

Original Article

A 5 year review of pregnancy outcome and interval to delivery after cervical cerclage in north-eastern Nigeria

Bukar M¹, Mohammed H², Ibrahim SM^{1*}, Moruppa JY³, Buba AA¹, Bakari MA¹

¹Departments of Obstetrics and Gynaecology, University of Maiduguri Teaching Hospital Maiduguri, Nigeria. ²Federal Medical Centre Nguru, Nigeria. ³Federal Medical Centre Yola, Nigeria.

*Corresponding author: ozovehesan@yahoo.co.uk

Received: 28.10.13; Accepted:15.02.14; Published: 30.03.14

ABSTRACT

Background: Evidences have shown the value of cerclage in reducing preterm birth in women with cervical incompetence. **Aim:** To document the pregnancy outcome in women with cervical incompetence after cerclage insertion and to determine the time interval to spontaneous delivery after elective removal of cerclage at term. **Methods:** Singleton pregnancies with cervical cerclage were reviewed in Federal Medical Centre (FMC), Gombe and FMC, Yola from 1st January, 2002 to 31st December, 2006. There were 38 patients in the study. The mean age of the patients was 27 ± 4.3 years while the mean gestational age (GA) at cerclage insertion was 15 ± 3 weeks. Outcome of pregnancy and interval to spontaneous delivery after elective removal of cerclage at term were determined. **Results:** Eighty nine percent had history of at least 2 mid-trimester miscarriages and only 7.9% had history of preterm birth. Mean GA at delivery was 37 ± 3 weeks and fetal salvage rate was 76.3%. Overall, twenty four (63%) of the pregnancies progressed to term. Fifteen (62.5%) of these had vaginal delivery after elective cerclage removal. The mean cerclage removal to delivery interval was 9.3 days and only 20% delivered within 48 hours after removal of cerclage. The morbidity rate following cerclage insertion was 42.1% with Preterm Premature Rupture of Membranes (PPROM) being the commonest morbidity. **Conclusion:** Most pregnancies in patients with cervical incompetence progressed to term following cerclage insertion and only few of them delivered within 48 hours of removal.

Key words: cervical cerclage, interval, outcome, incompetence, pregnancy

INTRODUCTION

Preterm birth remains the leading cause of neonatal morbidity and mortality in the world today^[1-3] Its incidence ranges from 5-12% and the annual number of preterm births is estimated to be 13 million worldwide.^[3,4] Cervical incompetence

which is the inability of the cervix to maintain a pregnancy to term due to structural or functional defect, is a generous contributor to the pool of preterm births.^[1,5] It is also an established cause of mid-trimester habitual abortion.^[5] There is lack of an objective diagnostic test or uniform diagnostic criteria for cervical incompetence but history of mid-trimester

miscarriage or preterm birth with characteristic silent dilatation of the cervix is considered diagnostic of cervical incompetence.^[6]

The procedure of cervical cerclage used in the treatment of cervical incompetence was first described in 1955 by Shirodkar *et al.*^[7] Since then over the years several modifications to the procedure have been made.^[7] The effectiveness of cervical cerclage in reducing incidence of mid-trimester miscarriage or preterm birth has been questioned as a meta-analysis has given no conclusive evidence to this effect.^[6] Evidence from another meta-analysis has shown the value of cervical cerclage in reducing preterm birth in women with history of preterm delivery and cervical shortening.^[8] However because there is difficulty in conducting true Randomized Controlled Trial (RCT) on patients with cervical incompetence because of the high risk of pregnancy loss, only few true RCTs were included in these meta-analyses.^[6,8] Uncontrolled studies have however shown that infant viability is 25% without cerclage and 75-90% with cerclage.^[9]

It is generally recommended that an elective cerclage is performed between 13-16 weeks gestational age, after ensuring that the fetus is viable and anomaly ruled out on ultrasound scan.^[2,7] Cerclage is removed electively at 38 weeks gestational age, in anticipation of spontaneous onset of labour.^[2] Due to the time interval between elective removal of cerclage to delivery, many women usually have anxiety if their delivery is delayed after cerclage removal.^[7]

The objective of the study was to document the outcome of pregnancy in women with cervical incompetence after cerclage insertion and to determine the time interval to spontaneous delivery after elective removal of cerclage at term.

