

## ORIGINAL RESEARCH ARTICLE

# Pregnancy Outcome after Cerclage for Cervical Incompetence at the University of Port Harcourt Teaching Hospital, Port Harcourt

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## Abstract

Cervical incompetence is often associated with mid trimester pregnancy losses and preterm labour. cervical cerclage to prevent miscarriage and preterm labour is practiced world wide. The objective of this study was to document the fetomaternal outcome following cervical cerclage for cervical incompetence. The study reviewed all case files of pregnant women who had cervical cerclage for cervical incompetence between January 1, 2004 to December 31, 2008, at the University of Port Harcourt Teaching Hospital. The study found an incidence of 0.17% of cervical incompetence among the antenatal population. Following cervical cerclage, miscarriage rate was 9.4%. Preterm delivery occurred in 21.8% while term pregnancy occurred in 68.8% of the women. There is improvement in pregnancy outcome after cervical cerclage for cervical incompetence hence we recommend the insertion for true cases of cervical incompetence. (*Afr J Reprod Health* 2012; 16[3]: 180-184).

## Résumé

L'insuffisance du col utérin est souvent associée à des pertes de grossesses du milieu du trimestre et le travail prématuré. Le cerclage du col utérin pour prévenir les fausses couches et de prématurité du travail est pratiqué dans le monde entier. L'objectif de cette étude était de documenter le résultat du fœto-maternelle à la suite du cerclage du col utérin pour l'insuffisance du col utérin. L'étude a examiné tous les dossiers des femmes enceintes qui ont eu le cerclage du col utérin pour l'insuffisance du col entre janvier 1, 2004 et décembre 31, 2008, au Centre Hospitalier Universitaire de Port Harcourt. L'étude a révélé une incidence de 0,17% de l'incompétence du col utérin chez la population prénatale. Après le cerclage du col utérin, le taux de fausses couches était de 9,4%. L'accouchement prématuré s'est produit chez 21,8% tandis que la grossesse s'est produite à terme chez 68,8% des femmes. Il y a une amélioration dans les résultats de la grossesse, après le cerclage du col utérin pour l'insuffisance du col utérin. Par conséquent, nous recommandons l'insertion pour les vrais cas d'insuffisance du col utérin (*Afr J Reprod Health* 2012; 16[3]: 180-184).

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**Keywords:** Cervical incompetence, cervical cerclage, pregnancy outcome

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## Introduction

A cervix is said to be incompetent when it is unable to retain pregnancy till term due to deficiency in its structure or function<sup>1</sup>. This has been identified as a major cause of mid-trimester miscarriages, pre-labour rupture of membranes and preterm labour<sup>1, 2, 3</sup>. Typically an incompetent cervix presents with recurrent mid-trimester miscarriage that is usually sudden with minimal or no abdominal pains<sup>1, 2</sup>. Diagnosis is often based on

history of these recurrent mid trimester miscarriages and on a few occasions digital vaginal examination and ultrasonography<sup>1, 2, 4</sup>. Ultrasonography has actually become a veritable tool in the diagnosis and follow-up of patients with cervical incompetence<sup>5</sup>. The definitive management of cervical incompetence involves strengthening the cervix with suture materials as enunciated by Shirodkar<sup>6</sup> in 1955 and modified by McDonald<sup>7</sup> in 1965 with both having similar outcomes<sup>8</sup>. Reports of pregnancy outcome after cervical cerclage vary, with some authors reporting good outcome of 60% term birth

following cerclage<sup>9</sup> and others reporting no significant difference in outcome following cerclage<sup>10</sup>. Cervical cerclage remains an integral part of the management of women with cervical incompetence at the University of Port Harcourt Teaching Hospital, UPTH, yet pregnancy outcome following cerclage has not been documented. This study therefore aims at reviewing and documenting the pregnancy outcome after cervical cerclage at the UPTH over a five year period.

## Materials and Methods

A total of 44 women were diagnosed as having cervical incompetence over the study period (January 1, 2004- December 31, 2008). Their case files were retrieved from the Records Department and analysed. The sociodemographic characteristics such as age, parity, number of mid-trimester pregnancy losses and educational status were documented.

The gestational ages at insertion of cerclage, position of the knot, use of post-operative antibiotics and tocolytic drugs, and total duration of hospital stay were analysed. After cerclage, the incidence of abnormal vaginal discharge, spontaneous miscarriage, pre-labour rupture of membranes, preterm labour, number of term pregnancies and duration of labour were also analysed.

