1 **Amniotic Fluid and Amniotic Bands**

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2 **Amniotic Fluid**

- Seen throughout pregnancy
- Increased in first and second trimesters
- Decreased in third trimester
- Small reflectors in fluid is vernix
  - Vernix increases at term

3 **Production of Amniotic Fluid**

- First Trimester
  - Cells lining amnion secrete AF
  - Water diffuses across chorion frondosum
  - Prior to kidney function, passive diffusion from fetus across skin
  - Amnion covering cord also involved
- 12 Weeks
  - Fetal kidneys produce majority of fluid through urination

4 **Function of Amniotic Fluid**

- Aides symmetrical growth
- Cushions fetus
- Prevents adhesions
- Freedom of movement for fetus
- Aides in lung development
- Maintains constant temperature for fetus
- 98% water, 2% solids

5 **Resorption of Amniotic Fluid**

- Ingested by fetus
  - only small amt. related to urine production in early to mid pregnancy
- At term rate of ingestion = urine production
- Equilibrium must be maintained

  Production Re-absorption

6 **Amniotic Fluid Index**

- Fluid determined by measuring fluid pockets
- Measure four pockets free of fetal parts or umbilical cord

7 **Abnormal Volume of AF**

- Polyhydramnios:
  - >2000-3000ml in 3rd Trimester
  - Indicator of possible fetal abnormality
  - LGA with tight abdomen
  - Causes of Polyhydramnios
    - Idiopathic-<50% unknown
    - Maternal causes:
      - Diabetes
      - RH incompatibility

- –Pre-eclampsia
- –CHF
- –Syphillis or infections

8 **Polyhydramnios:**

- Causes due to fetal abnormality:30%
  - NTD and CNS (45%)-
    - Anencephaly, meningocele, encephalocele, hydrocephaly, hydranencephaly
  - GI Anomalies-
    - Duodenal atresia
    - Double Bubble sign:
      - –fluid filled stomach
      - –fluid filled duodenum
      - –fluid not passed to small bowel for absorption. Esophageal atresia, jejunal atresia, diaphragmatic hernia

9 **Polyhydramnios: Causes due to fetal abnormality cont.**

- Multiple gestation
- Grossly malformed fetus
- Circulatory Abnormalities:
  - Cardiac arrhythmias, coarctation of aorta,
  - fetal hydrops, any compromising congenital defect of the heart.
- Miscellaneous:
  - Teratomas, Pulmonary hypoplasia, Trisomy 18 & 21, Cystic hygroma

10 **Polyhydramnios: Sonographic Characteristics**

- Excessive fluid
- Free floating fetal body
- Placenta appears thin

11 **Oligohydramnios:**

- Volume- <500ml
  - Poor acoustic window
- Causes of oligohydramnios:
  - Premature rupture of membranes
    - or leaking membrane
    - increased risk of infection and fetal demise
  - IUGR
    - intrauterine growth restriction

12 **Causes of oligohydramnios cont.**

- Structural urinary abnormalities:
  - Renal Agenesis (Potters Syndrome)
    - congenital absence of kidneys
    - polycystic kidney disease
  - Renal obstruction-
    - large fetal bladder that does not empty due to bladder neck or ureteral obstruction
    - ureteral obstruction

13 **Structural Urinary Abnormalities**

- General guidelines for evaluating renal disease:
  - Differentiate adrenal glands from kidneys when determining size
  - Check texture of kidneys
    - hypoechoic relative to liver
  - Renal size should be no more than 1/3 of the total abd. volume

14 **Other Causes of Oligohydramnios**

- Post maturity/Post term pregnancy
- Fetal demise
- Intrauterine infection

15 **Oligohydramnios**

- Severe decrease in amniotic fluid
- Associated with
  - Genitourinary defects
  - Intrauterine growth restriction
  - Premature rupture of membranes (PROM)

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- Raised and folded edge of chorion
  - May appear as a band crossing the gestational sac
  - Can have antenatal complications
    - Bleeding and preterm labor

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Conclusion

- Amniotic Fluid
  - First trimester
    - Skin, Cells lining Amnion, Water across chorion frondosum, Amnion covering cord
    - 12 weeks-Kidneys kick in
  - Polyhydramnions vs Oligohydramnios

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