

EP09.21 Feasibility of assessing fetal heart area and volume via speckle tracking echocardiography

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Objectives: This study aimed to evaluate inter- and intraobserver variability of fetal heart ventricular area and volume parameters in the second trimester using speckle tracking echocardiography (STE) with FetalHQ software.

Methods: The study included 58 patients. Two operators independently obtained 7-second cine loops of the fourchamber view during mid-trimester scans. In 20 cases, both sonographers analyzed the same clips using FetalHQ software, while in 38 cases, a single sonographer repeated the analysis after a few days. Intraclass correlation coefficients (ICC) with 95% confidence intervals (95% CI) were calculated to assess inter- and intraobserver variability. Results cover parameters reflecting the end-diastolic and end-systolic area (EDA, ESA) for the right (RV) and left ventricles (LV), along with volume measures (end-diastolic volume, EDV; end-systolic volume, ESV; and stroke volume, SV) for the LV.

Results: Reproducibility of volume-related parameters was low: EDV ICC = 0.39 (95% CI 0.07–0.71), ESV = 0.38 (95% CI 0.03–0.69), SV = 0.07 (95% CI 0.02–0.38). Slightly higher reproducibility was observed for LV area parameters: ESA = 0.46 (95% CI 0.06–0.74), EDA = 0.29 (95% CI 0.06–0.74), and RV area parameters: ESA = 0.5 (95% CI 0.06–0.8), EDA = 0.55 (95% CI 0.18–0.79). Repeatability for the same operator was excellent across all parameters, with LV: EDV ICC = 0.93 (95% CI 0.87–0.96), ESV = 0.95 (95% CI 0.9–0.97), SV = 0.64 (95% CI 0.41–0.79), LV area parameters: ESA = 0.95 (95% CI 0.9–0.97), EDA = 0.93 (95% CI 0.87–0.96), and RV area parameters: ESA = 0.95 (95% CI 0.91–0.98), EDA = 0.92 (95% CI 0.86–0.96).

Conclusions: The evaluated parameters showed low reproducibility and high repeatability, possibly due to differing cardiac cycle selections by the two operators during cine loop analysis.