

Introduction

Myometrial thickness has undergone sonographic evaluation during normal pregnancy, labor and postpartum and in certain situations such as twin pregnancy, polyhydramnios and preterm premature rupture of membranes. Some studies showed decrease in the myometrial thickness in the 2nd and 3rd trimesters compared with the 1st trimester and also in specific pregnancies which are associated with preterm labor such as twin pregnancy and polyhydramnios. Lower uterine wall lies close to the cervix and it is hypothesized that the changes that occurred in the cervix could possibly involve the adjacent lower uterine wall as well. The lower uterine wall can be measured precisely using transabdominal ultrasound which is readily available in almost all clinical settings. The normal value of lower uterine wall thickness and the correlation between the lower uterine wall thickness and cervical length is of great importance to find a surrogate marker of a short CL in order to overcome the obstacle mentioned above.

Aim of the Work

Detection of the sensitivity and specificity of myometrial thickness/cervical length ratio by ultrasonography between 20-24 weeks of gestation in prediction of preterm labor.

Patients and Methods

During this study, 60 pregnant women with gestational age from 20 to 24 weeks with one or more risk factors of preterm labor were enrolled, after consenting each of them.

Antenatal ultrasound examination was done, which included ultrasound measurements of cervical length and myometrial thickness at 3 levels; fundus, mid and low anterior. The correlation between myometrial thickness and cervical length in cases with and without preterm birth was evaluated. The participants in the study were followed up till delivery, gestational age and mode of delivery was recorded by contact with the patient or from hospital records.

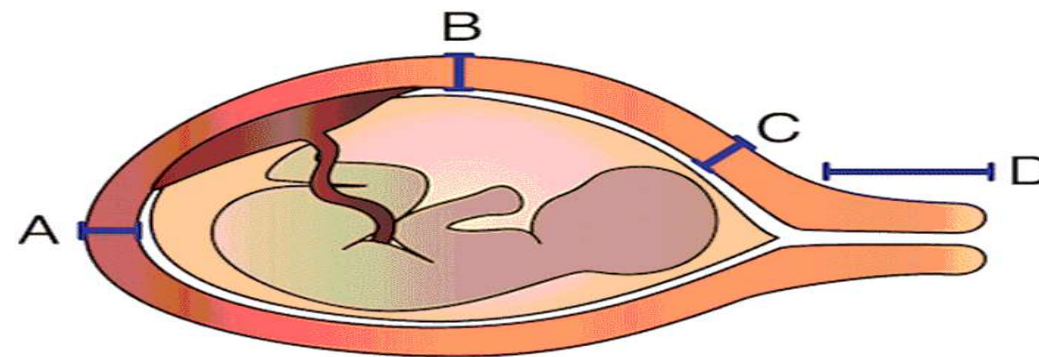


Figure: Illustration of different points of uterus from where measurements were obtained. A fundal myometrial thickness, B mid-anterior myometrial thickness, C lower uterine segment myometrial thickness, D cervical length.

Results

Sonographic measurements of our study, thicker fundal, mid / low anterior and mean myometrium thickness, shorter cervical length and higher fundus /cervical length, mid anterior/cervical length, low anterior / cervical length and mean myometrial thickness/cervical length ratios were positively correlated with higher percentage of preterm labor. Cervical length at a cut off value 25.0 mm and myometrial thickness/cervical length ratio 0.23 had sensitivity, specificity and accuracy 93.0, 90.0, 91.0 and 91.0, 93.0, 92.0 % respectively compared with fundal, mid anterior and low anterior myometrial thickness at cut off values 5.6, 5.53 and 5.11 mm with accuracy 82.0, 81.0 and 85.0% respectively.

Table 1: Relation between delivery time and different risk factors

	Delivery time				X ²	P value
	Term “n=39”		Preterm “n=21”			
	No.	%	No.	%		
Pregnancy induced hypertension	11	28.21	10	47.6	3.02	0.028*
Low socioeconomic status	5	12.82	9	42.9	7.22	0.001*
Previous spontaneous preterm birth	5	12.82	10	47.6	8.102	0.001*
Pregnant using of assisted reproductive technology	5	12.82	9	42.9	7.22	0.001*
Antepartum hemorrhage	7	17.95	15	71.4	12.1	0.001*

X² = chi square test

* = significant difference at 0.05

p was significant if ≤ 0.05

N.S. = Not significant

Table 2: Diagnostic value of myometrial thickness / cervical length ratio

Test Result Variable	Area	Cut off value	P value	Sensitivity	Specificity	Accuracy	PPV	NPV	Asymptotic 95% C.I.	
									Lower Bound	Upper Bound
myometrial thickness / cervical length ratio	0.752	0.23	0.001*	91.0	93.0	92.0	90.0	92.0	0.631	0.877

Conclusion

Myometrial thickness / cervical length ratio and cervical length at cut off values 0.23 and 25.0 mm by ultrasonography between 20-24 weeks of gestation have high predictive values and very accurate in prediction of preterm labor.