

Outcome of Pregnancy after Cerclage for Cervical Incompetence at a Tertiary Care Hospital

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Abstract: Miscarriage, particularly recurrent mid-trimester miscarriage is a distressful condition. This form of miscarriage and preterm birth appear to have some etiologies. An important etiology is cervical incompetence that describes a disorder in which painless cervical dilatation leads to recurrent second trimester pregnancy losses and preterm delivery. Every year more than 15 million preterm birth occurs and more than 1 million babies die from this common complication of pregnancy. The incidence of true cervical insufficiency is estimated at less than 1% of the obstetric population, but can account for 20-25% losses in second trimester. In the index pregnancy, findings indicative of possible cervical insufficiency include cervical funneling, cervical shortening, prolapse of membrane and overt cervical dilatation. The main objective of the study was to explore the benefit from cervical cerclage in pregnant women with cervical incompetence. This is a retrospective observational study conducted over a period of 24 months. All cases delivered in Rajkiya Mahila Chikitsalaya were assisted by consultant obstetricians, in which 15(48.3%) out of 31 cases were delivered by caesarean section. Miscarriage rate was 9.6%. Out of the caesarean deliveries 9(60%) were at term and 6(40%) were at preterm. In this study 2(6.4%) babies born at 32 week, 3(9.6%) babies born at 33 week, 2(6.4%) at 34 week, 2(6.4%) were at 35 week and 4(12.9%) born at less than 32 week. 6(17%) Fetus were lost, 3 Out of them were IUD and 3 expired in nursery. With regard to fetal outcome 22(70.9%) took their babies to home. The cervical cerclage procedure therefore should be available more widely to benefit those patients with proven or strongly suspected cervical incompetence.

Key words: Pregnancy Outcome, Cerclage, Miscarriage, Intrauterine death.

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I. Introduction:

Recurrent miscarriage is a distressful condition and recurrent mid-trimester miscarriage is disturbing to physician and patient alike, because the loss is that of a normal fetus in advancing stages of gestation. This form of miscarriage and preterm births appear to have similar etiologies. Classically, the term 'cervical insufficiency' was used to describe a disorder in which painless cervical dilatation led to recurrent second trimester pregnancy losses. Structural weakness of cervical tissue was thought to cause or contribute to these adverse outcomes. The diagnosis also includes women with or at risk for one or more such losses/deliveries. Although structural cervical weakness is the source of some preterm losses/births, most are caused by other disorders, such as decidual inflammation/infection or uterine over distension. Despite major research efforts, more than 15 million births before 37 weeks gestation occur worldwide annually and more than 1 million babies die from this common complication of pregnancy¹⁻⁵.

Cervical weakness is often over-diagnosed as a cause of mid-trimester miscarriage. There is also no satisfactory objective test that can identify women with cervical weakness in the non-pregnant state. Even though transvaginal ultrasound assessment of the cervix during pregnancy has been found to be useful in predicting preterm birth in some cases of suspected cervical weakness, treatment of cervical incompetence with cervical cerclage may not actually result in improved perinatal survival⁶⁻⁸.

Cervical insufficiency has no consistent definition, but is usually characterized by dilatation and shortening of the cervix before the 37th week of gestation in the absence of preterm labour, and is most classically associated with painless, progressive dilatation of the uterine cervix in the second or early third trimester resulting in membrane prolapse, premature rupture of the membranes, mid-trimester pregnancy loss, or preterm birth³⁻⁴. Cervical insufficiency arises from the woman's inability to support a full-term pregnancy due to a functional or structural defect of the cervix¹. The incidence of true cervical insufficiency is estimated at less than 1% of the obstetric population. In Denmark from 1980 to 1990, cervical insufficiency was diagnosed in 4.6 per 1000 women, and it is estimated to occur in 8% of women with recurrent mid-trimester losses^{2,5}. A variety

