

(EP08.94)Standardized fetal cardiac biometry using HeartAssist™: multicenter prospective reference ranges inthe Korean population

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Objectives To establish comprehensive fetal cardiac reference ranges using an automated measurementsystem, across 12 major referral centers in South Korea.

Methods A prospective multicenter study was conducted to establish normative data for fetal cardiacbiometry. Normal singleton pregnancies between 16.0 and 36.6 weeks of gestation were recruited from October 2022 to December 2025. Standardized video clips of fetal hearts were obtained from study centers,and a total of 34 cardiac parameters were measured using six standard views. All measurements were performed using HeartAssist™(Samsung Medison Co., Ltd, Seoul, Korea) and further adjusted manually by two specialists in fetalechocardiography.

Results A total of 1376 video clips were analyzed.Each parameter was measured according to preciselydefined cardiac cycles, and scatterplots were generated by fetal biometry and gestational age.The cardiac axisremained stable, averaging 36.6° throughout gestation.Other parameters showed a progressive increase withadvancing gestation.Notably, the annular diameters of the aortic and pulmonary valves tended to be larger atend–diastole than after valve opening.

View	Parameter		View	Parameter		
4CV	Cardiac axis	LV width	LVOTV	AV annulus (closed)	PA	
	Cardiac area	RV width		3VV	Ascending aorta (closed)	Aorta
	Thoracic area	LV/RV (W)			AV/aorta (closed)	SVC
	CTAR	LV length			AV annulus (open)	Thymus
	Cardiac circumference	RV length	3VTV	Ascending aorta (open)	Aortic isthmus	
	Thoracic circumference	LV/RV (L)		AV/aorta (open)	DA	
	CTCR	LV area		PV annulus (closed)	Ascending aorta	
	LA width	RV area	RVOTV	AAV	Proximal transverse aortic arch	
	RA width	LV/RV (A)			AV/PV (closed)	Distal transverse aortic arch
	LA area	TV annulus			AV/PV (open)	Aortic isthmus
	RA area	MV annulus			Descending aorta	
3VV, three-vessel view; 3VTV, three-vessel-and-trachea view; 4CV, four-chamber view; AAV, aortic arch view; AV, aortic valve; CTAR, cardiothoracic area ratio; CTCR, cardiothoracic circumference ratio; DA, ductus arteriosus; LA, left atrium; LV, left ventricle; LVOTV, left ventricular outflow tract view; MV, mitral valve; PA, pulmonary artery; PV, pulmonary valve; RA, right atrium; RV, right ventricle; RVOTV, right ventricular outflow tract view; SVC, superior vena cava; TV, tricuspid valve.						

Table1. Fetal cardiac biometric parameters categorized by echocardiographic views

Conclusions This study establishes gestational age and size–specific reference ranges for fetal cardiacparameters measured at precisely defined cardiac cycle using HeartAssist™.