

A comparison of sonographic fetal parameters in assessment of fetal gestational age in the first trimester

Hong Soo WONG¹

¹ Australian Women's Ultrasound Centre, Hong Kong

Introduction:

Crown-rump length (CRL) has been used as the gold standard for sonographic assessment of fetal gestational age in the first trimester. However the accuracy of CRL measurement is affected by fetal posture. Hence, reliable sonographic parameters that could be measured in the first trimester and yet not dependent on the fetal posture is desirable.

Objectives:

To compare the correlation of sonographic parameters with gestational age at 10-14 weeks gestation.

Methods:

From 3/2014 to 9/2016, fetal parameters including biparietal parameter (BPD), head circumference (HC), abdominal circumference (AC), femur length (FL), foot length (FT) and CRL were obtained from 35 routine Obstetric scans. FT is measured from the most posterior point of the fetal foot to the tip of the first toe or second toe, whichever is longer.

The correlation between BPD, HC, AC and FL to gestational age by date (GA), CRL and FT were compared and analyzed (SPSS Inc., Chicago, IL, USA).

Results:

BPD, HC, AC and FL correlated to GA, CRL and FT in a linear fashion as shown in Table 1 ($p < 0.001$, Anova).

The coefficient of determination of regression (R^2) between BPD, HC, AC and FL to FT was higher than when compared to CRL and GA.

Discussion and conclusion:

BPD, HC, AC and FL showed a high correlation to fetal gestational age assessed by date, CRL or FT at 10-14 weeks gestation. They could be used reliably in assessment of fetal gestational age.

Table 1: The correlation of fetal biparietal diameter, head circumference, abdominal circumference and femur length to foot length, crown rump length and gestational age assessed by date

	FT		CRL		GA	
	R ²	p	R ²	p	R ²	p
BPD	0.884	< 0.001	0.793	< 0.001	0.693	< 0.001
HC	0.897	< 0.001	0.834	< 0.001	0.706	< 0.001
AC	0.903	< 0.001	0.811	< 0.001	0.772	< 0.001
FL	0.878	< 0.001	0.843	< 0.001	0.698	< 0.001
FT	-	-	0.804	< 0.001	0.675	< 0.001
CRL	0.804	< 0.001	-	-	0.608	< 0.001

Abbreviations:

FT, foot length (mm); CRL, crown rump length (mm); GA, gestational age assessed by date (weeks); BPD, biparietal diameter (mm), HC, head circumference (mm); AC, abdominal circumference; FL, femur length (mm); R², coefficient of determination of regression; p, probability

