Outcome of Pregnancy After Emergency Cervical Cerclage

Adebiyi G. Adesiyun and Polite Onwuhafua
Department of Obstetrics & Gynaecology, Ahmadu Bello University Teaching Hospital, Shika Zaria, Kaduna State, Nigeria

Abstract

Context: Cervical incompetence is a common cause of repeated mid-trimester abortion and preterm deliveries. Its diagnosis poses a challenge to the obstetrician and the application of cervical cerclage in the emergent treatment of cervical incompetence has drawn a lot of comments.
Objectives: To determine if there is merit in the application of emergency cervical cerclage.
Study Design: A retrospective review of patients that had emergency cervical cerclage over a 7-year period
Results: A total of seventeen patients had emergency cervical cerclage within the review period. The mean age was 28.8 years and the mean gestational age at cerclage was 20.1 weeks. The mean duration of cerclage was 89.4 days while the mean gestational age at delivery was 32.9 weeks. The pregnancy outcomes were three miscarriages, nine preterm births and five term births. The fetal survival rate was 52.9%.
Conclusion: Emergency cervical cerclage has a place in our practice considering the extra pregnancy time gained in a setting where neonatal care services are not well developed.

Key Words: Cervical Cerclage, Mid-trimester Abortions, Fetal Outcome [Trop J Obstet Gynaecol, 2006, 23:129-132]

Introduction

Cervical incompetence is a notable cause of repeated mid-trimester abortions and preterm births. It is referred to as the inability of the cervix to carry an intrauterine pregnancy to term, due to a structural or functional defect of the cervix. The diagnosis is based on a history of successive pregnancy loss in the second and early third trimester, occurring at a decreasing gestational age. The process of abortion or preterm birth is typically painless, associated with spontaneous rupture of membranes, culminating in total expulsion of the products of conception.

The introduction of endovaginal ultrasound scan measurement of the length of the cervix and diameter of the internal cervical os has helped improve the diagnosis of cervical incompetence. Although ultrasound scans assessment of the cervix has its own flaws. It is difficult to call a cervix incompetent or competent, since the cervix is a dynamic component of the lower uterine segment that varies in length as the pregnancy advances [1,2]. The difficulty in distinguishing between upper position of the cervix and the lower uterine segment myometrium makes assessment of cervical length difficult before twenty weeks [3,4].

The absence of clear cut clinical criteria in the diagnosis of cervical incompetence, coupled with the emotional concern of the obstetrician in putting a halt to the repeated mid trimester abortions and preterm births in an already depressed couple, has led to the confusion and misuse of the cerclage operation. The aim of this study is to find out the effectiveness and efficiency of emergency cervical cerclage in our practice.

Materials and Methods

The study was a retrospective review of seventeen patients that had emergency cervical cerclage from June 1998 to June 2005 at the Ahmadu Bello University Teaching Hospital, Kaduna. For this study, emergency cervical cerclage was applied for patients with evidence of cervical dilation of at least 2cm and cervical effacement greater than fifty percent with associated herniation or bulging of fetal membrane in the absence of labour.

All the pregnancies were singleton pregnancy and their gestational ages were not more than twenty eight weeks. Five of the patient had previous history of cervical cerclage. All the patients had emergency ultrasound scan to confirm fetal viability and to estimate the gestational age of the pregnancy. In the cohort of patients that did not present with bulging or prolapsed membranes, ultrasound scan was used to confirm funnelling of the fetal membranes. Funnelling is defined as herniation of the amniotic sac through the internal os into the upper portion of the cervical canal. Nine of the patients had documented evidence of high vaginal swab culture which was positive in four of the patients.

Cervical cerclage was done under general anaesthesia in a steep Tredelenburg position. Fifteen of the patients had McDonald's cervical cerclage and two had cervical cerclage using the Wurm technique. The cervical suture used was 5mm mersilene tape (Ethicon RS-21)

Correspondence: *Dr. Adebiyi G. Adesiyun, P.O. Box 204, Kaduna, Nigeria. Tel: (+234) 803-786-1630.*
Email: *adebiyi_g@yahoo.com*

in eleven patients and 6mm nylon tape (Ethicon W27) in six patients. Post operatively, all patients were placed on strict bed rest, prophylactic antibiotics, analgesics and tocolytic agent (salbutamol). Three patients received intramuscular steroids (dexamethasone) to hasten fetal lung maturation.

All procedures were without operative complications and there was no case of re-operation. Cervical cerclage suture were removed normally at the thirty seventh week of pregnancy or whenever there was evidence of labour, vaginal bleeding, genital infection or liquor drainage.

Results

The mean age of the seventeen patients that had emergency cervical cerclage was 28.8 years (range 20 years to 37 years). The mean gestational age at cerclage was 20.1 weeks (range 14 28), while the mean duration of cerclage and gestational age at delivery was 89.4 days (range 7 162 days) and 32.9 weeks (range 24.5 39.2) respectively. In this series, three patients had miscarriage (defined as pregnancy loss before the twenty eighth week of pregnancy), nine patients had preterm birth (defined as delivery before thirty seventh completed week of pregnancy in this study) and five patients had term birth.

