RESCUE CERCLAGE: A RAY OF HOPE IN ADVANCED CERVICAL INCOMPETENCE

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ABSTRACT

Objective: To evaluate the efficacy of rescue cerclage in improving the perinatal outcome in patients with painless cervical dilatation and herniated fore waters in 2nd trimester or early 3rd trimester.

Design: An interventional study

Place and Duration of Study: Mother & Child Health Centre, Pakistan Institute of Medical Sciences, Islamabad, from February 2003 to June 2005.

Methodology: Women with singleton pregnancies between 18 and 31 weeks of gestation, with painless cervical dilatation of 3 - 10 cm and prolapsed membranes, underwent rescue cerclage after excluding intrauterine infection and placental abruption. A Mc Donald suture was applied on the cervix after replacing the membranes .All patients received prophylactic antibiotics and tocolytics. Outcome variables included gain in pregnancy, gestational age at delivery, birth weight and neonatal survival rate.

Results: Mean gestational age at the time of cerclage was 26 weeks (W) 5 days (D), (range 18-31 W 2D) and mean cervical dilatation was 4.3 cm (range 3-9 cm). Of 12 pregnancies, 8 resulted in live births, 3 ended up in abortion and one had intra partum still birth at 34 weeks. Mean extension of pregnancy was 7W 5D, (range 1D -13 W) while mean gestational age at delivery was 31 W (range 22-37W). Mean birth wt at delivery was 1900 grams (range, 450-3000 grams).Among the survivors, one baby had early neonatal death due to RDS. The percentage of take-home babies among the study population was 58.3%.

Conclusion: Rescue cerclage proves a last hope in improving the perinatal outcome in women with advanced painless cervical dilation with herniated bag of membranes.

Key Words: Cerclage, cervical, emergency cerclage, rescue cerclage, cervical incompetence.

INTRODUCTION

The term "cervical incompetence" has been in vogue for more than a century and is defined as, "the painless cervical dilatation in the 2nd or perhaps early 3rd trimester with prolapse of membranes in to the vagina followed by rupture of membranes and expulsion of an immature fetus".[1]

Anywhere from 0.1% to 2% of all pregnancies are complicated by cervical incompetence, a problem believed to be responsible for approximately 15 % of recurrent immature deliveries between 16 and 28 weeks of gestation.[2] The main stay of therapy for true cervical incompetence is placement of elective cerclage in early 2nd trimester, in women considered to be at very high risk of mid trimester miscarriage due to cervical factor. [3] However, identifying these women remains elusive due to multi factorial aetiology of late pregnancy losses. A recent trend of relying on cervical length and funneling of cervix, assessed through transvaginal ultrasound may miss many cases.[4] Controversies related to beneficial effect of cerclage in women whose ultrasound reveals short cervix or funneling may further complicate the situation.[5,6] These uncertainties may deprive many women of a potentially beneficial procedure, who may then present at an advanced stage of cervical incompetence, i.e. when cervix has dilated to a stage of irreversibility and membranes have prolapsed through the cervical os. Under these circumstances, management decision becomes difficult whether to let the progressive cervical dilatation continue which is surly associated with dismal prognosis or to do some desperate measures to halt this process.

Since 1980, a comparatively new procedure is being offered to this unfortunate group of parturients, called "rescue cerclage", also known as "emergent" , "emergency" or "salvage" cerclage. It is defined by American College of Obstetricians and Gynecologists (ACOG) as the placement of a cerclage in the setting of premature cervical dilatation (at least 2 cm or more) or effacement in the absence of labour pains prior to 28 weeks of gestation.[5] Several studies have suggested that rescue cerclage ,under ideal circumstances may improve perinatal outcome in women with asymptomatic cervical dilatation.[7,8] The average time between cerclage placement and delivery has been found to be 7 weeks, this allows almost 80% of infants to be born after 28 weeks or later gestation. However, in view of multifactorial aetiology of premature cervical dilatation, the success of rescue cerclage is unpredictable. Besides, the increased risk of chorioamnionitis and its associated risk of fetal inflammatory brain injury as well as the risk of extending a pregnancy from pre viability to severe pre

maturity are the major concerns related to emergency cerclage. Thus, further studies are needed to establish its efficacy and safety.

