E:/Biomedica Vol.24, Jul. – Dec. 2008/Bio-11.Doc (WC) P. 158-161

OUT COMES OF CERVICAL CERCLAGE IN PREVENTING PREGNANCY LOSS

NASEEM SABA, TANVEER SHAFQAT AND IHSAN ULLAH MAHSOOD
Departments of Gynaecology and Medicine, District Teaching Hospital Gomal Medical College, D. I. Khan, and Lady Reading Hospital, Peshawar

ABSTRACT
This study was designed to know the outcome of cervical cerclage in preventing pregnancy loss in patients with cervical insufficiency. This is a prospective study. Patients with previous early pregnancy losses were included. Cervical length less than 2.5cm at 12-16 weeks was taken as an indicator of insufficiency. Cerclage was removed at 37 week and patient and neonate were followed till one week postnatal. A total of 32 patients were included in this study. Fifteen patients had emergency cerclage and 85% had elective cerclage. A total of 79% patient delivered at term and 9% had abortion. Among them 72% patients had normal vaginal delivery and others underwent ceasarean section. Maternal pyrexia was more in emergency group. Jaundice was seen in 62% of the neonates and 17% neonates had respiretory problems. Cervical cerclage has a preventive role in singleton pregnancies with short and insufficient cervix.

INTRODUCTION

Cervical insufficiency is a major contributor to the part of preterm births. Preterm deliveries and spontaneous preterm losses are on the increase particularly in Europe and US.[1]

The term cervical insufficiency or cervical incompetence have been used to describe the inability of the uterine cervix to retain a pregnancy in the absence of contraction of labour.[2] Traditionally cervical insufficiency is defined as recurrent second-trimester loss of pregnancy. These losses are characterized by pain less dilatation of the cervix without uterine contraction or blood loss. The Pathophysiology of the condition is not known, but incompetent cervices have less elastic component both morphologically and biochemically when compared with normal cervices.[3] Cervical insufficiency is also related to less collagen concentration and more smooth muscle. Cervical trauma, forceful dilatation of cervix and obstetric lacerations increases the risk of insufficiency.[4] Cervical cerclage is a surgical procedure involving suturing the neck of womb (cervix) with a purse-string type stitch to keep the cervix closed during pregnancy. This has been used widely in the management of pregnancies considered at high risk of preterm birth. In cerclage the patients were subsequently delivered by caesarean section. Mc Donald from Royal Melbourne hospital in 1957 changed the procedure, by using synthetic suture in a purse-string fashion around the circumference of the cervix. This is less invasive as compare to the previous procedure.[5] The advent of dynamic terminology has also changed the types and concepts of cerclage. The historical term of cervix incompetence has been changed with term cervical insufficiency. Prophylactic or elective cerclage has been replaced with history indicated or primary cerclage. This is the type when only history suggests for pervious preterm losses. The therapeutic or salvage cerclage which is applied to patients with ultrasound based diagnosis of short or insufficient cervix is seconddary cerclage. Rescue, emergent or urgent cerclage is that category which is applied to patient with established cervical dilatation. This is termed as physical examination indicated or tertiary cerclage. As the aetiology of the cervical insufficiency is multifactorial, cerclage treatment is not effective for all patients.

METHODS

Patients with previous obstetric history complicated by one or more pregnancy losses at 18-22 weeks without contractions were included. Transvaginal ultrasound was performed at 12-16 weeks of pregnancy. A cervical length less the 2.5cm was taken as an indicator of insufficient cervix. Cervical cerclage (Mc Donald suture) with non absorbable (silk) was applied under GA. Patient was also advised bed rest especially till 20th weeks, the cerclage was planned to be removed at the end of 37 weeks. Delivery of the patients were managed at hospital and newborn were followed till one week postnatal life. Gestation at the time of delivery (weeks), mode of delivery, maternal and neonatal morbidity were considered the primary outcome of cerclage.

RESULTS

A total of 32 patients were included in the study. Five patients were managed with emergency cerclage, when they had established cervical dilatation and effacement. A total of 28 patients had therapeutic cerclage after confirmation of diagnosis by transvaginal ultrasonography (Figure-1).

