

Polyhydramnios Oligohydramnios (Summary)

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AMNIOTIC FLUID COMPONENTS

- Amniotic fluid is 98% water and electrolytes.
- Signaling molecules, peptides, carbohydrates, lipids, and hormones make up the other 2%
- Amniotic fluid normally has a pH of 7.0 to 7.5.

AMNIOTIC FLUID VOLUME

- 10 WEEKS ===== 30 ml
 - 20 WEEKS ===== 250 ml
 - 28 WEEKS ===== 800 ml
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- By 28 weeks, amniotic fluid reaches a volume of about 800 ml, where it plateaus until near term and then begins to decrease.

FUNCTIONS OF AMNIOTIC FLUID

- Fetal protection
- Umbilical cord protection providing a cushion between the fetus and the umbilical cord.
- Barrier against infection
- It serves as a reservoir of fluid and nutrients for the fetus containing: proteins, electrolytes, immunoglobulins, and vitamins from the mother.
- It provides the necessary *fluid, space, and growth factors* to allow normal development and growth of fetal organs such as the musculoskeletal system, gastrointestinal system, and pulmonary system.

Measurement of Amniotic Fluid

- **Based upon ultrasound examination, preferably based on an objective measurement:**
- Amniotic Fluid Index (AFI)
- Measured after 20 weeks by dividing the amniotic cavity into four quadrants using maternal linea nigra as the midline.
- Single Deepest Pocket (SDP)
- Measured vertically in the AP plane at any location in the amniotic cavity.

Polyhydramnios

- **Definition: Excessive amount of liquor:**

- (AFI) ≥ 24 cm or (SDP) ≥ 8 cm
- **MILD** === AFI 25-30 cm
- **MODERATE** === AFI 31-35 cm
- **SEVERE** === AFI More than 35 cm

- **ACUTE (rare)**

- Sudden onset, appears in few days

- **CHRONIC (More common)**

- Insidious onset, appears in few weeks

Causes Of Polyhydramnios

- **IDIOPATHIC (65%)**
- **MATERNAL (15%)**
 - Rh isoimmunization
 - DIABETES (GDM)
- **FETAL (18-20 %)**
 - Multiple pregnancy (Twin-Twin Transfusion Syndrome)
 - Fetal anomalies
 - Chromosomal abnormalities (Trisomies 21,18,13)
- **PLACENTAL (Less 1%)**
 - Placental chorioangioma
 - Circumvallate Placental Syndrome

FETAL ANOMALIES ASSOCIATED WITH POLYHYDRAMNIOS

- Any condition that prevents the fetus from swallowing – e.g. esophageal atresia, CNS abnormalities (Anencephaly, Opened spina bifid), muscular dystrophies, congenital diaphragmatic hernia.
- Esophageal or Duodenal atresia
- Anemia – alloimmune disorders, viral infections
- Fetal hydrops
- Twin-to-twin transfusion syndrome
- Increased lung secretions – cystic adenomatoid malformation of lung
- Genetic or chromosomal abnormalities

Clinical Features

Depending on the severity of polyhydramnios

- Asymptomatic
- General weakness
- Dyspnea, palpitation
- Pressure symptoms: Heart burn, Indigestion, lower limb edema, Abdominal discomfort, leg and vulval varicosities and hemorrhoids

Clinical Features

- **It should be suspected clinically when uterine size is large for gestational age.**
- The skin is tense and shiny
- The umbilicus is flat or everted
- The fetal parts are difficult to be palpated
- Difficult to hear fetal heart
- Abnormal lie and presentation
- High presenting part

Differential Diagnosis of Large-for-Dates Uterus

- **Differential Diagnosis of a Large-for-Dates Uterus:**

1. Incorrect Dating (The most common cause)
2. Multiple Gestation
3. Polyhydramnios
4. Fetal Macrosomia
5. Uterine Fibroids (Leiomyomas)
6. Pelvic Masses (Ovarian tumor)
7. Molar Pregnancy (Hydatidiform Mole)
8. Abruption placentae with concealed bleeding may rarely enlarge the uterus
9. Distended Bladder (Full Bladder)

COMPLICATIONS & POTENTIAL CONSEQUENCES OF POLYHYDRAMNIOS

During pregnancy:

- Malpresentation
- PROM
- Preterm Labor
- Placental Abruption and Accidental hemorrhage

During Labor:

- Early ROM
- Cord Prolapse
- Increased operative delivery
- Uterine atony, PPH & Shock

Fetal:

- Increase prenatal morbidity & mortality mainly due to prematurity and the presence of an underlying abnormality or congenital malformation.
- The baby must be examined before its first feed by a pediatrician. A nasogastric tube should be passed to ensure there is not a tracheoesophageal fistula or esophageal atresia.

