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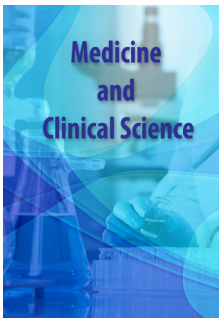

Outcome Of Cervical Cerclages In Semino Specialist Hospital: A 5-Case Series

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Abstract

Background: Cervical cerclage is simply the use of a specialized non-absorbable suture to tie the cervix at the level of the internal os to prevent recurrent abortions, preterm labour and delivery especially in women with short cervix or cervical weakness. It was introduced in the 1950s by Shirodkar and McDonald and has since become a common obstetric practice. There still exist a lot of controversies concerning its efficacy and the factors determining its success. This study is aimed at unraveling the factors that determined a successful cerclage in a private hospital setting in Enugu, south-east Nigeria.
Aim: To audit the pregnancy outcomes and its determinants following prophylactic cervical cerclage in a private centre
Methodology: This was a case series of five women who had prophylactic cerclage between 2020 and 2022 in SEMINO Hospital, Enugu, following either a clinical or ultrasound diagnosis of cervical incompetence or both. SEMINO Hospital receives referrals from some maternity homes and other private centres not manned by obstetrician/gynaecologist in and around Abakpa-Nike. These women were seen and managed by the authors in SEMINO Hospital over the period under review. Data were collected from the patients' case notes and presented in tabular form for easy analysis and comparison.
Conclusion: The use of adjunctive therapies and insertion of cerclages at earlier gestational ages may enhance the outcome of cervical cerclages.

Introduction

Cervical cerclage, also known as cervical stitch, is a surgical procedure for the treatment of cervical weakness or incompetence. It consists of using a strong non-absorbable suture sewn into and around the cervix at the level of the internal os to prevent preterm dilation of the cervix. It was introduced in the 1950s by Shrodkar [1] and McDonalds [2]. These two methods are only feasible in patients with sufficient cervical length. In many occasions due to cervical effacement, congenital absence or surgical procedures on the cervix, these procedures are impossible or very challenging.

Abdominal cerclage is another method of applying a cervical cerclage as described by Benson and Durfee [3]. This was later popularized by Novy with increased indications to include extensive cervical conization, cervico-vaginal fistulas following abortions or previously failed vaginal approach to cervical cerclage [4]. He also suggested its application in pregnant women with cervical effacement. Cervical cerclage is used in the treatment of cervical incompetence which is defined as the inability of the cervix to maintain pregnancy through to term because of structural or functional defects [5,6].

This is an important cause of second trimester recurrent pregnancy losses and preterm deliveries. The incidence of cervical incompetence varies from place to place and also according to the modalities employed in the diagnosis. In Nigeria the incidence ranges from 8 per 1000 deliveries to 1 in 146 deliveries [7-9], Despite lack of uniformity in the diagnosis and definition of cervical incompetence, the incidence of cervical incompetence has been reported as 2.7 to 18.4 per 1000 births and other studies have shown that 0.5-1.8% of all pregnancies and 8-15% of all recurrent pregnancy losses are complicated by cervical incompetence [10,11].

Many factors have been found to affect the outcome of cervical cerclage. One of the prominent determinants is the timing of the procedure viz: prophylactic or emergency. Nelson et al found that delivery beyond 36 weeks of gestation occurred in 73.9, 57.7 and 23.5% for prophylactic (history indicated, ultrasound indicated) and emergency (examination indicated) cerclage respectively [12]. Some of the additive therapies that

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may further impact on the outcome of cerclage include: bed rest, antibiotics, tocolytics and progestogens. Despite the combination of some of these interventions cerclages still fail. A systemic review in 2013 concluded that there was not enough evidence to generalize the use of these added therapies to cerclage at the moment [13]. Another systemic review revealed a paucity of published data on the use of peri-operative tocolysis with cerclage and suggested that adequately powered clinical trials on peri-operative use of tocolysis with cerclage placement compared with cerclage alone are needed to establish efficacy [14].

This study therefore, tried to analyze our experience in our centre, criticize our interventions and review our outcome so as to generate further research and discussion on the subject matter.

Aim

To audit the pregnancy outcomes and their determinants following prophylactic cervical cerclage in a private centre.

