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

Note: The words woman/women/mother/she/her have been used throughout this guideline as most pregnant and birthing people identify with their birth sex. However, for the purpose of this guideline, these terms include people who do not identify as women or mothers, including those with a non-binary identity. All clinicians should ask the pregnant person what their preferred term is and ensure this is communicated to the healthcare team.

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 woman. 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 unison.

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 respectfully 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
The purpose of this guideline is to provide information on the indications for cervical length surveillance, diagnosis of short cervical length and the appropriate use of cervical cerclage for prevention of preterm birth. For further information on the diagnosis and management of preterm labour and birth, see the Preterm Labour and Birth PPG, available at www.sahealth.sa.gov.au/perinatal.
Flowchart 1 | Management of Short Cervical Length

**SHORT CERVICAL LENGTH AT MID-TRIMESTER MORPHOLOGY SCAN**
(Between 18-23 weeks gestation)
- Cervical length less than 25 mm

**History of pre-term birth (<34 weeks gestation) OR other risk factor for spontaneous preterm birth?**

**YES**
- **CONSIDER TRANSVAGINAL CERVICAL CERCLAGE**
  - Refer to MFM for consideration of transvaginal cervical cerclage
  - Commence progesterone pessaries 200 mg PV nocte
  - Vaginal MC&S swabs and initiate treatment for bacterial vaginosis if present (see Antibiotics in the Peripartum Period PPG)
  - Encourage smoking cessation (if applicable)

**NO**
- **CONTINUE MONITORING/MANAGEMENT**
  - Commence progesterone pessaries 200 mg PV nocte
  - Vaginal MC&S swabs and initiate treatment for bacterial vaginosis if present (see Antibiotics in the Peripartum Period PPG)
  - Encourage smoking cessation (if applicable)
  - Serial transvaginal ultrasound for cervical length every 7-14 days up to 24 weeks gestation
  - Refer to MFM for consideration of transvaginal cervical cerclage if progressive shortening or if cervical length <10 mm

Refer to *Preterm Labour and Birth: Prevention, Diagnosis and Management PPG* for further information pertaining to pre-term labour and birth, available at [www.sahealth.sa.gov.au](http://www.sahealth.sa.gov.au)
South Australian Perinatal Practice Guideline
Cervical Length (Short) and Cerclage

Flowchart 2 | Decision for Cerclage

**History Indicated Cerclage**
- Criteria: History of 3 or more spontaneous preterm births or mid-trimester pregnancy losses
- *Timing of cerclage:* between 12-14 weeks, but may be placed up to 24 weeks gestation in individual cases

**Ultrasound Indicated Cerclage**
- Criteria:
  - Previous preterm birth (<34 weeks) and CVL < 25 mm OR
  - No previous preterm birth (<34 weeks) and CVL < 10-15 mm
- *Timing of cerclage:* between 14-24 weeks gestation

**Physical Examination Indicated Cerclage**
- Criteria:
  - Open cervix on examination AND
  - No evidence of active chorioamnionitis or active labour
- *Timing of cerclage:* 14-24 weeks gestation

**Investigations**
- WCC < 15,000/mL
- CRP < 20 ng/mL
- USS (check gestation, viability, plurality, exclude ROM)
- High and low vaginal swabs

**Clinical Assessment**
- Temperature < 38°C
- No uterine tenderness
- No fetal tachycardia
- No uterine activity
- Intact membranes

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**Anaesthetics & Consent**
- Consult with Anaesthetist to determine most appropriate anaesthetic option
- Obtain informed consent for procedure

**Consider Tocolysis**
- Intra-operatively
- Post operatively

**Perform Procedure & Document:**
- Material used
- Position of knot
- Type of knot, including if there is presence of an "air knot"

**Consider Broad-Spectrum Antibiotics**
- For emergency and rescue cerclage
- Refer to Antibiotics in the Peripartum Period PPG

**Considerations for Transabdominal Cervical Cerclage**
- Consider Transabdominal Cervical Cerclage if:
  - Previous cervical surgery where there is no intravaginal cervix to suture and a transvaginal cerclage will not be possible
  - History of failed cervical cerclage whereby previous ultrasound-indicated (but not physical examination-indicated) transvaginal cervical cerclages have not been successful in preventing pre-term birth

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**Output Consultant Input**
- Refer to Obstetric Consultant to explore alternative options
Summary of Practice Recommendations

All women should have a cervical length performed at the mid-trimester morphology scan, by either transabdominal or transvaginal ultrasound, for the identification of short cervical length and increased risk of spontaneous preterm birth.

Women with risk factors for spontaneous preterm birth should have serial cervical length monitoring from 15 to 24 weeks gestation.

