



TO STUDY THE ROLE OF SERIAL CERVICAL LENGTH MEASUREMENT BY TRANSVAGINAL ULTRASONOGRAPHY FOR THE PREDICTION OF PRETERM LABOUR IN PRIMIGRAVIDA PATIENTS

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ABSTRACT

Aim: To study the role of serial cervical length measurement as a predictor of preterm labour in primigravida patients. **Methods:** A prospective observational study was conducted in the department of Obstetrics and Gynaecology during January 2022 to December 2022 at School of Medical Sciences and Research , Greater Noida. Antenatal patients primigravida with singleton pregnancy visiting obstetrics OPD between 18-20 weeks period of gestation and giving consent for study were subjected to cervical length measurement during anomaly scan. These patients then had repeat serial TVS cervical length measurement between 28-30 weeks and at 34 week as a part of growth scan. They were divided into two groups A (< 2.5 cm) and B (≥ 2.5cm) cervical length. These patients meeting the inclusion and exclusion criteria were then followed for spontaneous preterm birth. **Result:** A total of 200 antenatal primigravida patients with singleton pregnancy were initially enrolled at the time of first scan during 18-20 weeks out of which five patients (2.5%) females were found to have a short cervical length .At 28-30weeks of gestation 17 patients(9.3%) with short cervix were found to be at risk for preterm delivery of which 16 (8.8%) patients delivered preterm. In group B 6 patients 3.6% had preterm delivery without any risk factor. In this study at 34 weeks 11 patients (7.5%) patient had short cervix <2.5cm and 9 (81.81%) delivered preterm. Only 6.9% patients with no cervical shortening and no other risk factor had preterm delivery. **Conclusion:** Serial sonographic evaluation of cervical length is a reliable non-invasive method and a good predictor of assessing increased risk of preterm delivery without adding additional cost.

KEYWORDS : Preterm , Cervical length , Short cervix**INTRODUCTION**

Preterm is defined as babies born alive before 37 weeks of pregnancy are completed. WHO defines preterm labour as Initiation of regular, painful uterine contractions associated with progressive cervical changes of effacement and dilatation before 37 weeks of period of gestation. On the basis of gestational age at which delivery occurs preterm birth can be subdivided into:

- extremely preterm (less than 28 weeks)
- very preterm (28 to less than 32 weeks)
- moderate to late preterm (32 to 37 weeks).

The overall global incidence of preterm birth in 2020 estimated to be approximately 13.4 million births which means more than 1 in 10 babies are born pre term¹ They account for 70% of neonatal morbidity, mortality thereby unnecessary hospital stay resulting in increased health care cost for neonates.² Preterm birth complications are also the leading cause of death among children under 5 years of age, responsible for approximately 900 000 deaths in 2019.³

So , for the past few decades there has been focus to reduce preterm labor and timely intervene with effective management strategies to prevent early neonatal complications .

In the last two decades, the detection of fetal fibronectin from cervicovaginal secretions and cervical changes diagnosed by transvaginal sonography have emerged as a major predictor of preterm birth. ⁴ There is ample of data which supports the availability of high resolution, noninvasive obstetric sonography to detect alteration of cervical anatomy for prediction of preterm birth. The importance of TVS is it's objectivity, safety and replicability when compared to examination of cervical length.⁵

Thus the present study was done with the aim to study the role of serial cervical length measurement as a predictor of preterm labour .

Aims and Objectives

To study the role of serial cervical length measurement as a predictor of preterm labour in primigravida patients along with maternal and fetal outcome.

MATERIALS AND METHODS**Study Design :** A Prospective Observational study**Study Duration:** From January 2022 to December 2022**Study Setting :** Obstetric OPD, Department of Obstetrics and Gynaecology, School Of Medical Sciences & Research, Greater Noida, UP**Inclusion Criteria**

All primigra patients with singleton pregnancies attending obstetric OPD at 18 – 20 weeks POG and giving consent for study,

Exclusion Criterion

1. Muligravida
2. Patients not willing to participate.
3. Patients with anomalous pregnancies.
4. Patients lost to follow-up.
5. Spontaneous preterm birth resulting due to obstetric causes like hypertensive disorder of pregnancy, Twins, Polyhydramnios, PPRM

Methodology

After obtaining written informed consent from primigravida patients attending antenatal OPD were subjected to TVS scan to measure cervical length. Next the Sonographic evaluation

of the cervix was done with a real time equipment (WIPRO-GRT 2000) using a 5-7.5 MHz transducer for transvaginal sonography. Three measurements were taken of which the smallest TVS length was taken as final cervical length.

First cervical length measurement was taken between 18 to 20 weeks as a part of anomaly scan. The patients were then followed as per the normal scheduled antenatal visits. Repeat TVS scan for cervical length were done between 28 to 30 and then at 34 weeks as part of growth scan.

The study population was divided into two groups depending upon cervical length
 Group A < 2.5 cm
 Group B ≥ 2.5cm

Both Group A & Group B were followed till spontaneous preterm birth or till term whichever earlier to observe maternal & neonatal outcome.

RESULT

A total of 200 primigravida patients, meeting the inclusion criteria were enrolled for the study at their visit between 18-20 weeks.

