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Research Article

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A Five-Year Survey of Cervical Cerclage at a Nigerian Tertiary Hospital

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Abstract

Background: *Cervical incompetence is an important cause of mid-trimester miscarriage. Mid- trimester pregnancy loss is a distressing event for both parents and physician contributing significantly to perinatal mortality, hence Cervical Cerclage. Proper definition of cervical incompetence and proper patient selection will improve the outcome of cervical cerclage.*

Objective: *To document the indications, outcome and complications associated for cervical cerclage insertion*

Methods and Material: *A 5-year retrospective analysis undertaken on patients who had cervical cerclage for cervical incompetence at the university of Abuja teaching hospital, Gwagwalada FCT within the period spanning from January 2012 to December 2017. Case folders of patients who had cervical cerclage were retrieved from the central records.*

Results: *In this study, 96 patients had cervical cerclage. Women within the age range of 26-30 (42.7%) had the highest cerclage insertion. Most of the cerclage were done between 14-16 weeks' gestation (45.8%) while, 38 (39.6%) were done below 14weeks and 14 (14.6%) were done above 16weeks gestation. All patients had McDonald's stitch. The most predominant indication for cerclage insertion being "history indicated" (78.1%). The most observed complication was pre-term labour 16 (16.7%) while majority of the patients 53 (55.2%) had no complications. The hallmark of the study was, out of the 96 women who had cervical cerclage, 14 (14.6%) had miscarriage and 82 (85.4%) delivered above the age of fetal viability. Out of the 82 patients that delivered above viability, 69 (84.1%) term deliveries, 13 (15.9%) preterm deliveries. Out of the 82 deliveries above fetal viability, there were 76 (92.7%) live births and 6 (7.3%) stillbirths. Vaginal deliveries were 61 (74.4%), while 21 (25.6%) were caesarean section. Therefore 69 (71.9%) of patients within this study had a successful cerclage.*

Conclusion: *Cervical cerclage remains one of the most practiced and deemed effective methods of preventing and prolonging preterm births. Its outcome depends on a careful patient selection and procedure.*

Keywords: Cerclage, Indications, Outcome, Complications.

Introduction

Cervical incompetence is one of the causes of recurrent mid trimester miscarriage and it is indeed a disturbing and distressful condition to the parent and physician alike [1,2]. The mid-trimester loss is that of a normal fetus in advancing stages of gestation as evidenced by foetal movements, but the joy of carrying a baby ends up in a painful wish [2,3]. Cervical cerclage is a well-known surgical procedure which places stitches around the cervix in a bid to provide support to the cervix in patients with cervical incompetence [3-6]. Cervical incompetence has no consistent definition, but it is usually characterized by dilatation and shortening of the cervix before 37 weeks of gestation in the absence of preterm labour, classically associated with painless, progressive cervical dilatation resulting in membrane prolapse, rupture, mid-trimester pregnancy loss or preterm birth [7-10]. Cervical incompetence is an important cause of pre-term births. With pre-term births accounting for over 70% of all perinatal mortality [5]. It is an important determinant of neonatal and infant morbidity including; neurodevelopmental handicaps, chronic respiratory problems, infections, neonatal intensive care admissions and ophthalmic problems [8-10].

A woman with incompetent cervix is 3.3 times more likely to deliver prematurely. Incompetent cervix is responsible for about 8% of mid –trimester pregnancy losses and present in 1% of all obstetric

population [9,10]. It has been recognized that the prevention of preterm birth is crucial in improving outcome hence the use of cervical cerclage. Cervical cerclage was first performed in 1902 and its technique and application has evolved over time [11]. The Most common transvaginal techniques are the McDonald's and the shiradkor which are the most widely used method. The success rate of both techniques are similar, however the McDonalds stich is commonly used compared to the shirodkar, because it is associated with less blood loss, less formation of cervical scar hence less chances of cervical dystocia in labor. It is removable and easier to perform compared to the shirodkar [2,12,13]. Other less commonly used methods are the trans abdominal and the occlusion cerclage [3,5,11]. And these are indicated when there's a short cervix, amputation of the cervix, failure of previous transvaginal procedure. Cervical cerclage function may provide a degree of structural support to a weak cervix, however, its role in maintaining the cervical length, endocervical mucus plug as a mechanical barrier to ascending infection may be more important [11]. The treatment of cervical incompetence by cerclage has yet to be standardized, as the diagnosis of cervical incompetence is not uniformly accepted. Its diagnosis particularly in the developing world is mostly based on past obstetric history of mid-term pregnancy losses, while in the western centers, ultrasound is increasingly being used [14,15]. Most authorities agree that cervical cerclage improves outcome in patients with true cervical incompetence and most controversies come from patients without a clear diagnosis [16].