There has been no proven benefit for transvaginal ultrasound cervical length measurement at less than 14 weeks and it is not recommended.

Transvaginal cervical cerclage reduces preterm birth in women with a previous spontaneous preterm birth, less than 34 weeks gestation and a cervical length less than 25 mm.

When performing a transvaginal cervical cerclage, perioperative tocolytics, corticosteroids and antibiotics should be considered, with caution.

Transvaginal cervical cerclage is associated with maternal and fetal risks and should be undertaken in a setting where there is ability to provide ongoing surveillance for sepsis or early preterm labour and need for urgent delivery.

Transabdominal cervical cerclage, while beneficial in a small group of women who have had a failed transvaginal cerclage, is associated with increased morbidity and requires specialist, experienced consideration and work up.
Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
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<tr>
<td>&gt;</td>
<td>Greater than</td>
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<tr>
<td>≥</td>
<td>Greater than or equal to</td>
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<tr>
<td>&lt;</td>
<td>Less than</td>
</tr>
<tr>
<td>≤</td>
<td>Less than or equal to</td>
</tr>
<tr>
<td>mL</td>
<td>Millilitre(s)</td>
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<tr>
<td>°C</td>
<td>Degrees in Celsius</td>
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<tr>
<td>CRP</td>
<td>C-reactive Protein</td>
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<tr>
<td>e.g.</td>
<td>For example</td>
</tr>
<tr>
<td>et al.</td>
<td>And others</td>
</tr>
<tr>
<td>FBE</td>
<td>Full blood examination</td>
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<tr>
<td>g</td>
<td>Gram(s)</td>
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<tr>
<td>LLETZ</td>
<td>Large Loop Excision of the Transformation Zone of the cervix</td>
</tr>
<tr>
<td>mg</td>
<td>Milligram(s)</td>
</tr>
<tr>
<td>mL</td>
<td>Millilitre(s)</td>
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<tr>
<td>ng/dL</td>
<td>NanoGram per decilitre</td>
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<tr>
<td>%</td>
<td>Percentage</td>
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<tr>
<td>PPROM</td>
<td>Preterm prelabour rupture of membranes</td>
</tr>
<tr>
<td>ROM</td>
<td>Rupture of membranes</td>
</tr>
<tr>
<td>USS</td>
<td>Ultrasound scan</td>
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<tr>
<td>WBC</td>
<td>Leucocyte (White blood cell)</td>
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Definitions

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tr>
<td>Cervical cerclage</td>
<td>A variety of surgical procedures in which sutures or synthetic tape are used to mechanically increase the tensile strength of the cervix, thereby reducing the occurrence of preterm birth.¹</td>
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<tr>
<td>Cervical insufficiency</td>
<td>A structural or functional weakness of the cervix causing painless dilatation and shortening of the cervix in the absence of contractions and is associated with premature and sometimes pre-viable birth.</td>
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<tr>
<td>Shortened cervix</td>
<td>A cervical length that measures &lt; 25 mm on a transvaginal ultrasound scan at 20-24¹⁰ weeks gestation.²</td>
</tr>
<tr>
<td>Cervical funnelling or 'beaking'</td>
<td>The separation of the internal os from the two sidewalls of the upper end of the cervical canal.</td>
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Literature Review

> Preterm birth complicates approximately 1 in 10 pregnancies.
> Cervical shortening and effacement start earlier in pregnancy (16-24 weeks gestation compared to from 32 weeks gestation) among women at risk of spontaneous preterm birth.
> A transvaginal cervical length of < 25 mm in the mid-trimester is associated with a 2.8x increased risk of delivering < 34 weeks gestation.
> Cervical cerclage is an intervention that when offered to the right women, can prevent pre-term birth and mid-trimester fetal losses.²
> Among women with a previous spontaneous preterm birth or mid-trimester loss and a cervical length < 25 mm, insertion of a transvaginal cerclage significantly reduces preterm birth (RR 0.70) and composite perinatal mortality and morbidity (RR 0.64).³
The benefits of transvaginal cervical cerclage among women with no previous spontaneous preterm birth and a short cervical length is less clear, however it may be beneficial when the cervical length is very short (less than 10 mm) or open with fetal membranes exposed.

There is limited high-quality evidence to inform what suture material to use for transvaginal cerclage, how to perform the procedure, or the use of tocolysis, corticosteroids and antibiotics at the time of insertion.3

Women undergoing a transvaginal cerclage, particularly a physical examination-indicated transvaginal cerclage, remain at an increased risk of spontaneous preterm birth and sepsis, necessitating close ongoing surveillance.

