A comparison of amniotic fluid index versus deepest vertical pocket measurement at term as a predictor of adverse perinatal outcome.

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INTRODUCTION

▪ Fetal surveillance with prompt and timely interventions is crucial in averting adverse pregnancy outcomes. Amniotic fluid volume (AFV) is a useful tool in that regard which is assessed most commonly by either Amniotic Fluid Index (AFI) method or Single Deepest Vertical Pocket (SDVP) method.

▪ The need of data on the best technique to evaluate AFV pertaining to fetal well-being is conspicuous in both local and global context complicated by dissonance among individual practices, preferences, available data and recommendations.

OBJECTIVES

▪ The purpose of this study was to compare the value of AFI measurement at term with that of SDVP measurement as a predictor of adverse perinatal outcome.

METHODS

▪ A prospective observational study was conducted in the obstetrics unit of Teaching Hospital Kandy, Sri Lanka for one year duration from May 2017.

▪ Singleton pregnancies admitted for delivery at gestational age between 37+0 and 40+0 weeks were recruited. Pregnancies complicated with medical disorders or fetal abnormalities were excluded. Sample size was 448.

▪ AFI ≤5cm and SDVP <2cm were the exposure variables. Several perinatal events were the outcome variables. Calculated likelihood ratios were used to compare the two methods.

RESULTS

▪ Mean AFI and SDVP values were 11.35cm (SD=5.15) and 4.07cm (SD=1.88) respectively while exhibiting a significant positive correlation with each other ($r=0.954$: $p<0.001$).

▪ A significant percentage of participants with low AFI needed labour induction (RR=2.14:95%CI=1.85-2.49). Low AFI was also a risk factor for not having an uneventful labour outcome (RR=2.682:95%CI=1.082-6.642).

▪ Low SDVP was a significant risk factor for induction of labour (RR=1.83:95%CI=1.434-2.334), deviation from normal vaginal delivery (RR=1.714:95%CI=1.292-2.280), meconium stained liquor (RR=2.67:95%CI=1.342-5.308) and 5-minute APGAR score <7 (RR=17.74: 95% CI=7.96- 40.924).

Parameter		AFI category		RR	95% CI
		≤5 cm	>5 cm		
Cardiotocography	Abnormal	12	120	1.18	0.728-1.912
	Normal	23	293		
Labour onset	Induction	32	176	2.14	1.85-2.49
	Spontaneous	3	237		
Mode of delivery	LSCS/OVD	19	186	1.205	0.873-1.664
	NVD	16	227		
Meconium liquor	Yes	5	58	1.017	0.437-2.370
	No	30	355		
APGAR score	<7	2	15	1.573	0.375-6.604
	≥7	33	398		
Birth outcome	SCBU/Death*	5	22	2.682	1.082-6.647
	Uneventful	30	391		

*all perinatal deaths (still births and early neonatal deaths), RR=relative risk, CI=confidence interval

Table 1: Association between perinatal outcomes and the AFI value

Parameter		SDVP category		RR	95% CI
		<2 cm	≥2 cm		
Cardiotocography	Abnormal	8	124	1.636	0.967-2.767
	Normal	9	307		
Labour onset	Induction	14	194	1.83	1.434-2.334
	Spontaneous	3	237		
Mode of delivery	LSCS/OVD	13	192	1.717	1.292-2.280
	NVD	4	239		
Meconium liquor	Yes	6	57	2.67	1.342-5.308
	No	11	374		
APGAR score	<7	7	10	17.74	7.96-40.924
	≥7	10	421		
Birth outcome	SCBU/Death*	5	22	5.76	2.484-3.366
	Uneventful	12	409		

*all perinatal deaths (still births and early neonatal deaths), RR=relative risk, CI=confidence interval

Table 2: Association between perinatal outcome and the SDVP value

Perinatal outcome	Low AFI		Low SDVP	
	LR	P value	LR	P value
CTG abnormality	0.414	0.52	2.47	0.119
Induction of labour	34.8	<0.05	9.73	0.002
Meconium stained liquor	0.002	0.968	5.05	0.025
Operative delivery*	1.107	0.293	6.92	0.008
Apgar score <7	0.338	0.561	26.51	<0.01
SCBU / Perinatal death	3.428	0.293	9.66	0.002

*Delivery by an operative vaginal delivery or caesarean section, LR=likelihood ratio

Table 3: Comparison of likelihood ratios of AFI & SDVP

CONCLUSION

▪ A higher potential is noted in low SDVP than low AFI in predicting adverse perinatal outcome.

▪ A more experimental focus may determine the most predictive cut-off values of SDVP and AFI for each perinatal outcome.

▪ Feasibility of incorporating prediction of adverse perinatal events using AFI and SDVP values to obstetric management guidelines should be contemplated.

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