



Amniotic Fluid Problems

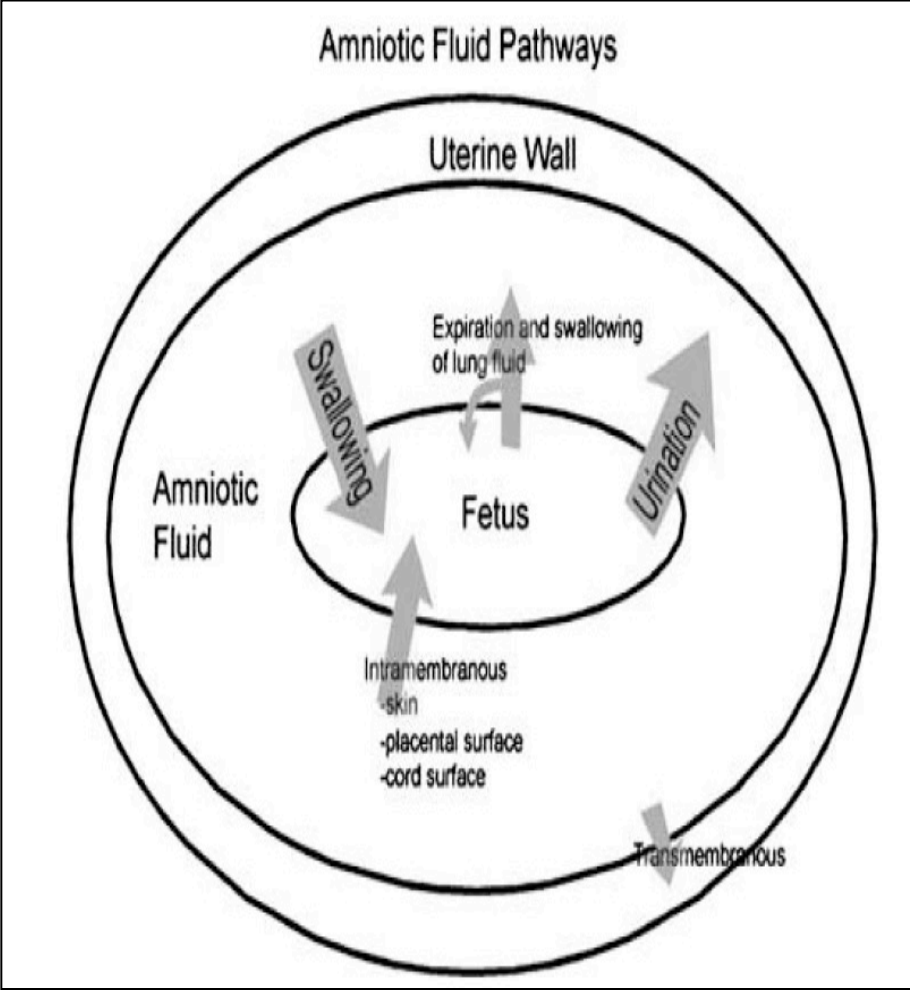
