
FOLLOW UP OF ELEVEN EMERGENCY CERVICAL CERCLAGE CASES AND THEIR OUTCOME

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ABSTRACT

Objectives: To evaluate the role of emergency cervical cerclage in prolongation of pregnancy and its effect on pregnancy outcome.

Patients & Methods: A prospective study of eleven patients who presented with a dilated cervical os and bulging fetal membranes between 17 and 26 weeks of pregnancy.

Setting & Period: In Al Medina Maternity and Children's Hospital (MMCH), KSA. From 01/01/1426 to 30/05/1427H.

Results: The pre cerclage cervical length ranged from full effacement to 1 cm, whereas the post cerclage length was 2-2.5 cm. Women were observed for 12-24 hours before a cerclage was inserted to rule out active labor, placental separation or infection. Prophylactic tocolytic in the form of magnesium sulphate (MgSO) was used in addition to a single agent antibiotic cover (amoxycillin + clavulanic acid). The procedure was performed under general anesthesia using McDonald's type of stitch. With one exception, procedure failure, there were no perioperative complications. Women remained in the hospital for a median of (16.6±SD) days after cerclage (range 2 to 85 days). Pregnancy was prolonged by 61.6 days (range from 3 to 140 days). One woman aborted after 3 days, another woman required removal of cerclage after 30 days due to active labor at 28 weeks gestation. Nine living infants, including one set of twins, were born (72.7%). Their median birth weight at delivery was 2331.25g (range from 1400 to 3000 g). Four women delivered at 37 weeks or more (36.36%). Two women delivered by cesarean section (18.18%). The mean gestational age at delivery was 32.8 weeks (range from 22 to 38 weeks).

Conclusion: Emergency cervical cerclage is an important obstetric procedure with well defined operative risks. As such and until adequate clinical trials are available demonstrating a clear benefit, emergency cervical cerclage is a treatment option for women presenting with advanced cervical dilatation with or without bulging membranes. It should be used judiciously and only after comprehensive patients' evaluation and selection as well as after extensive counseling.

INTRODUCTION

Traditionally, cervical cerclage has been performed either electively (based on past obstetric performance) or as an emergency procedure in women presenting with cervical dilatation. In general, cervical cerclage is performed for a clinical diagnosis characterized by acute painless dilatation of the cervix usually in the mid-trimester, resulting in a prolapsed and/or premature rupture of the membranes (PROM) with resultant extreme preterm

or even pre-viable delivery. A situation referred to as incompetent cervix. Presentation in the mid-trimester of pregnancy with cervical dilatation and prolapsed membranes was previously considered as imminent delivery and was associated with unpleasant outcome⁽¹⁾.

McDonald, Hargar and Kuhn & Pepperell⁽²⁻⁴⁾ reported success rates of 43%, 60% and 59% respectively. Foster and Al Yamamah hospital review^(5,6) reported better outcome. Emergency cervical cerclage is an invasive procedure with many

difficulties. It may end with membranes rupture or even chorioamnionitis. It is probably such difficulties which kept this procedure from gaining wide acceptance. Safe and effective methods of membrane reduction ⁽⁶⁻⁸⁾ were described.

Emergency cervical cerclage refers to placement of a purse string stitch in the setting of significant cervical dilatation and/or effacement with or without membrane prolapse prior to 28 weeks gestation, in the absence of labor. It can be offered to women with impending preterm labor.

Data in this study, as well as others, suggest that emergency cervical cerclage under ideal circumstances can significantly prolong pregnancy to viability.

MATERIALS & METHODS

The main objectives of this study were to evaluate the role of emergency cervical cerclage in prolongation of pregnancy for women who presented with a dilated cervical os and bulging membranes (hour glass) and its effect on pregnancy outcome. This study is a prospective study in MMCH, KSA between 01/01/1426 and 30/05/1427h. Pregnancy outcome between 17 and 26 weeks gestation was studied in eleven patients with:

- Cervical dilatation between 1.5 and 5 cm.
- Cervical effacement.
- Herniation of fetal membranes through the dilated cervix.
- Absence of established labor.

- Absence of clinical evidence of infection.

In this study the authors used McDonald's type of emergency cervical cerclage in these women.

