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Outcome And Complications In Women Undergoing Cervical Cerclage In A Tertiary Hospital In Kenya

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Abstract

Objective: To determine the immediate and late complications of women undergoing cervical cerclage, as well as their pregnancy outcomes.

Methods: This was a retrospective study based on traceable patient records over a 9-year period (2000 to 2008) undertaken at the Kenyatta National Hospital, Kenya's major referral and teaching hospital. All files on women diagnosed with cervical incompetence and treated by MacDonal's stitch insertion were scrutinized. Details on patients' age, gestation age at cerclage, immediate and late presentation and pregnancy outcome were collected. Comparisons were done for complications and pregnancy outcomes among emergency, elective and empirical cerclage groups.

Results: Complete medical records of 199 patients who underwent cerclage over this period were retrieved. They ranged from 17 to 42 years of age, with an average of 27.97 years. Majority of the patients presented at gestation of 10 to 20 weeks (90.1%). Major complications recorded include vaginal haemorrhage and urinary tract infections. For the 174 women whose complete pregnancy records were traceable, 53.3% delivered at full term, 19.6% had pre-term delivery, 7.5% had intrauterine fetal death and 7.0% had abortions.

Conclusions: This study adds to the existing knowledge on the controversial diagnosis of cervical incompetence and the use of cerclage in the African population. There is a relatively high incidence of complications among cerclage patients. The incidence of intrauterine fetal deaths among cerclage patients is underreported. More comprehensive randomized studies are needed to compare pregnancy outcomes in cerclage and control groups.

Introduction

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

mid trimester abortions[2]. Cervical surveillance by use of transvaginal ultrasonography has been advocated[3], but this does not find universal use in resource poor settings. The efficacy of cervical incompetence, as well as its need have been discounted, with Althuisius[1], terming it an unnecessary intervention in 50% of the cases. Cervical cerclage can be applied on empirical, elective and emergency basis, with empirical cerclage being used in the mid trimester, and emergency below 10 weeks and above 20 weeks of gestation in case of threatened abortion[4, 5].

Previous authors have reported contrasting results on the effectiveness and adverse effects of cervical cerclage in developed and developing countries. An increase in term deliveries and decrease in preterm deliveries and abortions has been noted[6]. In Nigeria, clear beneficial effects of cerclage with 94.4% fetal salvage up from 23.7% before cerclage are reported[7]. However, Chryssikopoulos[6] has reported an increase in breech presentation and rate of caesarean sections after cerclage, but no increase in congenital anomalies. In the same study, an increase in aerobic and anaerobic pathogenic flora was noted in postoperative cervical cultures. In developing countries, caution should be exercised in applying cerclage because of high rate of complications[8].

Blacks have been reported to demonstrate poor outcome after cervical cerclage[9]. Therefore, this retrospective study aimed at documenting the complications and pregnancy outcomes of women undergoing cervical cerclage in a Kenyan hospital.

Methods

This was a descriptive retrospective study based on patients' medical records at the Kenyatta National Hospital, Kenya's main referral hospital. Files under the code "cervical incompetence" were retrieved for the period January 2000 to December 2008. Ethical approval was granted by the Kenyatta National Hospital Ethics Committee.

Predesigned questionnaires were used to capture patients' details. These included; the age of the women and the gestation period in weeks at insertion of the stitch. The cerclage was grouped as emergency if it was indicated due to prolapsed membranes or

cervical dilatation on examination, elective if it was based on past history and empirical if not falling in any of the other two categories.

Immediate and late complications after cerclage were recorded. The pregnancy outcome was categorized as abortion (below 28 weeks gestation), premature delivery (if before 37 weeks), term delivery (up to 42 weeks gestation) and intrauterine fetal demise if any records of fetal death in utero were available. The mode of delivery was recorded as either normal vaginal or caesarean section.

We excluded incomplete patient files from the study.

Data was managed using SPSS 17.0 and analysis performed using simple descriptive statistics like means, frequencies and cross-tabulations. Data was presented by means of tables.

Results

For the period 2000 to 2008, 199 complete cases of women treated for cervical incompetence were recorded. The age range was 17 to 42 years with a mean age of 27.97.

Insertion of the stitch was done between 7 and 26 weeks of gestation. 1.5% of the patients presented below 10 weeks gestation, 90.1% between 10 and 20 weeks and 8.4% above 20 weeks. Majority (61.7%) presented between the 13th and 16th week of gestation. All the women were treated by MacDonald stitch insertion, with 72.5%, 25.4% and 2.1% falling in the empirical, elective and emergency categories respectively.

Immediate complications occurred in 24.1% (48) of the study group. Severe vaginal haemorrhage following insertion of the MacDonald stitch was seen in 4% of the total cases. Urinary tract infections were more common, at 20.1%. Urinary tract infections were statistically higher in the empirical cerclage group ($p=0.025$). Table 1 shows the complications per age category.