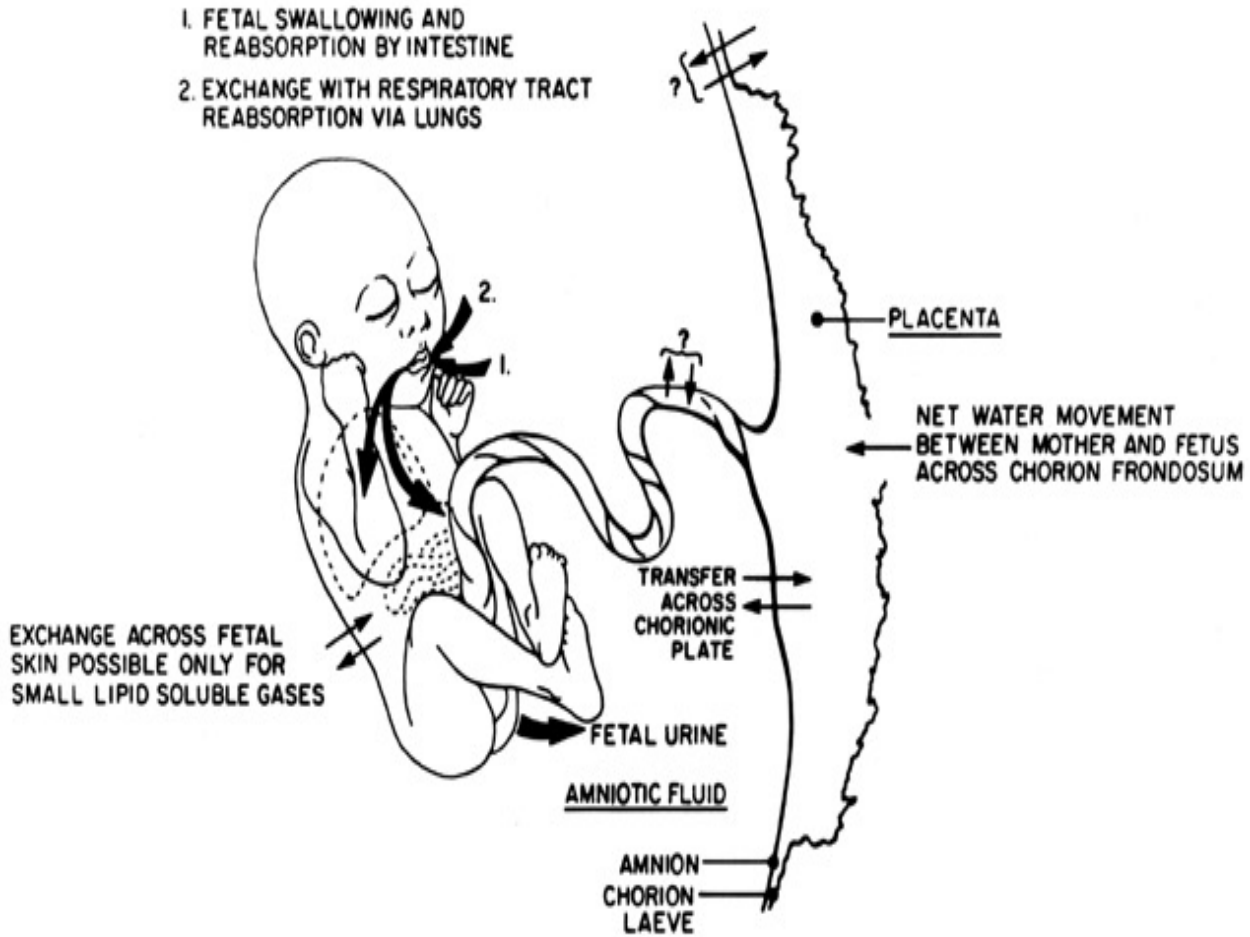
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INTRODUCTION

