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COMPARISON OF SUCCESS AND MORBIDITY IN CERVICAL CERCLAGE PROCEDURES

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ABSTRACT

Objective: To compare the success rate and morbidity of elective cervical cerclage with emergency cervical cerclage.

Material and Methods: A prospective interventional study with seven definite indications for cervical cerclage under taken over a five year period from July 2006 to June 2011 at Department of Obstetrics and Gynaecology, District Headquarter Hospital, Mardan, Pakistan.

Result: Fifty-five women were studied of these 42(76.36%) had elective cerclage while 13(23.63%) emergency cerclage. Complete medical record of these patients was retrieved. They ranged from 20-38 years of age with median at 27 years. Ninty percent of patients presented at 12 to 24 week of gestation. Elective cerclage significantly improved fetal survival rate in 35 (83%) of patients after elective cerclage versus 40(27%) of patients before cerclage *($p<.000$)*. Fetal survival rate increased after emergency cerclage but the effect produced was not significant 15 (60%) of patients versus 9 (69%) of patients *($p=0.423$)*. Pyrexia was the most common complication. Ceasarian section rate was not increased in the cerclage group. Complication rate was higher in the emergency cerclage group 53.84% versus16.66% in the elective cerclage group.

Conclusion: Prophylactic application of cervical cerclage is the best time especially in patients with previous history of two or more than two midtrimester abortions or premature births and history of previous cerclage. The prematurity and complications rate is higher in patient with emergency cerclage.

Key Words: Cervical insufficiency, cerclage, fetal survival rate, complications.

INTRODUCTION

Cervical cerclage is a common prophylactic intervention for the management of 2nd trimester pregnancy losses, although its application is not standard all over the world.[1] The diagnosis of cervical insufficiency is notoriously difficult to make, and is largely retrospective based on history.[2]

Elective cerclage is history indicated while ultrasound indicated or rescue cerclage is an emergency procedure for cervical shortening.[3] The efficacy of cervical cerclage and its need has been discounted, by Althusis calling it an unnecessary intervention in 50% of the cases. Due to high cost of the care of preterm baby,[4] experts in this field are always trying to find an easy way to deal with the problem of prematurity. There is some evidence of positive role of cerclage in women at high risk with more than one second trimester losses.[5] Strong risk factor for preterm birth is a prior history of cervical insufficiency, based on a history of repeated, painless midtrimester losses or preterm delivery. Previous studies have indicated that ascending infection from the vagina leads to preterm delivery as well as cerebral palsy.[6] In recent years the importance of the cervical mucus plug as gatekeeper protecting the feto-placental unit against ascending infection from vagina has been demonstrated.[7,8] Premature dilatation can be followed by infection but it can also be vice versa. There is convincing data showing that increased intrauterine cytokine production in the amniotic fluid contributes to the mechanism of cervical incompetence.[9]

Measurement of cervical length by transvaginal sonography provides accurate prediction of risk of preterm labour.[10] The trans abdominal Cerclage in cases of failed previous transvaginal cerclages[11], and cervical occlusion in combination with cervical cerclage in order to retain the mucus plug has been proposed to improve the take- home baby rate.[12]

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MATERIAL AND METHODS

This was a prospective interventional study based on record files of 55 patients at District headquarter hospital Mardan from first July 2006 to 30 June 2011. The data about previous pregnancies, the

course of the pregnancies, operation and delivery records, post operative care record and subsequent pregnancy record were all maintained. Approval was granted by the hospital ethics committee. Patients with contractions, vaginal bleeding, ruptured membranes, congenitally abnormal fetus and cervix more than 4 cms were excluded. Clinical indications for cervical cerclage were divided into seven categories in an effort to determine which feature would predict the success rate of the procedure. These different indications were;

1. History of single second trimester loss.
2. History of >2 second trimester losses.
3. History of single second trimester loss with prior cervical trauma.
4. History of premature labour.
5. History of previous successful cerclage.
6. Second trimester cervical dilatation without contractions.
7. Second trimester cervical dilatation with contractions.

Category 6 and 07 were called emergency cerclages or rescue Cerclage while 1-5 were called elective Cerclage or history indicated Cerclage. Differences in the fetal survival rate and complications were analysed in both the groups. Total of 8300 patients were enrolled in the 5-years study period out of which 65 patients were considered for cervical cerclage. In 55 patients cervical cerclage was done.

