PERDICTION OF PRETERM LABOUR BY TRANSVAGINAL ULTRASOUND

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SUMMARY

Preterm delivery is the single most common cause of poor neonatal outcome. If detected early, preterm labour can be treated effectively by tocolytic agents. Till today, only a p//v examination can subjectively evaluate cervical effacement and dilatation. A p/v examination has its drawbacks as the whole cervix is not accessible.

Transvaginal Ultrasound offers a very effective modality for looking at cervical shortening and internal os dilatation and hence for predicting preterm labour.

INTRODUCTION

Preterm delivery is the single most common cause of poor neonatal outcome, affecting 8% of births. Preterm deliveries are associated with a 15% to 20% perinatal mortality rate and account for 75% of nonanomalous perinatal deaths. Treatment of preterm babies is very expensive and is unaffordable in developing countries like India but if the period of gestation could be prolonged, hopefully the outcome of these deliveries would be much more favourable.

Preterm labor can be effectively treated if tocolyctic therapy is initiated before cervical dilatation and effacement are advanced. This generally occurs when the cervix is less than 3cms dilated and less than 50% effaced-unfortunately the initial stages of preterm labor are often asymptomatic and waiting for subjective symptoms of labour would delay appropriate treatment in majority of cases.

Therefore, seeing the magnitude of problem every effort should be employed to identify the subclinical stage of preterm labor and this can be achieved

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by identifying the risk factors, which are:

1. Previous H/o preterm and delivery. Late abortions.
2. Multiple pregnancy.
3. Incompetent cervix.
4. H/o cone biopsy.

Also a test be devised to pick up which cases are at more risk of preterm labour.

AIMS & OBJECTIVES

1. To correlate and predict preterm delivery with the short cervical length, dilatation at the level of internal OS and available closed cervical length.

2. Select cases suitable for cerclage/ or intensive tocolysis.

MATERIAL & METHODS

Present study was carried out at Malhotra Nursing Home where we evaluated 150 cases of normal ongoing pregnancies by ultrasound (TAS & TVS) and documented the findings 15 weeks onwards every 4 weeks in patients with normal cervical length and every 2 weeks in short cervical length and correlated with p/v examination at the same time.

All sonographic examinations were performed using Pie-medical 1120 with 3.5 MHz transabdominal curvilinear and 5 MHz transvaginal and Network 202.5 with 6.5 Mz T,V, probe.

Normal Cervix

Normal Length = 2.5 cm - 6 cm (Zemlyn 81) consists of fibrous with varying quantity of smooth muscles and elastic tissues. The smooth muscle is distributed irregularly. Isthmus consists predominantly of smooth muscle.

Cervix remains closed until the end of fetal maturation. Significant cervical shortening occurs from 4 cm to 2.5 cm between 30-40 wks. (Fig. 1 Normal Cx by TVS)

Fig.No.1 : Normal closed cervix by T.V.S.

In the final weeks of pregnancy there is a generalized maturation of the lower segment characterized by shortening of cervix and gradual opening of OS. The process of cervical dilatation begins at the internal OS and progresses outwards. The membranes prolapse into the opened cervix as BAG OF WATERS. (Fig.2)

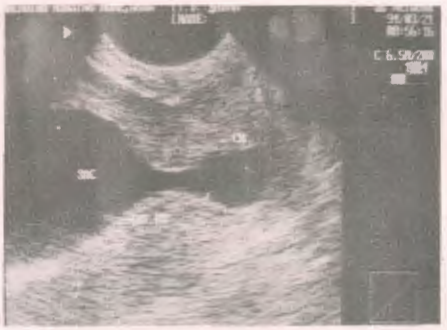

Fig.No. 2 : Dilatation ot cervix with membrane prolapse as Bag of waters.

Sonographically - Cervical incompetence may be suggested by cervical

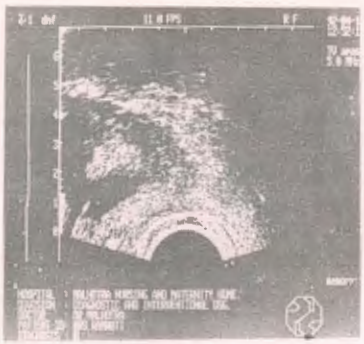

Fig.No.3 : Funelling of cervix 'V' shaped

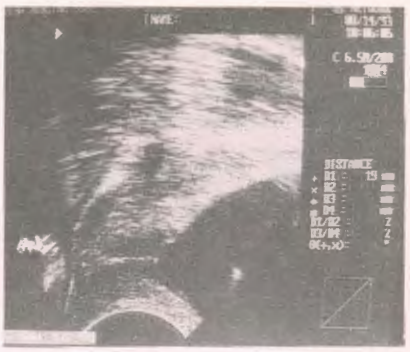

Fig.No.5 : Short cervix at 24 weeks by T.V.S. (19 mm) case for cerclage.