Amniotic fluid is an important part of pregnancy and fetal development. This watery fluid is inside a casing called the amniotic membrane (or sac) and fluid surrounds the fetus throughout pregnancy. Normal amounts may vary, but, generally, women carry about 500 ml of amniotic fluid

AMNIOTIC FLUID CIRCULATION



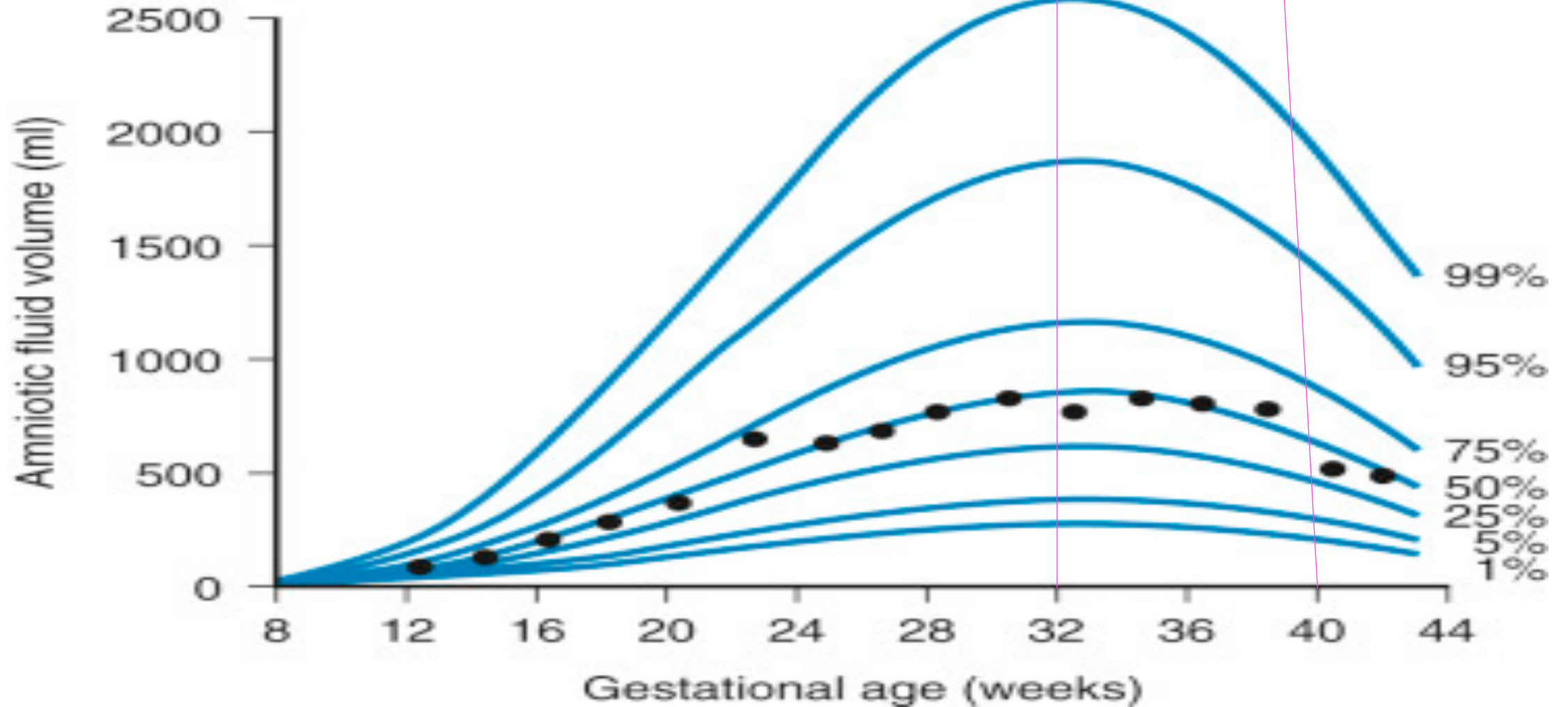
PHYSIOLOGY OF AF

Amniotic fluid helps protect and cushion the fetus and plays an important role in the development of many of the fetal organs including the lungs, kidneys, and gastrointestinal tract. Fluid is produced by the fetal lungs and kidneys. It is taken up with fetal swallowing and sent across the placenta to the mother's circulation.

PHYSIOLOGY OF AF

- Amniotic fluid problems occur in about 7 percent of pregnancies. Too much or too little amniotic fluid is associated with abnormalities in development and pregnancy complications. Differences in the amount of fluid may be the cause or the result of the problem