Approach to a case with polyhydramnios

- **Targeted history and physical Examination** looking for maternal and fetal conditions causing polyhydramnios.
- **The following investigations should be done:**
 - Blood group, Rh
 - GTT (Glucose Tolerance Test) as a screening test for Gestational Diabetes.
 - Fetal Ultrasound looking for fetal anomalies, twin- twin transfusion and placental abnormalities (Chorioangiomas)
 - Fetal chromosomal study (if chromosomal anomaly is suspected)

Management of Polyhydramnios

- Most of the time the management is **supportive** and no medical intervention is required in the majority of women with polyhydramnios.
- **In severe cases**, pressure symptoms and shortness of breath **aminoreduction** can be considered.
- **Indomethacin** can be used to reduces fetal urine production.
- **Note:** Indomethacin intake during pregnancy is associated with premature closure of the ductus arteriosus, intraventricular hemorrhage and fetal renal impairment or dysfunction leading to oligohydramnios, therefore it should not be used beyond 32 weeks.

Oligohydramnios

- **Oligohydramnios refers to amniotic fluid volume (AFV) that is less than the minimum expected for gestational age.**
- Amniotic fluid index (AFI) ≤ 5 cm
- Single deepest pocket (SDP) < 2 cm

Oligohydramnios

- **Some clinicians classify oligohydramnios as:**
 - mild (AFI 4.1 to 5.0 cm)
 - moderate (AFI 2.1 to 4.0 cm)
 - severe (AFI 0 to 2.0 cm)
- Anhydramnios is the extreme end of the oligohydramnios spectrum

Causes of Oligohydramnios

- **First of all, you have to R/O Rupture of membranes**
- **Maternal causes**: Placental insufficiency due to: HTN, PET, SLE, Chronic Kidney Disease, Chronic Abruptio, Post Term.
- **Fetal causes**: IUGR, Intrinsic renal disorders (e.g. cystic renal disease), Renal agenesis, Obstructive lesions of the lower urinary tract (e.g. posterior urethral valves, urethral atresia).
- **Drugs**: Indomethacin, ACE Inhibitors
- **Idiopathic**

Clinical Manifestations of Oligohydramnios

- Oligohydramnios may be suspected because the uterine size is less than expected for gestational age
- As an incidental finding on an ultrasound examination or performed for another reason
- The patient presents with prelabor rupture of membranes.

Complications of Oligohydramnios

- Pregnancies complicated by oligohydramnios from any cause are at risk for:
- **Pulmonary hypoplasia** (if second-trimester oligohydramnios)
- **Fetal deformation** (if prolonged oligohydramnios)
- **Umbilical cord compression**
- **Increased risk for fetal or neonatal death**, which may be related to the underlying cause of the reduced AFV, the sequelae of reduced AFV, or both.

Prognosis of Oligohydramnios

- **The fetal prognosis depends on several factors:**
- The underlying cause
- Severity (reduced versus no amniotic fluid)
- Gestational age at occurrence

Approach to a case with Oligohydramnios

- Targeted History and Physical Examination looking for maternal and familial conditions and maternal medications that may be associated with oligohydramnios.
- Rule out prelabor rupture of membranes (PROM)
- **ULTRASOUND:** Perform a detailed sonographic evaluation for findings that may account for reduced AFV (Fetal renal anomalies, Markers suggestive of aneuploidy, Fetal Growth Restriction, Placental abnormalities (e.g. chronic abruption))

Differential Diagnosis of Small-for-Dates Uterus

- Incorrect Dating
- Intrauterine Growth Restriction (IUGR)
- Oligohydramnios
- Fetal Demise
- Constitutionally Small Fetus