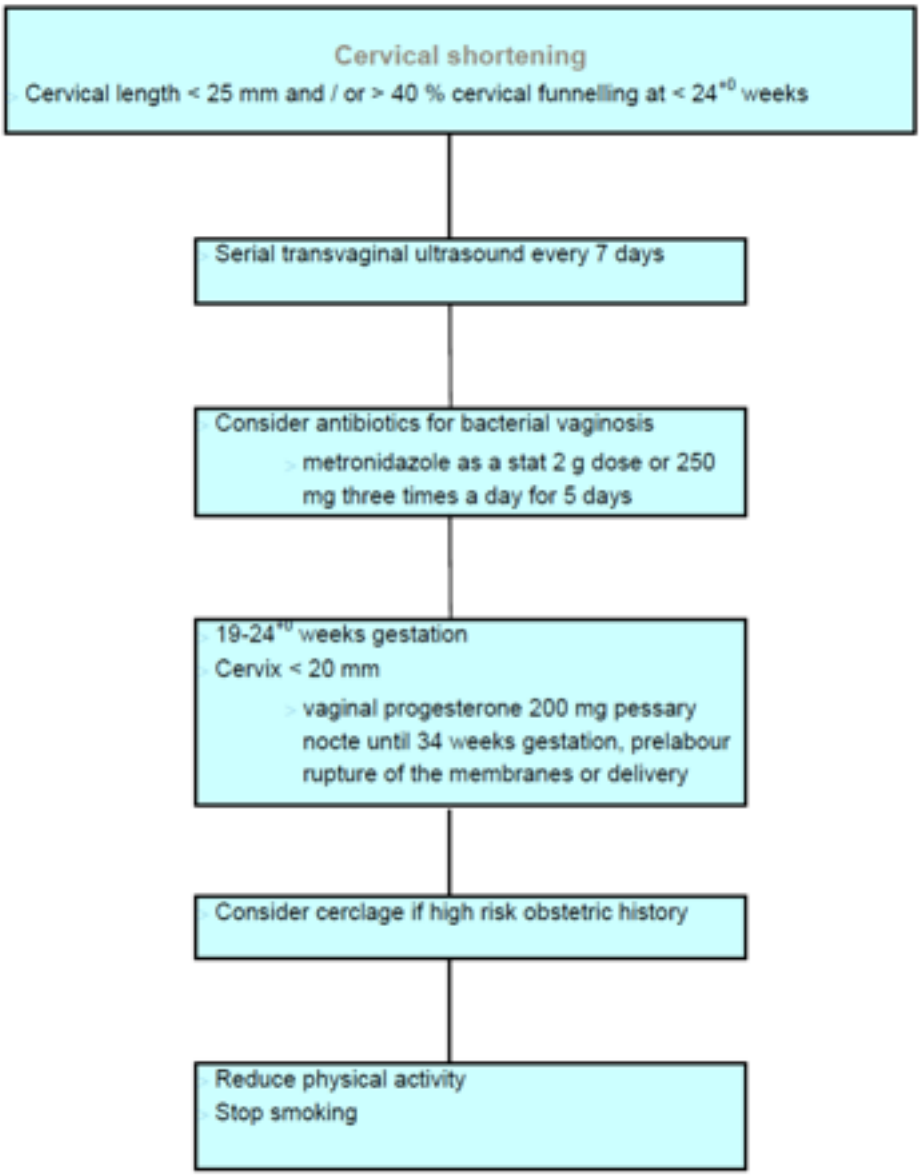
South Australian Perinatal Practice Guidelines

