IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 14, Issue 8 Ver. VI (Aug. 2015), PP 23-27
www.iosrjournals.org

Study of Pregnancy Outcome after Cervical Encerclage

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I. Introduction

Anatomic abnormalities are responsible for 10-15% of recurrent abortions at second trimester. The causes may be congenital or acquired[1]. Factors of accommodation become particularly important at this time. The commonest accommodation problems relate to abnormalities of the uterus-incompetence of cervix, anomalies of Mullerian fusion and uterine hypoplasia. Cervical incompetence is the inability of the uterine cervix to retain an intra-uterine pregnancy until term. Recognition and correction of the inadequacy offers perhaps the only present possibility of preventing certain late abortions or early premature labour and resultant foetal loss. The conceptus is normally retained in the uterus by a combination of hormonal and mechanical factors. If competence is lacking, the membranes are liable to herniated through the cervix. The first indication is usually unexpected rupture of membranes. This is soon followed by a relatively painless or premature labour.

II. Material and methods

This prospective study was carried out in the department of obstetrics and gynaecology at Govt. Victoria hospital, Andhra medical college at Visakhapatnam from January 2009 to June 2012.

Inclusion Criteria:

1) Either previous two or more midtrimester abortions,
2) Preterm labours,
3) Multiple pregnancies,
4) Trauma to cervix,
5) Previous history of encerclages are included in the present study.

Exclusion criteria:

High risk medical complications like

1) Chronic hypertension,
2) Diabetes mellietus,
3) Severe pre-eclampsia,
4) Cases of advanced cervical dilatation, rupture of membranes,
5) Foetal anomalies were excluded from the study.

Detailed history taken in the form of case sheet, detailed clinical examination done, for Ultrasound diagnosis both transabdominal and transvaginal sonography was done in the present study. The equipment used in 5MHZ or 7 MHZ vaginal probe transducer. Cervical length, width of enternal os, funnelling of amniotic sac into endocervical canal spontaneously or after application of fundal pressure are measured. Cervical length less than 25mm and funnelling more than 25% in to endocervical canal and width of internal os more than 1.5cm is taken into consideration.

III. Anesthesia

Either general anesthesia or inteavenous analgesia were given depending upon the choice of surgeon, condition of the cervix. Type of cerclage procedure: In the present study in 76 cases Macdonald's method done by using black silk. Wurms method was used in 3 cases as an emergency by using black silk. Benson and Durfee abdominal cervicoisthmic encerclage was done in one case using merceline tape where previous vaginal encerclage was failed and there is a deep cervical tear. Tocolytics, sedatives and antibiotics were given routinely to all the patients during post operative period. Progesterone was given upto 28 weeks. Regular antenatal check up and Ultrasound scan was taken as and when required. Cases were followed upto delivery and foetal outcome is noted. Results were documented.

IV. Results

Total 80 cases of cervical incompetence diagnosed by history and ultrasound examination were studied. On analyzing the data, the following observations and inclusions are made.

Table-1 Age distribution

Age in Years	No. Of cases	Percentage
<20	11	14
21-25	40	50
26-30	22	28
>30	7	8

n=80

In our study maximum number of patients belonged to age group 21-25 years (50%). Youngest age at which encerclage done is 18 years. Highest age is 32 years.

Table-2 Socioeconomic status

Status	No. Of cases	Percentage
Low socioeconomic group	49	61.2
Middle class	21	26.2
High class	10	12.5

n=80

This table shows that cases 61.2%belonged to low socioeconomic group 26.2%middle economic status and 12.5% high income group. However my studies are limited to Government hospital where the people mostly belonged to low socioeconomic group.

Table- 3 Gravida and Parity wise distribution

Gravida	No. Of cases	Percentage
I	10	12
II	26	32
III	30	38
IV	8	10
V	6	8

n=80

Parity	No. Of cases	Percentage
0-1	23	28.75
2-3	37	46.25
>4	20	25

n=80

This table shows distribution of cases with cervical incompetence, more is 3rd gravida followed by 2nd gravida. Precious pregnancies who conceived after infertility treatment with short cervix, multiple pregnancies, elderly primi with short cervix were included in study. Maximum number (46.3%) of cases belonged to para 2,3 where there is history of previous mid trimester abortions and preterm labours.