Amniotic fluid volume



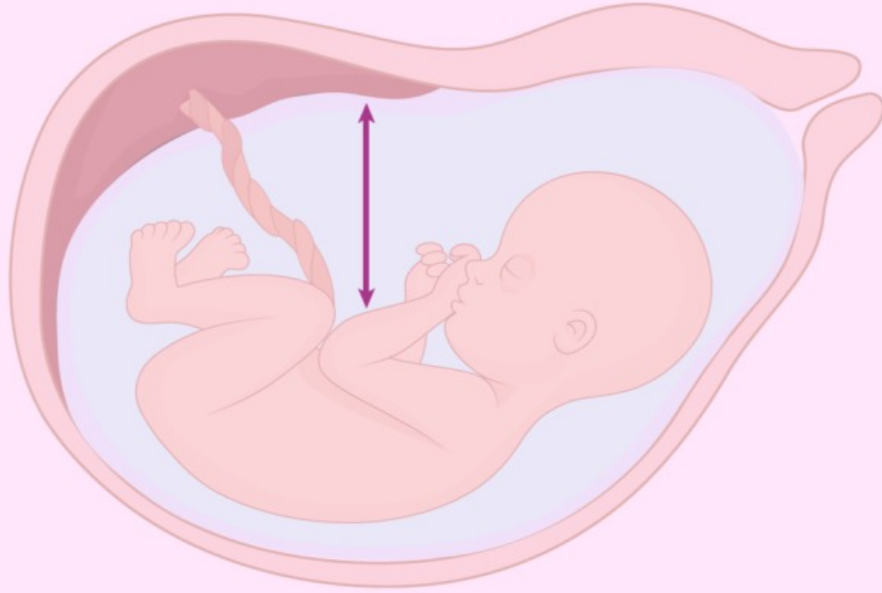
Amniotic fluid volume

- **8 weeks** : 15 ml, volume increases by 10 ml per week
- **17 weeks**: 250 ml, volume increases by 50 ml per week
- **28-38 weeks**: 750 ml ; decreases beginning at 34 weeks
- **42 weeks** : < 500 ml

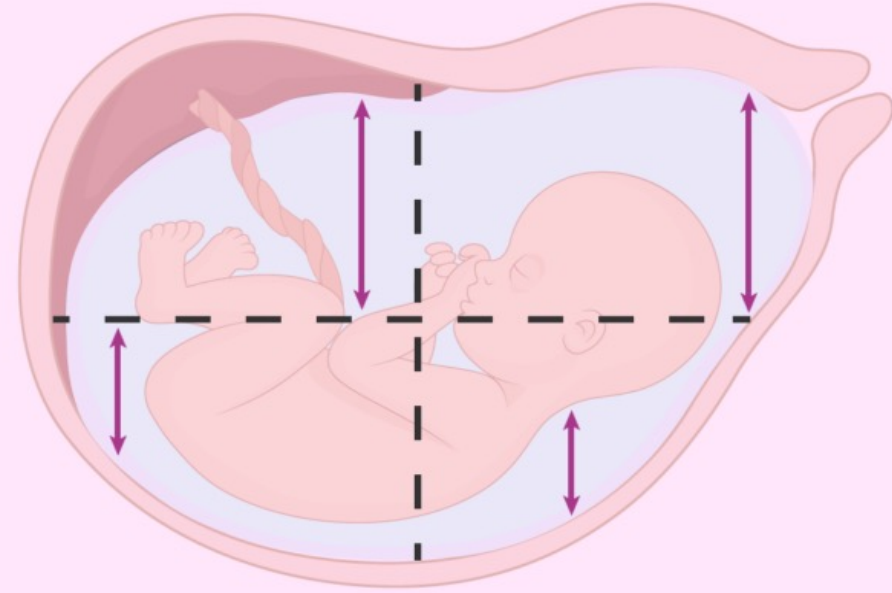
Sonographic AF measurement

- The uterus is divided into 4 quadrants
- Ultrasound transducer in vertical plane
- Sum of the 4 quadrant , or maximal pocket depth
- Variation :
 - *Transducer in sagittal alignment*
 - *Cord and limb not included*
 - *Before 20 weeks 2 halves*
 - *Twins: composite AFI or individual vertical pocket.*

Sonographic AF measurement



Measure the vertical diameter of the maximum free lagoon



Calculate the amniotic fluid index (AFI)

OLIGOHYDRAMNIOS

- **INCIDENCE:** 8-38% of pregnancies :
 - 8 % of antenatal patients ; [50% of postterm]
 - 38 % of patients in labor [50% ruptured membranes]
- **DIAGNOSIS:**
 - Clinically; uterus is smaller than gestational age
 - Ultrasound ; AFI < 5cm
 - Delivery; Scanty AF, with meconium staining

Causes of Oligohydramnios

1. Premature rupture of membranes (PROM)
2. Intrauterine growth restriction (IUGR)
3. Post-term pregnancy
4. Birth defects, *especially kidney and urinary tract malformations*
5. Twin-to-twin transfusion syndrome .