Two patients of the emergency cerclage and one with elective cerclage (9%) had abortion and cerclage was removed within 4-6 weeks of application (Figure 2) 12% of the total patients had preterm labour and cerclage was removed between 30 and 34 completed weeks of gestation.

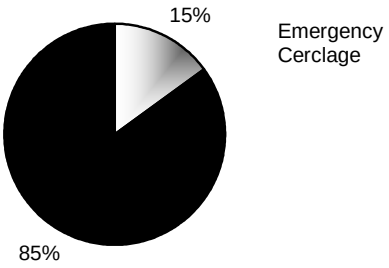

Figure 1: *Elective Cerclage.*

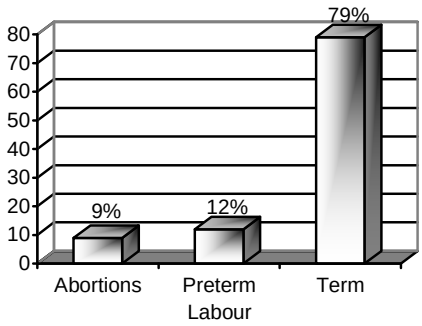

Figure 2: *Pregnancy Outcome.*

Table 1: *Mode of Delivery.*

	Mode	Can	%
1.	Normal vaginal delivery	27	72%
2.	Em.L. CS	2	7%
3.	Elective CS	3	11%

Among 29 patients, 82% had normal vaginal delivery. Three patients in this group were induced with membrane sweeping and the remaining had spontaneous labour. Emergency caesarean section was performed in two cases, i.e. one for chorioamnionitis and other for occipitoposterior position. Elective cesarean section (CS) was offered to three patients, and indications were, footling breech presentation, PROM and breech presentation and third for patient's desire.

Table 2: *Maternal Morbidity.*

Problems	Case	%
UTI	6	19%
Pyrexia	7	22%
Cherioamnionitis	1	3%
Cervical Trauma	2	6%

Table 3: *Neonatal Morbidity.*

	Case	%
Neonatal jaundice	18	62%
Sepsis	3	10%
Respiratory infection	5	17%

In Maternal morbidity (Table II) 22% patients had pyrexia and 19% urinary tract infection. Pyrexia was more in emergency cerclage group (n=4). In Neonatal morbidity, the neonatal jaundice reported in 62%, babies and 17% had respiratory infection. Two babies of the preterm group died in nursery.

DISCUSSION

The ideal treatment for cervical insufficiency remains quite controversial. The preventive role of cerclage is highly debatable and lot of controversial results are mentioned by many trails. But one fact is clear that it may help in selective cases.

Treating a patient with cervical insufficiency, cornerstone of the treatment lies in the proper diagnosis. Initially Harger[6] at all performed an evidence based analysis and he correlated features i.e. previous history of early pregnancy losses, patients cervical dilatation upto 4-6cm, absence of clinical features of placental abruption and history of cervical trauma leading to cervical insufficiency. In 1995 a multicentered trial by National Institute of Child Health, measured cervical length trans vaginally at 24-28 weeks gestation in singlton pregnancies, and then assessed the relation of this measurement to the risk of spontaneous loss. They concluded that at a cervical length less than 26mm, the relative risk of preterm delivery increased 6-fold[7].

In addition to cervical length, cervical effacement can be sonographically visualized. Zilanti et al[8] described as alphabetical progression of cervical effacement which proceeds from internal cervical os to external os by letters 'T' 'Y' V then U. T represents closed cervix uneffaced. As progressive

effacement takes place, the internal os becomes as Y and then V formation occur. As the cervix opens, and membranes are exposed through the internal os into vagina, a character "U" appears. Rust and colleagues[9] worked on shortened cervix, and they concluded that funnelling as "U" shape of the internal os is a significant risk factor for adverse perinatal outcome, including preterm birth, chorioamnionitis, rupture of membrane and serious neonatal morbidity.