Table-4 Obstetrical history

History	No. Of cases	Outcome of cases reached term	Percentage of outcome
Mid trimester abortion	30	29	97.1
History of preterm labour	20	17	85
Elderly primi with short cervix	10	8	75
Conceived after infertility treatment short cervix	9	3	75
Previous history of encerclage	4	4	100
Twins	2	2	100
Vaginal bleeding with short cervix	5	4	80

In our study out 80 cases there are 30 cases with previous history of mid trimester abortions. In that 29 cases reached term after encerclage (97.1%). In 20 cases there is history of preterm labour, In that 17 cases have reached term (85%).

Table-5 Etiological factor for incompetence

	Cases	Percentage
Primary	50	62
Secondary: (Traumatic)		
MTP	8	44
D&C	19	
Cervical Laceration	8	
Mullarian Anomolies	1	2
Twins	2	4

In most of the cases (62%) cause of cervical incompetence is not properly identified. These cases are treated as primary. Secondary factors(Traumatic) seen in 44% of cases.

Table-6 Cervical encertage applied at gestational age

Gestational age	No. Of cases	Percentage	Outcome	Success %
<14 weeks	14	17.5	Abortion – 2 Preterm – 1 Term – 11	78.5
15-20 weeks	46	57.5	Abortion – 1 Preterm – 2 Term – 43	93.4
>20 weeks	16	20	Abortion – 1 Preterm – 4 Term – 11	68.7
28-30 weeks	4	5	Preterm – 1 Term – 11	75

n=80

Maximum number of encerclages applied at 15-20 weeks gestational age. Success rate is also high in that period(93.4%). Encerclage done above 20 weeks gestation in 16 cases success rate is 68.7%.

Table-7 Cervical encerclage applied as

	No. Of cases	Percentage	At gestational age
Emergency	12	15	14 weeks 1
			15-20 weeks 4
			>20 weeks 5
			>28 weeks 2
Elective	68	85	< 14 weeks 12
			14-16 weeks 20
			17-14 weeks 30
			24-28 weeks 4
			>28 weeks 2

n=80

In my study 12 cases were done as emergency procedure (15%) at various gestational ages. Most of the cases (5) were done at gestational age 20-24 weeks. Where the patient complained of mild uterine contractions, pelvic discomfort and serial ultrasound revealed shortening of cervix hence emergency encerclage was done. The outcome after emergency encerclage is poor. 5 cases(41.6%) have gone to term, 2 cases aborted, 5 cases went onto preterm labour. Out of 80 cases elective encerclage done in 68 cases(85%). 63 cases reached upto term and success rate is 92%. In 3 cases premature labour pains started at 34-36 weeks. All the babies survived even though they have low birth weight.

Table-8 Type of encerclage

Procedure	No. Of cases	Percentage	Done as	Success rate
Mac Donald's	76	95	Elective 67 cases Emergency 9 cases	Term 65 Abortion 4 Preterm 7
Wurm's	3	3	Emergency 3 cases At gestational age: 24-28 2 cases > 28 weeks 1	Reached term 2 PretermPROM 1
Benson & Durfee	1	1	Elective 1 case At Gestational age 18	1 case, 100%

Out of 80 cases of cervical incompetence Mc Donald's encerclage was done in 76 cases (95%). This Procedure is done both as elective procedure(67 cases) and emergency procedure 9 cases.

Wurm's encerclage was done in 3 cases as an emergency procedure. In this, 2 cases reached term. In one case there is preterm PROM at 32 weeks,but baby is alive. In one case where there is previous history of encerclage was failed (G4P1L1A2) we have applied abdominal cervicoisthmal encerclage (Benson and Durfee) at 14-16 weeks as a elective procedure cervice is very short, irregular and difficult to catch from vagina. mercelene tape is used as a suture material. Elective LSCS was done at 38 weeks

Table-9 Complications faced during encerclage

	No. Of cases	Percentage
Bleeding	4	8
Rupture of membrance	1	2
Infections	2	4
Difficulty in applying due to irregular tears	2	4
No complications	71	82

Above table shows that there were no complications in most of cases (71) out of 80 cases. Indicating that is a safe and simple procedure,in 4 cases there is mild bleeding, in 1 case there was rupture of membranes. in 2 cases infection developed (fever foul smelling discharge) which was cured with antibiotics,in two cases due to very short cervix and irregular cervical lacerations cervical encerclage was difficult to apply in 1 case abdominal encerclage was done, in other case Mc Donalds encerclage was done with difficulty

Table-10 Pregnancy outcome after cervical encerclage removed

	No. Of cases	Percentage
>37 weeks full term Labour normal 57 LSCS 11	68	85
< 37 weeks preterm	8	10
Miscarriage	4	5

Out of 80 cases 68 cases reached term (ie 85%) in these 68 cases 47 went into spontaneous labour in 10 cases lavour was induced with mesoprostal, cesarean section was done in 11 cases,preterm labour occurred in 8 cases,4 cases end with miscarriage.

