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Sri Lanka College of Obstetricians and Gynaecologists

Cervical cerclage

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1. Introduction

Preterm delivery and prematurity are the leading causes of perinatal morbidity, mortality and long-term adverse outcomes among the survivors[1]. Cervical incompetency is one of the major causes of second-trimester pregnancy loss, preterm delivery and preterm prelabour rupture of membranes (PPROM). A short cervical length is a significant risk factor or predictor of cervical incompetency[2].

Cervical insufficiency is an imprecise clinical diagnosis frequently applied to women with a history where it is assumed that the cervix is 'weak' and unable to remain closed during pregnancy[3]. Recent evidence suggests that, rather than being a dichotomous variable, cervical integrity is likely to be a continuum influenced by factors related not solely to the intrinsic structure of the cervix but also to processes driving premature effacement and dilatation[3].

Cervical cerclage is one of the standard prevention methods for second-trimester loss and preterm delivery. Cervical cerclage may provide a degree of structural support to a 'weak' cervix. However, it's role in maintaining the cervical length and the endocervical mucus plug as a mechanical barrier to ascending infection may be more important. Cervical cerclage was first demonstrated in 1955 by Shirodkar by placing a stitch around the cervix and enclosing it. Later, modifications were made to this stitch technique, and different types of cervical cerclage placement are now in practice[4].

2. Keywords and terminology

- ***Second-trimester pregnancy loss*** – Pregnancy loss/ miscarriage that occurs after 12 completed weeks to 24 weeks of gestation (up to the gestation of fetal viability)[5].
- ***Spontaneous preterm delivery*** – Spontaneous delivery of the fetus between 24 weeks and 36 weeks and 6 days of gestation[6].
- ***History indicated cervical cerclage*** – Application of cervical cerclage in asymptomatic women with a previous history that increases the risk of preterm birth[7].
- ***Ultrasound indicated cervical cerclage*** – Application of cervical cerclage in a woman with short cervical length on ultrasound scan[7].
- ***Emergency or rescue cerclage*** – Application of cervical cerclage in a woman who is diagnosed to have premature dilatation of the cervix and exposed fetal membranes when she is not in labour[7].

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3. When is cervical cerclage indicated?

- ***History indicated cervical cerclage*** – Women with a singleton pregnancy and three or more previous second-trimester losses or preterm births[5,8].
- ***Ultrasound indicated cervical cerclage*** – Women with a singleton pregnancy who have risk factors for preterm birth and a cervical length <25mm[5,9].

Ultrasound evidence of funneling alone without shortening of the cervix is not an indication for ultrasound-indicated cervical cerclage. The obstetrician should discuss it with the woman, and an individual decision should be made[10].

Cervical cerclage is not indicated in women with a history of two or fewer previous preterm births or second-trimester loss[5,7].

Cervical cerclage is not indicated in women with no risk factors for preterm birth or second-trimester loss and an incidental finding of cervical length <25mm[5,11,12].

Pregnancy following IVF and uterine anomalies alone are not indications for cervical cerclage in the absence of other risk factors[10].

4. Risk factors for preterm birth or second-trimester loss

- Those with a previous preterm birth or second-trimester loss (16-34 weeks gestation)
- Previous preterm prelabour rupture of membranes (PPROM) at less than 34 weeks gestation
- Previous use of cervical cerclage
- History of trachelectomy
- Known uterine variant / structural abnormality
- Intrauterine adhesion

5. Screening for cervical insufficiency

Whom to screen?

- Previous second-trimester loss
- Previous spontaneous preterm delivery at <34 weeks gestation and no other cause
- Previous >1 LLETZ procedure
- Previous cone biopsy of cervix
- Previous cervical surgeries such as trachelectomy
- Known uterine anomaly

How and when to screen?

- Serial transvaginal ultrasound scans are recommended every two weeks from 16 weeks to 24 completed weeks of gestation[13,14].

There is insufficient evidence to recommend universal screening for cervical insufficiency[13].

6. What are the contraindications for cervical cerclage?

The following are considered contraindications for insertion of cervical cerclage[5,15].

- Active preterm labour
- Evidence of chorioamnionitis
- Continuing vaginal bleeding
- PPROM
- Evidence of fetal compromise
- Lethal fetal defect
- Fetal death

7. Types of cervical cerclage

Trans-vaginal cerclage

- McDonald technique – A transvaginal purse-string suture is placed at the vaginal part of the cervix without bladder mobilisation[5].
- Shirodkar technique – A transvaginal purse-string suture is placed following bladder mobilisation to allow insertion above the level of the cardinal ligaments[5].

Trans-abdominal cerclage

- A suture is placed at the cervico-isthmic junction and performed via a laparotomy or laparoscopy[5].

Selecting the type of cervical cerclage depends on the indication, skill of the operator and individual circumstances.

8. Which cervical cerclage method is better?

Comparing Shirodkar and McDonald cerclage, the former is theoretically effective as it is placed higher near the cervico-isthmic junction. But it has practical difficulties such as needing bladder dissection, requiring an experienced surgeon, and difficulties in removal.