Transvaginal ultrasound is recommended in assessing the cervix, as it is more reliable than trans abdominal route.[10] With the abdominal route, bladder overdistension can compress the walls of lower uterine segment and cervix, giving a deceivingly normal appearance in women with cervical effacement and dilatation. Further more an undistended bladder may preclude adequate visulisation of the cervix. The cervical length is accurately determined as the distance between internal and external os. The internal os is at the level where cervical canal meets the amniotic sac. The external os is difficult to define because of acoustic shadowing from rectal gas. This problem can be reduced by scanning with the patient in lateral decubities position, in elevating the hips with pillow.[11]

A study by Cicero et al[12] showed that patient's acceptability was equal for transvaginal, trans labial and transperineal sonography. Their study showed that at 22-24 weeks gestation, the cervix can be visualized adequately by translabial sonography in about 80% cases. The cervical length measured were very similar to those obtained with transvaginal sonography. Rozen burgh et al[13] compared two dimensional assessment of the cervical length and three dimensional assessment of cervical volume, in predicting preterm delivery. They concluded that cervical volume probably increases the positive predictive value of preterm delivery, but screening high risk women is best achieved with cervical length. Cervical length is normally distributed and remains relatively constant until about the beginning of third trimester. After 20 weeks, the cervix appear to shorten with increasing gestation, with median values falling from 35-40mm at 28 weeks to 30-35mm after 32 weeks: Crave et[14] al postulated that of all the cervical changes transvaginal length measurement is the best predictor of preterm delivery. Guzman et al[15] recommended serial ultrasound cervical length assessment from 15 weeks gestation for at least weekly interval (or more frequent if necessary) for women with a past history or symptomatic of preterm labour. Trans vaginal ultrasound has also been used in assisting intra-operative application of cervical cerclage suture.[16]

Digital examination of the cervix remains the oldest method of assessing the risk of preterm pregnancy loss. It can be subjected to inter and intra observer variations. Several studies have compared digital assessment with ultrasonography, giving variant results. The research group in Obstetrics and Gynacolgy (GROG) study[17], showed that transvaginal ultrasound predicted spontaneous delivery at < 34 weeks better, than digital examination at 27 weeks but not before 20 weeks. The society of obstetricians and Gynacologist of Canada Guidline recommends trans vaginal cervical instead of digital assessment.[18] The role of cerclage in the management of preterm labour remains controversial. Repeat studies have shown that cervical cerclage does not alter the perinatal outcome in singleton pregnancies. The result of meta-analysis by Jorgensen et al, suggest that in singleton pregnancy, cerclage may reduce the risk of pregnancy loss. However in it terms of maternal morbidity, a statistically significant increased risk of maternal pyrexia was observed in the cerclage group, but there was no significant evidence that the likelyhood of induction or casearean section was high in cerclage group.[19]

Another meta-analysis suggested that intervention of cervical cerclage in women with twin pregnancy increased the risk of preterm birth before 35 weeks of gestation, although the number of women for which data was available was small.[20] There is a possibility that the stage of pregnancy at which the cervical cerclage is administered may play a part in how effective it will be. However in all respects, previous history of early pregnancy loss is important along with ultrasound diagnosis. This is strongly supported by CIPRACT Trial, which used historical factors followed by sonographic finding, they showed a decrease in the incidence of preterm delivery prior to 34 weeks gestation and a less compound neonatal morbidity score with cerclage placement. The only ultrasound indicated trials failed to show any benefit of cerclage placement for any perinatal or neonatal outcome variable.[21]

It is **concluded** that cervical insufficiency is a combination of physiological and anatomical components. Cerclage treatment is not the single best modality of treatment. Ultrasound indicated cerclage placement in an asymptomatic patient without history of previous spontaneous pregnancy loss remains controversial. Therefore routine screening for low risk group is not advocated. If the patient has a cervical length less than 2.5 cm and a history of early pregnancy loss, there may be a role of cerclage, placement. Transvaginal cervical assessment is reliable and reproducible compared to digital assessment in predicting preterm labour.

ACKNOWLEDGEMENTS

The authors are thankful to their patients who consented to be a part of this study.

