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**Research Article**

# CERVICAL INSUFFICIENCY, MANAGEMENT AND OUTCOMES AT A TOP HEALTHCARE FACILITY IN SOUTHERN NIGERIA

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**Abstract**

When pregnancy terminates in spontaneous miscarriage, the desire and effort to reproduce ends in disappointment. Hopelessness and frustration sets in when it becomes repetitive. The objectives of this study were to determine the prevalence, sociodemographic, clinical presentation and outcome of surgically managed cases of cervical insufficiency.The study was a descriptive retrospective study which was carried out on managed cases of cervical insufficiency at the Obstetrics and Gynaecology department of the Federal Medical Centre, Yenagoa, Bayelsa State**.** The prevalence of cervical cerclage in our facility is 0.23%. A significant number of cases were seen among those aged 35 and above and were nulliparous. The commonest clinical presentation prior to cerclage insertion was recurrent miscarriage (43.7%) and indication for cervical cerclage insertion was history indicated cerclage (53.1%). All patients had McDonald's method of cervical cerclage. Elective cerclage accounted for 65.6% of cases. The success rate following insertion of cerclage was 79.1%.Cervical insufficiency is a major cause of mid-trimester fetal wastages with a prevalence of 0.23% in this study, commoner among the nulliparous women aged 35 year and above, presenting commonly with recurrent miscarriages. History indicated cerclage is the most common indication for insertion of cerclage and an appreciable success rate was recorded. McDonald's method of cerclage insertion is the preferred method in our centre.The use of cervical cerclage for cases of cervical insufficiency is associated with prolongation of pregnancy and reduction in perinatal morbidity and mortality.

**Keywords:** Cervical insufficiency, cerclage, McDonald's cerclage.

## INTRODUCTION

Cervical insufficiency also known as cervical incompetence is a previable or preterm termination of pregnancy due to cervical dilatation in the absence of any increase in baseline uterine activity or in the presence of mild uterine activity (Nkyekyer *et al.,* 2015). It is an identifiable cause of mid-trimester miscarriages, premature rupture of membranes and preterm labour (Nkyekyer *et al.,* 2015; Bennett, 2018). Typically an incompetent cervix presents with recurrent mid-trimester miscarriage that is usually sudden with minimal or no abdominal pains (Sneider *et al.,* 2016). Cervical insufficiency may be congenital or acquired. The most common congenital cause is a defect in the embryological development of Mullerian ducts. In Ehlers-Danlos syndrome or Marfan syndrome, due to the deficiency in collagen, the cervix is not able to perform adequately, leading to insufficiency (Brown *et al.,* 2019). The most common acquired cause is cervical trauma such as cervical lacerations during childbirth, cervical conization, loop electrosurgical excision procedure, or forced cervical dilatation during the uterine evacuation in the first or second trimester of pregnancy (Nkyekyer *et al.,* 2015; Bennett, 2018; Sneider *et al.,* 2016; Brown *et al.,* 2019). The diagnosis is usually made retrospectively following a second-trimester loss. Most of the women have no symptoms or only mild symptoms beginning in the early second trimester. These include abdominal cramping, backache, pelvic pressure, vaginal discharge which increases in volume, vaginal discharge which changes from clear to pink, and spotting (Brown *et al.,* 2019). A history of a painless cervical dilatation during the second trimester and a No. 7 Hegar dilator can pass through the internal cervical os without resistance during the non-pregnant period (Li *et al.,* 2020). Transvaginal ultrasound scan has been useful during pregnancy (Khanam *et al.,* 2017). Progestogens have been used historically and more recently in the prevention of preterm birth. The possible efficacy of progestogens in cervical insufficiency has often been extrapolated from that in preterm birth, but this may not be appropriate (Richard *et al.,* 2013). The use of pessaries in the management of cervical insufficiency or preterm delivery is not new, with the use of a glass pessary having first been described in 1977; to date the data supporting such techniques in the routine management of cervical insufficiency remain insufficient (Richard *et al.,* 2013). Cerclage procedures prophylactic, elective and/ or emergency during pregnancy are the standard surgical treatment option for cases of cervical incompetence (Nkyekyer *et al.,* 2015; Bennett, 2018; Li *et al.,* 2020 ; Wekere *et al.,* 2020). This study's objectives were to determine the prevalence of cervical insufficiency and socio-demographic characteristics of women managed for cervical insufficiency, the clinical presentation of surgically managed patients with cervical insufficiency, the indication and method of diagnosis of cervical insufficiency and to determine the type of surgery and success rate of patients with cervical insufficiency.