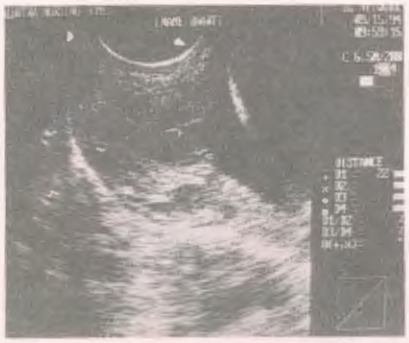

Fig.No.4 : Short cervix 22mm at 30 wks. also int OS Dilatation

Fig.No.6 : T.V.S. After cerclage

shortening or dilatation at the level of interval OS. A funneled or hourglass appearance of the internal cervical os may be seen (Fig. 3 & Fig. 4).

OBSERVATIONS

Table I

Total No. of Cases = 150 (All Primigravida) Cervical length at 24 weeks.

n=150

Cases	No.	Term Deliveries	Preterm Delivery
Group A : Cx length > 3 cm	136	127 (93.4%)	9 (6.6%)
Group B : Cx length < 3 cm	14	0	14 (100%)

Z = 3.125 P = < 0.01

Table II

Cervical Dilatation at 24 wks > 5 mm at into OS

Group	Cx Length	No.of Cases	Dilated D	Not Dilated ND	28-32 Wks D	28-32 Wks ND	32-36 Wks D	32-36 Wks ND
A	> 3 cm	9	3	6	1	1	2	5
B	< 3 cm	14	5	9	5	4	0	5

Corrected X2 8.12 df = 3, p = <0.05

Table III
STUDY OF CLOSED CERVICAL LENGTH
(AVAILABLE LENGTH IN DILATED GROUP)

Group	Cx Length	No.of Cases	ClosedCx Length < 1.5	ClosedCx Length > 1.5	Delivery 28-32	Delivery 32-37
A	> 3	3	0	3	1	2
B	< 3	5	3	2	5	0

Corrected X2 6.4, df3, p< 0.05

Inference : 5 cases with available Cx length of > 1.5 could have benefited by Cx cerclage.

Table IV
STUDY OF CLOSED CERVICAL LENGTH
(AVAILABLE LENGTH) IN DILATED GROUP

Group	Cx Length	No.of Cases	Closed Cx Length < 1.5	Closed Cx Length > 1.5	Delivery 28-32 Wks	Delivery 32-37 Wks
A	>3	3	0	3	1	2
B	<3	5	3	2	5	0

RESULTS

93.4% of the cases where cervical length was more than 3 cm at 24 wks. delivered at term (37 Wks. or More)

100% of the cases where cervical length was <3 cm at 24 wks delivered preterm (<37 wks.).

Based on our study Deadline for cerclage at 24 wks. in apparently normal pregnancy is : (Fig.5)

1. Length < 2.5 cm
2. Dilatation at int OS : > 15 mm
3. Available closed cervical canal 1/2 of the total cervical length

Based on this criteria 5 of 14 apparently normal pregnancies which delivered preterm, could have benefited by a cervical cerclage. (Fig. 6)

CONCLUSIONS

Following conclusions have been drawn on the basis of the present study:

1. In patients with a cervical length of >3 cm at 20-24 wks 93.4% delivered at term and with a Cx length of < 3 cm 100% delivered preterm. 6.6% patients with a cx length of >3 cm still had a preterm delivery.

2. In patients where int OS was found to be dilated chances of preterm labor increased significantly irrespective of cervical length. These cases (8) could have benefited by a cerclage or intensive tocolytic treatment depending on available cx length.

3. When available closed cx length was more than 1.5 cm in cases with int OS dilatation 33% of group A delivered before 32 wks. and 100% of group B delivered before 32 wks. 5 cases with available cx length of >1.5 cm could have benefited by a cervical cerclage/itensive tocolyis.

4. Pitfalls of over diagnosis, over full bladder pressure and dynamic Cx incompetence should be kept in mind.