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CERVICAL CERCLAGE – CURRENT TRENDS

By

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CERVICAL CERCLAGE – CURRENT TRENDS



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Cervical cerclage is performed as an attempt to prolong pregnancy in certain women who are at higher risk of preterm delivery.

Cervical cerclage was first performed in 1902 in women with a history of midtrimester abortion or spontaneous preterm birth suggestive of cervical incompetence with the aim of preventing recurrent loss. Cervical incompetence is an imprecise clinical diagnosis frequently applied to women with such a history where it is assumed that the cervix is weak and unable to remain closed during the pregnancy.

Cerclage may provide a degree of structural support to a weak cervix, its role in maintaining the cervical length and the endocervical mucus plug as a mechanical barrier to ascending infection may be more important.

The pathophysiology of cervical insufficiency is still poorly understood. Factors that may increase the risk of cervical insufficiency include surgical trauma to the cervix from conisation, loop electrosurgical excision procedures, mechanical dilation of the cervix during pregnancy termination, or obstetric lacerations.

Other proposed etiologies have included congenital mullerian anomalies, deficiencies in cervical collagen and elastin, and in utero exposure to diethylstilboestrol. However these factors are not associated specifically with cervical insufficiency and are not indications for the use of cervical cerclage

Indications:

In which patients is cerclage indicated based on obstetric history or physical examination findings? (see Box1).

The safety and efficacy of cerclage in the treatment of patients with cervical insufficiency after fetal viability have not been adequately assessed. Cerclage should be limited to pregnancies in the second trimester before fetal viability has been achieved.

Box 1. Indications for cervical cerclage in women with singleton pregnancies

History:

- History of one or more second trimester pregnancy losses related to painless cervical dilatation and in the absence of labor or abruption placentae.
- Prior cerclage due to painless cervical dilatation in the second trimester.

Physical examination:

- Painless cervical dilatation in the second trimester.

Ultrasonographic findings with a history of prior preterm birth:

Current singleton pregnancy prior spontaneous preterm birth at less than 34 weeks of gestation and short cervical length (less than 25mm) before 24 weeks of gestation

History Indicated cerclage:

Patient selection for history indicated cerclage (also known as prophylactic cerclage) is based on classic historic features of cervical insufficiency (see box 1)

History indicated cerclage can be considered in a patient with a history of unexplained second trimester delivery in the absence of labor or abruption placentae. History indicated cerclage typically are placed at approximately 13- 14 weeks of gestation.

Physical examination – Indicated cerclage:

Women who present with advanced cervical dilatation in the absence of labor and abruption placentae have historically been candidates for examination indicated cerclage (known as emergency or rescue cerclage). Thus after clinical examination to rule out uterine activity or intra amniotic infection or both, physical examination, indicated cerclage placement in patients with singleton gestations who have cervical change of the internal OS may be beneficial.

Ultrasound indicated cerclage

Ultrasound – indicated cerclage often is recommended for women who have changes on Trans vaginal ultrasound examination that are consistent with a short cervical length with or without the presence of funnelling. These women usually undergo an

ultrasound examination because they have risk factor for early delivery. Although patients usually are asymptomatic, some may report nonspecific symptoms such as back ache, uterine contractions, vaginal spotting, pelvic pressure or mucoid vaginal discharge.

Meta analyses of multiple randomized trials that compared cerclage versus no cerclage in patients with short cervical length during the second trimester have reached the following conclusion (1,2)

Although women with a current singleton pregnancy, prior spontaneous preterm birth at less than 34 weeks of gestation, and short cervical length (less than 25mm) before 24 weeks of gestation do not meet the diagnostic criteria for cervical insufficiency, available evidence suggests that cerclage placement may be effective in this setting.

Cerclage placement in women without a history of prior spontaneous preterm birth and with a cervical length less than 25mm detected between 16 weeks and 24 weeks of gestation has not been associated with a significant reduction in preterm birth (3).

Rescue Cerclage:

Insertion of cerclage as a salvage measure in the case of premature cervical dilatation with exposed fetal membranes in the vagina. This may be discovered by ultrasound examination of the cervix or as a result of a speculum / physical examination performed for symptoms such as vaginal discharge, bleeding or sensation of pressure.