## METHODOLOGY

This was a descriptive retrospective study of women managed for cervical insufficiency at the Obstetrics and Gynaecology department of the Federal Medical Centre, Yenagoa over a period of 3-years. The hospital serves as a referral centre for private, cottage, general and specialist hospitals in the Niger Delta region. A list of all patients' (names and hospital numbers) that had cervical insufficiency from 1st January 2018

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and 31st December 2020 was identified from theatre, department and nurses records. With the folder numbers, the case notes were retrieved from the medical records department of the hospital. Thirty three cases were identified but only 32 cases notes were retrieved (giving a retrieval of 97%) and analysed. Relevant information (which included age distribution, parity, and clinical presentation, type of surgery, success rate and length of hospital stay etc.) were retrieved from the cases notes and entered into a proforma. Data obtained were coded, entered into a spread sheet, analysed using statistical package for social science software version 25 software package and expressed in figures, percentages and presented in tables, bar-chart and pie charts. All patients who had cervical insufficiency/incompetence and cerclage during the study period were included in this study. Ethical clearance was obtained from the hospital's Ethics and Research committee prior to the commencement of the study.

## RESULTS

### Socio-demographic Characteristics

There were 13,868 pregnancies managed at the antenatal clinic during the study period of which 32 of them were complicated with cervical incompetence. These cases had cervical cerclage performed, giving a prevalence of 0.23%. Slightly below two out of every five cases were seen among those aged between 35 – 39 years (37.5%). Just above half of the cases were nulliparous (53.1%). At least six out of ten patients had a tertiary level of education (Table 1).

**Table 1. Socio-demographic Characteristics**

| Characteristics | Frequency N=32 | Percentages (%) |
|---|---|---|
| **Age** | | |
| 25- 29 years | 4 | 12.5 |
| 30-34 years | 11 | 34.4 |
| 35- 39 years | 12 | 37.5 |
| Greater 40 years | 5 | 15.6 |
| **Parity** | | |
| Nullipara ($P_0$) | 17 | 53.1 |
| Primipara ($P_1$) | 7 | 21.9 |
| Multipara ($P_2$– $P_4$) | 6 | 18.8 |
| Grandmultipara (>$P_5$) | 2 | 6.2 |
| **Religion** | | |
| Christianity | 32 | 100 |
| Islam | - | - |
| **Educational Status** | | |
| Primary | 2 | 6.3 |
| Secondary | 8 | 25 |
| Tertiary | 22 | 68.7 |

### Cervical Cerclage: Gestational Age at Insertion, Type of Suture Used, Type of Anaesthesia and Method of insertion of Cerclage

Table 2 shows that most patients had their cerclage insertion at a gestation of 14-16weeks (75%). This was followed by those done >16weeks (21.9%). The suture used for the all cases was solely Mersilene tape and most patients (81.3%) were under regional anaesthesia during their cerclage insertion. All patients had McDonald's method of cervical cerclage done for them. (Table 2)

### Clinical presentation of the patients

About 14 women presented with a history of recurrent miscarriage (43.8%). This was followed by 8 women presenting with bulging fetal membranes (25%), 6 patients presented with a history of previous cerclage (18.7%) and 4 patients with short cervix parameter (12.5%) (Figure 1).

