

ORIGINAL RESEARCH ARTICLE

Use of Cervical Cerclage as a Treatment Option for Cervical Incompetence: Patient Characteristics, Presentation and Management over a 9 Year Period in a Kenyan Centre

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Abstract

Treatment of cervical incompetence by cerclage and other methods has yet to be standardized, as its diagnosis is not uniformly accepted. Its diagnosis, particularly in the African setting, is mostly based on past obstetric history of pregnancy losses, while in developed centres; ultrasound diagnosis is increasingly being used. The mainstay of treatment in developing countries is cervical cerclage, although the indications and contraindications of this mode of treatment are not documented. Our aim was to appraise this practice in terms of patient characteristics, the diagnostic process and management at the Kenyatta National Hospital, Nairobi, Kenya. This was a descriptive retrospective study over 9 years. Predesigned questionnaires were employed to collect data on patient's socio-demographic profile, presentation, risk factors, diagnosis and management of cervical incompetence. Chi-squared test and student's t-test were used to correlate variables. A total of 199 patients were treated for cervical incompetence, with the patient mean age being 27.97. 87.4% of the patients ($p=0.02$) were in the 20 to 35 years category. Most of the patients (60.1%) were of low socio-economic status. Cervical cerclage was employed in all the patients, although ultrasound investigation was not employed in 65.8% of them. Diagnosis of cervical incompetence still relies on history of previous pregnancy losses, with the standard transvaginal ultrasound relatively unemployable. There is need to intensify investigations for this condition, standardize the indications for cerclage, and diversify management to other newer modalities. (*Afr J Reprod Health 2013; 17[1]: 169-173*).

Résumé

Le traitement de l'insuffisance cervicale par le cerclage n'a pas encore été standardisé, étant donné que son diagnostic n'est pas uniformément accepté. Son diagnostic en Afrique, est principalement basé sur les antécédents obstétricaux de pertes de grossesse, alors que dans les centres développés, le diagnostic échographique est utilisé. Notre objectif était d'évaluer cette pratique en termes de caractéristiques des patientes, le processus de diagnostic et de gestion à l'Hôpital National Kenyatta, à Nairobi, au Kenya. Il s'agissait d'une étude rétrospective descriptive qui a duré 9 ans. Les questionnaires préconçus ont été utilisés pour recueillir des données sur la situation sociodémographique des patientes, la présentation, les facteurs de risque, le diagnostic et la gestion d'insuffisance cervicale. Le Test du chi carré et le test de t de l'étudiant ont été utilisés pour corréler les variables. Un total de 199 patientes ont été traitées pour l'insuffisance cervicale, l'âge moyen des patientes étant de 27,97. 87,4% des patientes ($p = 0,02$) se trouvaient dans la catégorie des 20 à 35 ans. La plupart des patientes (60,1%) étaient de faible statut socio-économique. Le cerclage du col utérin a été utilisé chez toutes les patientes, bien qu'on n'ait pas mené une enquête échographique auprès des 65,8% d'entre elles. Le diagnostic d'insuffisance cervicale repose toujours sur les antécédents de perte de grossesses précédentes, là où on n'a presque pas utilisé l'échographie trans-vaginale normale. Il est nécessaire d'intensifier les recherches pour cette situation, de standardiser les indications du cerclage, et de diversifier la gestion vers d'autres modalités nouvelles. (*Afr J Reprod Health 2013; 17[1]: 169-173*).

Keywords: Cervical incompetence, cerclage, diagnosis, management

Introduction

Cervical incompetence accounts for 15 to 20% of pregnancy losses during the second trimester.

Considerable debate exists on the diagnosis of cervical incompetence¹. It has been termed a continuous rather than a categorical entity. Treatment of cervical incompetence therefore remains controversial, with some clinicians

abandoning cerclage altogether, while some insert it in 50-80 per 1000 mothers delivered under their care^{2,3}.

Traditionally, the diagnosis of cervical incompetence has been based on past obstetric history. This implies therefore that the patient has to experience an unspecified number of mid trimester abortions before a diagnosis can be made, which has attendant psychosocial, economic and reproductive implications for the patient. However, the advent of Transvaginal ultrasound has facilitated ultrasound assessment of the cervix and ultrasound-indicated cerclage^{4,5,6}.

Surgical intervention by cervical cerclage is the mainstay for treatment of cervical incompetence, using the MacDonal'd's and Shirodkar methods⁷. Application of cervical cerclage appears to be an unnecessary intervention in about 50% of women with a history suggestive of cervical incompetence⁸. Non-surgical interventions include bed rest¹, cervical surveillance⁹ and vaginal pessaries¹⁰. It has been proposed that a combination of surgical and non-surgical methods increases cervical length more¹. Cervical cerclage may be empirical, elective or emergency^{3-5, 11, 12}. To the best of our knowledge, there is no study reporting the prevalence and indications of the three types of cervical cerclage.

In settings where Transvaginal ultrasound has yet to take root, patient history and physical examination are the diagnostic tools. Indications for cervical cerclage in such settings are not clear, thus the need to appraise the practice in terms of patient characteristics, the diagnostic process and the management used.