Cervical insufficiency and cerclage

Short cervix management options flow chart



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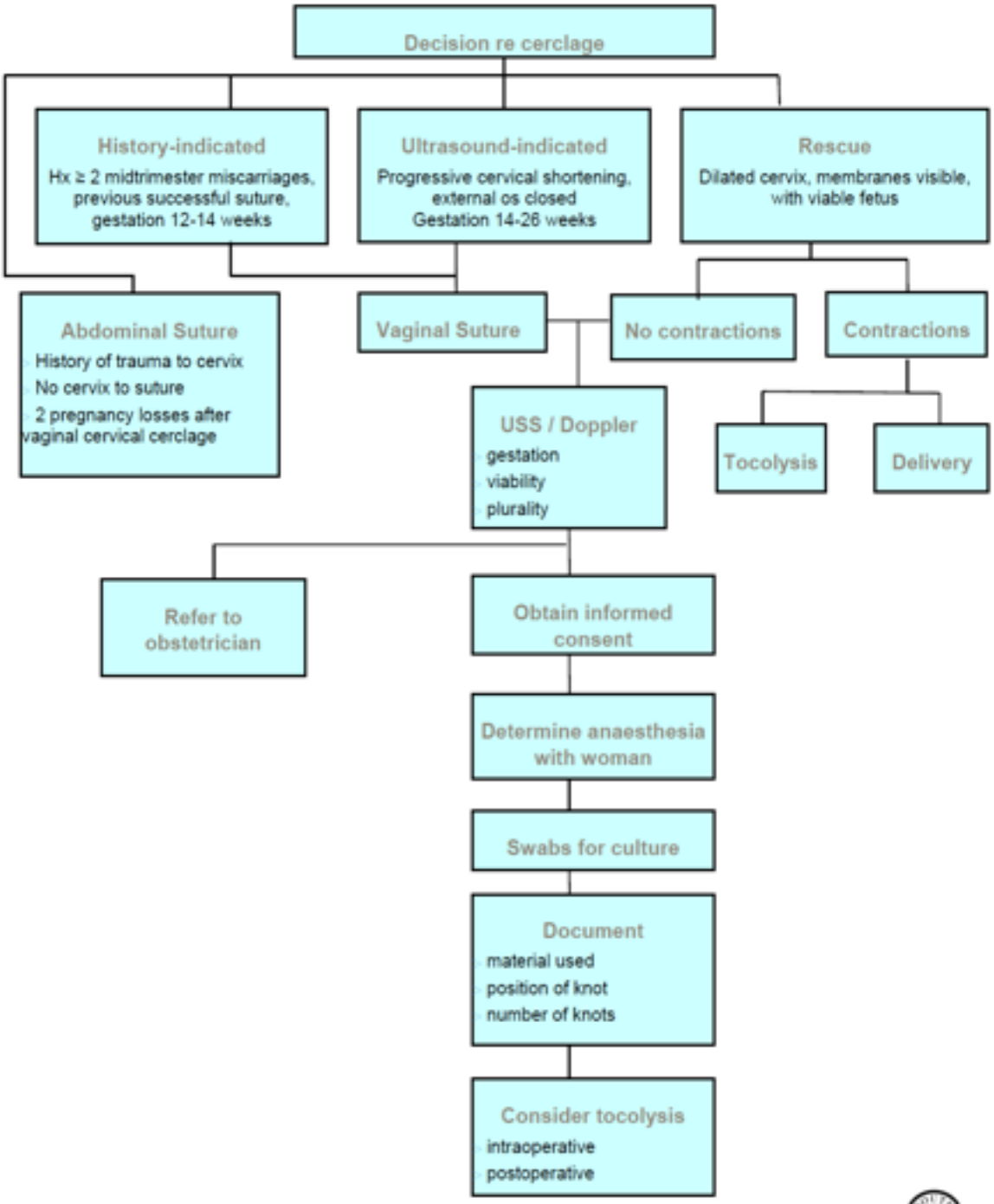
Decision for cervical cerclage flow chart