The indication for cervical cerclage placement over time has been categorized by most nomenclature and practice guidelines based on indications; as history–indicated, ultrasound-indicated and Rescue cerclage [11]. Cervical cerclage should be placed in patients whose obstetric history is consistent with cervical incompetence and this includes patients with at least one delivery in the second trimester characteristic of an incompetent cervix [16]. The timing of cerclage placement is often controversial, some advocate 12-14 weeks and others 16-18 weeks gestation when vast majority of spontaneous miscarriages have occurred or when most anomaly ultrasound scan have picked up major fetal defects not compatible with life [16-18]. It could also be placed in a pregnant woman whom has been investigated to have progressive shortening of the cervix on ultrasound scan [16]. Contraindications to cervical cerclage insertion include; Evidence of active uterine contractions, active vaginal bleeding, premature rupture of membranes, chorioamnionitis, fetal demise [16,19].

In general, regional anaesthesia is used, in certain cases, general anaesthesia may be more suitable, particularly if a significant amount of maternal positional manipulation, uterine relaxation or airway protection is needed [16]. Post- operative care with Tocolytics and antibiotics is still an area of controversy. The complications of cervical cerclage for an incompetent cervix include; haemorrhage, premature rupture of membranes, chorioamnionitis, vaginal bleeding, risk of pre-term birth, vesico-vaginal fistula [2-4,8]. Cerclage is normally removed at term or when there is vaginal bleeding, uterine contractions, fetal demise/distress or evidence of pre-term labour to avoid the possibility of a cervical laceration [20].

At the University of Abuja Teaching Hospital the standard timing for cerclage insertion is between 12 and 14 weeks of gestation when most patients are stable with no marked evidence of cervical change. While the rescue cerclages are performed later in pregnancy when cervical changes have already begun. Patients are admitted 24 hours pre-operatively, informed consent obtained and benefit from pre-anaesthetic review. Patient also benefit from a first trimester ultrasound scan prior to cerclage insertion to ensure foetal viability and rule out the presence of major/lethal foetal abnormalities. Patients are instructed to avoid sexual intercourse, douches and tampons about 24 hours before the procedure. General anaesthesia is mostly used in this centre and the preferred method is the McDonald's. Antibiotics are administered to most patients undergoing cerclage insertion and Tocolytics were reserved for well selected cases. After the cerclage insertion, patients are monitored for about 24 hours to make sure patient does not go into premature labour. Upon discharge, patients are instructed on strict bed rest and to avoid strenuous activities and sexual intercourse for at least 3 weeks. Cerclage were removed at term if there were no contraindications to cerclage placement.

Although controversial, the traditional mainstay in the management of cervical incompetence is the application of cervical cerclage. Although success rates vary from one center to the other, the success rate largely is dependent on proper patient selection as regards to the strict definition of an incompetent cervix [3,7].

Hence the aim of this study is to determine the indications for cervical cerclage insertion, the complications associated with cerclage insertion and the outcome of cerclage at the university of Abuja teaching hospital, Gwagwalada FCT, within the study period.

Methods and Materials

This was a retrospective study conducted at the University of Abuja Teaching Hospital on patients who had cervical cerclage for suspected cervical incompetence over a 5 year period. All the women who had cervical cerclage within the study period reviewed, were included in the study. Records of all the patients who had cervical cerclage within the study period were obtained from the theatre and gynaecological ward register and all the case folders retrieved from the central records department of the University of Abuja Teaching Hospital. The patient details were obtained and analyzed from the case folders using pre-designed questionnaires. Patient details included; the patient's age, gestational age in weeks at the insertion of the stitch, the type of cerclage inserted and outcome. The indication for cerclage insertion were categorized into history indicated (Obstetric or gynaecological history with recurrent mid- trimester miscarriage or increased risk of preterm deliveries), Ultrasound indicated (asymptomatic progressive shortening of cervix of 25mm or less) and rescue (advance cervical dilatation or membrane bulge at or below 4cm dilatation) [11]. Records of immediate or late complications were extracted and outcome was categorized as abortion (gestational age less than 28 weeks gestation), pre-term delivery (28 to less than 37weeks gestation) and term delivery (37-42 weeks gestation). Cerclage was termed successful if pregnancy was carried to term irrespective of the outcome and mode of delivery. The route of delivery was recorded as vaginal delivery or cesarean delivery. 104 cases of cervical incompetence had cervical cerclage procedures within the study period. Only 96 case folders could be retrieved and analyzed as the other folders were either missing or incomplete. All cervical cerclage were removed at 37 weeks of gestation unless, patient presented with progressing premature labour or cases of fetal compromise, in which case cerclage was removed.