The outcome between the knots at 6 and 12 o'clock positions were compared with the Chi square test as well as the various gestational ages at insertion. Also the outcome between the women that stayed longer than one week and those discharged within one week were compared with the chi square test. Test of significance was taken as  $P < 0.05$ .

## Results

There were 25,685 pregnancies managed at the antenatal clinic in the study period. Forty three of them, constituting 0.17%, were complicated by cervical incompetence for which cervical cerclage was performed. Of the 43 case files, only 32 (76.2%) were retrieved or contained adequate information. The ages of the women ranged from 25 to 42 years with mean age of  $31.5 \pm 3.1$  years (table 1). The number of pregnancy losses reported

by the women ranged from 1-6 with a mean pregnancy loss of  $2.9 \pm 1.2$  as shown in table 2.

The diagnosis of cervical incompetence was made after considering the history of mid trimester miscarriages, pelvic examination and ultrasonography. All the women had cervical cerclage done by the McDonald's method using mersilene tape. The knot was tied at 6 o'clock position in 20 of the women (62.5%) while the knot was tied at 12 o'clock position in 12 of the women (37.5%). Twenty seven (84.4%) of the women had their cerclage done between gestational ages of 14-20 weeks while the rest 5 (13.6%) had the cerclage done at 20 weeks due to late presentation. One woman had an emergency cerclage at 26 weeks gestation and was complicated with iatrogenic rupture of membranes and she subsequently expelled products of conception.

**Table 1:** Ages and Parity of the women

Ages of the women	Number	Percentage
25-29	11	34.4
30-34	12	37.5
35 and above	8	28.1
Nullipara	20	62.5
Primipara	6	18.8
Multipara	5	15.6
<b>Total</b>	<b>32</b>	<b>100</b>

All the patients received post-operative antibiotics and tocolytic drugs for a minimum of 5 days. The duration of hospital stay ranged from 3 to 175 days with a mean hospital stay of 25.2 days. The women with many pregnancy losses and previous failed cerclages had the longest stay in the hospital. After surgery, abnormal vaginal discharge occurred in 8 women (25%). Three (9.4%) of the women had spontaneous miscarriage

at gestational ages of 18, 21 and 26 weeks respectively after cerclage. Preterm pre labour rupture of membranes occurred in 7(21.9%) of the women; 4 at 35 weeks gestation and the other 3 at 28, 30 and 32 weeks respectively. (Table 2).

Twenty two (68.8%) of the women carried the pregnancy to term and had the cerclage removed at 37 weeks. The total take home babies were 27 (84.4%) with mean birth weight of 2.9kg. Eighteen of the women had spontaneous vaginal delivery while 2 women had successful induction of labour at 41 weeks gestation. Eight women were delivered by Caesarean section, 4 for elective indications while the other 4 were for emergency indications.

**Table 2:** Mid-trimester Pregnancy losses before surgery and Pregnancy outcome after cerclage

Previous prgnancy loss	Number	Percentage
1	4	12.5
2	8	25
3	11	34.4
4	6	18.8
5	2	6.3
6	1	3.1
Miscarriages	3	9.4
Preterm labour/PROM (28-33weeks)	3	9.4
Preterm labour/PROM (34-36 weeks)	4	12.5
Term Pregnancies	22	68.8
<b>Total</b>	<b>32</b>	<b>100</b>

There were 4 cases of preterm prelabour rupture of membranes among the 27 women that had their cerclage before 20 weeks gestation, while 3 occurred among the 5 that had their cerclage after 20 weeks; there was no statistical difference between them as  $P > 0.05$ . Among the 20 women that had the cerclage knot tied at 6 o' clock position, 5 experienced abnormal vaginal discharge, while 3 out of the 12 that had the knot at 12 o'clock position suffered similar morbidity.

Again there was no statistical difference as  $P > 0.05$ .

Out of the 7 preterm pre-labour rupture of membranes recorded in the study, 4 occurred in the 6 o' clock group while 3 occurred in the 12 o' clock group. This also was not statistically significant as  $P > 0.05$ . There was no statistical difference in the incidence of pre-labour rupture of membranes, preterm labour and ability to carry pregnancy to term amongst the women discharged within 1 week, within 2 weeks and greater than 2 weeks after surgery.

Out of the 20 women with knot at 6 o' clock position, 14 carried the pregnancy to term while 8 out of 12 of the women with knot at 12 o' clock position, carried the pregnancy to term also showing no statistical difference as  $P > 0.05$ .