This study was conducted to evaluate the role of rescue cerclage in prolongation of pregnancy, improvement of perinatal outcome and its safety in terms of maternal complications.

METHODOLOGY

The study was conducted at MCH centre, PIMS, between February 2003 to June 2005.Women with singleton pregnancy between 18-31 weeks gestation and cervical dilatation of 3 cm or more, in the absence of uterine contractions, were included in the study. Women with ruptured fetal membranes, intrauterine or vaginal infection, vaginal bleeding, intrauterine fetal demise, major fetal anomalies not compatible with life and life threatening maternal conditions that precluded anesthesia were excluded from the study.

The patients were kept under observation for 6-24 hours in Trendelenberg position. The genital tract infection was excluded clinically by the absence of fever and uterine tenderness. High vaginal swab was taken for culture and sensitivity. However, the culture result was not awaited for placement of cerclage, if microscopic examination was negative and signs of chorioamnionitis were absent. During the period of observation, the patients had an ultrasound examination to confirm fetal viability, exclude congenital fetal anomalies, measure cervical length and to localize the placenta. All patients received broad spectrum antibiotics, Clindamycin vaginal cream and Salbutamol infusion for tocolysis. In cases with gestational age of >26 weeks, neonatology consultation was sought and betamethasone 12 mg I/M, 12 hours apart was given before the cerclage .

The procedure was performed under general anesthesia after an informed consent from the couple. The patient was placed in steep trendelenberg position. The extent of dilatation and membrane prolapse was evaluated by direct visualization using a Sim's speculum. In all patients membranes were reduced by grasping the four quadrants of the rim of the cervix with sponge holding forceps and drawing the cervix downwards. The reduction of membranes was further aided by putting in a moistened sponge on a forceps or fingers in the cervical canal. Once the membranes receded completely in the cervical canal, Macdonald suture (a purse string suture passing through the stroma of the cervix and sparing the mucosa, using Silk No.2) was applied approximately at the level of internal os. In cases with bladder descent, a modified Schirodkar suture was placed by dissecting the bladder and applying a purse suture, using silk No.2 at the level of internal os.

Post operatively, tocolysis was continued for 24 hours in high dependency area .The patients were later shifted to the ward. Injection Metronidazole and Inj. Augmentin were continued for 48 hours followed by oral preparations of these antibiotics for another 5 days. In case of uneventful post operative course, the patients were usually discharged a week after cerclage with an advice for complete bed rest and to abstain from coitus. Further follow up was planned at 2 weeks interval in high risk clinic.

In the absence of complications, cerclage was removed at 37 weeks of gestation. Earlier removal was done in cases with premature uterine contractions, ruptured membranes or chorioamnionitis. All the information and delivery details were entered in a study proforma.

RESULTS

During the study period, 17 women were diagnosed to have premature painless cervical dilation of >3 cm with prolapsed membranes. Of these, 12 underwent emergency cervical cerclage. In the remaining 5 patients, cerclage was denied due to gross fetal anomalies in 2, ruptured fetal membrane in 1 and clinical suspicion of chorioamnionitis in 2 cases.

The demographic characteristics of individual patients are shown in Table 1.

The surgery was uneventful in all patients without any damage to fetal membranes. Hind water leakage was noted in one patient during surgery. The cerclage was however applied in her due to intact fore waters. The mean blood loss was 20 ml. Postoperative course was uneventful in all except one patient who developed pyrexia 48 hours after surgery which settled later on. The mean hospital stay was 2 weeks (range 6D - 4 W).