A randomised controlled trial showed no significant difference in the preterm delivery or fetal loss rates between upper and lower vaginal cerclage but fewer preterm deliveries and fetal loss rates in abdominal cerclage compared to lower vaginal cerclage[16].

As good clinical practice, we recommend a transvaginal cerclage placed as high as possible without dissection of the bladder, although there is inadequate evidence to recommend it. Further research is required in this area.

Trans-abdominal cerclage is recommended for women with previously failed vaginal cerclage and in women with a history of previous cervical surgery such as trachelectomy or a severely distorted cervix[16]. Trans-abdominal cerclage is not recommended as a first-line option unless it is indicated.

In the case of a previously failed McDonald cerclage, a detailed assessment should be carried out by an experienced clinician following which the application of either Shirodkar or an abdominal cerclage should be done by an experienced and skilled surgeon[17].

A trans-abdominal cerclage can be done via laparoscopy or laparotomy. Available evidence shows no significant difference in the efficacy. However, laparoscopic cerclage has less surgical morbidity, although it requires a skilled operator.

9. What is the preferred suture material?

A non absorbable suture material is recommended for cervical cerclage. The choice of suture material should be at the discretion of the surgeon.

Current evidence shows no significant difference in preterm birth rates between single and double sutures. Therefore, double sutures are not recommended.

10. Pre-operative preparations

All pregnant women awaiting cervical cerclage should have a first-trimester ultrasound scan or an anomaly scan to exclude gross fetal anomalies depending on the gestation.

Informed written consent should be obtained after explaining the procedure and possible adverse effects or complications to the patient. Cervical cerclage is associated with a small risk of intraoperative bladder damage, cervical trauma, membrane rupture and bleeding[5].

Screening for infection using WBC count and CRP should be carried out before emergency cerclage if there is a clinical suspicion of infection. A urine full report (UFR) and a high vaginal swab for culture can be considered before a cervical cerclage to screen for genito-urinary infection. There is insufficient data to recommend amniocentesis to screen for chorio-amnionitis in women awaiting emergency cerclage.

There is no evidence to support the use of routine perioperative tocolysis in women undergoing cervical cerclage[9].

Preoperative antibiotic prophylaxis can be decided according to local protocol, as there is no evidence to recommend routine antibiotic prophylaxis[9].

11. Post-operative care

There is no evidence to recommend bed rest routinely. Bed rest following cervical cerclage should be considered on an individual basis. It is also necessary to consider the adverse effects of prolonged immobilisation[18].

Abstinence from sexual intercourse following cerclage insertion should not be routinely recommended[15].

There is insufficient evidence to recommend progestogen therapy following cervical cerclage routinely. A systemic review and meta-analysis of 5 studies comparing cerclage alone and cerclage with adjuvant progesterone treatment concluded that intramuscular 17α-hydroxyprogesterone caproate (17-OHPC) in combination with prophylactic cerclage in women with prior preterm birth had no synergistic effect in reducing spontaneous recurrent preterm birth or improving perinatal outcomes[19].

The neonatal team should be informed after a successful emergency rescue cervical cerclage, and the availability of neonatal care facilities should be confirmed. If neonatal care facilities are unavailable, consider in-utero transfer[20].

There is insufficient data to recommend tocolysis therapy following cervical cerclage[21]. However, tocolytics can be used 48 hours following cervical cerclage.

12. When should a cervical cerclage be removed?

No trials are comparing the timing of cerclage removal. Cerclage should be removed before the onset of labour to prevent cervical trauma. If a woman does not go into spontaneous preterm labour, it is recommended to remove the cervical cerclage between 36 to 37 weeks of gestation to balance the risk of preterm delivery and fetal maturity[5].

Cervical cerclage should be removed as early as possible in women presenting with established preterm labour because dilatation of the cervix while the cervical cerclage is in place, can result in cervical trauma.

Removal of cervical cerclage can be delayed up to 48 hours in women presenting with PPROM, as it can delay the latency period, allowing time for the action of maternal corticosteroids. A retrospective study showed that delaying the removal of cervical cerclage for 24 hours following PPROM resulted in an increased time period from PPROM to delivery by 70.4 hours. But there is also a small increase in the rate of chorioamnionitis in women who had delayed removal (60% vs 45%)[22].

Women with high vaginal cerclage (Shirodkar) need anaesthesia for cerclage removal. Bladder dissection should be performed to reach the suture.

Women who have had an abdominal cerclage should undergo a prelabour elective caesarean section. The cerclage can be left in situ and does not necessarily need to be removed.

13. Cervical cerclage in multiple pregnancy

A multiple pregnancy is not an indication of cervical cerclage. A meta-analysis of five trials assessed the use of cerclage in multiple pregnancies; 122 women had twin pregnancies, and 6 had triplet pregnancies. Studies included assessed history-indicated cerclage, ultrasound-indicated cerclage and physical exam-indicated cerclage. No statistical difference was found between the cerclage and non-cerclage groups for perinatal death, significant neonatal morbidity and preterm birth less than 34 weeks[23].

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