CERVICAL ENCERCLAGE IN PREVENTION OF PRETERM LABOUR

by

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Introduction

Cervical incompetence as a cause of second trimester abortions is now a well established clinical entity. Late Shirodakar from India, Lash and Lash in United States and Palmer and Locomme in France were among the pioneers who recognised and treated this condition. Number of modifications of Shirodakar's cerclage procedure appeared further from various authors mainly avoiding the technical difficulty of the original operation. Later, it was thought that a lesser degree of incompetency of the internal cervical os can lead to premature labour also. Various cerclage procedures were then performed even in late pregnancies with the intention of prevention of premature labour. Later on, the idea of studying the cervical dilatation during pregnancy by repeated internal examinations came into minds of different workers and a wave of disbelief came in the conscience of many obstetricians. Foyd (1961) Parikh and Mehta (1961) were some of those who observed that many pregnant women with dilated internal cervical os in the midtrimester or early third trimester carry their pregnancies to term without complications. On the contrary, some workers (Wood, *et al* 1965) observed that a significant number of women with open internal os during midtrimester or early third trimester go into spontaneous premature labour. The present study was therefore undertaken in order to see whether cerclage procedure really improves foetal salvage and decreases the incidence of premature labour or not. Observations in 73 cases with history of repetitive pregnancy wastages are presented here.

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Material and Methods

Group A. A group of 55 cases who gave history of repetetive miscarriages, late in pregnancy or who on clinical examination appeared to be cases of incompetent internal os, were admitted in the hospital. MacDonald's cerclage procedure was done on them and they were observed for the rest of their pregnancy and the outcome of labour was recorded. Method used for cerclage was the one suggested by MacDonald using monofilament nylon on a non-cutting needle.

Diagnosis of cervical incompetence was mainly based on the symptoms of the patient such as glairy mucus discharge, backache, vague discomfort in pelvis etc., and the finding of an open internal os on vaginal examination in absence of perceptible uterine contractions.

The patients who presented with vaginal bleeding, toxaemia or hydramnios were considered to be unsuitable for operation. Intra-uterine death of foetus was excluded and in the presence of foetal anamolies the operation was not performed. Patients already getting labour contractions or leaking of membranes were also excluded.

Anaesthesia of choice was intravenous thiopentone supplemented by gas + oxygen mixture in majority of cases. The patient was kept in bed for 2 days and sedatives were administered freely in this period. Routine use of progesterone and isoxuprine hydrochloride was made to prevent uterine contractions in first few cases but later was omitted as it was found to be unnecessary.

The suture was divided whenever the patient had active uterine contractions or when she had completed 38 weeks. Follow-up till delivery was possible in 50 cases of whom 48 delivered vaginally and only 2 had abdominal delivery.

Group B. Eighteen more cases with history of one or more obstetric mishaps in past (abortion, premature delivery etc.) for which no obvious cause could be detected were also observed through their pregnancies in whom asymptomatic opening of internal os was detected in late second or early third trimester. These were treated conservatively without doing cervical tightening. Outcome of pregnancy was noted in them also. These cases could be conservatively treated either because the clinical entity was overlooked by the junior doctors or sometimes because the unit was against doing cerclage procedure in late pregnancy.

Observations and Results

Table I shows the various etiological factors responsible for causing incompetence of internal cervical os in both the study groups. Incidence of traumatic etiology was 30.1% (22/73). It was 27.27% in Group A and 38.88% in Group B. The commonest forms of trauma were either operative trauma of dilatation and curettage evacuation or cervical lacerations sustained during previous deliveries. Majority of the cases fell into the group of unknown etiology.

Table II shows the foetal survival in previous pregnancies in these 73 cases. Fifty patients from Group A had a total of 161 pregnancies in past, out of which in 5 instances cerclage was performed. Out of the remaining 156 pregnancies only 26 infants survived without any treatment. Fourteen children died due to some other obvious cause unrelated to the condition. Thus the corrected percentage of foetal survival without cerclage was 18.31%. Eighteen patients from Group B had a total of 64 pregnancies in

TABLE I
Etiological Factors

Factors responsible	No. of cases	
	Group A	Group B
Traumatic etiology		
Fothergill's operation	1	1
Forceps delivery	1	1
Cervical lacerations sustained during labour	5	2
D & C or evacuations	8	3
Congenital		
Arcuate uterus	1	—
Unknown etiology	39	11
Total	55	18

TABLE II
Foetal Survival in Previous Pregnancies

	No. of cases	
	Group A	Group B
No. of previous pregnancies	161	64
No. of surviving infants	31	20
Cerclage in previous pregnancies	5	1
Survival without any treatment	26	19
No. of children died due to other obvious cause	14	—
Corrected percentage of survival	18.31%	30.16%

the past out of which in 1 instance cerclage was performed. Out of the remaining 63 pregnancies 19 infants survived without any treatment. Thus the percentage of survival in group B was 30.16%.