of risk factors have been identified and are divided here into those that may be identified from prior maternal history and those that may arise in the index pregnancy itself. The classic history that raises the suspicion of cervical insufficiency is that of recurrent mid-trimester preterm pre-labour rupture of membranes at less than 32 weeks should be noted, as should a prior pregnancy with a cervical length measurement of less than 25 mm prior to 27 weeks of gestation⁶. Any history of prior cervical trauma (e.g. repeated therapeutic abortion, repetitive cervical dilatation, cone biopsy, cervical tears and lacerations, trachelectomy) should also be noted. A risk factor reducing in incidence is that of the mother herself having been exposed to diethylstilbestrol in utero⁶. A variety of other maternal risk factors include the presence of a congenital uterine anomaly or a maternal connective tissue disease or abnormalities, e.g. Ehlers-Danlos syndrome, that impacts upon the integrity of normal collagen development and function⁷. Recently, polycystic ovarian syndrome has been suggested as a risk factor for cervical insufficiency, especially in women of South Asian or Black origin⁸. In many cases, especially when clinical features and findings lead to suspicion of the diagnosis in the first pregnancy, these risk factors may not be present and the cause may remain idiopathic⁹⁻¹². In the index pregnancy, findings indicative of possible cervical insufficiency include cervical funneling, cervical shortening, prolapse of membrane and overt cervical dilatation^{12,13}. Even in the absence of funneling, a cervical length determined by transvaginal ultrasound to be < 25 mm prior to 27 weeks increases the risk of pregnancy loss or preterm birth^{10,11}. Up to 85% of the cervix's dry weight is collagen. Cervix is anatomically designed to maintain the functional integrity of internal os to prevent a preterm delivery or second trimester miscarriage. Petersen and Uldbjerg examined cervical collagen in non-pregnant women with previous cervical insufficiency and found that they had markedly lower median cervical hydroxyproline concentrations than parous women without cervical insufficiency¹⁴. The causes of this have yet to be ascertained, but this seems to be a key factor in understanding the mechanism of cervical failure in such cases. In addition to its mechanical strength, the cervix may also play a role in protecting the uterine contents from ascending infection, with one key factor in this being the role of the cervical mucus as a barrier between the uterus and ascending infection^{4,15}. Data suggest that 80% of cases of acute cervical insufficiency may be associated with intra-amniotic infection¹⁶.

II. Material and Methods:

This is a retrospective observational study conducted over a period of 24 months on all patients presenting with recurrent mid-trimester miscarriage or delivery before 36 weeks to a Tertiary care hospital that serves as a referral center for obstetric and gynecologic cases. Patients with a history of two consecutive mid-trimester miscarriages or delivery before 36 weeks, and patients who have previously had a McDonald's or Shirodkar's Cerclage with suboptimal results were included in this study. Patients with vaginal discharge, ruptured or bulging membranes, bleeding in early pregnancy and fetal anomalies were excluded.

Eligible patients underwent a transvaginal ultrasound scan to confirm cervical length of less than 2.5 cm or internal OS diameter of 0.8 cm or more in the current pregnancy. A McDonald cerclage was performed under general anesthesia at the level of the internal cervical OS (as described by McDonalds), Postoperative care using drugs and prophylactic antibiotics were given.

III. Results:

Table I: Distribution according to age

Age (years)	Number of patients
20-25	19(54.2%)
26-30	8(22.8%)
More than 30	8(22.8%)

Table 2: Distribution according to gravidity of patients

Gravida	Number of patients
2 th	14(40%)
3 rd	10(28.5%)
4 th	9(25.7%)
5 th	2(5.7%)

Table 3: Distribution of patients according to outcome of pregnancy

	Preterm	Term	Total
Caesarean section	6	9	
Vaginal Delivery	7	6	
Total	13	15	28

Four of the 35 cases didn't come for delivery at Rajkiya Mahila Chikitsalaya, Ajmer. So, pregnancy outcomes were analyzed among 31 cases while rests of the variables were analyzed among 35 cases. Of them 19 cases (54.2%) were between 20-25 years old, 8 (22.8%) between 26-30 years and remaining 8(22.8%) were more than 30 years.

29(82.8%) Cases were booked cases (they had antenatal care in the hospital) and 6(17.1%) were unbooked cases. Booked cases had 2-4 antenatal visits prior to cerclage. Among the patients 2nd gravida was 14(40%), 3rd gravida was 10(28.5%), 4th gravida was 9(25.7%) and 5th gravida was 2(5.71%). 10(28.5%) Cases had a previous history of atleast one dilatation and evacuation. 17 Cases (48.7%) were diagnosed with cervical incompetence clinically and confirmed by transvaginal ultrasound. Remaining 18 were assessed, based on history of midtrimester abortion, of having a high suspicion of cervical incompetence after mid trimester scan with measurement of cervical length.

In 30 cases (85.7%), cervical cerclage were done at 12-16 weeks of gestation, in 3 cases (8.5%) between 17-20 weeks and in 2 cases (5.7%) between 21-24 weeks which was an emergency or rescue cerclage. The postoperative period was uneventful in all 35 cases. All cases delivered at Rajkiya Mahila Chikitsalaya, Ajmer were assisted by consultant obstetricians. 15 (48.3%) out of 31 cases were delivered by caesarean section, out of them 6(40%) were preterm LSCS and 9(60%) were full term LSCS. Miscarriage rate was 9.6%. Out of 31 cases 13 had vaginal deliveries out of which 7(53.8%) were preterm and 6(46.1%) were full term. In this study 2(6.4%) babies born at 32 week, 3(9.6%) babies born at 33 week, 2(6.4%) at 34 week, 2(6.4%) were at 35 week and 4(12.9%) born at less than 32week. 16(51.6%) had normal birth weight for the area of study and 6(19.3%) had extremely low birth weight. 6(17%) Fetuses were lost, 3 Out of them were IUD and 3 expired in nursery. With regard to fetal outcome 22(70.9%) took their babies to home. In our study 2(5.7%) cases had history of macdonalds encirclage in previous pregnancy and 3 cases were IVF conceived.