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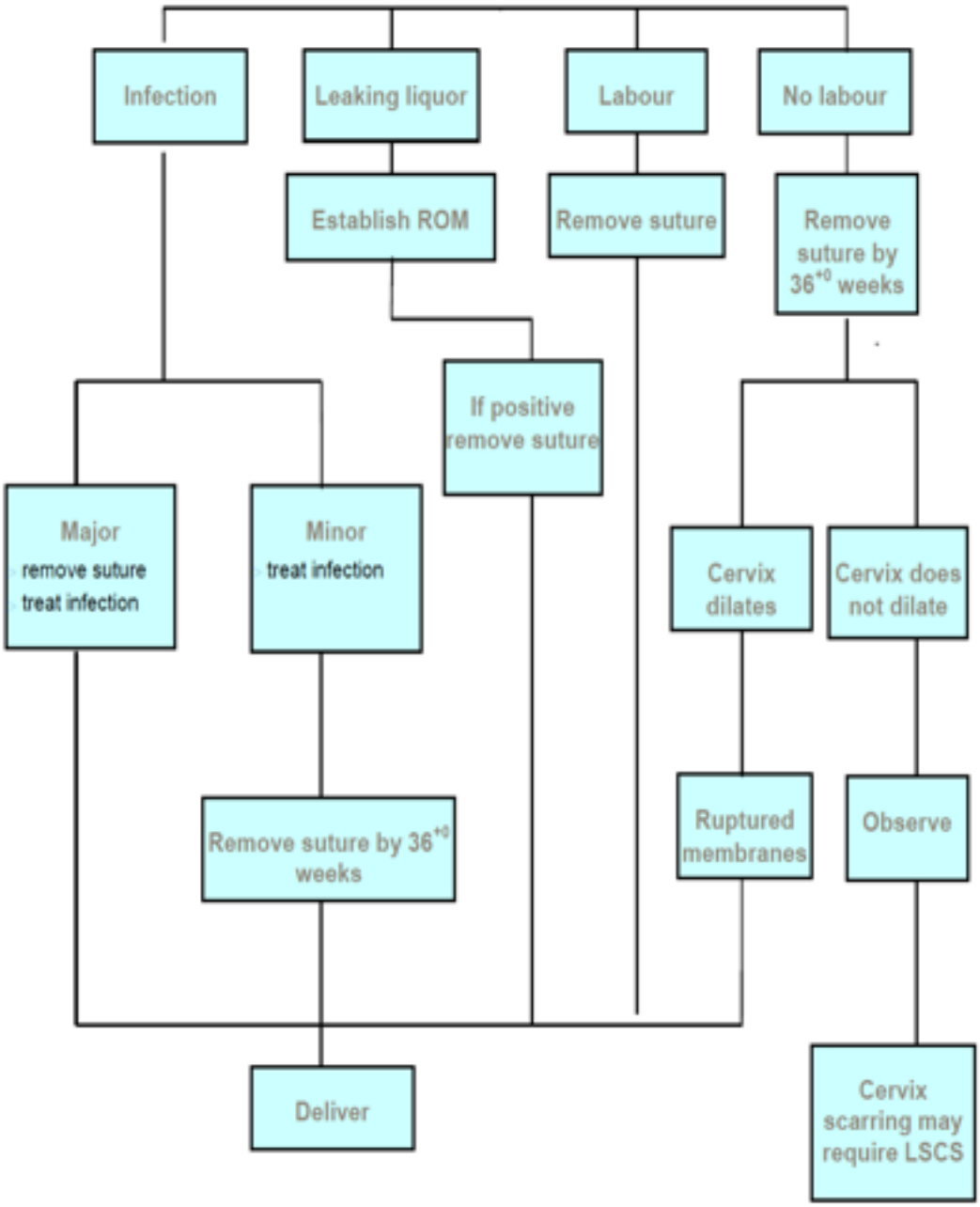
Cervical cerclage - antenatal care flow chart



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Cervical insufficiency and cerclage

Definitions

- Cervical cerclage refers to 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 (Norwitz et al. 2007)
- Cervical insufficiency is characterised by a structural weakness of the cervix causing painless dilatation and shortening of the cervix too early in pregnancy
- Cervical insufficiency may be associated with:
    - Bulging and / or prelabour rupture of the membranes
    - Preterm birth
    - Intra-amniotic infection
    - Fetal loss
- The most frequently used definition of a shortened cervix is one that measures < 25 mm (10^{th} centile) on a transvaginal ultrasound scan at $20\text{-}24^{+0}$ weeks gestation(3centres Collaboration 2011)

Literature review

- A Cochrane review (Drakeley et al. 2003) recommends that cervical cerclage should not be offered to women at low or medium risk of mid trimester loss
- Research to date has shown no clear benefit in using cervical cerclage for women who have cervical shortening on ultrasound (Drakeley et al. 2003)
- The CIPRACT study (Althuisius et al. 2001) found therapeutic cerclage with 48 hours of bed rest reduced preterm delivery before 34^{+0} weeks
- No randomised trials have presented findings free of confounding variables to support the routine use of tocolytics, corticosteroids and antibiotics with cervical cerclage (Harger 2002)
- Data from the latest individual patient data meta-analysis of more than 1,000 women undergoing cerclage in the context of several randomised controlled trials indicate no clear gain from the intervention in terms of pregnancy loss or perinatal outcome (Jorgensen et al. 2007). Pregnancy loss or death before discharge from hospital was significantly higher in twin pregnancies treated with cerclage than in those without cerclage (Jorgensen et al. 2007)

