INTRAPARTUM SONOGRAPHIC FETAL OCCIPUT-SPINE ANGLE PREDICTION FOR PROGRESSION OF FIRST STAGE OF LABOUR

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Introduction

The occiput-spine angle (OSA) is the angle formed by the junction of two lines, one tangential to the fetal cervical spine and the other to the occiput of the fetus, measured using intrapartum transabdominal ultrasound (TAUS) during the active phase of the first stage of labour. The OSA measures the extent of fetal head flexion quantitatively in occiput transverse or occiput anterior fetal position. A narrow OSA is supposed to be a sign of fetal head deflexion and hence prolonged labour. A narrow chin to chest angle and a wide OSA are observed in the incidence of vaginal deliveries. Therefore, the benefit of this examination is to help obstetricians make objective and better decisions to predict labour dystocia and manage it properly. In our study, we aimed to objectively correlate the OSA and the labour progression.

Aim of the work

The aim of this study is to assess the predictivity of the fetal occiput-spine angle using intrapartum sonography for the first stage of labour progression, with the ultimate goal to confirm the abnormal labour progression.

Patients and Methods

A prospective cohort study was conducted at the labour ward of El-Shatby Maternity University Hospital, involving 70 women aged between 18-35 years with single, viable, full-term, cephalic vertex occipito-anterior position of the fetus and admitted in the active phase of labour. Using intrapartum TAUS, the OSA was assessed on admission (OSA1) and again after 2 hours (OSA2) between uterine contractions. All cases were followed to determine labour progression and the mode of delivery

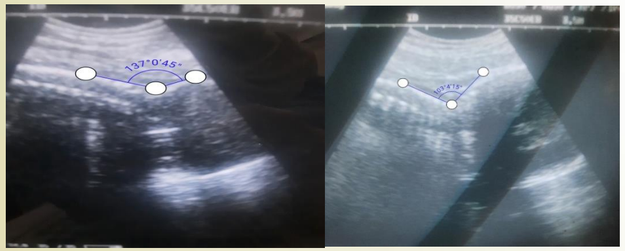

Fig (1) :TAUS showing assessment of the OSA in flexed and deflexed fetal heads.

Results

Table (1): Comparison between normal and abnormal labour progression and 1st and 2nd OSA.

	Normal labour progression	Abnormal labour progression	T Test P value
OSA 1			
Range	100°-123°	84°-110°	
Mean	112.48°	102.00°	5.508
SD	6.56°	8.01°	0.012*
OSA 2			
Range	112°-138°	106°-127°	6.550
Mean	127.72°	117.83°	0.011*
SD	6.00°	6.34°	

Table (2): Comparison between normal and abnormal labour progression groups and mode of delivery.

Mode of delivery	Normal labour progression "N=58"		Abnormal labour progression "N=12"		X2 P value
	No	%	No	%	
NVD	58	100.0	6	50.0	31.719
CS	0	0.0	6	50.0	0.001*

Table (3): OSA sensitivity, specificity, and accuracy in predicting the abnormal labour progression.

Test Result Variable(s)	Area	Cut off value	P value	Sensitivity	Specificity	Accuracy	Asymptotic 95% Confidence Interval	
							Lower Bound	Upper Bound
OSA 1	0.831	102.0°	0.0001*	82.0	79.0	80.0	0.714	0.943
OSA 2	0.880	124.0°	0.0001*	89.0	83.0	84.0	0.787	0.972

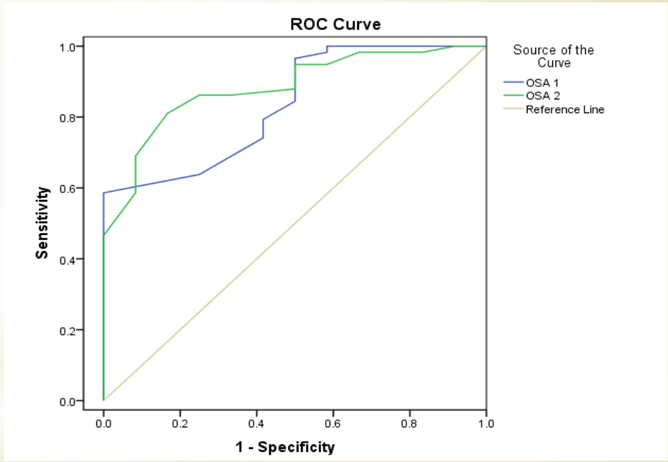

Figure (1): OSA sensitivity, specificity, and accuracy in predicting the abnormal labour progression.

Conclusion

Intrapartum ultrasound helps obstetricians in the quantitative assessment of labour, which enables them to evaluate labour progression and take their decisions on an objective basis. This study found that OSA, as one of the intrapartum ultrasound parameters, is an indicator of fetal head flexion, and its measurement of less than 125° is associated with abnormal labour progression and a higher chance of obstetric intervention and caesarean section delivery.