Objective
Speckle tracking technology has been applied to assess the ventricular deformation throughout the cardiac cycle. Reproducibility is still a matter of concern. An electronic 4D probe that allows acquisition of spatio-temporal image correlation (STIC) volumes (electronic STIC; eSTIC) more rapidly was recently introduced. The aim of our study was to prove that e-STIC acquisition may improve deformation analyses reproducibility.

Methods
We recruited fetuses between 20 and 40 weeks of gestation. We obtained a two-dimensional (2D) video clip and an e-STIC volume of a four chamber view. Left ventricular global strain (LV-GS) were measured by two operators. Intraobserver reproducibility between 2D and e-STIC acquisitions for the first operator and interobserver inter-method agreement were studied by means of intraclass correlation coefficient (ICC). The systematic differences were also computed using the paired Student’s t-test.

Results
We recruited 58 women at 29.7 ± 4.4 DS gestational age. We found a good agreement for the intra-observer reproducibility between 2D analysis and STIC (ICC 0.626; 95% CI 0.368 to 0.779).

We also proved a good inter-observer agreement for the STIC evaluation (ICC 0.712; 95% CI 0.513 to 0.829). The inter-observer evaluation for the 2D analysis, showed a good inter-observer correlation (ICC 0.722; 95% CI 0.531 to 0.836), but with a systematic differences between the two operators.

Conclusion: e-STIC technology may be helpful in the global strain fetal heart evaluation, reducing the inter-observer variability. Further studies are needed to assess the advantages of this approach in the assessment of fetal heart contractility, especially in cases of congenital heart defects.