Eleven women were admitted to the hospital. Nine of them were directly admitted to the labor room as they presented with dilated cervixes (3 to 5 cm) and with the membranes prolapsed whereas two women had ultrasonography follow up every two weeks until evident cervical dilatation without prolapsed membranes.

All patients and their husbands gave written informed consents.

They all had ultrasonography performed upon admission to hospital for fetal viability, placental localization and screening for fetal congenital abnormalities. Ten patients with singleton pregnancies and one with one set of twins underwent emergency cervical cerclage. Their characteristics are shown in table I

One patient had a history of cervical cerclage stitch in a previous pregnancy (9.09%). All patients received tocolytics 12-24 hours prior to stitch application and continued postoperatively for 24 more hours. Prophylactic antibiotics were started 12-24 hours preoperatively and continued for three days.

In six patients it was their first pregnancy (primigravidae), four patients had previous mid-trimester miscarriages whereas one woman had a history of preterm delivery.

The mean gestational age at the time of cerclage

Table I : Characteristics of the total No. of patients.

No	Mean age (years)	Mean Gestational age (weeks)	Mean No of gestations	Mean No of abortions	Mean No of Preterm deliveries	Mean No of > 37 WKS
11	25.27 (21-30)	22.2 (17-26)	0.63 (1 - 4)	0.36 (0 -1)	0.09 (0 -1)	0.18 (0 -2)

was 22.2 weeks (ranged from 17+ to 26+ weeks (143 to 184 days) respectively). The cervical dilatation was between 1, 5 and 5 cm. High vaginal swabs (HVS) were obtained from all patients for culture and sensitivity. All showed no bacterial growth.

Sixteen patients were observed for 12-24 hours before performing the procedure to ensure that the cause of cervical dilatation was not due to premature labor. Only eleven patients met the criteria. Labor in the rest of the patients did not respond to tocolytics. None of the selected patients had signs or symptoms of infection (clinically: no uterine tenderness, were afebrile and no vaginal discharge suggestive of infection).

Exclusion criteria :

- Abnormal placentae or vaginal bleeding suggestive of placenta previa.
- Apparent clinical chorioamnionitis.
- Ruptured fetal membranes.
- Mucopurulent vaginal discharge.
- Labor not responding to tocolytics.

The selected patients were given one agent intravenous antibiotic (amoxicillin + clavulanic acid 1.2 g initial dose then 600 mg 8 hourly) starting 12-24 hours preoperatively and continued for three days. Prophylactic tocolytics in the form of magnesium sulphate (MgSO₄) intravenous infusion of 2g per hour also started 12-24 hours prior to surgery and was continued for 24 more hours. Salbutamol 4 mg tablets three times daily were continued as necessary postoperatively.

Patients in steep Trendlenburg position, the procedures were performed under general anesthesia using halothane. Sim's speculum was used to examine and evaluate the cervix under direct vision. Nine patients had the fetal membranes protruding outside the cervical os whereas in two patients the membranes were visible at the level of the external os but not prolapsed.

We performed eleven emergency cervical cerclage procedures. Ten of them (90.09%) were successful at the time of surgery whereas one procedure was considered as failure because the cervix was torn during the procedure. The cervix was effaced in nine patients.

In four patients the stitch was removed electively at 37 weeks gestation. Pregnancy in these patients continued for 1-6 days after removing the stitch.

In all patients the membranes were reduced successfully and a McDonald's type of cerclage stitch was applied using Mersilene tape.

SURGICAL PROCEDURE

Patients in Trendlenburg position, under general anesthesia, using Sim's speculum, the urinary bladder was overfilled with 0.9% normal saline through a Foley catheter inserted in the urethra using 500 cc the cervix was evaluated after each 250 cc.

The four quadrants of the cervix were grasped using sponge holding forceps. The cervix was drawn downwards to help reducing the membranes to a higher level than the internal os. A stitch was then applied. In cases where the membranes were not reduced by this method, no.22 Foley catheter was used.

The balloon was inflated so as to push the prolapsed membranes higher than the internal os, stitch was then applied and the balloon was deflated and pulled outside. In some cases, the older method of pushing the membranes using wet gauze on a sponge holding forceps was used.

