

# Role of Cervical Cerclage in Cervical Incompetence

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## ABSTRACT

**OBJECTIVE:** To determine the etiological factors, clinical presentation and pregnancy outcome in women who underwent cervical cerclage for incompetent cervix.

**SETTING:** Obstetrics and Gynaecology Unit-II, Liaquat University Hospital, Hyderabad-Pakistan. Data records from January 2004 to December 2006 were analysed.

**STUDY DESIGN:** A retrospective study.

**MATERIAL METHODS:** The case files and OPD records of the cases of cervical incompetence were studied and data were recorded on a precoded proforma regarding patient's past obstetrical history, gestational age and cervical dilatation at the time cerclage placement, complications and pregnancy outcomes.

**RESULT:** Among 3033 patients admitted in the hospital 55 were diagnosed to have cervical incompetence, hence incidence came out 1.81%. In 41 patients cervical cerclage was applied, the method was "McDonald purse string suture". Out of 41 patient's miscarriage, pre-term and term delivery were 2.43%, 65.85% and 39.02% respectively. Foetal survival was 82.92%. No effect was seen on mode of delivery. There were no serious maternal complications.

**CONCLUSIONS:** Past history of recurrent mid-trimester abortion or pre-term delivery when combine with ultrasonography form reliable basis for diagnosis. Cervical cerclage seems to be the effective treatment of choice in patients with cervical incompetence.

**KEYWORDS:** Cervical Cerclage, cervical incompetence, complication and pregnancy out come.

## INTRODUCTION

Fetal loss is a painful experience. A history of second or early third trimester fetal loss, after painless dilatation of the cervix, prolapse or rupture of the membranes, and expulsion of alive fetus despite minimal uterine activity, is characteristic for cervical insufficiency<sup>[1]</sup>.

The prevention of habitual abortion and pre-term labour is challenge to modern obstetrics. A spontaneous abortion usually brings unhappiness to the parents. The later in pregnancy it happens the greater the sense of loss<sup>[2]</sup>.

The incompetent cervical os is one of the cause of habitual abortion. It is the inability of the cervix to retain an intrauterine pregnancy to term, which causes pre-term delivery and carries with it significant neonatal mortality and morbidity<sup>[3]</sup>.

Classically, this consists of one or more late second trimester or early third trimester losses, in the absence of an obvious precipitating cause<sup>[4]</sup>.

Cervical incompetence accounts for 20-25% of all 2<sup>nd</sup> trimester pregnancy losses and 10% of preterm labors<sup>[5]</sup>. The precise incidence of a condition with a subjective, retrospective diagnosis is difficult. Figures between 0.05-1% of all pregnancies have been suggested<sup>[6]</sup>.

Cerclage rates vary from 30 per 1000 birth (3%) in France to 5 per 1000 (0.5%) in Scotland with an average of 0.8% in Britain as a whole<sup>[7]</sup>.

The purpose of this study was to document the etiological factors, clinical presentation and pregnancy outcome in women who underwent cervical cerclage for incompetent cervix in our setup in order to outline the diagnostic protocol for at-risk women so that the preventable foetomaternal morbidity and mortality rate may be reduced.

## MATERIAL & METHODS

A retrospective analysis was performed of patients who underwent cervical cerclage for cervical incompetency at Obstetrics and Gynaecology Unit-II, Liaquat University Hospital, Hyderabad – Pakistan from January 2004 to December 2006. Patients were identified from OPD record and case files. A precoded proforma was used to record relevant information regarding demographics, history, examination, investigations, gestational age and cervical dilatation at cerclage placement, complications, pregnancy outcomes and complications.