Which patients should not be considered candidates for cerclage?

Incidentally detected short cervical length in the second trimester in the absence of a prior singleton preterm birth is not diagnostic of cervical insufficiency, and cerclage is not indicated in this setting.

Cerclage may increase the risk of preterm birth in women with a twin pregnancy and an ultrasonographically detected cervical length less than 25 mm and is not recommended (13,14). In addition, evidence is lacking for the benefit of cerclage solely for the following **indications:** prior loop electrosurgical excision procedure, cone biopsy, or müllerian anomaly.

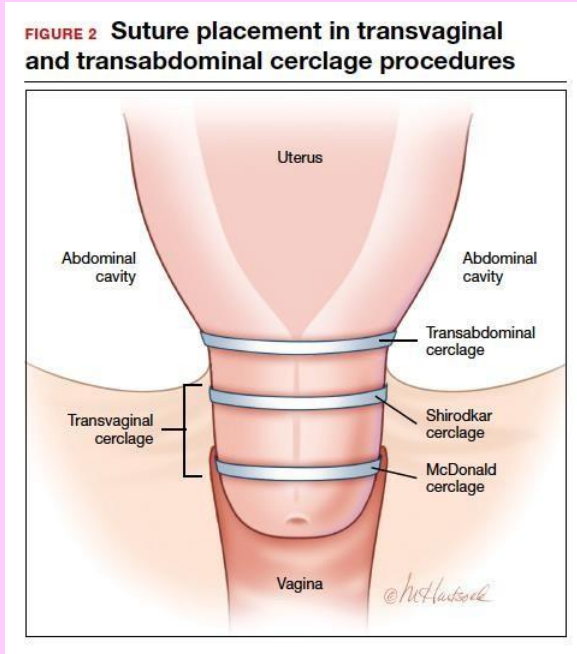
Treatment Options:

Historically several nonsurgical and surgical modalities have been proposed to treat cervical insufficiency.

Certain non-surgical approaches, including activity restriction, bed rest, and pelvic rest have not been proved to be effective for the treatment of cervical insufficiency and their use is discouraged (4,5)

Another non surgical treatment to be considered in patients at risk of cervical insufficiency is the vaginal pessary. Evidence is limited for potential benefit of pessary placement in selected high risk patients (6,7,8).

Surgical approach:



Transvaginal Cerclage(MC Donald)

A transvaginal purse- string non absorbable suture placed at the cervico vaginal junction, without bladder mobilisation, taking caution to avoid the paracervical vessels. The suture is then tied down with a surgeon knot, either anterior or posterior .

High transvaginal cerclage (shirodkar)

In this technique once the vesico cervical reflection has been identified, the mucosa of the anterior cervix is incised at this junction, similar to vaginal hysterectomy. An allis clamp can be used to elevate the bladder flap while the bladder is than mobilized cephalad using blunt or sharp dissection. This is continued until reaching the level of the internal OS. A similar incision is then made in the posterior cervical mucosa. Again, an Allis clamp can be used for traction on the posterior mucosa, while the reflection of the Pouch of Douglas is created using blunt dissection. An Allis clamp can then be applied at the 9 o'clock position to retract and isolate the paracervical vessels. A nonabsorbable suture can then be passed from anterior to posterior just beneath the Allis clamp so as not to enter the cervical os. The Allis should then be removed and placed in a similar fashion at the 3 o'clock position. The suture can then be passed from posterior to anterior, with special attention to lay the suture flat against the posterior aspect of the cervix. The suture can then be securely tied anteriorly. The anterior and posterior mucosa can then each be reapproximated in order to bury the cerclage stitch. This may be done in the running or

interrupted fashion using an absorbable suture. The free ends of the cerclage stitch may be left exposed to facilitate subsequent removal.

Trans abdominal Cerclage:

In women with a previous failed transvaginal cerclage, insertion of a transabdominal cerclage may be considered. Transabdominal cerclage may be performed preconceptually or in early pregnancy.

This cerclage performed via a laparotomy or laparoscopy, placing the suture at the cervico isthmic junction. It is done prior or during pregnancy, mostly between 12 to 16 weeks.