Referring Table 2, 8 pregnancies resulted in live births , 3 ended up in abortion and one had intra partum still birth at 34 weeks gestation due to delayed delivery of after coming head of breech at some private hospital. Mean extension of pregnancy was 5W 5D (range 1D -13W). Mean gestational age at delivery was 31 W (range 22-37W). Mean birth wt. at delivery was 1900 grams (range 450-3000 grams). Among survivors, one baby had early neonatal death due to RDS. The number of take-home babies among study population was 7 (58.3%).

Table 1. Demographic characteristics of the study population

S #	AGE	PARITY	ALIVE ISSUES	GA AT CERCLAGE	Cx DIL (cm)	Cx LENGTH (cm)	TLC (1000/ul)	HVS	CRP
1	35	$G_3P_2^{+0}$	Nil	27W2D	3	1	9.2	No growth	Neg
2	18	$G_3P_2^{+0}$	Nil	28W1D	3	1.5	7.6	No growth	Neg
3	31	$G_1P_5^{+4}$	2	27W5D	3.5	1	10.6	No growth	Neg
4	30	$G_9P_1^{+7}$	1	20W	6	0.5	11	Klebsiela	Positive
5	40	$G_7P_6^{+0}$	2	18W	9	0.5	8.6	No growth	Neg
6	22	$G_6P_3^{+2}$	1	29W1D	4	1	9	No growth	Neg
7	27	$G_2P_1^{+0}$	Nil	24W	4	1	8.5	No growth	Neg
8	32	$G_5P_1^{+3}$	Nil	31W	2.5	1.5	7	No growth	Neg
9	29	$G_3P_0^{+2}$	Nil	31W2D	4	0.5	9	No growth	Neg
10	24	$G_6P_3^{+2}$	1	26W*	5	0.5	10.2	No growth	Neg
11	31	$G_2P_1^{+0}$	Nil	23W 6D*	6	0.5	8.2	No growth	Neg
12	34	$G_4P_0^{+4}$	Nil	22W5D	2.5	1.5	9.6	No growth	Neg

* The patients had placement of Mc Donald suture in the first trimester of the current pregnancy.

ABBREVIATIONS

GA=Gestational age, Cx=cervix, DIL=dilatation, TLC= Total leukocytes count

HVS=High vaginal swab, CRP= C-reactive proteins, W=Weeks and D=Days.

S # represents the case number.

Table 2. Rescue Cerclage Results

S #	GA AT CERCLAGE	Cx DIL (cm)	PROLONGATION Of PREG (wks)	GA AT DEL (wks)	Wt AT BIRTH(gm)	PERINATAL OUTCOME
1	27W2D	3	9W5D	37W	2500	Survived
2	28W1D	3	2W6D	31	1600	ENND
3	27W5D	3.5	9W	36W5D	2300	Survived
4	20W	6	2W	22W	700	Abortion
5	18W	9	4D	18W4D	450	Abortion
6	29W1D	4	3W4D	33W5D	2200	Survived
7	24W	4	10W	34W	2400	Intrapartum Stillbirth*
8	31W	2.5	5W3D	36W3D	2800	Survived
9	31W2D	4	6W	36W2D	2700	Survived
10	26W**	5	8	33W	2000	Survived
11	23W 6D**	6	1D	24W	500	Abortion
12	22W5D	2.5	13W	35W5D	2600	Survived

ABBREVIATIONS

*Intrapartum Stillbirth resulted from delayed delivery of after coming fetal head of breech baby at a private clinic.

**The patients had placement of Mc Donald suture in the first trimester of the index pregnancy.

S # represents the case number.