In all patients, reformation of the cervix occurred. The cervical length obtained ranged from 2-2.5cm.

Intraoperative complications were seen in one patient (cervical tear). In one patient the cervix was torn after 30 days due to delayed removal of the stitch while the cervix was 6cm dilated.

RESULTS

The operative procedure was successful in eight patients (72.7%) in that cervical cerclage stitch was successfully applied after reducing the fetal membranes and pregnancy was prolonged to result in a take-home baby.

In one patient we failed to perform the procedure (case No 11), another patient aborted after three days (case No 9) while in the third patient the pregnancy was prolonged for 30 days but resulted in an extremely

premature baby who died after 2 days (case No 1).

Overfilling the urinary bladder failed to reduce the fetal membranes in two patients (case No 4 & 11). These patients had cervical dilatation of 5 cm. A wet sponge was used to reduce the membranes. In another two patients, the inflated Foley catheter balloon method along with overfilling the urinary bladder to successfully reduce the fetal membranes was used (case No 8 & 10). In the remaining three patients, the wet sponge method was used as the first choice (case No 2,3 & 5). The details of the studied group are shown in table II.

Table II : Details of the 11 patients underwent emergency cervical cerclage.

Case No.	Obstetric history	Gestational age at cerclage	Cervical dilatation (cm)	Extension of pregnancy Days	Gestational age at delivery	Weight at birth (grams)	Outcome	Histopathology of placenta & membranes	Remarks
1	P. G	21w 2d	3	4w 2D (30 D)	25w 4D	700	NND	-	Cervical tear during labor + hypothyroidism
2	P0 +1	22w 1d	4	12W 1d (85D)	34w 4D	1950	Survived	-	GDM class A1
3	P.G	24w 6d	3	8w 1D (57D)	32w 6D	1450	Survived	-	Severe PIH & bronchial asthma
4	P.G (twins)	20w 4d	5	11w 2D (79D)	31w 6D	1600 1900	Both survived	-	-
5	P 2+1 (1 PTL)	26w 2d	2	5w 4d (39d)	31w 6D	1400	Survived	-	Previous cervical cerclage
6	P 0+1 (mid-trimester)	23w 4d	2	13w 5d (96d)	37w 4D	2700	Survived	-	GDM class A1
7	PG	17w 2d	1.5	20w (140 d)	39w 1D	2250	Survived	-	GDM class A2
8	PG	24w	4	13w 3d (94d)	37w 2D	2400	Survived	-	-
9	PG	21w 2d	3	3days	21w 5D	450	Aborted	Infection	-
10	P 1+0	23w 6d	4	13w 2d (93d)	37w 2D	3000	Survived	-	-
11	P 0+1 (mid-trimester)	23w 3d	5	None	23w 3D	-	Cancelled due to cervical tear	Infection	-

* W = weeks * D = days PG = Primigravida, PTL = Premature labor

Pregnancy was prolonged by 61.6 days (ranged from 3 to 140 days). For the survivors it was 72.8 days.

The mean gestational age at delivery was 32.8 weeks (ranged from 22-38 weeks). For the survivors it was 35.8 weeks (ranged from 31 to 38 weeks).

In four patients the stitch was removed electively at 37 weeks gestation (36.36%), whereas in six patients the cerclage stitch was removed prior to 37 weeks while they were in active preterm labor.

In cases No 5&6, the cervical cerclage was applied after a prolonged period of outpatient department ultrasonography follow up. The stitch was applied after detecting secondary cervical shortening and dilatation; the membranes were not prolapsed outside the cervical canal. In these two patients pregnancy was prolonged beyond 37 weeks.

A comparison between past obstetric history and pregnancy outcome after emergency cervical cerclage is shown in table III.

Table III : Comparison between past obstetric history & pregnancy outcome after emergency cervical cerclage.

Past obstetric history	No. of cases		Outcome after emergency cerclage	
	No.	percentage	No.	percentage
Abortion	4	(36)	2	(18.18)
24-28 wks	1	(9.09)	1	(9.09)
29-31 wks	0	(0)	0	(0)
32-36 wks	1	(9.09)	4	(36.36)
> 37 wks	1	(9.09)	4	(36.36)

72.72% of the patients (N=8) had pregnancy prolonged beyond 31 weeks gestation with nine survivors (one set of twins). The mean birth weight at delivery was 2331.25 g.