IV. Discussion:

The benefit of mid-trimester cerclage placement in pregnancies has been the subject of research. In this study, we evaluated the efficacy and the outcomes of cerclage placement, outcomes for cerclage when cervical effacement is clinically apparent even in worse conditions, when dilation and bulging of membranes occur. We found that patients can benefit from cerclage placement as the complication rate is low and the prognosis is good even with many premature babies. We had 35 patients of cerclage. Of them 19 cases (54.2%) were between 20-25 years old, 8 (22.8%) between 26-30 years and remaining 8(22.8%) were more than 30 years. 29(82.8%) Cases were booked cases (they had antenatal care in the hospital) and 6(17.1%) were unbooked cases. Similar results were showed in S Khanam et al(2017). Among the patients 2nd gravida was 14(40%), 3rd gravida was 10(28.5%), 4th gravida was 9(25.7%) and 5th gravida was 2(5.71%). Another study S Khanam et al(2017) showed 2nd gravida was 14(40%), 3rd gravida was 10(28.5%), 4th gravida was 9(25.7%) and 5th gravida was 2(5.71%). 10(28.5%) Cases had a previous history of atleast one dilatation and evacuation. S Khanam et al(2017)¹⁷ showed 14 cases (73.68%) had a previous history of at least one dilatation and evacuation. 18 Cases (51.42%) had history of second trimester abortion. A Liddiard et al (2011)¹⁸ showed 21(84%) had past history of atleast one midtrimester loss. In 30 cases (85.7%), cervical cerclage were done at 12-16 weeks of gestation, in 3 cases (8.5%) between 17-20 weeks and in 2 cases (5.7%) between 21-24 weeks which was an emergency or rescue cerclage. A Liddiard et al (2011)¹⁸ showed major number of cervical encirclage carried out at mean gestation of 14 week and 9(5.08%) cases had rescue cerclage which is similar to our study. Out of 31 cases 13 had vaginal deliveries out of which 7(53.8%) were preterm and 6(46.1%) were full term. S Khanam et al(2017) showed 16(61.5%) out of 26 cases were delivered by caesarean section. Miscarriage rate was 9.6%. S Khanam et al(2017) showed miscarriage rate was 3(11.53%). Study of Port H Arcourt Teaching Hospital²⁰ JI Ikimalo et al(2012)²⁰ found miscarriage rate of 9.4%. In his study term pregnancy occurred in 68.8% of the women and preterm in 21.8%. In present study Out of 31 cases 13 had vaginal deliveries out of which 7(53.8%) were preterm and 6(46.1%) were full term. Whereas S Khanam et al(2017) has found 2(12.5%) at term deliveries and 14(87.5%) preterm deliveries. In present study 13(48.3%) cases had preterm birth at less than 35 week of gestation. Berghella et al(2005)⁹ shows in his study preterm birth at less than 35 weeks of gestation occurred in 29.2% (89/305) of the cerclage group. Mourali et al(2012)²¹ found term delivery in 68 cases(66.01%). In this study 2(6.4%) babies born at 32 week, 3(9.6%) babies born at 33 week, 2(6.4%) at 34 week, 2(6.4%) were at 35 week and 4(12.9%) born at less than 32week. S Khanam et al(2017) showed 3(21.42%) baby born at 32nd and 33rd weeks, 6(42.85%) at 34th week and 2(14.28%) was at 35th weeks. 6(17%) Fetuses were lost, 3 Out of them were IUD and 3 expired in nursery. With regard to fetal outcome 22(70.9%) took their babies to home. In S Khanam et al(2017) study fetal outcome 25 (96.2%) took their babies at home. Nasim akhtar et al (2013)²² showed improved fetal outcome with cervical cerclage. Debby et al demonstrated an overall neonatal survival of 82%.16(51.6%) had normal birth weight for the area of study and 6(19.3%) had extremely low birth weight. S Khanam et al(2017) showed 7 babies (43.75%) had normal

body weight for the area of study, 8 babies (50%) had low birth weight and only one had extreme low birth weight.

V. Conclusion:

Cervical cerclage reduces the risk of preterm birth in women at high risk of preterm birth and probably reduces risk of perinatal death. Caesarean section is more likely in women who had cervical suture in pregnancy. The question of whether cerclage is more or less effective than other preventive treatment, particularly vaginal progesterone, remains unanswered.

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