METHODOLOGY

The study was conducted at Federal Medical Centre, Gombe and Federal Medical Centre, Yola, both are situated in the North eastern states of Gombe and Adamawa, Nigeria. Retrospective analysis of records on all patients presenting to these hospitals with diagnosis of cervical incompetence from 1st January 2002 to

31st December 2006 were reviewed. All the 38 patients (100 % retrieval rate) with singleton pregnancy with either history or ultrasound diagnosis of cervical incompetence and had cervical cerclage insertion electively or as an emergency procedure were reviewed. Three case notes did not contain the interval between elective cerclage removal and delivery. These cases were included in the study though; they were excluded from the determination of interval between elective cerclage removal and delivery.

Information was obtained using a questionnaire which was developed for the study. Information on patient's bio data, previous obstetric history, GA at cerclage insertion, type of cerclage used, complications after cerclage insertion, GA at delivery, outcome of pregnancy, and time interval between elective removal of cerclage and delivery were recorded.

Statistical analysis

The information was subjected to statistical analysis using SPSS 16.0.

RESULTS

There was a total of 38 patients seen with cervical incompetence during the period of the study, 27 (71%) in FMC, Gombe and 11 (29%) in FMC, Yola. The mean age of the patients was 27 ± 6.3 years with a range of 18-35 years. The parity ranged from 0 to 5 with mean parity of 1.26. However, about 50% of the patients were of zero parity. The mean number of previous mid-trimester miscarriages was 2.87 with a range of 1 to 8, however only 1 woman had 8 previous miscarriages. Thirty four women (89.5%) had history of at least 2 mid-trimester miscarriages. Only 3 (7.9%) women had history of previous preterm birth. Mean gestational age at cerclage insertion was 15 ± 3 weeks. Four (10.5%) had cerclage in previous pregnancies.

The mean gestational age at delivery was 37 ± 3 weeks. There were 7 (18.4%) abortions, 7(18.4%) deliveries at 30-34 weeks and 24(63.2%) deliveries at 37-42 weeks.

Table 1 shows indications for cerclage removal. Overall, 36 of the 38 patients had their cerclage removed. Eighteen (47.4%) patients had removal at term, 5 (13.2%)

had removal due to onset of labour and 4 (10.5%) were removed due to preterm contractions. Three (7.9%) patients each had removal on account of preterm premature rupture of membranes and abortion, 2 (5.3%) on account of missed

abortion and 1 (2.6%) whose cerclage was removed on account of acute abdomen subsequently had laparotomy. Only 2 (5.3%) patients, whose cerclage were not removed, had elective caesarean section.

Table 1: Reasons for cerclage removal among patients with cerclage insertion

Indication	Frequency	Percentage
Term	18	47.3
Missed Abortion	2	5.3
Premature Rupture of Membranes	3	7.9
Labour	5	13.2
Preterm contractions	4	10.5
Inevitable abortion	3	7.9
Acute Abdomen	1	2.6
Cerclage not removed	2	5.3
Total	38	100

Table 2: Morbidity associated with cerclage insertion

Complication	Frequency	Percentage
Premature Rupture of Membranes	6	15.8
Preterm Delivery	3	7.9
Preterm contractions	2	5.2
Vulvo-vaginitis	5	13.2
No complications	22	57.9
Total	38	100

Table 3: Pregnancy Outcome in patients who had cerclage insertion

Outcome	Frequency	Percentage
Live birth	29	76.3
Abortion	7	18.4
Fresh Still Birth	2	5.3
Total	38	100

Table 4: Interval from cerclage removal to delivery among women who had cerclage removal at term

Interval	Frequency	Percentage
24 hours	1	6.6
2 – 6 days	3	20.0
1 – 2 weeks	4	26.7
2 – 4 weeks	7	46.7
Total	15	100

Table 2 shows morbidity associated with cerclage insertion. Six (15.8%) had rupture of membranes, 5 (13.2%) had vulvovaginitis, 3 (7.9%) had preterm delivery and 2 (5.2%) had preterm contractions. Twenty two patients (57.9%) had no complications.