Objectives

The specific objectives of this study were to determine the:

- Incidence of cervical incompetence in the centre
- Average gestational age of insertion of cerclage
- Pregnancy outcomes following cervical cerclage

Study area

The study was done in SEMINO Specialist Hospital, Abakpa-Nike, Enugu, in Enugu-East local government area of Enugu State, South-East, Nigeria. Abakpa-Nike is a semi-urban area and the headquarters of Enugu-East LGA of Enugu State. It is one of the three local government areas that constitute the capital of Enugu State. According to the 2006 National census of Nigeria, Enugu-East has a population of 279,089. There is no tertiary specialist hospital in the area. However, there are a handful of privately owned hospitals in the area that can offer cervical cerclage. SEMINO Hospital is one of such hospitals. It boasts of 3 consultant gynaecologists and a number of nurses/midwives. The number of births in the in the hospital over the years under review was 216 deliveries.

Materials and methods

This is a case series of five women who had prophylactic cerclage between 2020 and 2022 in SEMINO Specialist Hospital, Enugu, following either a historical or ultrasound diagnosis of cervical incompetence or both. These women were seen and managed by the authors in SEMINO Specialist Hospital over the period under review. Data were collected from the patients' case notes and presented in tabular form for easy analysis and comparison.

Cases

Case 1

She was a 39-year old Gravida6 Para3+2 who presented to our centre at a gestational age of 11 weeks and 5 days for booking and gave a history of a second trimester miscarriage and a case of ectopic pregnancy. Her second pregnancy was complicated by preterm cervical dilatation and she had an emergency cerclage inserted. The pregnancy was carried to term. The last pregnancy had prophylactic cervical cerclage with good outcome. At presentation she had no complaint. On digital examination the cervix was about 2cm long and the os was closed. A transvaginal ultrasound revealed a viable intrauterine pregnancy, cervical length of 3.02cm and a closed os with no evidence of funneling. She had a prophylactic cerclage inserted at a gestational age of 12weeks under spinal anaesthesia. She had prophylactic antibiotics for 5 days and progestogens support for one month. She was also admitted for observation and bed rest post insertion for 2 days. She had normal antenatal care and the pregnancy was carried to term. At the gestational age of 37 weeks the cerclage was removed and she subsequently presented in labour at a gestational age of 38 weeks and 5 days and had a successful vaginal delivery of a live male neonate that weighed 3.4kg with good Apgar scores..

Case 2

This was a case of a 33-year old Gravida5 Para0+4 who presented at our centre at a gestational age of 10 weeks and 2 days for management having had 3 mid trimester miscarriages in descending order of gestational ages despite use of cerclage in two of the episodes in a different centre while the last miscarriage was in the first trimester. At presentation she had no complaints and a digital examination revealed a cervical length of about 1.5cm. Transvaginal ultrasound revealed a viable intrauterine pregnancy with a cervical length of 2.2cm and no evidence of funneling. She had cervical cerclage inserted under spinal anaesthesia at 11 weeks gestational age. She had prophylactic antibiotics for 1 week and prophylactic progestogens support in combination with intermittent salbutamol for tocolysis. She had an initial 22 days of admission post insertion for absolute bed rest. She was also admitted on 2 other occasions on account of abdominal pain for which mid-stream urine culture yielded a heavy growth of coliforms. She was admitted for a total of 68 days with intermittent tocolysis, antibiotics and continuous progestogens support. At gestational age of 36 weeks and 5 days she presented with intermittent abdominal pain and requested for an abdominal delivery. The outcome was a live female neonate that weighed 2.4kg with good Apgar scores..

Case 3

This was a case of 38-year old Gravida4 Para0+3 woman who was referred by a midwife at a gestational age of 8 weeks with a history of failed emergency cerclage at a gestational age of 16weeks in her last pregnancy. The cerclage was inserted by a general practitioner following a history of 2 consecutive mid trimester miscarriages. At presentation the pregnancy had remained uneventful. Digital examination revealed a cervical length of 2.5cm. On transvaginal ultrasound, there was a viable intrauterine pregnancy at 9 weeks gestation and the cervical length was 2.55cm with no obvious evidence of funneling noted. She had cervical cerclage inserted at a gestational age of 10 weeks under spinal anaesthesia. She was admitted for 22 days post insertion for observation and bed rest. She also had prophylactic antibiotics for 1 week, intermittent tocolysis and continuous progestogens support till the gestational age of 18 weeks. The cerclage was removed at a gestational age of 37 weeks and she had a spontaneous vaginal delivery of a live female neonate at 39 week gestation that weighed 3.2kg with good Apgar scores.