**Table 2. Cervical Cerclage: Gestational Age at Insertion, Type of Suture Used, Type of Anaesthesia and Method of insertion of Cerclage**

| Characteristics | Frequency N= 34 | Percentages (%) |
|---|---|---|
| GA at insertion | | |
| <14 weeks | 1 | 3.1 |
| 14-16 weeks | 24 | 75 |
| >16weeks | 7 | 21.9 |
| Type of suture used | | |
| Mersilene | 32 | 100 |
| Others | - | - |
| Type of anaesthesia | | |
| Regional | 26 | 81.3 |
| TIVA | 6 | 18.7 |
| Method | | |
| McDonald's | 32 | 100 |
| Shirodkar | - | - |

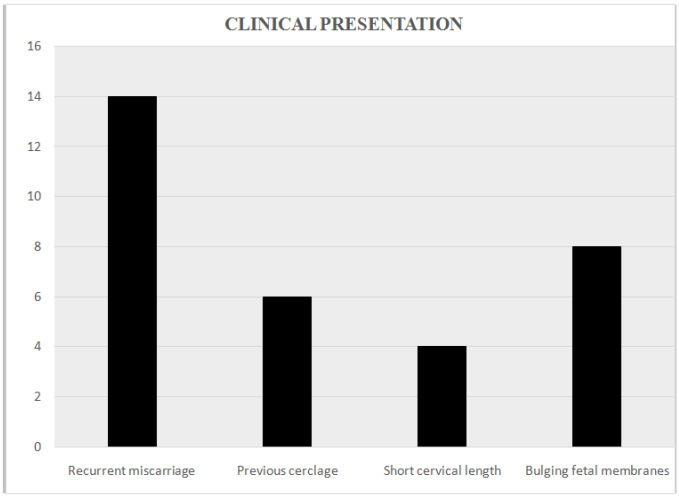


**Fig. 1. Clinical presentation of patients**

### Indications for cervical cerclage

The prevailing circumstance for cervical cerclage insertion in more than half of the patients was history indicated cerclage (53.1%). This was followed by ultrasound indicated cerclage (28.2%) and rescue cerclage accounting for 15.6%. Prophylactic cerclage was the least (3.1%) (Figure 2).

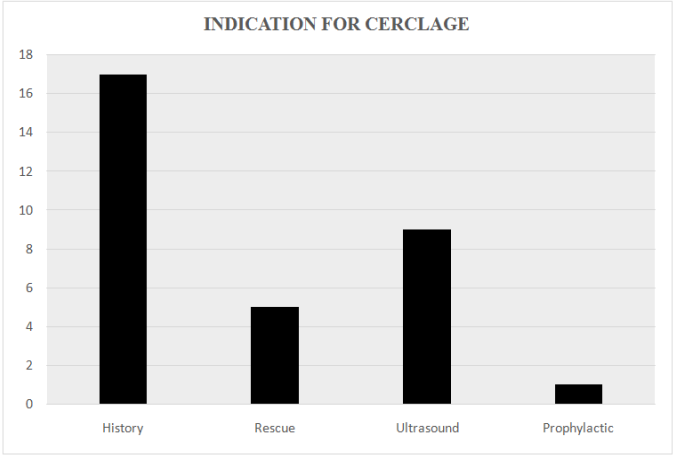


**Fig. 2. Indications for cervical cerclage**

**Urgency of cerclage insertion**

Elective cerclage accounted for at least six out of every ten cases (65.6%) (Figure 3).