Results

Table 1: There were 96 patients who had cervical cerclage for cervical incompetence during the 5-year period under review (2012-2017). The age range of patients in this study was (20-44) years with a mean age of 30.8 years. Women within the age range of (26-30) years had the highest cerclage insertion.

Table 1: Age of Patients

Age	Number	Percentage
21-25	6	6.3
26-30	41	42.7
31-35	34	35.4
36-40	12	12.5
41-45	3	3.1
TOTAL	96	100%

Table 2: Cervical cerclage Insertion was done between 11 and 22 weeks gestation with a mean gestational age at insertion of (16.5) weeks. Majority of the patients had cerclage done between (14-16) weeks gestation (45.8%), followed closely by below 14 weeks (39.6%) and least by above 16 weeks gestation (14.6%).

Table 2: Gestational age at Insertion of Cerclage

Gestational age	cerclage number	Percentage
Less than 14weeks	38	39.6%
14-16weeks	44	45.8%
Above 16weeks	14	14.6%
Total	96	100%

Table 3 and 4: All the 96 (100%) women in this study had McDonald's cerclage insertion, with the most predominant indication for cerclage insertion being history indicated 75 (78.1%), followed by Rescue cerclage of 21 (21.9%). There were no records of ultrasound as an indication for cervical cerclage insertion among the study population.

Table 3: Type of Cerclage

Cerclage type	Number	Percentage
McDonald's	96	100%
Shiradkor	0	0%

Table 4: Indications for Cerclage

Indication	Number	Percentage
History	75	78.%1
Ultrasound	0	0%
Rescue	21	21.9%
Total	96	100%

Table 5: Pre-term labour 16 (16.7%) was the most common complication observed in the study, others were premature rupture of membranes 8(8.3%), Urinary tract infections 6 (6.3%), haemorrhage 5 (5.2%), cervicitis/vulvovaginitis 4 (4.2%), chorioamnionitis 3 (3.1%) and cervical dystocia 1(1.0%). Out of the 96 patients who had cerclage, there were no complications observed in majority 53 (55.2%) of patients within the study.

Table 5: Complications of Cerclage

Complications	Number	Percentage
Haemorrhage	5	5.2%
PROM	8	8.3%
Pre-term labour	16	16.7%
Urinary tract infection	6	6.3%
Cervicitis/vulvovaginitis	4	4.2%
Cervical laceration	0	0%
Cervical dystocia	1	1.0%
Chorioamnionitis	3	3.1%
No complications	53	55.2%
Total	96	100%

Table 6: The hallmark of the study was, out of the 96 cases studied, 14(14.6%) had miscarriage and 82(85.4%) delivered above the age of fetal viability. Out of the 82 patients who delivered above viability, there were 69 (84.1%) term deliveries, 13 (15.9%) preterm deliveries. Still out of the 82 deliveries above fetal viability, there were 76 (92.7%) live births and 6 (7.3%) stillbirths. For the 82 cases who delivered above viability, 61 (74.4%) had vaginal deliveries, while 21 (25.6%) had caesarean section. Therefore 69 (71.9%) of patients within this study had a successful cerclage.