Case 4

This was a case of a 29-year old Gravida4 Para0+3 who presented at a gestational age of 12 weeks and 3 days with a previous history of one mid trimester miscarriage and two first trimester miscarriages. At presentation she had no complaints.

Digital examination revealed a short cervix of about 1.5cm with closed os. Transvaginal ultrasound revealed a viable intrauterine monochorionic, diamniotic gestation with a cervical length of 2.5cm and evidence of funneling. She had cervical cerclage inserted at a gestational age of 13 weeks under saddle block. She was placed on bed rest for 14 days with prophylactic antibiotics for 1 week, intermittent tocolysis and progestogen supports till 20 weeks of gestation. The pregnancy remained uneventful until 37 weeks when the cerclage was removed and she had an elective caesarean delivery of 2 live male neonates that weighed 2.7 & 2.8kg respectively with good Apgar scores.

Case 5

It was a case of a 30-year old Gravida3 Para2+0 at a gestational age of 11 weeks and 5 days who presented for antenatal care. The pregnancy had remained uneventful. She had a history of early 3rd trimester preterm birth (at gestational age of 28 weeks and 4 days) in her first pregnancy. The second pregnancy was carried to term following a prophylactic cerclage. Digital examination at presentation was unremarkable with a cervical length of 2.5cm and a closed os. Transabdominal ultrasound was rather equivocal, revealing a viable intrauterine pregnancy at 11 weeks. The cervical length was 5.1cm and dilated to a diameter of 0.7cm with features suggestive of funneling. Patient declined further counseling for a transvaginal ultrasound and insisted on cerclage which was inserted at a gestational age of 13 weeks under saddle block. She was admitted for observation and bed rest post insertion for 3 days. Prophylactic antibiotics were given for 5 days with progestogen support until 18 weeks gestational age. The antenatal period was uneventful and the cerclage was removed at 38th week of gestation. She subsequently had a spontaneous vaginal delivery of a live male neonate that weighed 3.6kg with good Apgar scores

These cases were summarized in the table 1 below for easy comparison and analysis.

The incidence of cervical incompetence in the centre over the period was 23.15 per 1000 deliveries.

The average gestational age of insertion of cerclage in the study was 11.6 weeks.

The average number of days on admission was 20.6 days.

Discussion

The aim of this study was to audit the pregnancy outcomes and their determinants following prophylactic cervical cerclage in a private centre. From the case summaries above it can be deduced that there was positive pregnancy outcome in all the cases. By positive pregnancy outcome we mean a pregnancy that was carried to term or as close to term as possible to permit neonatal survival. The whole essence of cervical cerclage is to carry otherwise threatened pregnancies due to cervical weakness

Table 1. *Summary of history and pregnancy outcome*

	Case 1	**Case 2**	**Case 3**	**Case 4**	**Case 5**
Age	39	33	38	29	30
Parity	$Para3^{+2}$	$Para0^{+4}$	$Para0^{+3}$	$Para0^{+3}$	$Para2^{+0}$
Obstetric history	1 previous mid trimester miscarriage followed by 2 term SVD, an ectopic gestation and another term delivery	4 previous miscarriage with 2 previously failed cerclages	3 previous consecutive pregnancy losses the last was following a failed emergency cerclage at GA of 16weeks	Had 2 previous 1st trimester miscarriages followed by 2nd trimester miscarriage with twins in the index pregnancy	1 previous preterm 2nd trimester delivery and a term delivery following prophylactic cerclage
N0 of previous cerclages	3	2	1	0	1
Outcome of previous cerclages	Term birth	Miscarriage	Failed cerclage	Not applicable	Term birth
Method of diagnosis of weakness	Ultrasound	Clinical	Clinical & ultrasound	Ultrasound & clinical	Ultrasound & clinical
GA at insertion of index cerclage	12weeks	11weeks	10weeks	13weeks	13weeks
N0 of days on admission/bed rest	2	68	22	14	3
Adjunctive therapies	Progestogen support, & prophylactic antibiotics	Progestogen support, prophylactic antibiotics & salbutamol	Progestogen support, prophylactic antibiotics & salbutamol	Progestogen intermittent tocolytics & prophylactic antibiotics	Progestogens support & prophylactic antibiotics
Type of anaesthesia	Spinal anaesthesia	Spinal anaesthesia	Spinal anaesthesia	Saddle block	Saddle block
GA at removal of cerclage	37	36+5	37	37	38
Reason for removal	Term gestation	Patient's request	Term gestation	Term gestation	Term gestation
Final pregnancy outcome	Live male neonate	Live female neonate	Live female neonate	2 live male neonates	A live male neonate

