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CERVICAL CERCLAGE

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ABSTRACT :

Cervical cerclage is surgical placement of suture in or around the cervix for surgical correction of cervical incompetence. Most procedures are carried out during pregnancy. Vaginal procedures are McDonald, Shirodkar, modified Shirodkar and Wurm's operation. Transabdominal cervicoisthmic cerclage is helpful in congenital cervical hypoplasia and attresia or previously failed vaginal procedure.

In women at high risk of the second trimester abortion or preterm delivery, trial of cerclage proved to have marginal significance. However prophylacatic cerclage has been helpful in management of placenta previa, cervical pregnancy and mullerian abnormality.

Keywords : Cervical cerclage, cervical incoompotence, mullerial abnormality Diethyl Stillboestrol (DES).

INTRODUCTION :

Cerclage is surgical reinforcement of weak cervix by tying a noose around it and is used, by and large, for surgical correction of cervical incompetence. Cervical incompetence is a known cause of midtrimester abortion[1]. The incidence of cervical incompetence ranges from, 0.05 - 1/100[2] pregnancy to 1-2%[1]. In primigravidae cervical competence may be due to congenital defect of outer longitudenal layer and may also be associated with uterine abnormality or prenatal exposure to DES or abnormal cervical histology[2,3].

Many investigators have shown the importance of cerclage in, in utero DES exposed women with cervical incompetence[4-7].

Trauma to cervix in the form of over-zealous diltation was a potential cause of cervical incompetence in the early 70's[8] as cervical rupture >5mm in depth was observed in 22% of uteri dilated to 12mm Hegar's[9] but recent time has seen less of this and can be explained by the fact that, to-day gynaecologists refrain from over-forcible dilatation of cervix[10-12]. Cervical amputation and cone biopsy may also lead to cervical incompetence. Jones[13] reported 18%

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preterm delivery after cone biopsy compared to 5% among control.

Diagnosis of Cervical Incompetence : Since there is no valid daignostic test of cervical incompetence, appropriate diagnostic criteria is questionable however diagnosis of cervical incompetence is more clinical, based upon carefully observed and recorded events which include acute painless cervical dilation, with prolapse and ballooning of membrances into the vagina followed by spontaneous rupture of membrane and expulsion of immature live fetus.

A. In non-pregnant state : Auxiliary test for increased compliance of cervix are :

   i) Cervicogram on luteal phase which shows funnelling of cervical os >8 mm

   ii) Acceptance without resistance at internal os of Hegar no 8 and Pratt no 15 dilator[13].

   iii) Traction test based on pull through technique of foleys ballon with 1-3 ml fluid.

B. During pregnancy : by using ultrasound attempts have been made with moderate success to predict premature cervical dilation, whereby funnelling of membrane into the endocervical canal and progestive dilatation at internal oscan be noted[15-17] Michael[18], performed serial prospective sonogtaphic study from 14-17 weeks and identified 5 or 21 pregnancy with progestive cervical effacement and dilatation in utero DES exposed women where cerclage was helpful to prolong pregnancy to 36 weeks. Iam's[19] performed cross sectional study on cervical length between 20-30 weeks of gestation using vaginal u;trasound in women with cervical incompetence of prior to prreterm delivery and observed that the preterm delivery was well co-rrelated with cervical length.

Sometimes rapid effacement and dilatation of cervix takes place[20].

Surgery is the principal form of therapy for cervical incompetence. Two strategies are taken into consideration.

a) repair of primary defect

b) cervical reinforcement with circumferrential suture.

In non-pregnant state : Palmer or Lash procedure were used to correct anatomical defect of cervix. It is seldom used now a days due to dimunished fertility after the operation. Mann's operation is similar to Shirodkar's but consists of extensive dissection.