Table III shows the outcome of pregnancy in both the groups. Out of 50 infants from Group A, 35 (70%) were born with birth weight more than 2250 gms and 39 out of 50 (i.e. 78%) survived in the first 7 days of neonatal life. Eleven out of 18 cases from Group B delievered prematurely where the baby was weighing less than 2250 gms. (61.1%) and in 6 instances of these the babies did not survive on account of prematurity. Thus the infant survival in first week of neonatal life in these 18 cases was 66.66%.

Duration of pregnancy at the time of cerclage has been given in Table IV. Maximum duration of pregnancy at the time of cerclage was 32 weeks in 2 cases and minimum was 14 weeks in 2 cases. Maximum number of operations were carried out between 26 and 28 weeks of gestation.

Four patients delivered within 2 weeks after operation. Fifteen patients delivered prematurely inspite of cerclage and 11 of them failed to get a live child even after the procedure. Known causes for this failure were detected in 6 of these 11 cases. These were, placental insuffici-

TABLE III
Outcome of Pregnancy

	Group A (Treated)			Group B (Untreated)		
	Survived	Died	Total	Survived	Died	Total
Mature >225 0	34	1	35	7	-	7
Premature <225 0	5	10	15	5	6	11
Total	39	11	50	12	6	18

TABLE IV
Duration of Pregnancy at the time of Cerclage

Duration in weeks	14	16	18	20	22	24	26	28	30	32
No. of cases	2	4	3	5	2	3	15	12	2	2

ency, accidental haemorrhage, irritable uterus, intrauterine death of foetus and effaced cervix at the time of cerclage.

Duration between cerclage and actual delivery was minimum 2 days and maximum 28 weeks, average being 10.2 weeks.

Discussion

Two groups of cases have been observed with and wihout cerclage procedure. The ethical aspect of depriving some cases from treatment may be questioned. As these 18 cases observed here without cerclage were overlooked by the Junior doctors or the obstetrician concerned did not believe in doing cerclage for these cases.

Generally, cases having no living issue were considered for operative treatment and those having at least 1 living issue were observed conservatively and hence the group does not form an unbiased sample in strict sense. The number of cases in untreated group is also very small for the same reason.

So far, efficacy of cerclage procedure is determined by comparing the foetal salvage in past pregnancies with that in present pregnancy. Here in addition, a small sample of 18 cases also gives another group which can serve as control.

This small study, gives a definitely improved foetal salvage after cerclage than that observed before. Fifty cases in Group A had a total foetal salvage rate of 18.31% before cerclage as against 78% after it. This sifinificantly improved foetal salvage compares well with the previously given results of other authors.

Comparison of the outcome of pregnancy in two groups of cases reveals that incidence of premature labour was about 30% in Group A as against 61.1% in Group B. This indicates that foetal maturity increases significantly with cerclage procedure ($P = 0.02$, $x^2 = 5.42$). Cerclage carried out in late second or early third trimester may postpone delivery by few weeks, thus increasing the foetal weight to some extent.

As far as foetal survival in first week of neonatal life is concerned, there is no significant increase even after cerclage ($P = 0.40$, $x^2 = 0.90$). Seventy-eight per cent babies from Group A and 66.66% from Group B survived in this period. This may lead to a wrong interpretation, that cerclage procedure is unnecessary in late pregnancy and does not improve foetal salvage. Though some of the premature infants are known to survive during early neonatal period majority of them do succumb to minor infections.

The comparison of foetal salvage in Group B before and during this study also may be interpreted in the same manner and it may be concluded that outcome of pregnancy is not significantly altered by cerclage. But whether these babies will survive ultimately and whether they will be otherwise similar to mature infants in future is doubtful. Hence, it is felt that better results of improved maturity after operative closure of cervix should be considered as merit to the cerclage procedure.

Thus, it is felt that in absence of any definite cause, a patient showing asymptomatic cervical dilatation during late second or early third trimester (upto 30 weeks) with a previous unsuccessful obstetric carrier should be considered for cerclage. It may add few valuable weeks to the foetal life irrespective of the cause of such cervical dilatation.

Cerclage operation prevents premature labor first, by mechanically closing the cervix it gives support to the membranes and thus prevents their subsequent rupture. Secondly, it may minimise the

chances of ascending infection through the open os, which weakens the membranes, leading to their subsequent rupture. Thirdly, the strong mechanical closure of the internal os may counteract the effect of gravity and thus may increase the ability of the cervix to retain the conceptus. This last factor may be the reason of patients not going in premature labour even when they are ambulatory.

The cause of such early cervical dilatation in apparent absence of uterine contracticity remains to be studied. A temporary increase in uterine activity may occur which could only be detected by improved techniques of measuring uterine activity continuously during pregnancy. Previous damage or inherent weakness of cervix may impair the ability of the cervix to retain the conceptus. Impaired uterine distensibility may also be a factor which explains the occurrence of premature labour in congenitally malformed uterus. Prediction of the responsible factor in a given case requires further study. Whatever these factors prove to be, women previously denied children can now be offered some hope with the help of cervical encerclage.

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