DISCUSSION

Advanced painless cervical dilation before the age of viability is not of common occurrence. However once started, the process is self perpetuating and results in delivery of a premature fetus with dismal prognosis. Despite having a well equipped neonatal intensive care unit, the facilities at majority of the tertiary care hospitals are not optimum for survival of very low birth weight neonates. The situation is worse in low resource countries where survival of neonates of <32 gestational age is low. Keeping in view the local scenario, the upper limit for cerclage was taken as 32 weeks gestation. This is in contrast to international studies in which 28 weeks has been taken as the upper cut off limit.[7-10] Yip and his colleagues however, have chosen 30 weeks as the upper cut off limit.[8,11] Thus the procedure is justified at any gestation where survival of premature neonate cannot be ensured.

Though the protrusion of membranes beyond external os is considered a poor prognostic indicator for prolongation of pregnancy [12], the situation is not so grave as is evident from our study where mean extension in pregnancy was 40 days. This allowed 67 % infants to be born after 32 weeks gestation with a birth wt of > 1500 grams, thus improving their chances of survival. The mean gain in pregnancy reported by other workers was 28, ,30 , 46 and 49 days.[7,9,13,14] The maximum gain reported in this situation is 102 days while it was 90 days in our study. These findings limit the placement of cerclage at <16 weeks gestation due to potential risk of converting a pregnancy from miscarriage to extreme prematurity.

The success rate of rescue cerclage in terms of take home babies was 58.3%. The rate is considerably lower than that of elective cerclage which is reported to be 90 %. [15] It is however consistent with that of various emergency cerclage studies; the survival rates in these studies was 43, 48, 63 and 70 % respectively.[7,8,11,16] On analysis of the cases with cerclage failures, it was found that the major factor contributing to failure was cervical dilatation of > than 6 cm. Poor prognosis under these circumstances is attributed to intrauterine infection resulting from reduction of contaminated prolapsed membranes.[12] Other markers are also used to predict the success rate of cerclage. These include amniotic fluid assessment for proteomic biomarkers (Mass Restricted Score indicative of inflammation) and haemoglobin estimation for decidual haemorrhage.[17] Further studies are however needed to establish their role.

It is interesting to note that two of our patients had previous placement of elective Mc Donald cerclage in the first trimester of index pregnancy, followed by rescue cerclage at 24 and 26 weeks gestation respectively. The success rate in this group was 50%, providing evidence that one failure does not always mean a failure. Thus, these patients should be evaluated on the same lines as those without the cerclage, especially those with MC Donald cerclage where suture is often placed below the level of internal os. Optimum reduction of the fetal membranes is the major problem while performing the procedure. The three major modes are trendelenberg position, traction on the cervix and gentle pressure on the membranes. We were able to successfully reduce the membranes without much difficulty in all cases by applying these methods. Recently, over filling of the bladder has been shown to be a very helpful mode of reduction of membranes and may be applied in difficult cases.[14]

The major limitation in safe application of cerclage was the exclusion of chorioamnionitis. We relied on clinical assessment due to long waiting time required for culture results which in turn increases the risk of chorioamnionitis. Recently, interleukin-6 is considered as a better and quicker predictor of chorioamnionitis than high vaginal swab, the results are not yet

conclusive![15,17] Histopathology of placenta and membranes though a gold standard, provides only retrospective evidence and may be helpful in establishing the cause of cerclage failure in cases of sub clinical infection.[14] Until the optimum diagnostic tools are available, we may have to rely on combination of broad spectrum antibiotics, starting before the operation and continuing for at least one week after the surgery.

The alternative to rescue cerclage is strict bed rest, preferably in trendelenberg position.

The option is difficult and may not be compatible with social setup. By virtue of cerclage, all our patients after an initial phase of hospitalization were managed at home and majority were mobile. The issue has been addressed by Olatunbosun in a comparative cross sectional study.[17] Randomized controlled trials are lacking in this regard due to ethical concern, as it would deprive patients of a potentially beneficial therapy.

CONCLUSION

Rescue cerclage, under ideal circumstances can significantly prolong pregnancy and increase the chance of viable pregnancy outcome. Large scale studies are however needed to establish safety and efficacy of the procedure.

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