DISCUSSION

In this study, emergency cervical cerclage prolonged pregnancy beyond 32 weeks gestation in 72% of the studied group which means less special care for the survivors. These data, combined with other published data, suggest that emergency cervical cerclage under ideal circumstances with careful patients selection can significantly prolong pregnancy and increase the chance of viable pregnancy outcome. However in counseling women about the therapeutic benefit of emergency cervical cerclage, the increased

risk of membranes rupture and chorioamnionitis and its associated effects on both the mother and fetus as well as the risk of extending a pregnancy from viability to extreme prematurity should be discussed.

It is generally accepted that cervical cerclage placement for cervical incompetence is best performed prior to cervical dilatation and effacement and it became clear in this study in cases No 5 & 6.

At least two studies (3,9) have reported a lower success rate (50% and 59%) with emergency cervical cerclage as compared with prophylactic cerclage (86% and 81%).

If emergency cervical cerclage truly have a lower success rate, it means that it is either the cervical cerclage was applied too late or that some

prophylactic cervical cerclages are placed in women who do not need them.

To reduce the number of unnecessary cervical cerclages, there is a growing tendency towards following Althuisius group ⁽¹⁰⁾ from Holand which aims at delaying elective cervical cerclage until evident cervical changes at ultrasonography appear. This observation was applied for the high risk patients in this study and two of them were detected.

The predictors of success in women with dilated cervixes are :

- Exclusion of placental separation.
- Exclusion and prevention of infection.
- Exclusion and prevention fo labor.
- Successful replacement of the prolapsed fetal membranes.

We observed patients for sufficient time to exclude placental abruption or labor. The diagnosis of apparent infection should be easy and should not create a problem. The main difficulty lies in the diagnosis of subclinical infection for which a single antibiotic given 12-24 hours prior to stitch application may not be sufficient to eradicate it. In a study carried in Al Yamamah hospital ⁽⁶⁾, histopathology of the placenta revealed evidence of placental and chorioamniotic infection in all unsuccessful cases. This reflects that the standard methods of detecting subclinical infection (only with HVS) failed to detect infections. C-reactive protein and amniotic fluid for microbiology culture and sensitivity failed also to detect subclinical infections. Because of these difficulties, it is better to consider starting a combination of antibiotics to cover aerobes and anaerobes (e.g. metronidazole in addition to a cefalosporine, erythromycin or (amoxycillin + clavulanic acid). This was evident in cases No 9 & 11 in this study.

For the successful reduction of the fetal membranes, we feel that overfilling of the urinary bladder with normal saline is a safe and easy procedure.

It is now recommended to use balloons of the type used for endoscopic proportional dissection ⁽⁸⁾.

It is commonly believed that emergency cervical cerclage may be the only hope for prolonging pregnancy in women with advanced cervical dilatation in the second trimester with or without membrane prolapse. However, emergency cervical cerclage is a surgical procedure with well defined operative risks. There is no evidence whether this approach is superior to bed rest and expectant management or not and remains unclear ⁽¹¹⁾. There are yet no published randomized controlled trials (RCT) specifically addressing the issue of emergency cervical cerclage. Some would argue that such RCT unethically would deprive patients of standard therapy. Others would argue that it is unethical to continue to pretend that emergency cervical cerclage has ever been proven to be of benefit in a scientific fashion.

In the absence of incontrovertible evidence demonstrating a benefit, emergency cervical cerclage should be used judiciously and only after comprehensive patients' assessment and extensive counseling.

CONCLUSION

Emergency cervical cerclage remains an important part of the obstetric procedures (armamentarium) for the management of cervical incompetence. However it is a surgical procedure with well defined operative risks.

As such, and until adequate clinical trials are available demonstrating a clear benefit, emergency cervical cerclage is a treatment option which could be the only hope for women presenting with advanced dilatation of the cervix with or without membrane prolapse. It should be used judiciously and only after comprehensive patients' evaluation and selection as well as after extensive counseling.

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