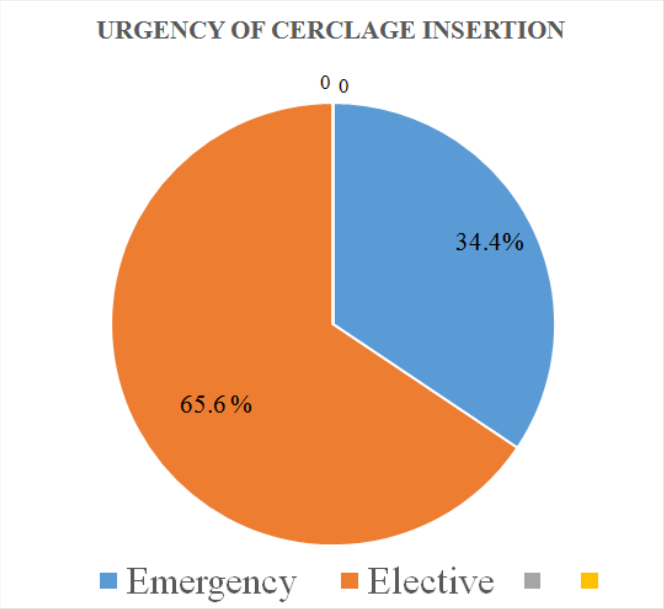


**Fig. 3. Urgency of cerclage insertion**

**Outcome of cervical cerclage**

The success rate following insertion of cerclage was 78.1%. These were the patients who had carried their pregnancy beyond the age of fetal viability (Figure 4)

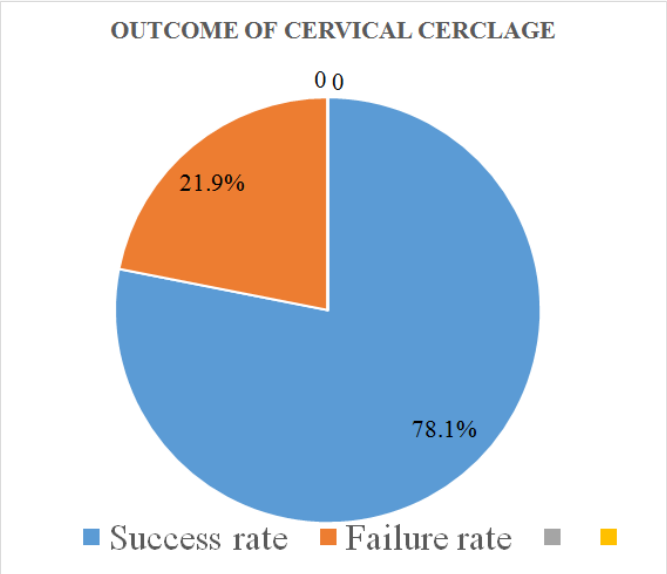


**Fig. 4. Outcome of cervical cerclage**

## DISCUSSION

In the African setting where childbearing is a cardinal expectation, cervical incompetence can cause a sense of failure to the woman and could have family disharmony as a resultant effect, hence the need to prevent fetal wastages from cervical insufficiency and thereby enhance family harmony.Cervical insufficiency also known as cervical incompetence is a previable or preterm termination of pregnancy due to cervical dilatation in the absence of any increase in baseline uterine activity or in the presence of mild uterine activity (Nkyekyer *et al.,* 2015). It is an identifiable cause of mid-trimester miscarriages, premature rupture of membranes and preterm labour (Nkyekyer *et al.,* 2015; Bennett, 2018). A total of 13,868 pregnancies were managed at the antenatal clinic during the study period of which 32 of them were complicated by cervical incompetence for which cervical cerclage was performed giving a prevalence of 0.23%. This was slightly lower than 0.69% recorded in a similar study in River State University Teaching Hospital (Wekere *et al.,* 2020). Cervical insufficiency was more common among those aged between 35 – 39 years and it is comparable to study done in Korea (Shinyoung *et al.,* 2020) but contradicts similar studies done in Nigeria by Wekere *et al.,* (2020) and Allagoa *et al.* (2019). This study also showed 53.1% of the women to be nulliparous which agrees with studies done in Port Harcourt (Wekere *et al.,* 2020) and Lagos (Babasola and Peter, 2015). The plausible explanation for this may be a past history of previous cervical dilatations from induced abortions. It however differs from a similar study done by Allagoa et al in Ngeria (2019) and Vidyadhar et al in India (Vidyadhar *et al.,* 2012). Recurrent miscarriages were the commonest clinical presentation observed in this study and similar to studies done by Babasola *et al.* (2015) and Vasuduva *et al.,* (2018). It disagrees with a study done by Wekere *et al.* (2020). The diagnosis is made based on history as it is, thus a retrospective one. However it is not necessary to wait till recurrent miscarriages occurs before the diagnosis is made; if there has been only one miscarriage with the classic features, the diagnosis of cervical insufficiency may confidently be made, especially in the presence other risk factors (Nkyekyer *et al.,* 2015). Our study revealed that most women had history indicated cerclage (53.1%). This was followed by ultrasound indicated cerclage 28.2%, rescue cerclage 15.6% and prophylactic cerclage 3.1%. This was in keeping with similar studies done in Hong Kong (Lucia *et al.,* 2015) and Israel (Rottenstreich, 2019).

