1 📕 Fetal Thorax

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2 Potentials for Mass Effect in the Thorax

- Diaphragmatic Hernias
- Ectopia Cordis
- Congenital Cystic Adenomatoid Malformation
- Bronchopulmonary Sequestrations
- Congenital Fetal Hydrothorax

3 Lung Tissue

- Moderate echogenicity
- Distinguish type of lesion
 - Extrapulmonic
 - Diaphragmatic hernia
 - Intrapulmonic
 - Congenital cystic adenomatoid malformation

4 Respirations

- Seesaw movement of chest and abdomen
- Should see every 20-30 minutes in the second and third trimester

5 Pulmonary Hypoplasia

- Small lung volume
- Causes
 - Oligohydramnios/anhydramnios
 - Mass effects
 - · Congenital anomalies-esophageal anomalies
- Earlier occurrence=worse prognosis
- Sonographically

Small

- Echogenic lungs
- Small chest circumference

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6 Normal Diaphragm

- Diaphragm
 - Dome shaped
 - $^{\circ}\,\text{Musculotendinous septum}$
 - Smooth, hypoechoic
 - Located between
 - Liver/spleen
 - Lungs

Diaphragmatic Hernia CDH

- Occurs in 1 in 2200 births
- Typically occurs on the left side
- Cause unkown

- Typically not associated with other syndromes
- Overall survival about 65%

B Diaphragmatic Hernia CDH- Treatment

- Inutero Surgery
 - Fetalscope, ultasound guidance
 - Balloon placed in trachea
 - ${}^{\circ}\ensuremath{\,\text{Lung}}$ expands and grows
- Severe CDH
 - Exit to ECMO
 - Modified cesarean delivery
 - · Baby remains attached to umbilical cord
 - · Airway is opened, ventilation is performed

9 CDH- Sonographic Findings

- Absence of fluid filled stomach in abd.
- Displacement of the heart to the right side
- Bowel and liver in the chest
- Fluid filled stomach adjacent to the heart

10 Ectopia Cordis

- Heart located outside the thoracic cavity
- May be isolated finding or part of syndrome
 - May involve just the heart
 - ${}^{\circ}\operatorname{May}$ involve the ventral body wall thus affecting
 - Thorax
 - Abdomen
 - Or both

11 Ectopia Cordis-Categories

- Thoracic
 - Heart anterior to sternum
- Thoracoabdominal

• Heart lies between thorax and abdomen

- Abdominal
 - ${}^{\circ}\operatorname{Lies}$ within the abdomen
- Cervical

 ${}^{\circ}\operatorname{Lies}$ within or on top of the neck

12 Ectopia Cordis

- Associated Anomalies
 - Ventricular septal defects
 - Tetralogy of Fallot
 - Omphalocele
 - Turners Syndrome
 - Chromosomal Anomalies
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13 Ectopia Cordis

- Treatment
 - Often still birth or death after birth
 - Few successful treatments
 - Covering of the exposed heart
 - Correct other intracardiac defects

14 Congenital Cystic Adenomatoid Malformation (CCAM)

- •Overgrown lung tissue
- •Solid, Cystic or a combination
- •Blood supply from normal lung tissue
- •Rare-occurring 1 in 25,000 pregnancies
- Unknown cause

15 Bronchopulmonary Sequestration (BPS)

- Benign mass of non-functioning lung tissue • Intralobar
 - Extralobar
- Serial ultrasounds performed
 - Assess growth

16 Congenital Hydrothorax

- Pleural effusions
- May be an isolated finding
- Unilateral or bilateral
- Lung compression and heart displacement

17 Summary

- Mass effects
 - Displace cardiac structures
- Evaluate cardiac axis
- Assess cardiac size
- Scan for fluid collections

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18 Summary Fetal Chest

19 Thoracic Circumference

- Heart should occupy approx 1/3 of the fetal thoracic cavity
- Lung should occupy approx 2/3
- Take circumference measurement in the same plane as the 4 chamber

20 Fetal Aortic Arch and Ductus Arteriosus

- Sagittal Planes of Chest
 - Aortic Arch
 - Candy Cane Sign
 - Patent Ductus Arteriosus
 - Hockey Stick Sign