Abnormalities of Amniotic fluid

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Meconium Staining
Incidence

- The ranged 7-22% of pregnancies
- It is uncommon prior to 38 weeks and increases after 40 weeks
Staining of the amnionic membranes is obvious within 1-3h after meconium passage.
Meconium

What is it?

- Is the earliest stools of an infant
- Thick dark material made up of GI secretions: intestinal epithelial cells, lanugo, mucus, amniotic fluid, bile and water that is sometimes secreted in amniotic fluid.
- Meconium is a yellow or greenish-black color and very sticky, tarry in its texture
- May be classified as light or heavy.
Meconium passage is associated with:

- Increased fetal acidemia
- Increased perinatal mortality and morbidity
- Increased C/S
- Increased neonatal mortality
Meconium

- Complicates 12% of birth
- Of these 5% aspirate meconium (1/200 preg)
- Very toxic to lungs
- Evidence that it inactivates surfactant
Management

- No difference in the blood pH of neonates with and without meconium if the heart rate is normal.

- If the heart pattern abnormal then the incidence of acidosis is increased and the fetus should be delivered.
Grading of meconium and management

Grade 1: Enough AF + light meconium

Discharge of oxytocin + follow up

Grade 2: Enough AF + thick meconium

Fetal blood sampling and AB evaluation

Grade 3: Oligohydramnios + thick meconium

Urge delivery or C/S
Meconium - newborn

- 35% who aspirate meconium develop complications:
  - 10% pneumothorax
  - 66% persistent pulmonary hypertension related to meconium
  - 4% die
Treatment is standard suctioning of baby mouth and nose.

When

Head and neck are delivered

Before

Shoulder is delivered
Disorders of Amniotic fluid volume
Normally:

- Amnionic fluid volume increases to about 1 liter or more by 36 wks

- In postterm there may be only 100-200 ml
Normal volumes of amniotic fluid

varies with the duration of pregnancy

Average of amniotic fluid volume

12 w: 50 ml

24 w: 500 ml

36 w: 1000 ml & decreases thereafter.

At term: The normal range in a singleton pregnancy is large: 500-1500 ml
polyhydramnios
Definition
Amniotic fluid volume (AFV) >2 L

Incidence
1-4% pregnancies.
Types

1. Chronic:
Excess fluid accumulates gradually & it is only noticed after the 30th w of pregnancy. It is 10 times more common than acute type.

2. Acute:
Excess fluid accumulates more quickly & it occurs earlier in pregnancy. It is usually associated with twin pregnancy.
With sonography:

<table>
<thead>
<tr>
<th>Level</th>
<th>Size</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>8-11 cm</td>
<td>80%</td>
</tr>
<tr>
<td>Moderate</td>
<td>12-15 cm</td>
<td>15%</td>
</tr>
<tr>
<td>Sever</td>
<td>&gt;16 cm</td>
<td>5%</td>
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</tbody>
</table>
pathogenesis

- Early in pregnancy the amnionic cavity is filled with fluid similar to extracellular fluid
- In the first half of pregnancy transfer of water across the amnion and fetal skin
- During the second trimester the fetus begins to urinate, swallow and inspire
Causes

*Fetal:

1- Multiple pregnancy
2- Hydrops fetalis
3- Fetal anomalies
Fetal anomalies

- **Neural tube defect** (Anencephaly, Spina bifida)
  1. Increased transudation of CSF
  2. Excessive urination
     * stimulation of cerebrospinal centers

- **Duodenal atresia**

- **Thoraco-oesophageal fistula**
*Maternal:

- Diabetes mellitus

Maternal hyperglycemia $\rightarrow$ Fetal hyperglycemia

Osmotic diuresis

- Pre-eclampsia

- Heart or renal failure

*Idiopathic*
Symptoms

- Dyspenea
- Edema
- Oliguria
- Dyspepsia
Diagnosis

- Uterine enlargement (larger than the period of pregnancy)
- Difficulty in palpating fetal part
- Difficulty in hearing fetal heart
- Sonography
**With sonography**

A. Confirm diagnosis:
   * Vertical pocket >8cm
   * AFI >24 cm (AFI > 97.5 percentile for gestational age)

B. Detect the degree:
   * Mild
   * Moderate
   * Sever

C. Detect the cause
Differential Diagnosis

1. Twins
2. Ovarian cyst
3. Full bladder
4. Hydatiform mole
5. Ascite

All are resolved by U/S
Complication

- PROM
- Prolapses of umbilical cord
- Placental abruption
- Uterine dysfunction
- Post partum hemorrhage
Pregnancy Outcome

In general, the more severe degree of hydramnios

The higher perinatal mortality rate
Management

- **Minor degrees** of hydramnios rarely require treatment.
- **Moderate degrees** can usually managed until labor ensues.
- **Sever degrees** (dyspnea or abdominal pain or other complication), hospitalization become necessary.
Treatment

- **Amniocentesis**
  - 500 ml/h
  - 1500-2000 ml/d

- **Indometacin**
  - Decreases lung liquid production
  - Decreases fetal urine production
  - Increases fluid movement across fetal membranes
Oligohydramnios
Definition
Marked deficiency of the amniotic fluid volume (below the normal limits)

incidence
0.5-5% of all pregnancies
In general:

Oligohydramnios developing early in pregnancy is less common and has a bad prognosis.
Causes

Fetal
- Chromosomal abnormalities
- Congenital anomalies
- Fetal death
- IUGR
- Postterm
- PROM
- Twin-twin transfusion

Placenta
- Abruption

Drug
- Prostaglandin synthetase inhibitors,
- Angiotensin converting enzyme inhibitors

Maternal
- Uteroplacental insufficiency
- Hypertension
- Diabetes

Idiopathic
**Clinical picture**

**Uterus** is small for date

**Fetus:**
- easily felt & immobile
- FHS easily heard

**U/S:**
- Vertical pocket <1cm or <2cm;
- AFI <5 cm
Complications

During pregnancy

1. Fetal hypoxia (cord compression)
2. Persistent position of the fetus
3. Limb deformities: (pressure or amniotoic bands)
   * talipes (clubfoot)
   * ankylosis of joins
4. Pulmonary hypoplasia
During labor

- Increased variable deceleration
- Increased c/s rate
Amnioinfusion: infusion of saline into the uterine cavity through the abdominal wall by a spinal needle
- To increase the AFV
- To dilute meconium

Treatment