Late complications included vaginal discharge (12.1%), and premature labour/threatened abortion at 6.5%

53.3% of the women went on to full term pregnancy after the cerclage. 19.6% had premature deliveries, 7.5% intrauterine fetal deaths, and 7.0% abortions. 12.6% (25) patients undetermined (either lost to follow up or not recorded properly). The distribution of the outcomes is shown in table 2, while table 3 summarizes the distribution of pregnancy outcomes among the cerclage groups.

74.7% of the deliveries were by normal vertex delivery, with 25.3% as emergency and elective caesarean

sections. The gestation age at removal of the stitch ranged from 16 to 41 weeks. Those who had removal of the stitch before term mainly presented with vaginal bleeding and features of inevitable abortion, preterm rupture of membranes and fetal death. Those who presented for removal of the MacDonald stitch after 39 weeks were mainly characterized by poor appointment keeping. In 2 cases, patients gave birth with the MacDonald stitch in situ.

Discussion

Majority of the women undergoing cerclage in this Kenyan population fall in the age group 20-35 years, which is in keeping with the general age of marriage and child bearing in the African population. According to the PRAMS study[10], majority of the women who develop cervical cerclage fall under 20 years of age. This disparity may partly be explained by ethnic and lifestyle differences. The mean age of our patients was 27.97, which is in keeping with 29.28 reported previously[11].

The gestation period in our population ranged from 7 to 26 weeks, with majority (90.1%) falling between 10 and 20 weeks and 61.7% between 13 and 16 weeks. Cervical incompetence is mostly diagnosed in the second trimester when the amniotic sac fills the uterine cavity[12]. Rodrigues[11] has reported an average gestational period of 18.29 weeks, which compares well with our findings. Most of the women undergoing cerclage after 20 weeks fall in the emergency group in which patients present with bulging membranes and an intervention is required to salvage the pregnancy. Those requiring prophylactic intervention undergo cerclage earlier[13]. In another study done in Saudi Arabia, the mean gestation age for patients undergoing cerclage was 23.05 weeks, with a range of 18.2 to 26.5 weeks[14], which compares well with our findings.

The present study reveals that early complications of cervical cerclage occurred in 48 patients (24.1%), with urinary tract infections being the majority. This is in keeping with studies elsewhere in Africa. An incidence of 50.4% of urinary tract infections has been reported in a Nigerian population[15]. Idrisa[16] reported that urinary tract infections, vulvovaginitis and premature rupture of membranes were the commonest complications. In another Nigerian study, only 3 out of the 154 study subjects were reported to have severe vaginal haemorrhage, urinary tract infection and abortion[17]. These findings are however in discordance with reports among Saudis, where no cases of urinary tract infections were seen in a 7-year

retrospective study[18]. The differences observed might be attributed to selection of patients for cerclage, treatment of urinary tract infections before surgery and the use of prophylactic antibiotics post-operatively. The differences in antibiotic resistance in different regions may also play a role. An increase in aerobic and anaerobic pathogenic flora has been noted in post-operative cervical cultures[6]

Late complications of cerclage in this study include vaginal discharge (12.1%) and threatened abortion (6.5%). The vaginal discharge may be due to vulvovaginitis, but in our study, there was no follow-up on cultures and sensitivities of vaginal swabs. Vulvovaginitis is however a common early and late complication of cerclage[15, 17]. Egwuatu[17] reported late complications in 9.7% of the study population. Suture re-insertion, maternal death due to endotoxic shock has been reported. We did not encounter a case of maternal mortality in our study. Urinary tract infection and endotoxic shock may be a continuum that is orchestrated by inappropriate antibiotic use after cerclage.

Our findings reveal that over half (53.3%) of the study subjects had term deliveries, 19.6% had premature deliveries, 7.5% IUFDs while 7.0% had abortions. Our study did not evaluate the fetal salvage rates because it was not clear how many premature deliveries survived. Previous studies have reported a wide range of pregnancy outcomes. For instance, Sobande[18] reported 90% live births, while Jongen[8] reported 43.8% term deliveries in Tanzania following cerclage. In another study, 69% of mothers delivered at term while 25% had abortions[19]. Favorable fetal salvage rates have been reported in African populations, with Wright[7] reporting a 94.4% fetal salvage rate, while Feyi-Waboso[15] reported 92.2%. Results of a meta-analysis show a significant reduction in pregnancy loss and pre-term delivery rates[12]. However, it is not possible to rule out other causes of abortions, premature deliveries and IUFDs in most studies. Drakeley[12] has concluded that the effectiveness of prophylactic cerclage in preventing pre-term deliveries is not proven.

There is paucity of data on IUFDs after cervical cerclage. The present study reveals that 7.5% of the pregnancies result in IUFDs, but other possible causes of IUFDs must be ruled out to correlate them with cervical cerclage. A Perinatal mortality of 42.3% has been reported in mothers after cerclage[6], but it is not clear how many of these were dead at delivery. Kurup[20] reported a total neonatal survival of 85.7%. The results of our study show a less favorable outcome compared to another African study that reported 76.8%, 14% and 9.2% of term, preterm

deliveries and abortions respectively[21]. In a South African survey, there was no evidence that cervical cerclage either prolonged gestation or improved survival. The cerclage group was more likely to receive tocolytic drugs and experience puerperal pyrexia[22]. Shamshad[23] has found placenta abruption and severe pre-eclampsia as the main causes of premature delivery. A high rate of preterm deliveries has been recorded in a recent Pakistan study, with 65.85% of the patients falling in this group[24]. Table 4 summarizes the pregnancy outcomes as seen by various authors.