The three patients that had miscarriage had their cerclage removed due to ruptured fetal membranes in two patients and vaginal bleeding in one patient. The nine patients that had preterm birth had their cerclage removed as a result of preterm contraction in five patients, ruptured fetal membranes in two patients and heavy vaginal discharge in the remaining one patient. In the five patients that had elective removal of cerclage at thirty seven weeks, the mean interval between cerclage removal and onset of labour was eight days.

The perinatal outcome shows that there were four still born (defined as dead fetus weighing more than 500 grams at birth), four neonatal deaths and nine live births. This gives a survival rate of 52.9%. In the subgroup of patients that had preterm birth, there were three neonatal deaths and one neonatal death in the subgroup that had miscarriage. Of the four neonatal deaths, three were less than thirty weeks of gestation at delivery.

The duration of cerclage and gestational age at delivery were significantly affected by gestational age at which cerclage was applied, the cervical dilatation at the time of cerclage and presence of bulging membrane. The group of patients that had cerclage done before twenty weeks of pregnancy, with absence of bulging membrane and cervical dilation of 2cm at cerclage, had a better clinical outcome compared to the group that had cerclage after twenty weeks of gestation with presence of prolapsed fetal membrane and cervical dilation of 3cm or more at the time of cerclage.

Discussion

The diagnosis of cervical incompetence in itself poses a challenge to the obstetrician and it is enmeshed in a lot of controversy. Furthermore, the application of cervical cerclage as a form of treatment in emergent situations has attracted a lot of conflicting statements and comments on its suitability.

In this review, we found the application of emergency cervical cerclage beneficial in our practice. It helped in the prolongation of pregnancy, which is of great value to us in the developing world; where we have limitations in our neonatal care service. Emergency cervical cerclage did assist in decreasing the abortion rate though it did not significantly decrease the preterm birth rate, but better more it helped prolong pregnancies beyond the thirtieth week in eleven out of the seventeen patients. Our neonatal unit records a better fetal outcome from a gestational period of thirty weeks. There have been similar reports of prolongation of pregnancy following emergency cervical cerclage [5,6,7]. The extra time gained from the application of emergency cerclage allows for the administration of steroids, which apart from accelerating fetal lung maturation, also reduces the incidence of persistent ductus arteriosus, interventricular haemorrhage and necrotizing enterocolitis in preterm neonates [8].

The clinical outcome of emergency cerclage in our series is seen to be positively influenced by the application of cerclage at or before twenty weeks gestation with the cervical dilation at 2cm. Yip *et al* [9] reported a similar finding but in contrast to our finding on cervical dilation at cerclage, they reported that those patients with cervical dilation of 4cm or more at cerclage, did not show significant reduction in the duration of cerclage insitu. However, a better clinical outcome is said to be associated with emergency cerclage using McDonald's technique, if the application of the cerclage tape is preceded by traction on the cervix with 6 10 stay sutures [7].

In this review, the clinical outcome of emergency cerclage was significantly affected by herniation of fetal membranes. The five patients in this group ended up with three miscarriages and two preterm deliveries. The fetal outcome was equally bad; three stillbirths and two neonatal deaths. However, Wu *et al* [5] found no significant difference in the clinical outcome of those with and those without prolapsed membranes. Swab on a sponge holding forceps as described by Olatunbosun and Dyck[10] was the method used to reduce prolapsed

Table 1: Gestational Age at Emergency Cerclage and Clinical Outcome Following Emergency Cerclage.

Serial No. of Patient	Gestational Age at Cerclage	Duration of Cerclage (Days)	Gestational Age at Delivery (Wks)	Clinical Outcome	
				Pregnancy Outcome	Fetal Outcome
1	22	21	25.3	Miscarriage	Stillborn
2	20	122	37.2	Term delivery	Live birth
3	24	15	26.0	Miscarriage	Neonatal death
4	14	153	36.1	Preterm delivery	Live birth
5	20	119	37.1	Term delivery	Live birth
6	16	154	38.3	Term delivery	Live birth
7	26	27	29.8	Preterm delivery	Neonatal death
8	16	136	35.6	Preterm delivery	Live birth
9	18	112	34.2	Preterm delivery	Live birth
10	28	7	29.2	Preterm delivery	Stillborn
11	20	91	32.6	Preterm delivery	Live birth
12	22	19	24.5	Miscarriage	Still born
13	20	114	36.3	Preterm delivery	Live birth
14	26	78	37.1	Term delivery	Still born
15	16	162	39.2	Term delivery	Live birth
16	16	110	31.5	Preterm delivery	Neonatal death
17	16	79	29.2	Preterm delivery	Neonatal death