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Table-11 Foetal birth weight after delivery

Weight	No. Of cases	Percentage	No. Of live children
>2.5 kg	63	78.7	100% 63 cases
2-2.5 kg	11 6 preterm	13.7	100% 11 cases
< 2 kg	6 2 preterm 4 abortion	7.5	1 case alive 1 case expired

Out of 80 cases 63 cases babies were weighing > 2.5Kgs (78.7%).11 cases are weighing 2-2.5 kgs. In that 6 are pre term even though birth weight is less, all are live children.In 6 cases babies are weighing less than 2 Kgs. 1 baby born with 1 kg birth weight expired due to prematurity, Rest of the baby alive. In 4 cases of abortions birth weight of babies is 250 gms each. Maximum weight of the baby born by LSCS is 3.4 Kgs.

V. Discussion

Cervical incompetence is a significant problem due to its impact On reproduction function. in the present study of 8O cases of cervical incompetence, cervical encerclage was done. Maximum number of cases were in the range of 21-30 years. Youngest age is 18 years and oldest ages is about 32 years. These age groups were comparable to similar study by Shamshad et al[2].

	Age	Percentage
Present study	20-30 years	61.7
Shamshad et al.	20-30 years	52

Most of our patients in the study were multigravidas with previous pregnancy losses and preterm labours. Obstetrical history is varied in all these 80 cases. In 38% of cases there is History of midtrimester abortions and 25% cases of pervious preterm labour.

Majority of cases have no significant cause for incompetence. 44% cases had traumatic etiology. this is compared to these studies.

traumaticetiology

present study	44%
Shamshad et al	30%
Kaul Olyai	43%

30% noted in shamshad et al. Study[2]. 43% noticed in Kaul Olyai study[3].

Cervical encerlage was applied as elective procedure in 85% cases with a success rate of 92%. In some cases where patients complained of pelvic discomfort and mild uterine contractions and ultrasound evidence of shortening of cervix, encerclage is done as emergency procedure. In the presentstudy, i.e., 15% with a success rate of 41%. In Harger studyFoetal survival was 50% in emergency cases and 81% in Elective encerclage[4].

	Foetal survival	
	Emergency encerclage	Elective encerclage
Present study (n = 80)	41.6%	92%
Harger study (n = 160)	50%	81%

Different procedures of cervical encerclage were done. In maximum cases (95%) MacDonald's procedure is followed. It is done both as elective and emergency procedure success rate is 85.5%. Wurm's method is used as rescue procedure in 3% cases. Success rate by this method as emergency procedure is 66%. Abdominal cervicoisthmic encerclage is done in 1 case, where previous vaginal encerclage method is failed. This case was electively operated by caesarean section at term. Intraoperative complications during cervical encerclage were negligible as this is a simple and safe procedure.

Supportive treatment after encerclage was given for all the cases. Tocolytics were given till 37 weeks of gestation and progesterone weregiven till 28 weeks.

Regarding pregnancy outcome after encerclage removal,85%cases reached term 10% went into preterm labour, and 5% had miscarriage. This difference is statistically significant as the p value is <0.05(z=14.4).83.7% had normal full term vaginal delivery 16.3t% had undergone caesarean section. Main outcome of this study is prolongation of pregnancy and good foetal outcome after encerclage.

	term	Preterm	Miscarriage
Present study	85%	10%	5%
Shamshad et al	73.7%	18.7%	7.2%
Ambiye et al.	66%	11%	20% -
Schwartz et al.	73%	8%	19%

Vaginal delivery is common after encerclage. Caesarean section is done for obstetric reasons only. Not for cervical dystocia. Foetal survival rate was 98% in present study that has reached term. In the preterm deliveries foetal survival is 87.5%.

VI. Conclusion

Past History of recurrent mid trimester abortions or preterm deliveries when supported by ultrasonography forms a reliable basis for diagnosis. It was observed that selective use of cervical encerclage had important effect in prolongation of pregnancy and improving foetal survival rate.If both history and ultra sound findings are considered, early diagnosis is possible and outcome is good after encerclage.

This study concludes that cervical encerclage in women with risk factors for cervical incompetence proved to be useful in prolonging pregnancy and ensures a favourable foetal outcome.

Reference

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