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STUDY OF CERVICAL LENGTH MEASUREMENT BY TRANSVAGINAL SONOGRAPHY IN PREDICTION OF SPONTANEOUS ONSET OF LABOUR AT TERM

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ABSTRACT

AIMS & OBJECTIVES: To evaluate the predictive accuracy of transvaginal ultrasound cervical length measurement for spontaneous onset of labour in singleton pregnancy enrolled at term.

Methodology: 140 singleton low risk primigravida with term gestation cephalic presentation were enrolled in the study.TVU CL at 37 weeks was measured .Women who went into spontaneous onset of labour were followed up till delivery.women who did not go into spontaneous labour till 40 +6weeks were induced with prostaglandins and progress of labour monitored. The primary outcome measured was delivery after spontaneous onset of labour before 41 weeks

Result: This study demonstrated that the probability of going into spontaneous labour followed by vaginal delivery was significantly higher($p<0.05$)in patients with TVUCL at or below optimum cut off cervical length (3cm)compared to those with TVU CL more than 3 cm. Vaginal deliveries were more compared to LSCS (97.84%v/s2.16%)when cervical length is at or below 3 cm.p value was significant which was <0.05

KEYWORDS

INTRODUCTION

The ultimate goal of safe motherhood is accomplished in true sense when a healthy mother gives birth to a healthy baby at optimum time along with complete maternal and fetal well being during pregnancy, labour and postnatal period.

USG has been utilised in the antenatal armamentarium at different phases of gestation and is an integral part of antenatal care for accurate pregnancy dating and screening for fetal abnormalities, placenta previa and multiple pregnancy.

Over the past few years, cervical assessment has moved from digital examination to ultrasound evaluation and ultrasound of the cervix has been the focus of much research.Transvaginal ultrasonographic cervical measurement is quantitative, reproducible and easy to learn,Transvaginal ultrasound allows visualization of the cervix beyond a closed external os and measures the cervical length accurately, without much inter-observers' variation, especially in cases of non-palpable cervix on digital examination It may accurately reflect the cervical anatomy and it is considered a well tolerated examination than painful pelvic examination

METHODOLOGY:

A longitudinal descriptive type of observational study was conducted at the department of obstetrics & gynecology . 140 singleton low risk primigravida with term gestation cephalic presentation were enrolled in the study.TVU CL at 37 weeks was measured . Performed in the dorsal lithotomy position with empty bladder. The ultrasound probe was placed in the vagina proximal to the cervix (to avoid any cervical distortion) of its position or shape and a sagittal view of the cervix, with the echogenic endocervical mucosa along the length of the canal, was obtained.Calipers were used to measure the distance between the internal and external os.

Measurement in the absence of uterine contractions was recorded.Three consecutive cervical images were obtained and three separate readings of cervical length was taken and then the shortest cervical length was considered. Women who went into spontaneous onset of labour were followed up till delivery.women who did not go into spontaneous labour till 40 $^{+6}$weeks were induced with prostaglandins and progress of labour monitored. Statistical analysis was done.Continuous variables were summarised as mean and Standard deviation while minimal / categorical variables as proportions. Unpaired t-test and other parameters were used for continuous variables where chi square and other non parametric tests were used for nominal / categorical variables.

The primary outcome measured was delivery after spontaneous onset of labour before 41 weeks.

Observations and results : Mean age of cases was 24 ± 3.5 yrs. Most of the cases (81.43%) were Hindu and 17.86% were Muslim. Other (0.71%) being of other religion, which reflects the demographic profile of patients attending antenatal clinic. Majority of the women (71.43%) were from urban area and 28.57% were from rural area .Most of the cases (85%) belonged to middle socio-economic status, 15% were from lower and none belonged to upper socio-economic status. Majority of the cases (90%) were booked and 10% were unbooked.10% cases were illiterate and rest were literate.The median cervical length in our study was 2.76 ± .58 cm whereas optimum cut off cervical length was 3 cm. Maximum number of cases (52.14%) were with CL 2-3 cm, 33.57% had CL more than 3 cm and 14.29% had CL in the range of 1-2 cm.