Incidence

- Cervical incompetence affects 1 % of pregnancies
- Occurs in 8 % of women with recurrent mid-trimester losses (Drakeley et al. 2003)

Risk factors

- Early identification of women at risk of cervical incompetence is important

Historical risk factors:

- Mid trimester loss suggesting cervical incompetence
- Previous preterm prelabour rupture of membranes < 27^{+0} weeks
- Previous cervical trauma (e.g. repeat TOP, miscarriage, cone biopsy, LLETZ)

Congenital / hereditary risk factors

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- In utero diethylstilbestrol exposure
- Uterine anomalies (congenital cervical hypoplasia or aplasia)
- Connective tissue abnormalities (Ehlers-Danlos syndrome)
- Medical expert consensus recommends serial ultrasound examination should be considered in a woman with historical risk factors for cervical incompetence and should be initiated between 15 and 20 weeks of gestation or later (ACOG 2003)

Diagnosis

- No diagnostic test for cervical incompetence
- Exclude other causes of preterm labour and birth (for further information, refer to the PPG 'Preterm Labour Management)
- Digital examination is subject to inter examiner variability
- Transvaginal ultrasound has been demonstrated to be a valid and replicable method of cervical assessment

Management

Cervical insufficiency

- The decision to perform cervical cerclage is based on obstetric history and clinical assessment of the cervix during pregnancy
- Counsel woman regarding risks and benefits of cerclage
- Consider perioperative antibiotics and tocolytics, with caution

Cervical shortening

Cervical length < 25 mm and / or > 40 % cervical funnelling at < 24+0 weeks

- Serial transvaginal ultrasound every 7 days
- Consider antibiotics for bacterial vaginosis (give metronidazole as a stat 2 g dose or 250 mg three times a day for 5 days)
- A 200 mg vaginal progesterone pessary nocte to women who are shown to have a cervix < 20 mm at 19-24^{+0} weeks gestation until 34 weeks gestation, prelabour rupture of the membranes or delivery can be recommended (Royal Hospital for Women 2008; 3centres Collaboration 2011; Romero et al 2012; (for further information, refer to the PPG 'Preterm Labour Management)
- Reduce physical activity
- Stop smoking
- Consider cerclage if high risk obstetric history

> 23+0 weeks

- Consider nifedipine tocolysis 60 - 160 mg per day

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- Consider corticosteroids - administer IM betamethasone in two doses of 11.4 mg (5.7 mg x 2) 24 hours apart
- If betamethasone is unavailable, give IM dexamethasone in two doses of 12 mg, 24 hours apart

Transvaginal ultrasound

- Clinically useful to identify signs of effacement (funnelling or beaking)
  - Transfundal pressure is more effective than coughing or standing in eliciting cervical changes and signs of progressive second trimester cervical shortening during active assessment of the cervix (Guzman et al. 1997)
  - Funnelling refers to the separation of the internal os from the two sidewalls of the upper end of the cervical canal
  - Cervical shortening is analogous with a change from the normal 'T' shaped endocervical canal to a 'Y' shape with initial effacement. With progressive shortening, the endocervical canal becomes 'V' shaped and eventually 'U' shaped

History-indicated cerclage

Consider cervical cerclage for women with a history of:

- Two or more second trimester pregnancy losses after excluding other risk factors and in the presence of cervical shortening
- Each loss earlier in gestation than the previous pregnancy

Investigations

- Complete blood picture (leukocyte count ≤ 15,000 / mL)
- C-reactive protein
- 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

Placement

- Usually between 12-14 weeks (3centres Collaboration 2011), but may be placed up to 26 weeks gestation in individual cases
- Regional anaesthesia preferred

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Ultrasound-indicated cerclage

Consider for women with a history of:

- Changes to cervical length on serial ultrasound
- External os remains closed
- Investigations and observations as above
- Placement as above
- Consider broad spectrum antibiotics