## Discussion

Cervical incompetence was diagnosed in 0.17% of the women. Similar incidences have been reported in the literature<sup>2,11</sup>. The mean age of the women was 31.5 years. This is not unexpected as most cases of the cervical incompetence in developing countries result from traumatic insults on the cervix which increases with maternal age as termination of pregnancies and deliveries are undertaken.

Twenty three (71.9%) of the women in the study had tertiary education. Similar report by Egwuatu and co workers found higher incidence in the literate and high socioeconomic class<sup>12</sup>. The educated women are more likely to report cases of recurrent pregnancy loss to the teaching hospital. Majority (62.5%) of the women in this study were nulliparous. In an African environment where high premium is placed on child bearing, these groups of women are likely to present to the teaching hospital after several miscarriages.

Making a definitive diagnosis of cervical incompetence is often a difficult task<sup>1,2</sup>. Most clinicians rely on the history of recurrent mid-trimester pregnancy losses, clinical examination finding of an open cervical os and an ultrasound diagnosis of dilated internal cervical os during pregnancy<sup>2,4</sup>. The mean pregnancy loss prior to surgery among the women was 2.9. The history of a mid-trimester, often painless miscarriage, usually alerts the doctor of the possibility of a cervical

incompetence. The presence of more than one mid-trimester miscarriage as found among these women is highly suggestive of cervical incompetence. In this study most of the women had an ultrasound support to make a diagnosis of incompetent cervix

The McDonald technique using mersilene tape, was used for all the women. This technique because of its simplicity of insertion and removal, and low complication rates<sup>2,9</sup> appear to have gained acceptance and popularity among gynaecologists world wide. Majority of the women had the cerclage inserted before twenty weeks gestation. This is the practice worldwide. Those who presented late had the cerclage at gestational ages greater than 20 weeks. A woman had an emergency rescue cerclage at 26 weeks gestation but unfortunately had a miscarriage following iatrogenic rupture of fetal membranes. This is a common complication of emergency cerclage which increases its failure rate<sup>2,13</sup>.

It is believed that the position of the knot does not influence the outcome after cerclage hence most gynaecologist would prefer the position most convenient for them to tie the knot. This may explain why majority of the women in the study had the knot tied at the 6 o'clock position while the rest had the knot at the 12 o'clock position. There was no statistical difference in outcome in terms of abortions, pre-labour rupture of membranes, preterm labour and ability to carry pregnancy to term.

Majority of the women were discharged within one week of surgery while some of them especially with advanced maternal age and high previous pregnancy losses, were kept for longer duration in the hospital. There was no statistical difference in pregnancy outcomes amongst the various durations of hospital stay after surgery. Abudu et al had earlier demonstrated no significant improvement in outcome with increased hospital stay after surgery<sup>14</sup>. The number of patients in this study however is small to draw a conclusion on this. A larger study with randomization is needed here especially because of the economic and social implications of prolonged hospital stay.

The term pregnancy rate in this study was 68%. Similar high term pregnancy rates have been reported by previous workers<sup>8,9,15</sup>.

## Conclusion

Despite several reported successes with cerclage in preventing mid-trimester pregnancy losses and preterm labour, there remains doubt as to the real value and place of cerclage in managing recurrent pregnancy loss due to incompetent cervix. In a meta analysis of randomized control trials by Drakeley et al<sup>10</sup>, there was no statistical difference in pregnancy outcome between intervention and non intervention groups.

Despite the limitation of non randomization in this study, it would appear that a good number of pregnancies that ordinarily would have been lost were saved by cervical cerclage. In developing countries where traumatic injuries account for greater percentage of cervical incompetence, the place of cervical cerclage may never be overemphasized. However a randomized control study in our environment will help to answer this question. Until then, it is our opinion that cervical cerclage may still be useful in preventing mid-trimester miscarriages and preterm labour in pregnancies complicated with cervical incompetence as demonstrated by other studies<sup>3,10,15</sup>.

## Contribution of Authors

Conception and Design of Study: Dr Kenneth Izuchukwu Professor John Ikimalo and Dr Nestor Inimgba

Collection of Data: Dr K. Izuchukwu

Analysis of Data: Dr K. Izuchukwu, Prof J. Ikimalo, Dr Nestor Inimgba

Preparation of Manuscript: Dr K. Izuchukwu and Professor J Ikimalo.

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