Oligohydramnios

Causes of Early-Onset Oligohydramnios

Idiopathic

Fetal

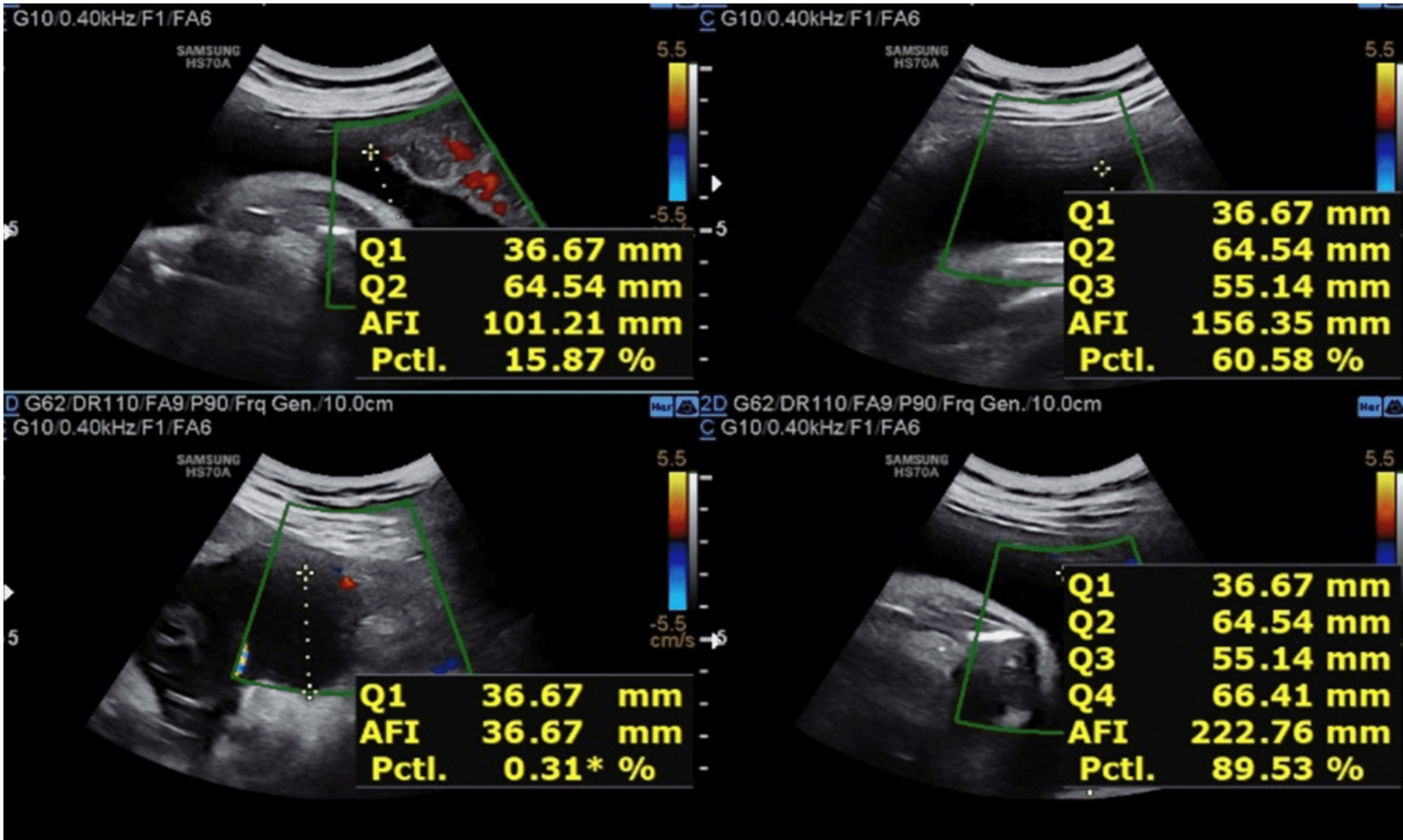
- Chromosomal abnormalities
- Congenital anomalies
- Growth restriction
- Demise
- Postterm pregnancy
- Ruptured membranes