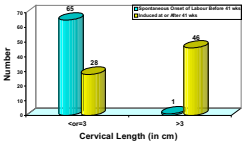
None had CL less than 1 cm. In our study 47.14% of total cases enrolled went into spontaneous labour before 41 wks and rest i.e. 52.86% were induced with prostaglandins at or after 41 weeks' period of gestation. The incidence of vaginal delivery was 100%. Among the 66 (47.14%) cases that went into spontaneous labour Among the 66 cases that went into spontaneous labour before 41 weeks' period of gestation, majority i.e. 65 had TVU CL at or below optimum cut off cervical length i.e. 3 cm and only 1 had TVU CL above 3 cm at 37 wks. Whereas among 74 cases which required induction at or after 41 weeks, majority (46) had TVU CL above 3 cm and only 28 had TVU CL at or below 3 cm at 37 wks. Thus a significant association ($p < 0.05$) was established between TVU cervical length and spontaneous onset of labour at 37 wks.

Table – 1

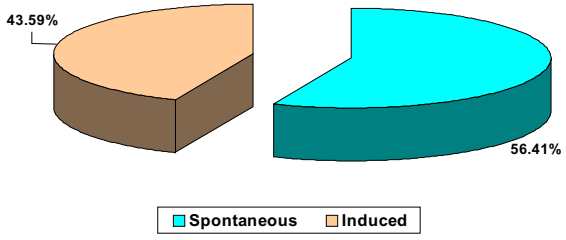
Relationship Between Cervical Length and Onset of Labour

Cervical Length (in cm)	Spontaneous Onset of Labour Before 41 wks	Induced at or After 41 wks
≤ 3	65	28
>3	1	46
Total	66	74

$\chi^2 = 57.56$ d.f. = 1 $p < 0.05$ Sig



Among the patients who were inducted at or after 41 weeks' period of gestation, maximum (68.92%) delivered successfully within 24 hrs, whereas 22.94% had caesarean section for failed induction and 8.11% were taken up for emergency caesarean for fetal distress.Among all the cases that delivered vaginally 56.41% delivered after spontaneous onset of labour before 41 weeks whereas 43.59% were induced with prostaglandins at or after 41 weeks' period of gestation.Among all the 66 cases that delivered vaginally after spontaneous onset olabour before 41 weeks' period of gestation, majority, i.e. 65 had TVU CL at or below 3 cm at 37 wks whereas only 1 had TVU CL above 3 cm at 37 wks. Whereas among the 51 vaginal deliveries after induction of labout at or after 41 weeks' period of gestation, 26 had TVU CL at or below 3 cm at 37 wks and 25 had TVU CL above 3 cm at 37 wks. Thus a significant association ($p < 0.001$) was established between TVU CL and spontaneous vaginal delivery at 37 wks.



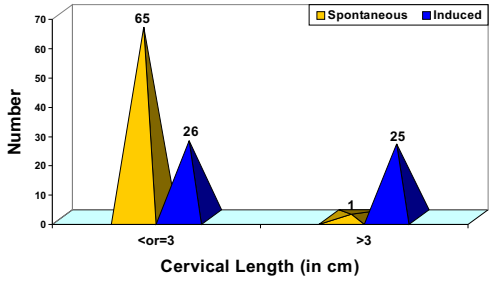


Table – 2
Relationship of Cervical Length with Type of Vaginal Delivery (n = 117)

Cervical Length (in cm)	Spontaneous	Induced
≤3	65	26
>3	1	25
Total	66	51

$\chi^2 = 34.86$ $p < 0.001$ d.f. = 1 Sig

Discussion :
Findings from present study demonstrate that measurement of cervical length at 37 wks can predict chances of spontaneous labour and thereby help counselling women on need for obstetric intervention.. In the study conducted by Meijer-Hoogeveen M et al (2008), they concluded that between 37 & 38 wks gestation, spontaneous onset of labour before 41 wks can be predicted by a CL measurement, but with a low sensitivity and NPV.

A single CL measurement below 30 mm between 37 and 38 wks of gestation predicted spontaneous onset of labour before 41 weeks' gestation with a sensitivity of 46%, specificity of 78%, positive predictive value (PPV) of 82%, negative predictive value (NPV) of 40% in the supine position; and sensitivity of 53%, specificity of 72%, PPV of 81%, NPV of 40% in the upright position. Similarly in the study conducted by Bayramoglu O et al (2005) in their study they found a significant association between cervical length measurement by TVS in the prediction of spontaneous labour within a 7 day period at term.

Similarly Ramanathan G et al (2003)in their study concluded that measurement of cervical length at 37 wks can define the likelihood of spontaneous onset of labour before 40 wks and 10 days. In their study they successfully measured cervical length in all cases and the median value was 30 mm.

There was a significant association between cervical length and spontaneous onset of labour and delivery before 40 wks and 10 days. Hence, our study suggests, that an obstetric scan should include cervical length assessment because measurement of cervical length provides useful information to the Obstetrician and her patients in deciding on the appropriate mode of delivery.