Women with mid-trimester pregnancy who presented with cervical shortening i.e. cervical length  $\leq 25$ -mm or with no measurable cervix with or without external cervical os dilatation; diagnosed by transvaginal ultrasound during routine antenatal evaluation were selected for the placement of cervical cerclage. Cases with symptoms of preterm labour, preterm prelabour rupture of membranes or chorioamnionitis were not offered cervical cerclage. Patients were admitted for

uterine monitoring and preparation for cerclage. Patients with cervical shortening received only perioperative tocolysis with either MgSO<sub>4</sub> or Indomethacin, whereas patients who presented no measurable cervix received tocolysis by means of MgSO<sub>4</sub> (4-g IVPB/20 minutes followed by a continuous infusion of 3-g/hr) and Indomethacin (50-100 mg rectally followed by 25-mg every 6-hr for a total of 48 hours); perioperative prophylactic antibiotics were also administered to these patients. Cervical cerclage was placed by McDonald suture technique under spinal or general anesthesia, as per the choice of the anaesthetist. Patients were kept under observation for 24-48 hours and were then discharged with the advice to refrain from heavy physical activity and coitus, and to report immediately in case of vaginal discharge, bleeding, painful contractions, and pyrexia.

Data were analysed by using SPSS version 14. Frequencies with percentages were calculated for qualitative variables. Means with standard deviations were calculated for continuous data.

### RESULTS

Among 3033 pregnant women 55 (1.81%) presented with cervical incompetence from which 41 (1.35%) underwent cervical cerclage by McDonald suture.

Out of 41 women in which cervical cerclage was applied 26 (63.41%) were asymptomatic and diagnosed on routine antenatal checkup, 9 (21.95%) presented with pelvic pressure, 5 (12.19%) presented with increased vaginal discharge and 1 (2.43%) presented with vaginal bleeding.

In 20 (48.78%) cases cervical cerclage was applied on the bases of history with ultrasound and pelvic examination, as detailed in **Table I**.

No etiological factor was detected in 31 (75.6%) cases, whereas history of dilatation and curettage (D&C) was present in 8 (19.51%) cases, and 2 (4.87%) cases presented with history of instrument delivery.

Gestational age of 29 (70.73%) women was 14-20 weeks at the time of cerclage placement and in 12 (29.26%) women cerclage was placed in 21-24 weeks gestational age.

Twenty-six women presented with <1-cm dilatation. Dilatation of cervix and their respective delivery interval are detailed in **Table II**.

Majority (85.36%) of the women delivered through spontaneous vaginal delivery, 27 (65.85%) women delivered after 36-weeks of gestation, and 34 (82.92%) live-born babies survived (**Table III**).

In 26 (63.41%) cases no complication was reported, whereas premature rupture of the membranes (PROM) occurred in 5 (12.2%) cases (**Table IV**).

**TABLE I:  
DIAGNOSTIC CRITERIA FOR CERVICAL  
INCOMPETENCE IN THE STUDY GROUP (n=41)**

Mode of Diagnosis	No. of Patients	%
History + U/S + P/S	20	48.78
H/O multiple 2 <sup>nd</sup> trimester miscarriages	18	43.90
H/O multiple preterm deliveries	13	31.70
History alone	11	26.82
Ultrasonography alone	8	19.51
H/O obstetric trauma	2	4.87
History + P/S	1	2.43

**TABLE II:  
DILATATION AT THE TIME OF CERCLAGE  
PLACEMENT (n=41)**

Dilatation at Cerclage Application	No. of Patients	Mean±SD Gestational Age at Delivery	Mean±SD interval up to Delivery
<1 cm	26	38±2 wks	18±2 wks
1 cm	10	38±2 wks	16±2 wks
2 cm	3	36.3±2 wks	11±2 wks
2-2.5 cm	2	32±2 wks	8±2 wks

**TABLE III:  
MODE OF DELIVERY AND PREGNANCY  
OUTCOME (n=41)**

Variable	No. of Patient	%
Spontaneous vaginal delivery	35	85.36
Emergency LSCS	3	7.31
Forceps Delivery	2	4.87
Elective LSCS	1	2.43
<b>Prolongation of Pregnancy</b>		
14.32 weeks	2	4.87
33.36 weeks	11	26.82
> 36 weeks	27	65.85
<b>Foetal Outcome</b>		
Live born survived	34	82.92
Live born died	4	9.75
Miscarriage	1	2.43

**TABLE IV:  
EARLY & LATE COMPLICATIONS RELATED WITH  
CERVICAL CERCLAGE (n=41)**

Variable	No. of Patients	%
No complication	26	63.41
Fever	4	9.75
PROM	5	12.20
Vaginitis	3	7.31
Cervical tear during labour	1	2.43
Premature contraction	1	2.43
Cervical dystocia	1	2.43

## DISCUSSION

Classic cervical insufficiency is a diagnosis based on an obstetric history of recurrent second or early third-trimester foetal loss, following painless cervical dilatation, prolapse or rupture of the membranes, and expulsion of a live foetus despite minimal uterine activity<sup>[8]</sup>. In the absence of the classic recurrence, the term cervical insufficiency is generally used as a work-diagnosis based on a single event with the same characteristic clinical history after exclusion of other possible causes of preterm delivery.

