

Basics in Fetal Echocardiography

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- **Importance of Fetal Echocardiography?**
- Congenital Heart Disease (CHD): Most common congenital malformation: 4-13/1,000 live births
- Major CHD: 2-4/1,000 births
- 20% of still birth, 42% of infant deaths related with cardiac defects
- Prenatal detection rate vary widely
- Diagnostic rate doubled after 2 years of training.

(Lin et al. 2014)

- Contents
- Cardiac anatomy
- Guidelines for fetal heart screening
- Method for fetal cardiac evaluation
- Basic views for fetal cardiac evaluation
- Anatomy of the Fetal Heart
- **Anterior Anatomy of the Fetal Heart**
- **Posterior Anatomy of the Fetal Heart**
- Inside of the Right Atrium
- Sagittal Section of Fetus
- **Anatomy in Right Ventricle that is Visible by Fetal Ultrasound**
- **Anatomy of Left Side of the Heart**
- **Guidelines for Fetal Cardiac Screening Scan**
- Extended Integral
- Connection to appropriate ventricles
- Size & position of two great arteries
- Adequate opening
- **Sequential Segmental Approach**
- **Basic Views of Fetal Echocardiographic**
- Four chamber view
- Three vessel view
- Aortic arch view
- Ductal arch view
- LV outflow tract view

- RV outflow tract view
- Bicaval view
- **Basic Planes for Fetal Echocardiography**
- **Transverse View of Upper Abdomen**

The first step in any fetal echocardiographic examination is to establish fetal position.

To determine fetal situs, you have to check transverse plane of upper abdomen.

Check points:

- Location of the stomach,
- Location of the Aorta,
- Location of the IVC
- **Four Chamber View**

Check points

- Is heart in left chest?
- Are atria equal in size?
- Are ventricles equal in size?
- Is left atrium posterior?
- Is foramen ovale flap in LA?
- **Four Chamber View**

Check points

- Is there apical offset of TV?
- Is interventricular septum intact?
- Is moderator band in RV?
- Is cardiac axis 30-60°(mean 45°)?
- Is there any pericardial effusion?
- Is there ventricle septal defect (ASD, VSD, AVSD) ?
- **Three Vessel View**

Check points

- Vessel number, alignment and size
- Position and size of aortic and ductal arches.
- Trachea and bronchi.
- **Three Vessel View**

Check points

- Branched pulmonary arteries

- The size of 3 vessels and order is pulmonary artery > aorta > SVC from left to right side.
- **LV Outflow Tract (LVOT) View**

Check points

- Crossing nature of outflow tracts to arterial trunks
- Patency of outflow tracts and semilunar valves
- **LV Outflow Tract (LVOT) View**

Septal integrity

- -> Is an aorta flow out from the Left ventricle?
- -> Does it cross over the pulmonary artery and aorta?
- -> An aorta seems to be connected with the ventricular septum?
- **RV Outflow Tract (RVOT) View**
- **RV Outflow Tract (RVOT) View**
- **Aortic Arch View**
- **Ductal Arch Long Axis View**
- **Ductal and Aortic Arch View**
- **Bicaval View**
- **Conclusions**
- Prenatal detection of CHD may improve outcomes with specific lesions.
- Systematic examination of fetal heart can help identifying fetuses at risk for genetic syndromes, as well as to provide multidisciplinary care.