Mid-Trimester Cervical Length Measurement for Prediction of Preterm Birth

All women should have an appropriately performed cervical length at the mid-trimester morphology scan, at 18-23 weeks gestation. This can be performed transabdominally or transvaginally. Transabdominal cervical length assessment requires a partially filled bladder (an over-full bladder falsely elongates the cervical length) and is performed in a midline sagittal plane.

If the cervical length is < 35 mm on transabdominal ultrasound, or is unable to be seen well, a transvaginal ultrasound should be performed.

Transvaginal cervical length assessment should be performed with an empty bladder, and multiple images taken over a period of 5-10 minutes, as the cervical length can be dynamic.

The cervical length should be measured as a linear distance, between the internal and external cervical Os, and the shortest measurement reported. The presence of any funnelling should also be reported.

Women who are considered to be at an increased risk of preterm birth should undergo serial transvaginal cervical length measurement between 15 and 24 weeks gestation.

Management of Short Cervical Length in the Mid-Trimester

The decision to perform cervical cerclage is based on obstetric history and ultrasound and clinical assessment of the cervix during pregnancy. Women should be counselled by a practitioner experienced in performing the procedure. Consider use of perioperative antibiotics and tocolytics with caution.

Perinatal service providers need cultural sensitivity within a non-judgemental environment when planning care for Aboriginal women. Aboriginal women should be referred to or offered support from an Aboriginal Health Professional to support their care.

Among women with a history of a previous preterm birth or mid-trimester loss, and a transvaginal cervical length < 25 mm, there is evidence from a systematic review and meta-analysis that a transvaginal cervical cerclage reduces the risk of recurrent preterm birth (RR 0.70).4

Approximately 15% of low-risk women with singleton pregnancies with a mid-trimester cervical length measurement of 26 to 29 mm will experience cervical shortening to ≤ 25 mm before 24 weeks gestation and repeat ultrasound transvaginal cervical length in two weeks may be reasonable.5

There is no evidence for benefit of vaginal progesterone to reduce the risk of preterm birth with transvaginal ultrasound cervical length greater than 25 mm.
Among women without a history of preterm birth or mid-trimester loss, and a transvaginal cervical length < 25 mm, there is limited high-quality evidence to guide practice. It is possible that any benefit of transvaginal cervical cerclage in this population would be when the cervical length is very short (< 10 mm) or open. A randomised trial compared transvaginal cervical cerclage with expectant management, among predominantly low risk women with a cervical length < 15 mm, did not find a significant difference in rate of preterm birth. Further trials are ongoing.

There is no evidence to guide recommendations for management among women with a short cervical length in the mid-trimester and other risk factors for preterm birth (Mullerian abnormality, previous cone or LLETZ procedure, twins or higher order multiples). Management of these women should be individualised and carried out by experienced specialists.

Considerations Prior to Transvaginal Cervical Cerclage

Prior to performing a transvaginal cervical cerclage, the following investigations should be undertaken.

**Investigations:**
- full blood examination (leukocyte count ≤ 15,000 / mL)
- C-reactive protein (< 20 ng/dL)
- high and low vaginal swabs
- ultrasound to exclude fetal anomalies, preterm pre-labour rupture of the membranes, confirm gestational age.

**Observations:**
- exclude regular uterine activity
- exclude preterm rupture of the membranes
- maternal temperature < 38˚C
- no uterine tenderness
- no fetal tachycardia
- ensure informed consent is signed.

Indications for Transvaginal Cervical Cerclage

1. **History-Indicated**

   Consider a transvaginal cervical cerclage for women with a history of:
   - three or more spontaneous preterm births or mid-trimester pregnancy losses.

   **Timing of cerclage placement:**
   - between 12-14 weeks but may be placed up to 24 weeks gestation in individual cases.

2. **Ultrasound-Indicated**

   Consider cervical cerclage for women:
   - with a cervical length < 25 mm AND a history of preterm birth < 34 weeks gestation.
   - with a cervical length < 10 mm AND no history of preterm birth < 34 weeks gestation.

   **Timing of cerclage placement:**
   - usually between 14-24 weeks gestation.
3. Examination-Indicated

- Do NOT offer a transvaginal cerclage if there are signs of infection, bleeding or uterine activity.\(^8\)
- Consider cervical cerclage for women with a combination of:
  - open cervix on examination and
  - no evidence of active chorioamnionitis or active labour.