Table: 6 Outcome

Outcome	Number	Percentage
Viability(delivery)		
<28 weeks		14.6%
>28 weeks	82	85.45%
Total	96	100%
Fetal outcome		
Live births	76	92.7%
Stillbirths	6	7.3%
Total	82	100%
Gestational age		
Preterm	13	15.9%
Term	69	84.1%
Total	82	100%
Mode of delivery		
Vaginal	61	74.4%
Caesarean section	21	25.6%

Discussion

Cervical incompetence is an important cause of pre-term births. Preterm births accounts for over 70% of all perinatal mortality [5]. Most authorities agree that cervical cerclage may be beneficial in patients with true cervical incompetence and most controversies come from patients without a clear diagnosis [16]. In this review, the majority of women in this study population fall under the age group of 25-29 which is in keeping with data form the Nigerian Demographic and health survery [1]. "fertility peaks at age 25-29 years in Nigeria where most of the women would have had their 1st child and the diagnosis of cervical incompetence made from previous obstetric histories. The mean age at presentation was 30.8 years

which is similar with the age range of 29.3 from Benin, Nigeria [7]. The gestational age range at cervical stitch insertion in this study was 10-25 weeks with a mean gestational age of 16.4 weeks which is in contrast to findings of mean gestational of 23.1 weeks from Kenya [5]. The gestational age range of 10- 20 weeks had the highest presentation of 87 (90.6%) and above 20 weeks 9 (9.4%) being the least. This is consistent with findings from studies by Secher et al and Feyi et al, at this gestational age the amniotic sac and its contents begins to fill the uterine cavity contributing to progressive cervical dilatation [21,22].

McDonald's cervical stich was the only method use in all the 96 patients in this study because it is the most commonly used method in the West African sub-region [3]. This was similar to a studies in Benin and Garkuwa, Nigeria [7,13]. The indication for cerclage insertion with the highest proportion was the "history indicated" 75 (78.1%) with the Rescue indication being 21 (21.9%) while, there were no ultrasound indications for cervical cerclage insertion. One of the most important pointer towards cervical incompetence is a precious history of recurrent mid-trimester miscarriages [6,9]. Having that most women in this study who had cervical cerclage had presented earlier with a history in keeping with cervical incompetence that necessitated subsequent elective cerclage. This is in contrast to studies in korea where ultrasound was employed and inferred as the most powerful tool in the indication for cerclage insertion [19].

In this study, 43 (44.7%) of the patients were found to have developed complications while majority 53 (55.3%) did not develop any form of complications. This is a similar finding in studies by Saumu et al [5]. This relative finding may be attributed to proper patient selection and cerclage carried being out by the most experienced obstetrician available. Out of the 96 cases reviewed complications of pre-term labour 16 (16.7%), premature rupture of membranes 8 (8.3%) and hemorrhage 6 (6.3%) were the most observed complications of the study. This is in contrast other studies in Aba and Maiduguri where urinary tract infection, vulvovaginitis and premature rupture of membrane were the most observed complications [22,23]. The difference in anti-biotic resistance in different regions may play a role in this contrast [5].

The Summary of cervical cerclage out come in this review showed that of the 96 cases studied, 69 (71.9%) had a successful cervical cerclage (term deliveries), 82 (85.4%) had deliveries above the age of viability and of which 76 (92.7%) were live births. These were similar to studies in Kaduna and Garkuwa our study did not evaluate the fetal salvage rates because it was not clear how many preterm babies survived [2,14]. Previous studies have reported a wide range of pregnancy outcomes. Sobande reported 90% live births while Jogen reported 43% live births [24,25]. Findings in this study are also closely related to a study in Zambia with 76.8%, 14% and 9.2% of term, pre-term and miscarriages respectively [26]. These are similar to a Cochrane meta-analysis showing a significant reduction in pregnancy loss and preterm births with cerclage [20]. The successful outcome of 69 (71.9%) in this study shows that cervical cerclage may be beneficial in confirmed cases of cervical incompetence. This relative success of this study may be attributed to the fact that most of the women had an elective procedure by history indication.

The mode of delivery of the women who had live births (preterm and term) was 79 (82.3%). Out these, 58 (73.4%) of them had vaginal birth while 21 (26.6%) had caesarean delivery. Most of the indications for the cesarean deliveries were pre-eclampsia and fetal distress which was not as a result of complications from the cerclage stitch. Limitations of the study was in the fact that there was no standard protocol/consensus in the diagnosis, evaluation and treatment of cases of cervical in competence in the area of prophylaxis's for Tocolytics and anti-biotic cover. This may have influenced these findings.

In conclusion, despite the inconsistencies that exist in the diagnosis management cervical incompetence, cervical cerclage for suspected cases of cervical incompetence is associated with a potential for considerable prolongation of pregnancy and reduction in perinatal morbidity and mortality in carefully selected patients [27].

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