Our comparison of type of cerclage and pregnancy outcome reveals that the emergency group had a relatively poorer outcome than the empirical and elective groups. However, the disparities in the patient numbers in the three groups preclude statistical comparison. Elective cerclage is reported to have better neonatal outcome, with the mortality of 20% compared to 44% in the emergency group[5]. The outcome in this group is poorer in patients with prolapsed membranes, advanced cervical dilatation and infection. Therefore, proper selection of patients and prophylactic antibiotics before cerclage might help improve outcome.

The present study has revealed that 74.7% of the mothers delivered by spontaneous vaginal delivery while 25.3% underwent caesarean sections. The main indications for operative delivery were fetal distress and prolonged labour. These results are in keeping with previous reports that women on cerclage have more caesarean sections than control groups[26]. Other studies report no significant difference in mode of delivery, mean birth weight and APGAR score in patients under cerclage or cervical pessaries[27].

One of the main indications for operative delivery in cerclage patients is failure to progress to labour[28]. Recent reports indicate that fetal rather than maternal indications influence the rate of caesarean deliveries[29]. Although there is demonstrated increase in operative deliveries in women under cerclage[29, 30], this has not been directly linked to the cerclage itself as most of the compelling indications are fetal. Some reports are in discordance with the general trend that caesarean section rate increases with cerclage[23, 24]. Though not exhaustively documented, one of the likely maternal indications for caesarean section due to cerclage is cervical stenosis[31, 32].

In a comprehensive review on cervical cerclage, Drakeley[12] has noted an increase in caesarean deliveries in the cervical suture group, though not statistically significant. One of the postulations is that pregnancies are 'medicalised' once a stitch is inserted

hence increased anxiety to expedite delivery. Therefore, many women may be treated unnecessarily due to poor prediction and indications. The randomized studies done on this subject are too few and inconsistent[12] to draw a firm conclusion. Although our study points at an increased rate of caesarean deliveries in the cerclage patients than the recommended for the general population, there is a need to undertake a comprehensive randomized analysis to shed more information on this. It is possible that the results from such analysis would be different from the existing one, because of recorded poor outcome based on the black race[9].

Conclusion(s)

Our results on the age distribution and gestation period at insertion of cervical sutures are in keeping with previous reports. We found similar complications and pregnancy outcomes as previously demonstrated. However, data on intrauterine fetal deaths is lacking in the literature. There are many existing inconsistencies in the diagnosis and management of cervical incompetence. Further, the indications for cerclage are not unified in all centres. There is need for comprehensive randomized studies in the African population to compare outcomes and complications among cerclage and control groups so as to document the real benefits of cerclage. A standardized diagnostic and management approach is a long overdue.

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Illustrations

Illustration 1

Table 1. Immediate complications of the patients in various age categories

COMPLICATIONS		
Age Category	Urinary Tract Infection	Severe Vaginal Haemorrhage
Below 20 years	3	1
20-35 years	34	6
Above 35 years	3	1
Total	40	8 Total (48)

Illustration 2

Table 2. Distribution of pregnancy outcomes for the women under cervical cerclage

Outcome	Frequency (%)
Abortion	14 (7.0)
Premature delivery	39 (19.6)
Term delivery	106 (53.3)
Intra-uterine fetal demise	15 (7.5)
Undetermined	25 (12.6)
<u>Total</u>	<u>199 (100)</u>

Illustration 3

Table 3. Distribution of pregnancy outcomes among the various cerclage groups

Pregnancy outcomes				
Cerclage group	Abortion	Premature delivery	Term delivery	Intrauterine fetal death
Empirical	10 (8.3%)	25 (20.8%)	76 (63.3%)	9 (7.5%)
Emergency	4 (8%)	13 (26%)	28 (56%)	5 (10%)
Elective	0 (0%)	1 (25%)	2 (50%)	1 (25%)
Total (n=174/199)	14	39	106	15

Illustration 4

Table 4; Pregnancy outcomes among various population groups on cervical cerclage

Author and year	Population studied	Sample size	Pregnancy outcomes
Wright, 1987	Nigeria	71	80.3% (57) term, 14.1% (10) pre-term, 5.6% (4) abortions.
Waloch, 1996	Zambian	207	76.8% (159) term, 14% (29) pre-term, 9.2% (19) abortions
Hordnes et al., 1996	Norwegian	16	25% (4) term delivery, 4 (25%) abortions and 42.9% (7) pre-term
Feyi-Waboso et al., 2005	Nigeria	103	68% (70) term, 32% (33) pre-term
Matijevic et al., 2001	Croatian	25	48% (12) term, 32% (8) pre-term, 20% (5) abortions
Present Study (2010)	Kenya	199	53.3% (106) term, 19.6% (39) pre-term, 7% (14) abortions, 7.5% (15) IUFDs, 12.6% (25) Undetermined
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