At initial visit at 18-20 weeks of gestation 5 patients (2.5%) had cervical length <2.5cm and were classified in group A whereas , 195 patients (97.5%) had cervical length ≥ 2.5cm and classified as group B . Table 1

Table 1: Distribution Of Cases As Per Cervical Length Measurement At 18-20 Weeks

	GROUP A (<2.5cm)	GROUP B (≥ 2.5cm)
Number of cases	5	195
Percentage (%)	2.5	97.5

Three out of five patients in Group A at 18 to 20 weeks with short cervical length were offered cervical cerclage. Remaining two patients took progesterone as a part of management of short cervix.

At 28 – 30 weeks of gestation, 19 patients were lost to follow up. Thus 181 patients underwent Transvaginal sonography at 28-30 weeks of gestation cervical length was noted and patients were reclassified into Group A and B depending upon their cervical length as shown in table 2.

Table 2 : Distribution Of Cases As Per Cervical Length Measurement At 28-30 Weeks

	GROUP A (<2.5cm)	GROUP B (≥ 2.5cm)
Number of cases	17 (12+5) *	164
Percentage (%)	9.3	90.60

*Group A constituting a total of 17 patients of which 12 patients were found to have short cervical length at 28-30 weeks and 5 patients with short cervical length diagnosed at 18-20 weeks .

At 34 weeks of gestation 145 patients reported for repeat scan.

Table 3 : Distribution Of Cases As Per Cervical Length Measurement At 34 Weeks

	GROUP A (<2.5cm)	GROUP B (≥ 2.5cm)
Number of cases	11	134
Percentage (%)	7.5	92.4

Amongst the group A , 9 patients(81.8%) patients landed up having pre term labour of which 1 patient was offered cerclage as mentioned previously. 2 patients with cerclage delivered till term.

In group B 4 patients out of 134 (2.9%) had preterm delivery due to various obstetric causes (1had severe pre eclampsia

and 3 had PROM) and were excluded from the study . Nine patients amongst 130 (6.9%) remaining patients with no associated risk factor had preterm delivery in group B.

All the newborns born to mother due to preterm delivery associated with maternal short cervical length required NICU.

200 antenatal patients enrolled at 18 to 20 weeks	
Group A – 5 patients	
Group B – 195 patients	
181 antenatal patients reported at 28-30 weeks (19 lost to follow up)	
Group A (17)	Group B (164)
11 patients delivered before 34 weeks	17 patients lost to follow up
1 patient lost to follow up	1 developed severe pre eclampsia
	6 had preterm delivery
145 reported for TVS at 34 weeks	
Group A (11)	Group B (134)
9 patients delivered preterm	4 patients delivered preterm due to obstetric causes
	9 patient of the remaining 130 delivered preterm without any risk factor

DISCUSSION

Pre term labour is the major cause of perinatal morbidity and mortality is preterm birth in developing nations. Predicting spontaneous preterm birth will help in early intervention and improvement in outcome mother and baby.^{6,7} This study was conducted which included all primigravida patients with singleton pregnancy.

At first visit during 18-20 weeks 2.5% ladies were found to have a short cervical length <2.5cm and had preterm delivery similar finding was supported by Boties et al who reported that a short cervix at ultrasonography was an independent predictor of preterm delivery.⁸

At 28-30weeks of gestation 9.3% were found to be at risk for preterm delivery of which 8.8% patients delivered preterm in group A. In group B 3.6% had preterm delivery without any risk factor. Gamze et al., had evaluated 120 pregnant women between 20-24 weeks. Their study showed that the TVS measurement of cervical length in second trimester is an optimal method for cervical assessment for spontaneous preterm delivery with significant statistical difference between term and preterm delivery.⁹ Begum J, Behera AK in their study concluded that shortening of cervical length had the maximum predictive value. Cervical changes in earlier weeks of pregnancy were more indicative of cases at risk of developing preterm labour.¹⁰

Several studies have demonstrated an inverse relationship between the length of cervix as measured by ultrasonography during pregnancy and spontaneous preterm delivery. The shorter the cervix, the greater the likelihood of preterm delivery Anderson et al. (1990), Iams et al. (1996) observed that in patients with cervical length of more than 3cm at 20-24 weeks 93.4% delivered at term and with a cervical length of less than 3 cm, 100% delivered preterm.^{11,12} In this study at 34 weeks 7.5% patient had short cervix <2.5cm and 9(81.81%) delivered preterm. Only 6.9% patients with no cervical shortening and no other risk factor had preterm delivery. Thus, showing that cervical length measure has a good predictive value for preterm birth.

The novelty of our study was that since India is a developing nation where antenatal patients manage even 4 ANC visits with great difficulty clubbing it with routine USG scans caused no monitory loss, no additional visit and more effective management as primigravida patients were studied exclusively.

CONCLUSION

We conclude that serial sonographic evaluation of cervical length is a reliable non-invasive method and a good predictor of preterm birth. The major advantage of this serial sonographic evaluation is that it can be combined with routine growth scans performed at 28-30 weeks and at 34 weeks period of gestation for all primigravida patients with singleton pregnancy. This therefore will not add any extra financial burden to the patients and family- an important consideration for any developing country.

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