Placement

- Usually between 14-24 weeks, but may be placed up to 26 weeks gestation in individual cases

Rescue cerclage

Consider for women with a combination of:

- Cervix dilated > 2 cm with no perceived uterine contractions
- Premature cervical effacement > 50 %
- Presence of pelvic pressure
- Heavy mucoid vaginal discharge
- Or bulging membranes through the cervical os
- Investigations and observations as above
- Consider broad spectrum antibiotics

NB: there must be no evidence of chorioamnionitis

Technique

The two main techniques are:

- Insertion of the suture in bites with no dissection
- Less commonly a sub epithelial suture with dissection of the bladder
- Suture materials used include mersilene tape, nylon and silk
- There is no evidence to recommend a particular technique or suture material over another
- The position and type of knot used needs to be accurately documented

Complications

- The MRC / RCOG report showed that the use of cerclage is associated with increased medical intervention and doubles the risk of puerperal pyrexia
- The risk and nature of complications is influenced by whether the cerclage is inserted electively or as an emergency with membranes bulging through the cervix

These include:

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- Chorioamnionitis
- Prelabour preterm rupture of membranes
- Suture displacement
- Preterm labour
- Cervical dystocia
- Cervical laceration

Removal of cerclage

- The cerclage can be removed electively at 36^{+0} weeks gestation
- Knots placed anteriorly are easiest to see and remove. Usually it is easiest for the obstetrician who inserted the cerclage to remove it prior to delivery. Removal can be performed without anaesthesia under these conditions
- There is evidence that removal of the cerclage followed by immediate artificial rupture of the membranes or the spontaneous onset of labour is more likely to be associated with chorioamnionitis with coliforms than if this is delayed for 48 hours or longer. Antibiotic prophylaxis e.g. Benzylpenicillin, gentamicin should be given for the duration of labour
- Women who go into labour with the stitch insitu should have the stitch removed as early as possible. If this cannot be achieved, remove the stitch after delivery
- 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

Transabdominal cervico-isthmic cerclage

Only used in selected cases where:

- 2 attempts at transvaginal cervical cerclage have failed
- cervical anatomy does not allow the placement of a vaginal suture

Surgical procedure

- Elective procedure
- The traditional approach is via laparotomy, but a laparoscopic approach may also be undertaken (Umstad et al. 2010)
- Transabdominal cervical cerclage is more complicated than the transvaginal cervical cerclage and is associated with greater morbidity (wound infection, bleeding) (Umstad et al. 2010)
- This procedure should only be undertaken by an Obstetrician with appropriate expertise
- Suture material may be mersilene tape or a number 2 Portex infant feeding tube threaded onto a number 4 taper point mayo needle (provides greater elasticity)
- Consider single dose perioperative prophylactic antibiotics

Timing of procedure

- May be done before pregnancy or between 10-12 weeks of gestation

Before pregnancy

- An advantage is that the procedure is less vascular

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- If the 'more elastic' option of the Portex infant feeding tube is used as the suture material then the tension of the suture can be adjusted so that it extrudes a No 5 Hegar dilator placed in the cervical canal before insertion of the intra-abdominal cerclage. This ensures that the cervical canal is not completely obliterated so that in the event of aneuploidy / missed abortion the suture is sufficiently elastic to enable a No 5 Karmen suction catheter to be passed to evacuate the uterine contents without disturbing the suture

Between 10-12 weeks of gestation

- The procedure is more vascular
- The timing allows for first trimester screening to be completed and missed miscarriage to be diagnosed and treated
- Prophylactic hospitalisation is not required for any pregnancy after the procedure

Delivery

- Ideally around 36 weeks of gestation by caesarean section
- The suture may remain insitu for any future pregnancies

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Useful reference

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Abbreviations

ACOG	American College of Obstetricians and Gynecologists
cm	Centimetre(s)
e.g.	For example
et al.	And others
g	Gram(s)
LLETZ	Large Loop Excision of the Transformation Zone of the cervix
mg	Milligram(s)
mL	Millilitre(s)
MRC/RCOG	Medical Research Council/Royal College of Obstetricians and Gynaecologists
%	Percentage
TOP	Termination of pregnancy

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Version control and change history

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Version	Date from	Date to	Amendment
1.0		current	Original version

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