Normal Cardiac Anatomy and Echocardiographic Views

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Anatomy

Right atrium

Left atrium

AV Valves

TV sits slightly lower than MV
TV = 3 leaflets
- Anterior
- Septal
- Posterior
MV = 2 leaflets
- Anterior
- Posterior

Mitrail – Aortic continuity
Ventricular anatomy

Right Ventricular Interior

Right ventricle

Left ventricle

Semilunar valves
Preparing for Echocardiography

Expose chest and abdomen

Extend neck with roll for suprasternal images

Consider rolling slightly to left side to bring heart closer to chest wall for improved imaging

Probe Manipulation

- **Rotation** – rotate probe around central axis
- **Tilt** – keeping probe in same position, move probe at angles to the plane
- **Angulation** – extend the view, move along the axis

Standard Echocardiographic Views

1. Parasternal
2. Right parasternal
3. Apical
4. Subcostal
5. Suprasternal notch

Parasternal long axis

- Probe placed along long axis of left ventricular outflow tract
- Visualize aortic valve, mitral valve in continuity, left ventricle, and portion of the right ventricle
- Obtain LA-Ao ratio
- Tilt probe towards right hip to obtain view of RV and tricuspid valve
- Tilt probe towards left shoulder to obtain view of right ventricular outflow tract including pulmonary valve
**Parasternal Long Axis**

- Rotate probe so that notch points towards left shoulder
- Visualize aortic valve en fosse at base of heart
- Tilt probe towards left hip to sweep to the apex to assess function (SF)
- Tilt probe towards right shoulder to view MPA and branch PAs and PDA

**Parasternal Short Axis**

- Rotate probe so that notch points towards left shoulder
- Visualize aortic valve en fosse at base of heart
- Tilt probe towards left hip to sweep to the apex to assess function (SF)
- Tilt probe towards right shoulder to view MPA and branch PAs and PDA
Parasternal Short Axis

Apical
- Apical 4 chamber view
  - Tilt posteriorly to see coronary sinus
  - Tilt anteriorly to obtain 5 chamber view with aortic valve
  - Assess tricuspid and mitral regurgitation
  - Assess function (EF) using volume measurements (Simpson’s)
- Apical 5 chamber view
  - View LVOT
Subcostal

1. Notch 3 o’clock
2. Visualize liver, IVC, Ao position for situs
3. Invert the image
   » Subcostal long axis sweep
   » Utilized to look at atrial septum
4. Rotate transducer to 6 o’clock
5. Invert the image
   » IVC on long axis
   » Tilt to find descending aorta
6. Obtain short axis sweep

Subcostal Subxiphoid Long-Axis sweep

Subcostal Short axis (sagittal) sweep

Suprasternal View

- Position baby supine with a neck roll under shoulders to extend the neck as tolerated
- Notch at 1-2 o’clock will provide imaging of distal aortic arch and isthmus with duct if present