Observational studies show that in classical cases with a severely traumatized or virtually absent cervix, neonatal survival may be up to 93% after effective cerclage as compared to 27% before the cerclage<sup>[9]</sup>. Others regard the diagnosis of cervical insufficiency as elusive because of the lack of uniform diagnostic criteria and/or an objective diagnostic test<sup>[10]</sup>, and cerclage therapy as ineffective because pooled data of randomized controlled trials show no reduction in foetal loss<sup>[11]</sup>.

However, data confirming all these associations are limited and the role of prophylactic or therapeutic cervical cerclage in women for the prevention of second trimester abortion or preterm delivery is unclear<sup>[12]</sup>.

From January 2004 until December 2006, there were 3033 deliveries at Liaquat University Medical Hospital Hyderabad and a total of 41 cervical cerclage "one per 74 deliveries", incidence of cervical incompetence in our studies is 1.81% which is consistent with international studies as discussed previously.

Cervical cerclage has become an established treatment for cervical incompetence. The fact that effectiveness of elective cerclage is much better when applied prophylactically.

In our study 26 (63.41%) patients were applied elective McDonalds stitch, whereas 15 (36.59%) patients underwent cerclage after some degree of dilatation.

form our study it has been shown that emergency cerclage did not prevent pre-term delivery but nevertheless the duration of pregnancy was prolonged by the cerclage; these observations were consistent with previous studies<sup>[13]</sup>. In our series the mean duration of cerclage in situ in those patients who had cerclage after some dilatation of cervix was 84 days. This extra time gained would contribute to the improved survival rate, since gestational age is one factor which strongly associates with neonatal survival<sup>[14]</sup>.

Although cerclage is relatively simple surgical procedure, it is not without side effects. In our study 4 patients with dilatation of >2-cm who were applied cerclage, 1 (2.43%) developed premature contraction and other 3 (7.32%) developed PROM. In a study cited by Golen, et al the reported frequency of PROM was 30% whereas 15.5% of patients developed premature contractions<sup>[15]</sup>.

One (2.43%) of the patient in our study developed cervical laceration due to contraction. McDonalds stitch was removed because of advanced change and cervical laceration needed stitching due to bleeding.

The frequency of cervical dystocia was in 1 (2.43%) patient and the frequency of caesarean section as a consequence of cervical dystocia was also 1 (2.43%).

Golen, et al reported that the cervical dystocia was observed in 2.5-4% cases whereas frequency of caesarean section due to cervical dystocia was 19.5%<sup>[15]</sup>.

Main outcome measures in our study were prolongation of pregnancy and foetal outcome. Pre-term and term delivery rates were 14 (34.15%) and 27 (65.85%) respectively.

Overall neonatal survival rate was 82.92% compared well with a study by Waloch showing rates 76.8% and 79.1%<sup>[16]</sup>.

The results of this study do suggest that the cervical cerclage can have an important beneficial effect in carefully selected pregnant women.

## CONCLUSIONS

We concluded that past history of recurrent mid-trimester abortion or pre-term delivery when combine with ultrasonography form a reliable basis for diagnosis. It was observed that careful selection of patients, method of cerclage and optimal timing of the operation can reduce chances of complications and failure of the procedure. Selective use of cervical cerclage had important beneficial effect in prolonging the pregnancy and improving foetal survival rate. Data of this audit suggest that cervical cerclage should be offered to women at high risk such as those with a history of repeated pregnancies ending before 37 weeks of gestations. In addition, there is a need for more basic knowledge of cervical ripening, objective assessment

of cervical visco-elastic properties, and randomized controlled trials of technical aspects of cervical cerclage (e.g. suturing technique).

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