In two patients fetuses were dead, 05-refused this type of surgical intervention. In 03-patients cervix was so badly damaged that it was not possible to apply cervical cerclage. In all the patients McDonald suture was applied, with non absorbable silk No. 2, in purse string manner taking 4-5 bites, tying the knot anteriorly at 12, O, clock position. This procedure was performed at 13-14 wks but patient presenting late upto 24-wks were also included. General anaesthesia was used in all the patients. Post operative bed rest for 24 to 72 hours was given in emergency procedures while elective cerclage was done on day care basis with patients staying upto 12-18 hours at Hospital. Parentral antibiotics were given in all the patients for first 24 hours.

They were advised to refrain from heavy physical activity and coitus. Advice was given to report immediately in case of abnormal vaginal discharge, bleeding, painful contraction and pyrexia. Antenatal evaluation was carried out routinely. Suture was removed at 36-weeks and patient was advised to come at weekly interval for antenatal check up or if labour ensues which ever is first.

RESULTS

The 55 patients had 222 pregnancies before the cerclage was performed and the fetal survival rate was 25%. In patient having elective cerclage the fetal survival rate in 192 prior pregnancies was 20% where as the previous fetal survival rate in 30 prior pregnancies of women with emergency cerclage was 57%. The difference between these rates is significant ($p<.000$) suggesting that two population were not similar. The population having emergency cerclage had better previous record of reproductive success but the fetal survival rate after 13 emergency cerclage procedures was only 69% compared to 83% after 42 elective cerclages. The cerclage does not reduce the number of first trimester losses. The percentages of emergency and elective cervical cerclages are shown in (figure 1).

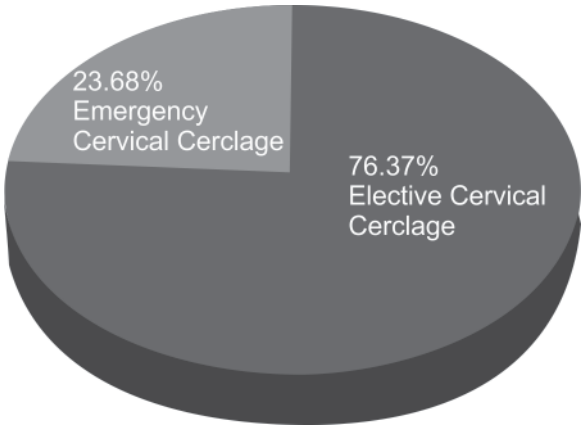

Fig. 1: Types of cervical cerclage.

In patients having elective cerclage the fetal survival rate in 150 prior pregnancies beyond twelve weeks was 27% where as it was 60% in the 25 prior pregnancies beyond twelve weeks in women with emergency cerclage. When the Cerclage procedures were sub divided by gestational age at the time of operation, no significant differences in the fetal survival rate, premature delivery and small for gestational age infants were found. The fetal survival rate was higher after elective cerclages i.e. (35/42=83%) than it had been in the pregnancies prior to cerclage in those women (40/150=27%, $p=.001$). Fetal survival rate after 13 emergency cerclages was not significantly greater than it had been in the pregnancies prior to cerclage i.e, (9/13=69% versus 15/25=60%, $p=0.423$ respectively). After analyzing the effect of indications on pregnancy outcome, the greatest increase in pregnancy outcome i.e. upto 4-fold, occurred in the group with 2 or more previous second trimester pregnancy losses and those with history of prior successful cerclage.

Estimated blood loss averaged 20ml in elective McDonald procedure. No Major post operative

complication occurred within two weeks of the 42 elective procedures. The risk of pregnancy loss apparently caused by elective procedures is 1%. One of the elective cerclage suture was found displaced from the cervix, two weeks after the procedure which was reapplied and pregnancy reached to term. One patient in elective group delivered one week after the procedure. Among the 13 emergency cerclages there was one case of acute charioamnionitis within one week postoperatively. The fetus didn't survive. Among the entire series of 55 cases there were two cases of post op charioamnionitis forcing immediate suture removal and delivery (3.6%). In two cases in the elective cerclage group membranes were bulging with cervical dilatation upto 2cm, in non of these, sac ruptured during surgery but both developed premature rupture of membranes after surgery and delivered within 3 weeks of application of suture. At parturition, one woman had irregular cervical tear among the emergency Cerclage group. No cervical laceration was reported in the elective Cerclage group. After cerclage, cervical laceration occurred in (1.8%) of cases. There was no case of bladder damage or heavy bleeding.