The study observed that 75% of the women had cerclage inserted between 14-16 weeks of gestation. This finding is similar to studies done by Wekere *et al.* (2020) and Allagoa *et al.* (2015). This may be due to the fact that most of the women had history indicated cerclage which is generally inserted between these gestational ages, so that natural selection of non-viable pregnancy can take place (Nkyekyer *et al.,* 2015; Bennett, 2018; Sneider *et al.,* 2016). All the patient in this study had Mersilene tape inserted which may be due to the availability of the suture material in the facility and it is the departmental protocol to use it. There has not been any difference in pregnancy outcomes between Mersilene and non-Mersilene suture (Childress *et al.,* 2016; Berghella *et al.,* 2012). Most of the cases were done under regional anaesthesia compared to general anaesthesia. This is similar to the finding in Wekere et al's study (Wekere *et al.,* 2020). This is due to the fact that regional anaesthesia is preferred as it does not causing retching and coughs which may put undue strain on the cerclage during recovery from general anaesthesia (Wekere *et al.,* 2020). All the women in this study had McDonald technique as the only method of cerclage insertion and this is in keeping with several other studies (Wekere *et al.,* 2020; Allagoa and Agbo, 2019; Childress *et al.,* 2016). McDonald technique is associated with minimal blood loss, less formation of cervical scar, less chances of cervical dystocia in labour and it is easy to perform when compared to other methods like Shirodkar (Wekere *et al.,* 2020; Allagoa and Agbo, 2019;

Childress *et al.,* 2016). This may be why the former technique is preferred. The study observed that 34.4% of the cerclage were inserted as an emergency cerclage. Emergency cerclage may be inserted when a woman presents with silent or painless cervical dilatation and bulging of foetal membranes without uterine contraction (Nkyekyer *et al.,* 2015; Bennett, 2018). However, cerclage should not be inserted where there is clinical evidence of uterine contraction, bleeding, intrauterine fetal death, rupture of fetal membranes and infection, including raised C-reactive protein or elevated white blood cell count (Nkyekyer *et al.,* 2015; Bennett, 2018; Wekere *et al.,* 2020). The success rate recorded in this study was 79.1%. They were those who carried their pregnancies above the age of fetal viability. This success rate correlated with studies done at the Irrua Specialist Hospital in Edo State, Nigeria (Allagoa and Agbo, 2019) and University of Abuja Teaching Hospital, Abuja, Nigeria (Adewole *et al.,* 2018). This shows that cervical cerclage is a useful tool in women confirmed to have cervical insufficiency. The outcome may also be attributed to the fact that most of the patients had an elective cerclage by history indication. Surgeries done as an elective case tends to have better outcome than ones done as emergency.

**Conclusion**

The prevalence of cervical cerclage in our hospital is 0.23%. McDonald's method of cerclage insertion is the preferred method in our centre.The use of cervical cerclage for cases of cervical insufficiency is associated with prolongation of pregnancy and reduction in perinatal morbidity and mortality.

**Statement of competing interest**

The authors have no competing interest

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