The primary indication will be the failed vaginal cerclage in previous pregnancy also where the vaginal approach is not feasible due to shortening or abnormal anatomy of cervix

Classic laparotomy approach is an invasive procedure and the way of birth mostly c- section. With the aim to avoid this two laparotomies, a laparoscopic approach for cerclage placement could be an interesting choice.

In laparoscopic cerclage a 5mm Mersilene tape with straight needle is introduced by suprapubic trocar into abdominal cavity. Before a complete identification of uterine vessels at both sides and using atraumatic graspers, the needle is grasped on the proximal portion in a 90 degrees angle. Posteriorly and helped by a cranial and posterior uterine mobilization, the needle passes through the right broad ligament in the avascular space created on the anterior leaf, medially from the uterine artery until the tip of needle is seen in the posterior face above the uterosacral ligament. All the steps are possible by synchronic uterine mobilization. The procedure is then repeated contra-laterally following the same anatomical and technical precepts, but from posteriorly to anteriorly. Once the position of the mesh is complete and checked, far away from ureter and medial to uterine arteries, the tape is knotted seven times anteriorly at the cervicoisthmic junction and Caprofyl 2-0 stitch is made to fix the knot and left it horizontally. Finally, the procedure is ended with the anterior peritonization, covering all the plica uterovesicalis and the mesh, leaving completely extra peritoneal.

Despite the arduous technique required in this approach some interesting intrinsic advantages as a lack of foreign body inside the vagina, absent of mesh slippage (reducing potential migration due the proximal placement) and high placement of the suture are also found.

Moreover laparoscopic itself has less membranes rupture and chorioamnionitis rates.

Regardless the surgical method selected the laparoscopic cervical cerclage placed prior pregnancy is a real, feasible and non-inferior choice when compared to a vaginal or laparotomy approach.

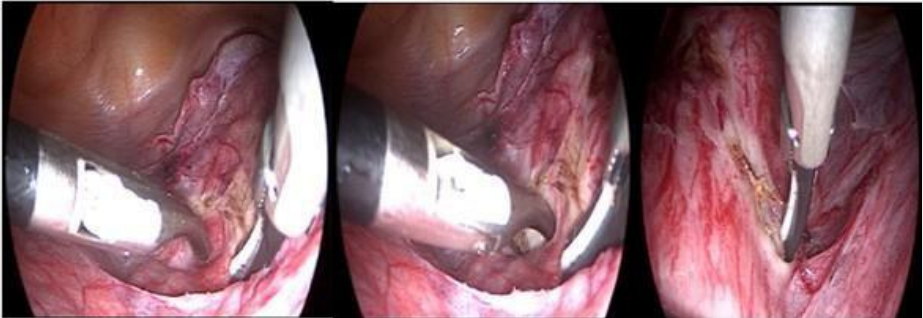


Figure 2: Creation of an avascular space in the anterior leaf of broad ligament, bilaterally.

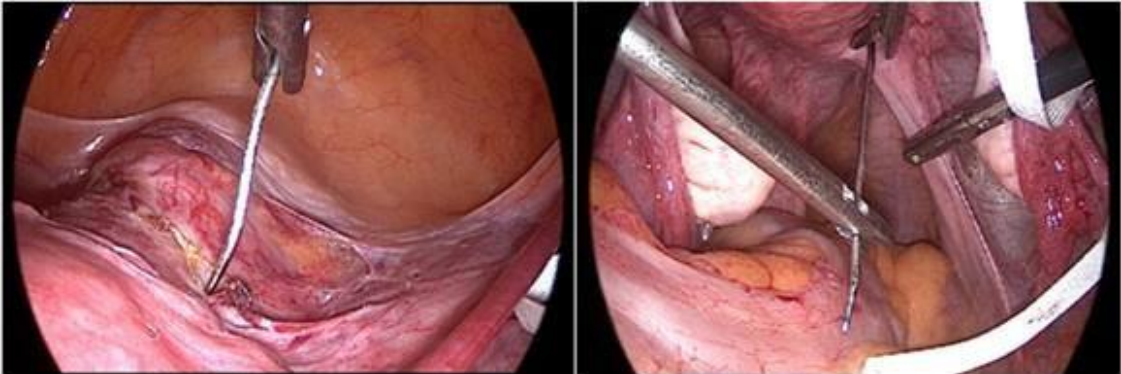


Figure 3: Passing the needle attached to Mersilene Tape from anterior to posterior, medially to uterine vessels and above cardinal ligament.