**Timing of cerclage placement:**
- May be performed between 14 and 24 weeks gestation.

**Transvaginal Cervical Cerclage Technique**

- The two main techniques are:
  - **McDonald transvaginal cervical cerclage**: Insertion of a transvaginal cervical cerclage with no dissection of the vaginal skin.
  - **Shirodkar transvaginal cervical cerclage**: Insertion of a transvaginal cervical cerclage where dissection of the vaginal skin occurs, to facilitate reflection of the bladder and a higher cerclage placement.

- Suture materials used include mersilene tape, prolene, nylon and silk.
- There is no evidence to recommend a particular technique or suture material over another.
- The suture is knotted - knots placed anteriorly are the easiest to see and remove.
- Some surgeons insert an "air knot" to facilitate easier identification and removal of the suture. The position and type of knot used needs to be accurately documented.

**Complications**

The MRC / RCOG report\(^9\) showed that the use of cerclage is associated with increased medical intervention and doubles the risk of maternal fever and sepsis. The risk of maternal fever and sepsis are higher when a physical examination-indicated cerclage is inserted.\(^10-11\) Women who have a transvaginal cervical cerclage inserted remain at an increased risk of preterm birth and sepsis, and require education about when to present, and ongoing close surveillance.

**Complications include:**

- chorioamnionitis
- prelabour preterm rupture of membranes
- preterm labour
- cervical dystocia
- cervix may not dilate due to scarring, therefore requiring a caesarean section
- cervical laceration.

**Removal of Transvaginal Cervical Cerclage**

The cerclage can be removed electively at 36\(^{\circ}\) - 37\(^\circ\) weeks gestation. Usually, it is easiest for the obstetrician who inserted the cerclage to remove it prior to birth. It is important that the obstetric doctor removing the suture refers to the original operation records prior to removal to ensure that the suture/s are removed entirely. Removal can be performed, in most cases, without anaesthesia.
A CTG should be performed post suture removal, and close observation of vaginal loss and uterine activity. If the CTG is normal and no other clinical concerns one hour post procedure, the woman may be discharged with a documented plan for follow up, and instructions for the woman to contact the hospital if she has any concerns, feels unwell, experiences any vaginal loss or decreased fetal movements. Women who go into labour with the suture insitu should have the suture removed as early as possible. If this cannot be achieved, remove the suture after birth. The onset of preterm labour unresponsive to tocolysis and / or a strong suspicion of sepsis are indications for the removal of the cerclage as an emergency.

Aboriginal women should be consulted on any follow up plans and supported their nominated Aboriginal Health Professional.

**Transabdominal Cervico-isthmic Cerclage**

There is evidence that for women at very high risk of preterm birth, transabdominal cervical cerclage is associated with a reduction in preterm birth and mid-trimester loss. Transabdominal cervical cerclage is more complicated than transvaginal cervical cerclage and is associated with greater morbidity (wound infection, bleeding). Also, vaginal birth is not possible following this approach, so a caesarean section is necessary for the birth of the baby.

The indications for transabdominal cervico-isthmic cerclage are:

- cervical anatomy does not allow the placement of a cervical cerclage vaginally (e.g., post trachelectomy)
- after a failed transvaginal cerclage (delivery at <30 weeks gestation after a history- or ultrasound-indicated, but NOT physical examination-indicated, transvaginal cervical cerclage).

**Surgical Procedure**

Transabdominal cervico-isthmic cerclage is generally an elective procedure that should only be undertaken by an Obstetrician/Gynaecologist with appropriate expertise. It can be performed via laparotomy or laparoscopy. Suture material may be mersilene tape or a number 2 Portex infant feeding tube threaded onto a number 4 taper point mayo needle. Consider single dose perioperative prophylactic antibiotics.

**Timing of Procedure**

A transabdominal cervico-isthmic cerclage can be inserted either between pregnancies, or in early pregnancy. There are risks and benefits to both procedures, and women who are identified as potentially being candidates for a transabdominal cervico-isthmic cerclage should be referred early to Maternal Fetal Medicine for consideration.

**Birth Following Transabdominal Suture**

- Ideally around 36-37 weeks of gestation by caesarean section.
- There is a potential for uterine rupture if labour occurs spontaneously.
- The suture may remain insitu for any future pregnancies.
Resources

SAPPGs Web-based App:
Practice Guidelines (sahealth.sa.gov.au)

Medicines Information:
Medicines Information Homepage - SA Pharmacy Medicines Information Service - LibGuides at South Australian Health Library Service (sahealthlibrary.sa.gov.au)

SA Health Pregnancy:
Pregnancy | SA Health

Australian Government Pregnancy, Birth and Baby:
Pregnancy, Birth and Baby | Pregnancy Birth and Baby (pregnancybirthbaby.org.au)
References


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# South Australian Perinatal Practice Guideline

## Cervical Length (Short) and Cerclage

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