to term or as close to term as possible to allow the survival of the newborn [15]. The incidence of cervical incompetence and by extension cerclage in our centre over the period was found to be 23.15 per 1000 deliveries. This differs from a 2012 study by John I Ikimalo et al where they found an incidence of 0.17% of all antenatal patients [16]. The study also revealed a term delivery of 68.8% among those that had cerclage. The difference could be due to the fact that the two studies though hospital based and data was secondary from case files, the two hospitals were in different geopolitical regions and the quoted study was done in a teaching hospital as against our study done in a small private facility. They also considered the whole antenatal population whereas we considered only the deliveries. Lastly, ours was just a case series of 5 cases as against the other study that reviewed all antenatal women. From a Cochrane review [17], it was concluded that cerclage does not result in reduction in pregnancy loss and preterm delivery rate, although a small reduction in births under 33 weeks gestation was seen in the largest trial. It also revealed that cerclage was associated with mild pyrexia, increased used of tocolytics therapies and hospital admissions but no serious morbidity. However, in our cases there was no incidence of pyrexia but tocolytics were used but there were no standardized criteria for the use of any of those therapies. There were also increased hospital admissions especially in case 2 where a total of 68 days were spent on hospital admissions. The hundred percent success rates in these cases could be due to the skill of the surgeons (qualified gynaecologists), gestational age at insertion (11.6 weeks) and /or adjunctive therapies post insertion. All the pregnancies were carried to term (37 completed weeks except one that was electively delivered at 36 weeks and 5 days on maternal request) but Nelson et al found a success rate of 23.5% [12]. The difference could be accounted for by the differences in the methodology as our study was a case series. These adjunctive therapies include bed rest, antibiotics, tocolysis or progestogens. However, none of these therapies have been proven to be of significant benefits in the literature. In a retrospective study in University of Ilorin Teaching Hospital involving 103 cases out of 12,142 deliveries, the number that had term delivery were 73(85.95%) [18].This relatively good outcome with use of adjuncts such as bed rest and tocolysis may suggest some benefits from the use of such modalities with cerclage. However, the study did not use progestogens which we used in the few cases reported and this could have contributed to the success we recorded.

The average gestational age at the insertion of the 5 cerclages was 11.6 week. This is lower than the generally recommended gestational age of 14 to 16 weeks when abortions from chromosomal abnormalities are ruled out and organogenesis would have completed. However, in the cases reported, the gestational age range was 10 to 13 weeks, giving an average of 11.6 weeks. With availability of high resolution ultrasound one can make diagnosis of ectopic early and monitor fetal wellbeing better and make a case for earlier insertion of cerclages when the length of the cervix is still significant. This will make for a better grasp of the cervix and reduce the failure rates. The use of ultrasound surveillance will help to determine the right time to terminate the management. The success rate recorded in these case series may lay credence to early insertion; however, a multicentre study with larger sample size may be required to make a case for this proposition.

The choice of anaesthesia for cerclage could be general or regional anaesthesia depending on the patient's choice and factors. In a study in 2015 by Alexander Ioscovich, et al. [19] out of 487 cerclages done in 327 women, 402(82.5%) were general anaesthesia (GA) while 85(17.5%) were regional. In this cohort study majority of the cases were general anaesthesia whereas in the 5 cases reviewed by us, the choice was regional (3 spinal and 2 saddle blocks). The post anaesthetic care unit stay is generally shorter with GA but the obvious complications and challenges of GA make the choice of regional anaesthesia preferable. This informed our choice of spinal anaesthesia and saddle block employed in our cases.

Conclusion

The use adjunctive therapies and insertion of cerclages at earlier gestational ages may enhance the outcome of cervical cerclages.

Recommendations

We recommend a multi-centre, cohort study with large sample size to validate our findings.

Acknowledgments

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Disclosure of conflict of interest

We wish to state that there was no conflict of interest encountered in the course of this study and its write-up.

Statement of informed consent

This was a retrospective study in which data was obtained from case files of patients that had cervical cerclage inserted in the centre.

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