Cerclage during pregnancy :

1. Vaginal precedure
   a) Shirodkar's operation
   b) McDonal procedure
   c) Modified Shirodkar
   d) Wurn's cerclage procedure

2. Trans Abdominal cervico isthmic cerclage.

Timing of Operation :

Timing of cerclage during pregnancy influence outcome, hence cerclage at 14 weeks of gestation appears to be preferable[2,21]. It is best performed after the 1st trimester of pregnancy but before cervical dilation of 2-3 cm. Most authors feel the correct timing of operation to be 14-20 weeks but not after 26 weeks because any surgical intervention as the pregnancy advances

can lead to preterm labour membrance rupture.

Elective/Emergency cerclage :

Though bulging membranes are associated with increased failure rate, application of emergency cerclage can be of benefit in some cases[22,23]. The procedure is made easier by raising the foot end or keeping inflated foley's ballon during surgery and releasing after completion of surgery. Dhaliwal gopalan have performed Wurns cerclage, both as an emergency and elective procedure. Wurms cerclage was used by Hefner in 6 of 9 cases who delivered infants that survived when under taken with bulginh membrane.

Contraindication to cerclage are :

a) labour
b) rupture of membrane
c) uterine bleeding
d) uterine contraction
e) chorio-Amnionitis
f) cervical dilation >4 cm
g) polyhydraminious or any fetal anomalies.

Prerequisites : preopeartive evaluation consists of sonography to confirm living fetus and to exclude obvious major fetal anomalies. Cervical culture for gonorroea, chlamydia and Group B steptococci should be taken and treatment be given in cases of positive culture. There should be no sexual intercourse a week before and after surgery.

McDonald procedure (1963) places a reinforcing purse string suture around the proximal cervix. Four bites with deep penetration into the cervical stroma all made at the junction of vaginal mucosa and cervix, with non absorbable suture such as mersilene (prollene or monofilament suture material). Silk is best avoided because of risk of infection. The suture is tied around cervical canal to reduce the diameter of canal to 5-10 mm.

Advantage	- Simple & versatile - Can be performed as an emergency cerclage
Disadvantage	- vaginal discharge due is exposed suture material.

Modified Shirodkar Operation (Caspi & Associate 1990) :

After transverse cervical incision, bladder being pushed cephalad, double needled ligature is pased anteriorly to posteriorly on each side of cervix and ligature is tied posterorly around 10 mm dilate. Cervcical mucosa is closed with chronic suture to bury anterior purse strng.

High success rate of 85-90% is achieved with McDonals of Modidied Shirodkar[25,26] procedure.

Shirodkar Operation (19955) : Places a reinforcing band around cervix beneath the mucosa at the level of internal os. Large round needle is used to insert a monofilament then it is sutured around either side of cervix under the vaginal mucosa in cude sac and tied. Spinal or epidural anaesthesia, trendelenberg position and adequate retraction facilitates the placement of suture.

The original operation used aneurysm needled to place a band of fascia lata around the cervix at the level of internal os. Recently merselene band is swaged onto large autraumatic needle with the knot tied posteriorly to avoid erosion into the bladder. The encercling knot is tied to secure the cervix with an opening of 3-5 mm. the suture is anchored anteriorly with fine silk. The incision in vaginal mucosa is closed with absorbable suture.

Advantages :

1. Less vaginal discharge as the suture is buried.

2. Has lower failure rate- though this ooperation is technically difficult and time consuming.

3. Novy[27] (1990) has described some modification to the classical Shirodkar cerclage to facilitate iits application on patient with dilated cervix, with herniated membrances.

Wurm's Cerclage :

Two horizontal mattress sutures are placed one from front and other from side to side. Hefner using wurms technique reported 6/0 patients who delivered infant that csurviced when under taken with bulging membrance.

Trans-abdominal cervicoisthmic cerclage - is indicated when vaginal cerclage is not feasible due to traumatic cervical laceration, congenitally shortened cervix, cervix after post conisation, advanced cervical efficement and precviously failed vaginal cerclage[28-29]. Various authors have also recommended transabdominal cerclage[30-35]. Here a band is placed at the level of internal os, in an avascular space between branches of uterine arteries.

Post Operative Care :

Role of prophylatic antibiotics, tocolytic drugs and progesterone has not been established[36,37].

