

First trimester fetal heart assessment: influence of maternal body mass index and ultrasound approach

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Objective

The visualization of the fetal heart in the first trimester allows the detection of congenital heart defects in some patients. The main limitation is the fetal heart size, and the prenatal natural history of certain evolving heart defects. Maternal factors may also limit visualization. The objective of this study is to determine to what extent the ultrasound visualization approach (transabdominal (TA), transvaginal (TV) or combined), and the presence of maternal overweight or obesity, affect the ability to visualize the 4 chambers (4C) and 3 vessels (3V) views in fetuses between 11 and 13.6 weeks of gestation.

Methods

Descriptive cross-sectional study. All the patients who attended our center for a first trimester scan, in a period of 18 months, were consecutively included. Trained obstetric sonographers with high resolution echo machines assessed the visualization of the 4 chambers and 3 vessels views, with and without color Doppler, in the TA and TV approaches in all patients.

Results

Among the 1134 patients that were included, there were 56% with obesity or overweight. In the obese and overweight group the 4C view could be assessed in 95% and the 3V view in 81%, whereas in the normal and low-weight group the visualization of the 4C view was achieved in 99% and the 3V view in 90%. The 4C view could be assessed in 68.3% of patients using a combined approach, in 18.4% with the TA, in 11.2% with the TV, and in 2.1% visualization could not be achieved. The 3 vessels view could be seen with a combined approach in 27.5%, TA in 20.3%, TV in 31%, and in 21.2% the view could not be achieved.

Conclusion

The visualization of the 4C and the 3V views at the time of the 11-13.6 week antenatal scan, by trained operators and using high resolution echo machines, is feasible. Obesity and overweight reduce visualization. The use of the combined approach, transabdominal and transvaginal, improves the ability to obtain cardiac views for a basic evaluation of the fetal heart in the first trimester.