency caesarean section. This can be achieved by:
>
> Positioning the woman in the deep knee-chest position or on the left side with head down. Elevate the foot of the bed where possible
>
> Manually elevating the presenting part is reasonable if there is immediate access to theatre—Insert sterile gloved fingers into the vagina to elevate the presenting part away from the cord. Avoid excessive handling of the cord
>
> Acute intravenous tocolysis (using either SC or IV Terbutaline or IV salbutamol) may be an effective adjunct treatment (for dosing information on tocolytic alternatives, see Tocolysis for Uterine Hypercontractility PPG available at www.sahealth.sa.gov.au/perinatal)
>
> Bladder filling: In cases where a delay in transfer to theatre for caesarean section is expected – consider elevation of the presenting part through rapid instillation of sodium chloride 0.9 % (at least at room temperature) into the maternal bladder (by inserting the end of a blood giving set into a Foley catheter). Position head down in left lateral position before passing urinary catheter. Clamp the catheter once 500 – 750 mL has been instilled. Ensure the bladder is emptied before any delivery attempt
>
> If a delay in transfer to theatre is expected and the pulsating cord is prolapsed outside of the vagina, the cord may be replaced in the vagina or a pad soaked in warm saline (sodium chloride 0.9 %) may be used to cover the cord. There is insufficient data to prove the benefits of either method.
Cord Presentation and Prolapse

Anaesthetic and theatre management

> The aim should be to deliver the baby as soon as possible in a manner that provides for safe anaesthesia for the mother

> There is poor correlation between the decision-to-delivery interval and umbilical cord pH. The 30-minute decision-to-delivery interval is the acknowledged target for category 1 caesarean section. The average interval between decision and childbirth for fetal concern in maternity units in the UK ranges between 30 and 40 minutes, but, in the National Sentinel Caesarean Section Audit, for cases with cord prolapse the median interval was 17 minutes and 75% of deliveries were performed within less than 26 minutes (interquartile range 12–26). It is acknowledged that patient safety and attention to the individual woman is more important than fixation on time targets. For information on the SA auditable standard for category 1 caesarean section, (See Standards for the Management of Category 1 Caesarean Section in SA available at www.sahealth.sa.gov.au/perinatal)

> A focused anaesthetic assessment of the woman must be conducted before anaesthetising the woman

> If the woman has a working epidural in place, there may be time for this to be topped up, by the anaesthetist, either before or en-route to theatre, thus avoiding general anaesthesia

> The majority of caesarean sections, where there is a cord prolapse and there is no epidural in-situ, are performed under general anaesthesia. However, expeditious spinal anaesthesia can be performed in cases of cord presentation, particularly when the fetal heart rate is acceptable.

> It is a high priority to move the woman to the operating room:

> Depending upon local circumstances, some procedures e.g. intravenous cannulation, obtaining group and save and urinary catheterisation can be delayed until the woman is in the operating theatre

> The usual prophylaxis to prevent the adverse effects of the aspiration of gastric contents should still be given to the woman, e.g. sodium citrate plus ranitidine

> Perform “Surgical Team Safety Checklist” as per SA Health Policy Directive “Surgical Team Safety Checklist” before commencing surgery. In many cases, the immediacy of the situation leaves little time for documentation of consent before surgery

Second stage of labour

> If the woman is in the second stage of labour and vaginal birth is feasible with the presenting part at or below spines, the doctor should prepare for operative delivery (vacuum extraction or instrumental)

> If immediate vaginal delivery is not feasible, expedite delivery with caesarean section

> Obtain arterial and venous cord blood gases immediately after delivery

Cord not pulsating

> Confirm fetal death with ultrasound scan

> Allow labour to proceed as for vaginal birth of fresh stillbirth
Cord Presentation and Prolapse

Post birth

> Document details of birth and outcome in the medical record

Counselling

> The woman and her significant support persons should receive ongoing explanation to ensure the woman's informed cooperation
> In the case of planned immediate caesarean section, the woman may require a general anaesthetic. Explain that the support person may not be able to attend the theatre in this situation

Communication with women and their support people during caesarean section

> It is important that staff counsel any support persons who are unable to be present in theatre for the emergency caesarean section regarding the need for immediate intervention to optimise fetal outcomes

Postpartum follow up

> Staff involved in the care of the woman should follow her up in the postnatal period.
> This may help clarify the sequence of events related to the cord prolapse / presentation and provide the woman with an opportunity to ask any questions
Cord Presentation and Prolapse

References


Cord Presentation and Prolapse

Acknowledgements

The South Australian Perinatal Practice Guidelines gratefully acknowledge the contribution of clinicians and other stakeholders who participated throughout the guideline development process particularly:

Write Group Lead
Allison Rogers
Dr Steven Scroggs

Other major contributors
SAPPG Work Group 2005-2014
D Murphy

SAPPG Management Group Members
Sonia Angus
Dr Kris Bascomb
Lyn Bastian
Elizabeth Bennett
Dr Feisal Chenia
John Coombes
A/Prof Rosalie Grivell
Dr Sue Kennedy-Andrews
Jackie Kitschke
Catherine Leggett
Dr Anupa Parange
Dr Andrew McPhee
Rebecca Smith
A/Prof John Svigos
Dr Laura Willington
## Cord Presentation and Prolapse

### Document Ownership & History

**Developed by:** SA Maternal, Neonatal & Gynaecology Community of Practice  
**Contact:** HealthCYWHSPerinatalProtocol@sa.gov.au  
**Endorsed by:** SA Health Safety and Quality Strategic Governance Committee  
**Next review due:** 30 June 2019  
**ISBN number:** 978-1-74243-469-8  
**PDS reference:** CG139  
**Policy history:**
- Is this a new policy (V1)? **N**  
- Does this policy amend or update an existing policy? **Y**  
- If so, which version? **V4**  
- Does this policy replace another policy with a different title? **N**  
- If so, which policy (title)?

### Approval History

<table>
<thead>
<tr>
<th>Approval Date</th>
<th>Version</th>
<th>Who approved</th>
<th>New/Revised Version</th>
<th>Reason for Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/05/2018</td>
<td>V4.1</td>
<td>SA Health Safety and Quality Strategic Governance Committee</td>
<td>Review date extended to 5 years following risk assessment. New template</td>
<td></td>
</tr>
<tr>
<td>17/06/2014</td>
<td>V4</td>
<td>SA Health Safety and Quality Strategic Governance Committee</td>
<td>Reviewed in line with scheduled review date.</td>
<td></td>
</tr>
<tr>
<td>26/07/2011</td>
<td>V3</td>
<td>Maternal and Neonatal Clinical Network</td>
<td>Reviewed in line with scheduled review date.</td>
<td></td>
</tr>
<tr>
<td>17/06/2008</td>
<td>V2</td>
<td>Maternal and Neonatal Clinical Network</td>
<td>Reviewed in line with scheduled review date.</td>
<td></td>
</tr>
</tbody>
</table>