During the study period there were 597 cesarean sections among the 6000 deliveries (9.95%). In this study Cesarean section rate was not affected by cerclage. Among 55 patients who underwent cervical cerclage, only 06-patients needed cesarean section (10.9%) due to fetal and maternal indications.

DISCUSSION

Since cervical cerclage was introduced to clinical practice 60 years ago, the efficacy of the operation has not been established by evidence based standards, for many indications serious flaws in the methods employed to study the safety and efficacy of cerclage have led to confusion and misuse of the operation.[13,14] Although some investigators call randomized clinical trial of this traditional surgery unethical, establishing the diagnosis of midtrimester loss actually caused by cervical insufficiency is very difficult. The accepted indications for cervical cerclage vary widely. There is no satisfactory objective test that can identify women with cervical weakness in the non pregnant state.[15] Most physician prefer history indicated cerclage to women with two or more previous preterm births or second trimester losses[5,16]. In woman at increased risk of spontaneous mid-trimester or early preterm delivery, a policy of sonographic surveillance followed by cervical cerclage reduces the need for surgical intervention, without increasing adverse pregnancy outcome.[17]

In this study the degree of success was calculated from the effect of the procedure on prolongation of pregnancy in weeks and the fetal survival rate. Overall fetal survival rates after both types of cerclage in this study are comparable to other studies.[13,18] On analyzing the fetal survival rates, it was found that emergency and elective cerclage are two totally distinct groups. The emergency ceclage group had better previous record of reproductive success compared to fetal survival after the procedure which means emergency cerclage did not improve fetal survival significantly which is similar to other similar studies.[13,14] Cervical cerclage is best performed prophylactically prior to cervical effacement and dilatation as the fetal survival rate after 42 elective cerclages was 83% versus20% before the application of cerclage .If emergency cerclage have lower success rate it is tempting to conclude that the cerclage was placed too late.[19] Patients undergoing rescue cerclage do benefit from at least 24-hours post operative period observation in hospital owing to the higher risk of preterm premature rupture of membranes, early preterm delivery, miscarriage and infection. Elective Transvaginal cerclages can be safely performed as day case procedures.[15] like this study, most studies in the literature indicate a low major complications rate in less than 10% of procedures.[13] charioamnionitis is 2-3 times higher in elective cerclages [20] but in this study it was higher in emergency cerclage group i.e,7.69% which is similar to other studies.[21] The complication rate increase with increasing gestational age and cervical dilatation. Preterm premature rupture of membranes after elective cerclage occured in 4.76% versus 7.69% in emergency procedures. In the 6000 deliveries performed at DHQ Mardan, 120 cervical lacerations at parturition required surgical repair or about 1 in every 50 deliveries (2 %). After cerclage cervical laceration occurred 1 in 55 cases which is the almost the same. Cervical trauma in labour occurred in 7.69% of patients in emergency cerclage which is less than that given by Harger and Fox.[13,22] pyrexia was common in both the cerclage groups(30.7%in emergency group versus 7.14%in elective group) which is similar to the final report given by the Royal College of London.[5] Excessive bleeding, maternal sepsis and fistula formation were rare.

In this study, caesarian section rate in the cerclage group was not significantly higher than the rest of the population (10.9% in the cerclage groupversus9.95% in patients without cerclage $p=0.67$) which is similar to other studies.[23,24,25] Moreover the indications for section were both maternal and fetal.

To improve the prognosis with the cerclage procedures prior exclusion of chorioamnionitis and fetal compromise is essential. It is essential to exclude genetic disorders, mullerian defects, thyroid disorders, and collagen vascular disease before proceeding with a cerclage.[15] There is absence of data to support routine genital tract screening for infections before cerclage insertion.[15]

CONCLUSION

Cervical cerclage should be offered to woman at high risk as selective use of this procedure has important beneficial effect in prolonging the pregnancy and improving fetal cervical rate.

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