Immediate complications are :
a) haemorrhage
b) rupture of membrane (within 1-3 days in 45% of patient)
c) infection including chorioamnionitis ranging from 15-19/100 pregnancy[37].

Delayed complications are :
a) cervical dystocia due to fibrosis.
b) rupture of uterus may be a consequence of vigorous contraction with suture in place.
c) vesicovaginal fistula.

Removal of Suture : ideally done at 38 weeks gestation, or when labour starts. A well placed Shirodkar's suture may be left and baby delivered by caesarean section. when membrane ruptures within 48 hours of cerclage an indication to removal of cerclage for prevention of fetal and maternal infection has been suggested[26]. Barth[38] emphasized on observation to removal of cerclage with observation and labour induction. the management of patient with preterm rupture of membrane is complex. some suggest immediate removal of suture, other have allowed more conservative policy and level the suture as such and thereby observed significant prolongation of pregnancy.

Prophylactic Cerclage :

a) **Placenta previa** - Prophylactic use of cerclage has been beneficial in the management of placenta previa, according to various authors cerclage was useful in limiting the formation of lower uterine segmant[39-42].

b) **Cervical pregnancy** - Cerclage has been effective in management of cervcal pregnancy. Bernstein and Assoc[43] managed two cases by placing heavy silk approved by Bachus and Assoc[44] of cervical pregnancy. Wharton and Gore[45] used Shirodkar cerclage and local injection of vasopressin before evacuation of cervical pregnancy.

c) **Uterine abnormality** - Use of prophylactic cerclage has been useful

for the uterine abnormalities like uncounuate and bicornute uterus[46-48]. The question whether to place cerclage in both cervices of uterine diadelphis remains unresolved[49-51].

In twin pregnancy, use of cerclage has been found to be of no proven benefit[52-54].

Trial of Cerclage :

Two small randomised controlled trials failed to demonstrate any benefit froom cervical cerclage in high risk patient[55-56].

In a large trial among 905 women eith a history of early delivery or cervical surgery, the operation was found to have marginal usefulness with beneficial effect found in one in every 20-25 cases in trial of cerclage reported by MRC/RCOG[57] working party. another much larger trial conducted by medical research coundil and Royal college of Obstetrician and Gynaecologist in 1995[58], included 1292 women from 12 countries in heterogenous group and often unclear indication for cervlage to see if the application of cerclage prolonged pregnancy. Approximately 75% women enrolled in t his randomised study had precious preterm delivery. In 647 women cerlclage were placed at 16 weeks and the outcome compared with 645 women randomised to no cerclzge. Significant decrese in birth before 33 weeks was observed in cerclage group (17%) compared to that of control group with no cerclage (13%) and the result observed was marginally statistically significant. Although this study found more favourable results in the froup submitted to cerclage this trial included women in whom clinicians were uncertain of benefit of cerclage. However the result might have been more conclusive in women with more clearly defined evidence of cervical incompetence. Thus the results froom recently published mulicentre randomised trial of cervical cerclage demonstrate that although there was small reduction in deliveries before 33 weeks in cerclage group there was no significant difference in fetal survival rate between cerclage and the control group. In addition, cerclage was associated with increased obstetric intervention and an increased incidence of puerperal pyrexia. This suggests that the widespread use of cervical cerclage is not justfied and procedure should be limited to those women with clearest evidence of incompetence.

CONCLUSION :

There problems in published studies prohibit the choice of treatment for cervical incompetence.

- precise and reproducible definition of cervical incompetence required for comparing success rates.
- benefit attributed to cerclage may not be due to operation itself but rather to a phenomenon termed - regression to the mean[59].
- randomized clinical trials compariing two operations are rarely done when new operations are introduced.

The results of cervical cerclage are difficult to assess because the diagnosis of cervical incompetence cannot be made with certainity in every case. An overall review of literature has shown satisfactory successful pregnancy rate usually in excess of 70% following cerclage in patient who had poor results without its use[60].

However when there is nothing else to offer, cervical cerclage is worthwhile e.g. in patient with fetal losses and mullerian anomalies such as unicornautes, bicornuate uterus and DES exposed women with hypoplastic cervix.

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