Table 3 shows the pregnancy outcome of the patients after cerclage insertion. There were 29 (76.3%) live births, 7 (18.4%) abortions and 2 (5.3%) fresh still births.

Twenty four (63%) of the pregnancies progressed to term out of which 3 were in spontaneous labour before cerclage removal, 2 (5.3%) had elective caesarean section and 1 had emergency caesarean section due to fetal distress. The remaining 18 patients had elective cerclage removal. As shown in table 4, the cerclage removal to delivery intervals in fifteen (63%) patients was 24 hours for 1 (6.6%), 2-6 days for 3 (20%), 1-2 weeks for 4 (26.7%) and 2-4 weeks for 7 (46.7%) patients. The mean cerclage removal to delivery interval was 9.3 days and overall only 20% of the patients progressed to spontaneous labour within 48 hours after removal of the cerclage. The interval was not indicated in 3 of the case notes. Therefore cerclage removal to delivery intervals was calculated for only 15 of the 18 patients who had elective removal of cerclage at term.

DISCUSSION

The mean GA at cerclage insertion in our study was 15 weeks; this is similar to 14.5 weeks found in a study of multi-ethnic patients in a London hospital.^[7] Most cerclage are inserted after the first trimester when it is expected that first trimester miscarriage from other causes would have occurred.^[2] However, occasionally emergency cerclage is inserted for patients when they present later in pregnancy with cervical shortening, dilation or bulging membranes.^[1,3] In our study, 2 patients that had emergency cerclage at 22 and 30 weeks had preterm delivery of viable babies. This outcome supports findings from several studies where emergency cerclage was useful in preventing delivery prior to 34 weeks' gestation.^[10-12] Gestational age of less than 22 weeks and presence of membranes prolapsing beyond the external cervical os

at cervical cerclage have been found to be associated with decreased success rate of emergency cerclage.^[11] These factors were not present in our patients.

In a study of patients with cervical incompetence in the University of Maiduguri Teaching Hospital (UMTH) situated in the North Eastern part of Nigeria, preterm births accounted for 33% of the complications following cerclage insertion.^[5] This is much higher than 7.9% in our study. This difference may be explained by the fact that the Maiduguri study considered delivery at gestational age of between 24-37 weeks as preterm while in our present study, 28-37 weeks was used.^[5] More also, the proportion of patients studied in UMTH was more than in our study.^[5]

The fetal salvage was 76% in our study likely because most of the pregnancies progressed to term and only few preterm births were recorded. Some other studies in Nigeria have equally reported impressive fetal salvage ranging from 92% to 94%.^[13,14] Generally, fetal salvage rate depends on the success of cerclage, frequency of preterm delivery and availability of equipped neonatal care unit.^[13]

The mean interval from elective removal of cerclage at term to delivery in our study was 9.3 days. This time interval is so lower than the 14 days reported from Thomas Jefferson University study with only 11% of the patients delivering within 48 hours of cerclage removal.^[15] However, the sample size in the study was 141 compared to 15 in our study.^[15] Our sample size was small and not enough to draw conclusion on the mean interval to delivery after elective removal of cervical cerclage.

The limitation of our study is that the sample size was small. This may be related to the fact that many of our women prefer -delivery at home.^[16] Only 58% of women in Nigeria attend ANC and only 35% deliver in health facilities out of which only 20% deliver in public facilities. This finding is especially worse in northern Nigeria where only 8% of births occur in health facilities.^[17] Therefore this study which is hospital-based from two government hospitals might not be a representative of the number of women

with cervical incompetence in the population.

CONCLUSION

Most pregnancies in patients with cervical incompetence progressed to term after cerclage insertion but only few of them delivered within 48 hours following removal with good fetal salvage rate. Although the study sample size was small, pregnant women on cerclage may be counseled on the reduced chances of delivery less than 48 hours after removal of cerclage. They may therefore be allowed to go home after removal to return when in labour.