REFERENCE

1. Martin JA, Hamilton BE, Sultan PD. Birth: Final Data for 2002. Nati vital statistics report 2003; 52.
2. American collage of Obstetrician and Gynacologist. ACOG Practice Bulleton. 48. Cervical insufficiency Obstet Gynecol 1991; 165: 1111-15.
3. Leppert PC, Yu. Sk, Keller S et al. Decreased elastic fibers and desmosine content in the incompetent cervix. Am J Obstet Gynecol 1987; 157: 1134-39.
4. Peterson LK, Uldbjerg N. Cervical collagen in-pregnant women with previous cervical incompetence. Eur. J Obstet Gynecol, reporo Biol. 1996; 67: 41-45.
5. MC Donal LA. Suture of the cervix for inevitable miscarriage. J Obstet Gynecol 1957; 64: 343-50.
6. Harer JH. Cerclage and cervical insufficiency: an evidence based analysis Obstet Gynecol 2002; 100: 1313-27.
7. Jams JD, Golden berg RL, Meis PJ et al. NCHD HHD MFM Network, the length of the preterm delivery. N Engl J Med 1996; 334: 567-572.
8. Zilanti M, Azuage A, Calderon F et al. Monitoring the effacement of the cervix by trans perineal sonography: A new perspective, J ultrasound Med 1995; 14: 1719-24.
9. Rust OA, Atlas RO, Kiminel S, Roberts WE, Hess LW. Does the presence of a funnel increase the risk of adverse perinatal outcome in Patients with a short cervix AM J Obstet Gynecol 2005; 192: 1060-66.
10. The society of obstetricians and Gynecologist of Canada Guidelines No. 102-ultrasound cervical assessment in predicting preterm birth J Soc. Obstet Gynecol Can 2001; 23: 418-21.
11. American college of Radialogy. Appropriate criteria of premature cervical dilatataion Guide line ACR, 2005.
12. Cicero S, Skentoa C, Souka A, To M, Nicolaides K. Cervical length at 22-24 weeks of gestation: comparison of transvaginal and trans perineal translabial ultrasonography. Ultrasound obstet Gynecol 2001; 17: 335-40.
13. Rozeuberg P, Rafi A, Senat M, Dujardia A, Rapon J, Vitle Y. Predictive value of two dimensional and three dimensional multiplanar ultrasound evaluation of the cervix in preterm labour. J Maternal Fetal Neonat Med 2003; 13: 237-241.
14. Crane J, Van deut of M, Anerson B, Liston R, Transvaginal ultrasound in the prediction of preterm delivery: singleton and twin gestation. Obstet Gynecol 1997; 90: 357-63.
15. Guzman ER, Mellon C, Vintzeleous AM, Anath CV, Walter C, Gipson K. longitudited assessment of endocervical canal lenth between 15 and 24 weeks gestation in women at risk of pregnancy loss. Obstet Gynecol 1998; 92: 31-37.
16. Quiran MJ. Vaginal Ultrasound and cervical cerclage: a prospective study: ultrasound obstet Gynecol 1992; 2: 410-16.
17. Vayssiere C, Favre R, Audibent F et. Cervical assessment at 22 and 27 week for the prediction of spontaneous birth before 34 weeks in twin pregnancy. Is transvaginal sonography more accurate then digital assessment. of ultrasound obstet Gynacol 2005; 26: 707-712.
18. Palaniappau V, Skentou C, Gibb D. Elective cerclage veres ultrasound indicated cerclage in high risk pregnancy. Ultrasound obstet Gynecol 2002; 19: 457-77.
19. Jorgensen A, Alfirevic Z, Tuder Singht Williamson P; cervical cerclage for preventing pregnancy loss: individual patient data analysis. BJOG 2007; 114: 1460-1476.
20. Berg hella V, Odibo AO, To Ms, Rust OA, cerclage for short cervix an ultrasonography meta-analysis of trials using of individual patient data. Obstet Gynecol 2005; 106: 181-9.
21. Allthuisius SM, Dekker GA, Hummel P, Bekedam DJ, Final results of cervical incompetence prevention, randomized cerclage trial (CIPRACT). Therapeutic cerclage with bed rest verses rest alone. AM J Obstet Gynecol 2001; 185: 1106-1112.