SONOGRAPHIC MYOMETRIAL THICKNESS MEASUREMENT FOR THE PREDICTION OF A SUCCESSFUL INDUCTION OF LABOUR

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Introduction

Induction of labor (IOL) refers to the artificial initiation of uterine contractions before their spontaneous onset at or beyond the age of viability with the sole aim of delivery of the feto-placental unit where the benefit of pregnancy termination exceeds its prolongation. Certain maternal, fetal characteristics and ultrasound parameters have been associated with higher odds of IOL success.

Aim of the Work

The aim of this study was to assess the value of myometrial thickness measurement using trans-abdominal ultrasound in predicting labour induction success.

Patients and Methods

Our study recruited 60 pregnant women indicated for IOL at term. Background characteristics were collected, the Bishop score of each case was calculated, sonographic myometrial thickness was assessed using an abdominal probe, and labor was induced using either dinoprostone and oxytocin.

Results

Using a cut-off value of 4 mm thickness, lower-segment thickness can predict the success of normal cases with 62% sensitivity and 66% specificity. A high positive predictive value of 84.8%

Table 1: Comparison between the two studied groups according to fundal myometrial thickness and lower segment myometrial thickness (in millimeter)

	Success (n = 45)	Failure (n = 15)	P
Fundal myometrial thickness	8.11 ± 0.98	8.43 ± 1.16	0.218
Lower segment myometrial thickness	4.05 ± 0.46	4.43 ± 0.52	0.018*
Ratio (Fundal/ Lower)	2.02 ± 0.32	1.92 ± 0.28	0.310

Table 1 shows that, for fundal myometrial thickness, there were no significant differences between the success and failure groups. The mean fundal thickness was 8.11 mm for the success group and 8.43 mm for the failure group. There was no significant difference. For lower segment myometrial thickness, the failure group had significantly greater thickness. The mean lower segment thickness was 4.43 mm for the failure group and 4.05 mm for the success group. There was a significant difference between the groups. For the fundal to lower segment ratio, there were no significant differences between the groups. The mean ratio was 2.02 for the success group and 1.92 for the failure group. There was no significant difference.

Table 2: Agreement (sensitivity, specificity) for different parameters to predict success normal cases (from CS)

Myometrial thickness	AUC	P	95% C.I	Cut off	Sensitivity	Specificity	PPV	NPV
Fundal	0.607	0.219	0.436 – 0.777					
Lower segment	0.693*	0.026*	0.533 – 0.852	≤4	62.22	66.67	84.8	37.0

AUC: Area Under a Curve   CI: Confidence Intervals
NPV: Negative predictive value   PPV: Positive predictive value

Table 2 shows that the superiority of lower segment myometrial thickness over fundal myometrial thickness isn't statistically significant and may be due to random chance. This is indicated by the overlapping of their two confidence intervals. The area under the curve (AUC) is indeed comparable between the two measurements (0.607 for the fundal myometrial thickness VS 0.693 for lower-segment myometrial thickness). Using a cut-off value of 4 mm thickness, lower-segment thickness can predict the success of normal cases with 62% sensitivity and 66% specificity. A high positive predictive value of 84.8% can be achieved using this method.
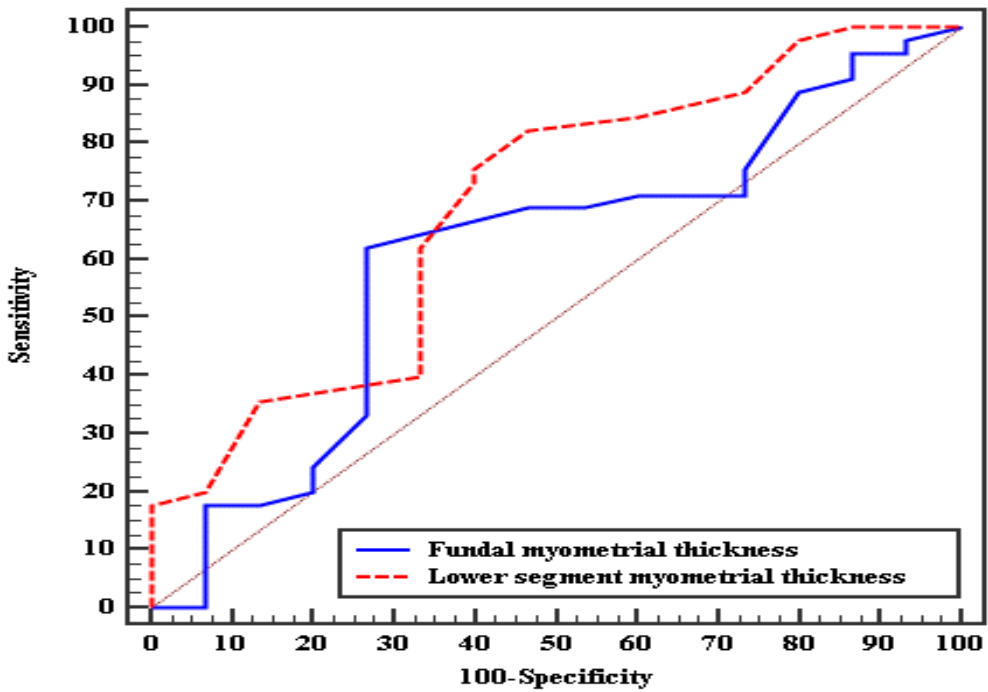
Figure: ROC curve for different parameters to predict success normal

Conclusion

Lower-segment uterine thickness was found to be a valuable predictor of IOL outcomes (p-value: 0.026). Using a cut-off value of 4mm, lower-segment uterine thickness provides 62% sensitivity, 66% specificity, and more importantly, a PPV of 84.8%.