Materials and 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 and cervical cerclage" were retrieved for the period January 2000 to December 2008. Ethical approval was granted by the Kenyatta National Hospital Ethics Committee.

Pre-designed questionnaires were used to capture patients' details such as demographics,

which included age, marital status, parity, education level and employment status. The gestation age at patient presentation to the hospital, as well as the patient clinical features were taken. A risk factor profile was drawn from the traceable records, some of which included prior history of pregnancy losses, history of uterine or cervical surgery, known congenital anomalies of the reproductive system and smoking among others.

The diagnostic procedure employed on the patient was recorded, as well as the patient management. Cerclage were categorized into emergency, empirical or elective cerclage. We excluded incomplete patient files from the study.

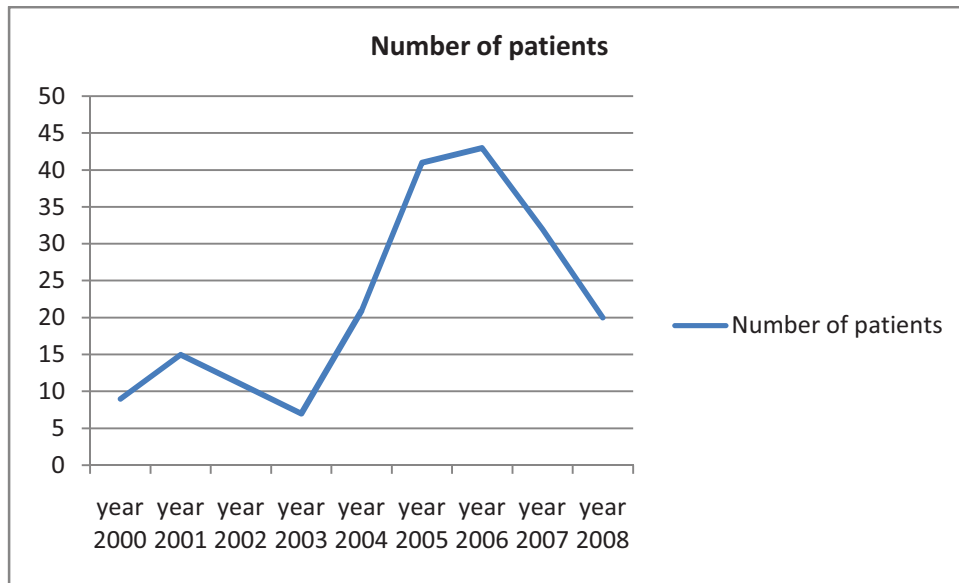
Data was managed using SPSS 17.0 and analysis performed using simple descriptive statistics like means, frequencies and cross-tabulations. Chi-square and students' t-test were used to correlate variables. A p value of less than 0.05 was taken for statistically significant comparisons.

Results

A total of 199 patients seen over the period 2000 to 2008 were included in the study, with 58.3% seen between 2005 and 2007. There were a total of 19 incomplete files, 1 for 2003, 1 for 2004, 9 for the year 2005, 5 for 2006 and 3 for 2007. The mean age of the patients was 27.97, with majority in the age category of 20 to 35 years (87.4%, $p=0.02$). 16 of the patients (8%) were above 35 years of age. The patients ranged from 17 years to 42 years of age, and 92% of the patients were below 35 years. 90.5% of the mothers were married, while 9.5% were single.

30.3% of the patients had primary school level education while 41.9% and 27.8% had secondary and tertiary education levels respectively. Most of the patients had no work (60.1%), 17.7% and 22.2% were in unskilled and skilled occupations respectively.

Recurrent pregnancy loss was the most common presentation, with a few presenting with non-specific symptoms like abdominal pain and per vaginal bleeding. The number of previous



Line graph showing patients undergoing cerclage annually over the study period

pregnancy losses ranged from 0 to 11, with a mean pregnancy loss of 2.45. The number of past viable pregnancies at presentation was 0.77, with a range of 0 to 4. On average, therefore, most patients presented with mostly 2 to 4 lost pregnancies. The gestation age at presentation varied from 7-28 weeks, with an average of 14.96 weeks.

17.1% of the patients had a prior history of cervical or uterine surgery, compared to those with no history of surgery ($p=0.001$). 11.6% of the patients had uterine and cervical defects, including bicornuate uterus, uterine septa and cervical tears. 7.1% of the patients had a history of uterine fibroids. Data on history of diabetes mellitus, previous history of macrosomia, hypertension was equivocal. An insignificant percentage of patients (0.6%) had a history of cigarette smoking.

34.2% of the patients were investigated by ultrasound, with 92.6% of these by Transabdominal ultrasound, and only 7.8% ($p=0.004$) by Transvaginal ultrasound, which is the gold standard for diagnosing cervical incompetence.

All the patients were treated by cervical cerclage using MacDonalld stitch. 72.5% of the patients underwent empirical cerclage, 25.4% elective and 2.1% underwent emergency cerclage. There was no case of Shirodkar stitch in any patient.