Table 2 Comparison of Gestational Age at Cerclage, Herniation of Fetal Membranes and Cervical Dilation at Cerclage as they Affect the Mean Duration of Retaining Cerclage and the Mean Gestational Age at Delivery

	n=17	Mean Duration of Cerclage in Days (Range)	Mean Gestational Age At Delivery in Weeks
(Range)			
Gestational Age at Cerclage			
< 20 WEEKS	11	122.9 (19 162)	35.2 (29.2 39.2)
> 20 WEEKS	6	27.8 (7 78)	28.7 (24.5 37.1)
Herniation of Fetal Membrane			
Yes	5	17.8 (7 27)	26.7 (24.5 29.8)
No	12	119.2 (78 162)	35.4 (29.2 39.2)
Cervical Dilation at Cerclage			
2 cm	9	127.8 (78 162)	36.8 (34.2 39.2)
> 3 cm	8	46.1 (7 110)	28.5 (24.5 32.6)

fetal membrane in this review. Some authors have recorded better outcomes by using techniques that decreases the incidence of microtrauma to the fetal membrane such as the use of plastic inflatable balloon designed for preperitoneal endoscopic dissection [11] and use of saline solution to overfill the urinary bladder [12]. Others have used Foley's catheter to achieve reduction of prolapsed fetal membrane [13].

In the emergent management of cervical incompetence, various treatment modalities have been used either solely or in combination. Results from studies have reported varying clinical outcome on different treatment modalities, which includes bed rest alone [14, 15] and cerclage with bed rest [14]. In this review, a combination treatment of emergent cerclage, bed rest, tocolysis and prophylactic antibiotic was employed. The overall fetal survival rate of 52.9% recorded in this review is low compared to figures reported in other studies [6, 7, 11]. This might be attributable to the limitations we have in the quality of our neonatal care services.

The mersilene and nylon tape used for cerclage in this study are both polyfilament suture material. These have been associated with a higher incidence of vaginal infection and post-cerclage chorio-amnionitis compared to monofilament suture material [16]. We found no significant clinical difference associated with the use of both tapes. However, nylon tape is cheap and readily available, though it is not manufactured with attached needles as we have with mersilene tape. There was one case of overt post operative vaginal infection that necessitated removal of the tape in this review.

The factual interplay of gestational age at cerclage, cervical dilation at cerclage and herination of fetal membrane as it affects the outcome of emergency cerclage, need further research, preferably a randomized control trial. Emergency cervical cerclage has a place in our setting, considering the extra pregnancy time gained for fetal maturation in a setting with poorly developed neonatal care services.

References

1. Iams JD. Cervical ultrasonography. *Ultrasound Obstet Gynecol,* 1997; 22: 156 160.
2. Harger JH. Cerclage and cervical insufficiency: an evidence-based analysis. *Obstet Gynecol,* 2002; 100: 1313 1327.
3. Hibbard JU, Snow J, Moawad AH. Short cervical length by ultrasound and cerclage. *J Perinatol,* 2000; 3:161 165.
4. Rana J, Davis SE, Harrigan JT. Improving the outcome of cervical cerclage by sonographic follow up. *J Ultrasound Med,* 1990; 9: 275 278.
5. Wu MY, Yang YS, Huang SC, Lee TY, Ho HN. Emergent and elective cervical cerclage for cervical incompetence. *Int J Gynecol Obstet,* 1996; 54: 23 29.
6. Matijevic R, Olujic B, Tunbrii J, Kurjak A. Cervical incompetence: The use of selective and emergency cerclage. *J Perinatal Med,* 2001; 29: 31 - 35
7. Hordnes K, Askuik K, Dalaker K. Emergency McDonald cerclage with application of stay sutures. *Eur J Obstet Gynecol,* 1996; 64: 43 39.
8. Ward RM. Pharmacological enhancement of fetal lung maturation. *Clin Perinatol,* 1994; 21: 523 542.
9. Yip S-K, Fung HYM, Fung T-Y. Emergency cervical cerclage: a study between duration of cerclage in-situ, herniation of forewater and cervical dilation at presentation. *Eur J Obstet Gynecol,* 1998; 78: 63 67.
10. Olatunbosun OA, Dyck F. Cervical cerclage operation for a dilated cervix. *Obstet Gynecol,* 1981; 57: 166 170.
11. Tsatsaris V, Senat MV, Gervaise A, Fernandez H. Balloon replacement of fetal membrane to facilitate emergency cervical cerclage. *Obstet Gynecol,* 2001; 98: 243 246.
12. Scheerer LJ, Lam F, Bartolucci L, Katz M. A new technique for reduction of prolapsed fetal membrane for emergency cervical cerclage. *Obstet Gynecol,* 1989; 74: 408 410.
13. Orr C. An aid to cervical cerclage. *Aust NZ J Obstet Gynecol,* 1993; 13: 114
14. Althusius SM, Dekker GA, Hummel P, Van Geign HP. Am J *Obstet Gynecol,* 2003; 189: 907 910.
15. Godlin RC. Surgical treatment of patients with hour glass shaped or ruptured membranes prior to the twenty fifth week of gestation. *Surg Gynecol Obstet,* 1987; 165: 410 412.
16. MacDougall SN. Cervical cerclage *Br. J. Obstet Gynaecol,* 1991; 98: 1234 1238.