REFERENCES

1. Sandhu KS, Keeler S, Seubert DE. Cervical Insufficiency. In: Progress in Obstetrics and Gynaecology. John Studd, Seang Lin Tan, Frank Chervenak (Eds). London, Elsevier Publishers. 2008; 175-184.
2. Yeung T, Regan L. Recurrent miscarriage including cervical incompetence. In: A textbook for gynecology for less-resourced locations. H Beechuizen and R Unkels (Eds). London, Sapiens Publishing Ltd. 2012;134-146.
3. Tezcan B, Hezelgrave N, Shennan A. The role of cervical ultrasound screening in determining the timing of emergency cerclage. *J Obstet Gynecol* 2012; 32:444-446.
4. Wood NS, Marlow N, Costeloe K, Gibson AT, Wilkinson AR. Neurologic and developmental disability after extremely preterm birth: Epicure study group. *N Engl J Med*. 2000; 343: 378-384.
5. Audu BM, Chama CM, Kyari O. Diagnostic features of cervical incompetence among women in Maiduguri. *J Obstet Gynecol* 2003; 23:130-133.
6. Drakeley AJ, Roberts D, Alfirevic C. Cervical stitch (cerclage) for preventing pregnancy loss in women. *Cochrane Database of Systemic Reviews* 2003; Issue 1. Art. No.: CD003253. DOI: 10.1002/1451858.CD003253
7. Fleischmann G, Steel A, Yoong A, Fakokunde A. Demographics and outcome of elective cerclage in a multi-ethnic London. *J Obstet Gynecol* 2009;29:17-20.
8. Berghella V, Keeler SM, To MS, Althuisius SM, Rust OA. Effectiveness of cervical cerclage according to severity of cervical length shortening: a meta-analysis. *Ultrasound Obstet Gynaecol* 2010; 35:467-473.
9. Lotgering FK. Clinical aspect of cervical insufficiency. *BMC Pregnancy and Childbirth* 2007;7:S17.
10. Althuisius SM, Dekker GA, Hummel P, Van Geijin HP. Cervical incompetence prevention randomized cerclage trial: emergency cerclage with bed rest versus bed rest alone. *Am J Obstet Gynecol* 2003; 189:907-910.
11. Terkildsen MFC, Parilla BV, Mumar P, Grobman WA. Factors associated with success of emergent second-trimester cerclage. *Obstet Gynecol* 2003;101:565-569.
12. Daskalakis G, Papantoniou N, Mesogitis S, Antsaklis A. Management of cervical insufficiency and bulging fetal membranes. *Obstet Gynecol* 2006;107:221-226.
13. Wright EA. Fetal salvage rate with cervical cerclage. *Int J Obstet Gynecol* 1987;25:13-6.
14. Feyi-Waboso PA, Umezurike CC. Management of cervical incompetence in Aba, South-Eastern Nigeria. *Niger J Med* 2005;14:400-404.
15. Bisulli M, Suhag A, Arvon R, Seibel-Seamon J, Vistintine J, Bergella V. Interval to spontaneous delivery after removal of cerclage. *Am J Obstet Gynaecol* 2009; 201:163 e1.
16. Enzuladu EA, Agbo HA, Lassa S, Kigbu JH, Zoakah AI. Factors determining the choice of a place of delivery among pregnant women in Russia village of Jos North, Nigeria: achieving the MDGs 4 and 5. *Int J Med Biomed Res* 2013;2:23-27
17. Demographic and health survey. Nigeria Demographic and health survey 2008 [online]. Available: <http://www.measuredhs.com/pubs/pdf/GF15/GF15.pdf> [Accessed 13th March, 2012].

doi: <http://dx.doi.org/10.14194/ijmbr.3.1.4>

How to cite this article: Bukar M, Mohammed H, Ibrahim SM, MoruppaJY, Buba AA, Bakari MA. A 5 year review of pregnancy outcome and interval to delivery after cervical cerclage in north-eastern Nigeria. *Int J Med Biomed Res* 2014;3(1):17- 21

Conflict of Interest: None declared



This is an Open Access article distributed under the terms of the Creative Commons Attribution 3.0 License (<http://creativecommons.org/licenses/by-nc-sa/3.0/>) which permits unrestricted, non-commercial, share-alike use, distribution, and reproduction in any medium, provided the original work is properly cited.