Table 1: Socio-demographic features of women treated for cervical incompetence at the Kenyatta National Hospital

Patient Characteristic	N	Percentage (%)
<i>Age category</i>		
• Below 20 years	9	4.5
• 20-35 years	174	87.4
• Over 35 years	16	8.0
<i>Marital status</i>		
• Single	19	9.5
• Married	180	90.5
<i>Education level</i>		
• Primary level and below	60	30.3
• Secondary	83	41.9
• Tertiary	56	27.8
<i>Employment status</i>		
• Unemployed	119	60.1
• Unskilled worker	35	17.7
• Skilled worker	45	22.3

Discussion

Findings of the present study demonstrate an increase in the number of patients undergoing cervical cerclage over a 9 year period, with a peak

between 2005 and 2006. It is possible that this reflects the increasing number of mid trimester losses in the population, hence an increased number of women seeking medical care in the subsequent pregnancies. The prevalence of cervical incompetence in the African population is not documented. The Florida PRAMS study¹³ has reported a prevalence of 5.3% among black Hispanics and 4.1% among whites. Consequently, the incidence of preterm deliveries has been reported to be higher in women of African origin^{14, 15}.

Our study reveals that most women undergoing cervical cerclage fall in the ages 20 to 35 years, which contrasts with the reported under 20 years majority in the west¹³. Among the Brazilian population, women under the age of 20 years have been found to have shorter cervical lengths, and therefore a higher prevalence of cervical incompetence¹⁶. There are suggestions that behavioral factors other than intrinsic biologic determinants may explain this observation¹⁷. The contrast with the present study may possibly be an ethnic variation regarding behavior patterns of adolescents in the black and white communities, and the apparent earlier sexual maturation in the white population.

In our study, most of the women fall in the low socio-economic status category. This is in keeping with previous studies¹⁶. It has been in fact suggested that social and economic status are more important determinants of poor pregnancy outcome than ethnicity. Infections and cervical trauma as risk factors for cervical incompetence are more likely to be experienced in the lower socio-economic groups.

The commonest presentation of patients was recurrent pregnancy losses with a range of 0 to 11 abortions and a mean of 2.45 pregnancy losses. It is therefore apparent that in developing countries like Kenya, mothers have to suffer multiple pregnancy losses before diagnosis is made, as the diagnosis of cervical incompetence remains "historical" based on ongoing disease. This is corroborated by the low number of patients undergoing ultrasound investigations for cervical incompetence at 34.2%, with only 7.8% ($p=0.004$) undergoing transvaginal ultrasonography, widely regarded the gold standard of screening for

cervical incompetence^{11, 12}. On the contrary, 97% of the patients diagnosed and subsequently undergoing cerclage for incompetence did not undergo tests to rule out other causes like antiphospholipid syndrome and brucellosis.

The risk factor profile of this Kenyan group is in keeping with what has been reported in other populations. We found prior uterine and cervical surgery (17.1%), utero-cervical abnormalities like bicornuate uterus (11.6%) and uterine fibroid (7.1%) as the major recorded risk factors. History of smoking and prior macrosomic babies was equivocal, possibly because of the low incidence of smoking among women in this setup and partly due to poor record keeping. Cervical surgery has been shown in previous studies to contribute to preterm deliveries, presumably due to weakening of the cervix¹⁸.

All the patients diagnosed with cervical incompetence were treated by MacDonalld stitch insertion. Other African countries have reported the use of Shirodkar stitch, with 19% usage in one Nigerian population⁷. The role of cervical cerclage remains controversial. Idrisa and colleagues⁷ suggested that this is the mainstay of treatment of cervical incompetence, while Althuisius and colleagues⁸ has termed it an unnecessary intervention in over 50% of the cases. Alternatives such as cervical pessaries¹⁰, bed rest¹ and cervical surveillance by transvaginal ultrasound⁹ have been advocated but are yet to take root in developing countries. The indications and contraindications for cervical cerclage are not standardized, as some centres are altogether abandoning it in favor of cervical surveillance. We found majority of our patients to undergo cervical cerclage on an empirical basis, on the presumption of cervical incompetence based on obstetric history.

There is a need for more research on the correct diagnosis of cervical incompetence and when to consider cerclage as the mode of treatment. It has been proposed that patients with demonstrated cervical shortening on transvaginal ultrasound during second trimester in the absence of genital tract infection or uterine activity should be considered as those with genuine cervical incompetence and could benefit from cerclage⁹. By inserting cerclage based on the results of ultrasound assessment of cervical morphometry,

the number of cerclage insertions can be reduced while improving patient outcome. The role of transvaginal ultrasound and cervical surveillance in the African setting needs to be up-scaled instead of the “historical diagnosis” which basis itself on previous pregnancy losses.

One of the limitations of our study was the many incomplete files which totaled 19, and the ambiguity in the diagnosis of cervical incompetence. As a result, most of the files available for the study from the records department were mainly for those who underwent cervical Cerclage. It is possible that a small number of patients who never underwent Cerclage were missed in our study. However, given the nature of treatment of cervical Cerclage, we captured most of the records, and this allows our study to make plausible conclusions.

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