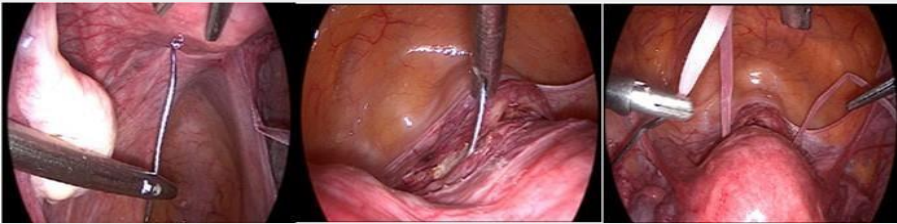


Figure 4: Passing the needle from posterior to anterior, medially and up the uterosacral ligament insertion, leaving both free arms of the mesh anteriorly.

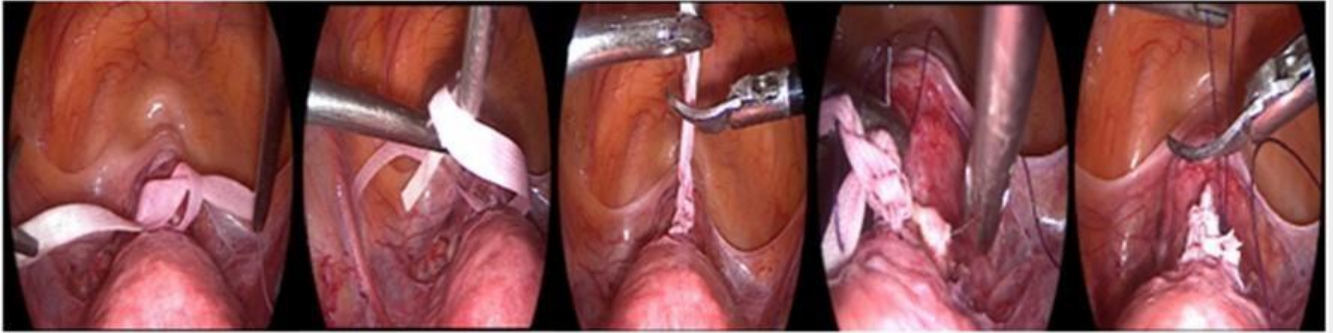


Figure 5: Knotting the mesh and placing a secure knot of Caprofil 2-0 attached to cervical tissue.

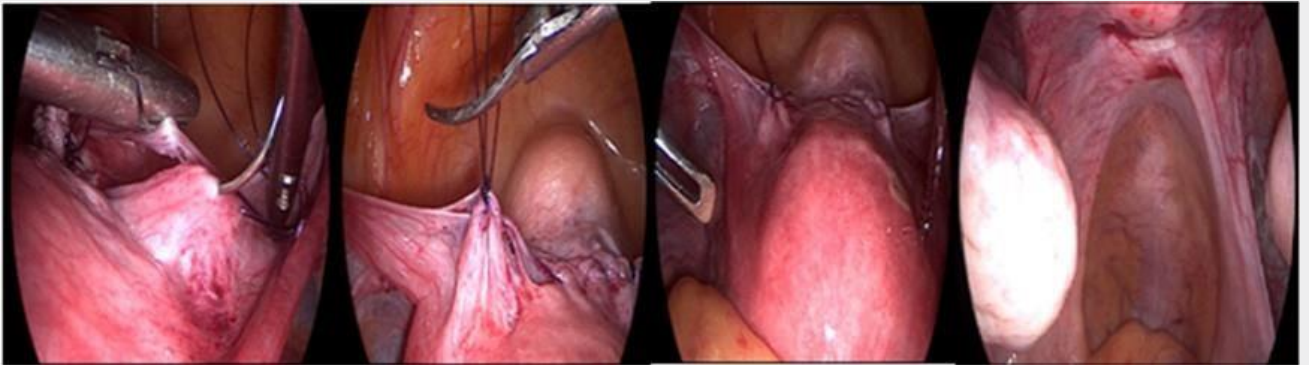


Figure 6: Peritonization and final result of procedure.

