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## Comparison of first trimester to second trimester fetal heart examination in detection of cardiac anomalies in a tertiary fetal medicine teaching unit

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**Objectives:** To study the detection rate of congenital fetal heart anomalies in first trimester scanning compared with second trimester scanning and to postnatal exam and neonatal echocardiography.

**Methods:** This is a prospective observational study performed at a tertiary Fetal Medicine Unit. Patients had a first trimester scan from 11–14 weeks which included screening for Down's syndrome by measurement of the NT thickness, detection of nasal bone, measurement of DV flow and tricuspid valve flow. Full anatomy exam was performed with special interest in the heart. Examination of the heart included; the four chamber view, intact inter-ventricular septum, correct outflow tract and the three vessel view in the mediastinum. Pulsed Doppler was done at level of tricuspid valve to exclude regurgitation. A similar examination of the heart was performed at 20–24 weeks with full anatomy survey for other congenital malformations. Comparison of the two fetal heart examinations was done compared to final neonatal examination and neonatal echocardiography when indicated.

**Results:** A total of 300 pregnant females were examined. The mean age of the patients were;  $29.9 \pm 6.3$ . Mean BMI was 32.5. The mean GA at the first trimester was  $12.9 \pm 0.9$  and the mean GA at the second trimester was  $20.4 \pm 1.4$ . A total of 11 congenital heart anomalies were confirmed postnatal (3.7%). Seven (7) were diagnosed and 4 were missed at the first trimester and one was falsely diagnosed as having an anomaly giving a detection rate of 63.6%, specificity 99.7%, PPV 87.5%, NPV 98.6% and agreement reached 98.3% (kappa 0.728). In the second trimester scan 9 cases were diagnosed, 2 cases were missed giving a detection rate of 81.8%, specificity 99%, PPV 75%, NPV 99.3% agreement 98.3% (kappa 0.774).

**Conclusions:** First trimester heart examination has a good detection rate for congenital heart anomalies and should be done as a routine during first trimester screening for Down's syndrome.

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