Feasibility of two-dimensional whole wall motion tracking in fetal echocardiography

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Objective
Fetal cardiac function has been quantified by pulse-waved Doppler, tissue Doppler and speckle tracking. Endocardial border tracking by velocity vector imaging has already been described in the fetus. For the first time, this study aimed to show the feasibility of two-dimensional (2D) based whole wall motion tracking echocardiography in the fetus for the assessment of cardiac deformation parameters.

Methods
This is a prospective cross sectional study. We present results of fetal peak global longitudinal strain values obtained from fetal echocardiography examination performed with a Toshiba Artida system. Based on an apical or basal four-chamber view of the fetal heart, raw data volumes with a high temporal resolution were acquired and digitally stored.

Results
Twenty singleton pregnancies with normal appearance fetuses and with a fetal echocardiogram performed between 20 and 37 weeks of gestation were included. The temporal resolution was >100 frames per second (fps). Peak global longitudinal strain values for both, left and right ventricle, were assessed.

Conclusion
The assessment of fetal myocardial deformation parameters by 2D whole wall motion tracking is technically feasible.