Contraindications to cerclage insertion:

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

Information given to woman before circlage:

- Cerclage insertion is associated with a doubling in risk of maternal pyrexia but no apparent increase in chorioamnionitis.
- Cerclage insertion is not associated with an increased risk of PPROM, induction of labour or caesarean section.

- The insertion of a cervical suture is not associated with an increased risk of preterm delivery or second trimester loss.
- There is a small risk of intraoperative bladder damage, cervical trauma, membrane rupture and bleeding during insertion of cervical cerclage.
- Shirodkar cerclage usually requires anaesthesia for removal and therefore carries the risk of an additional anaesthetic.
- Cervical cerclage may be associated with a risk of cervical laceration / trauma if there is spontaneous labour with the suture in place.

Pre-operative management

Investigations before insertion of cerclage

- It is good practice to offer a first trimester ultrasound scan and screening for aneuploidy before the insertion of a history indicated suture to ensure both viability and the absence of lethal / major fetal abnormality.
- There is insufficient evidence to recommend routine amniocentesis before rescue or ultrasound indicated cerclage as there are no clear data demonstrating that it improves outcomes.
- In the presence of positive culture from a genital swab a complete course of sensitive antimicrobial eradication therapy before cerclage insertion would be recommended.
- Delayed cerclage can only increase the risk of infection, immediate insertion is likely to supersede the benefits of waiting to see if infection, manifests clinically.

Operative issues:

- There is no evidence to support the use of routine perioperative tocolysis in women undergoing insertion of cerclage
- Antibiotic prophylaxis at the time of cerclage placement should be at the discretion of the operating team
- Elective transvaginal cerclage can safely be performed as a day-care procedure

Women undergoing ultrasound indicated or rescue cerclage may benefit from at least 24 hours post-operative period of observation in hospital.

In women undergoing insertion of trans- abdominal cerclage via laparotomy an inpatient stay of at least 48 hours is recommended.

Adjuvant management:

Bed rest:

Bed rest in women who have undergone cerclage should not be routinely recommended . But the decision should be individualised.

Sexual intercourse:

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

Role for post cerclage serial sonographic surveillance of cervical length

Routine serial sonographic measurement of the cervix is not recommended, it may be useful in individual cases following ultrasound -indicated cerclage to offer timely administration of steroids or in utero transfer.

Role of repeat cerclage when cervical shortening is seen post cerclage

The decision to place a rescue cerclage following an elective or ultrasound indicated cerclage should be made on an individual basis taking in to account the clinical circumstances.

Should women receive supplemental progesterone following cerclage.

Routine use of progesterone supplementation following cerclage is not recommended.

When should the cerclage be removed of

A transvaginal cerclage should be removed before labour, usually between 36⁺¹ and 37⁺⁶ weeks of gestation. Unless delivery is by elective caesarean section, in which case suture removal could be delayed until this time.

In women presenting in established preterm labour, the cerclage should be removed to minimise potential trauma to the cervix

There are no studies regarding the use of anaesthesia in the use of shirodkars suture but given that the technique involves burial of the suture an anaesthetic is likely to be necessary for removal.

All women with a trans abdominal cerclage require delivery by caesarean section and the abdominal suture may be left in place following delivery if further pregnancies are contemplated.

Should the cerclage be removed following PPRM

In women with PPRM between 24 and 34 weeks of gestation and without evidence of infection or preterm labour, delayed removal of the cerclage for 48 hours can be considered as it may result in sufficient latency that a course of prophylactic steroids for fetal lung maturation is completed and or in utero transfer arranged.

Complications with cerclage

Overall there is a low risk of complications with cerclage placement. Reported complications include rupture of membrane, chorioamnionitis, cervical lacerations and suture displacements.

Life threatening complications of uterine rupture and maternal septicaemia are extremely rare but have been reported with all types of cerclage (9,10)

Compared with transvaginal cerclage, trans abdominal cerclage carries a much greater risk of haemorrhage which can be life threatening in addition to all the other complications associated with abdominal surgery (11,12)

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