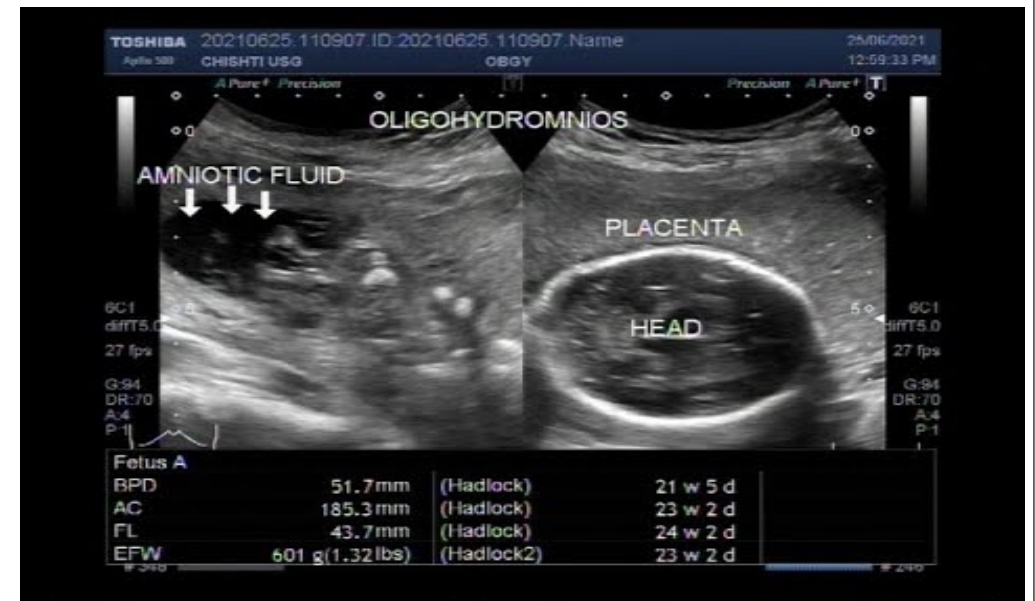
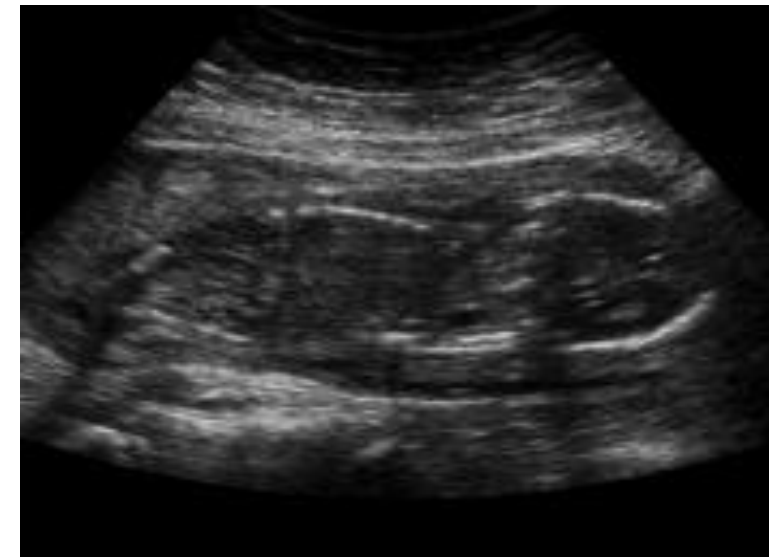
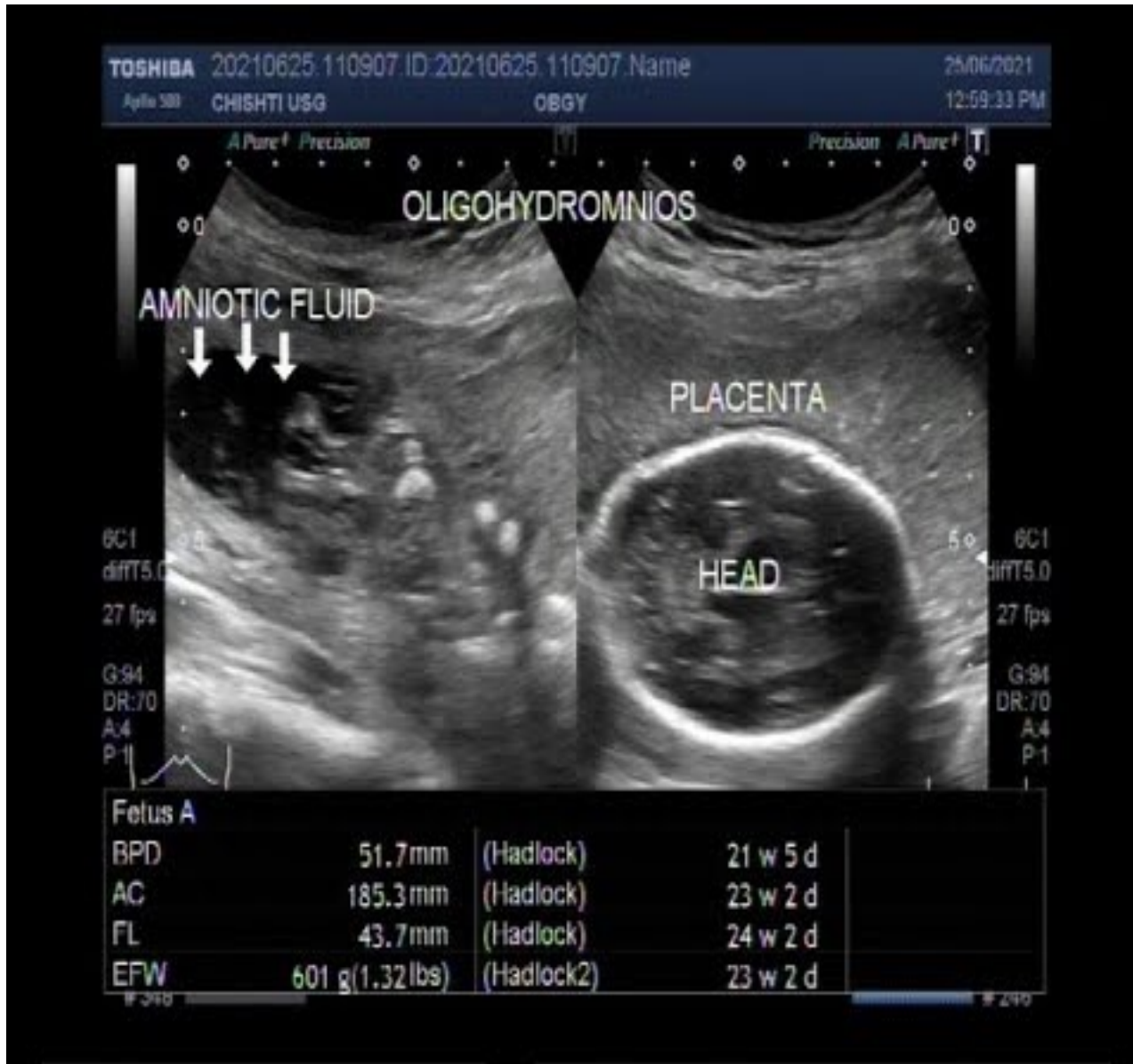
Maternal

- Uteroplacental insufficiency
- Hypertension
- Preeclampsia
- Diabetes

Placenta

- Abruption
- Twin-twin transfer





Complications of Oligohydramnios

- Amniotic fluid is important in the *development of fetal organs, especially the lungs*. Too little fluid for long periods may cause abnormal or incomplete development of the lungs called **pulmonary hypoplasia**. **IUGR** is also associated with decreased amounts of amniotic fluid.
- Oligohydramnios may be a **complication at delivery**, increasing the risk for *compression of the umbilical cord* and *aspiration of thick meconium* (baby's first bowel movement)

Complications of Oligohydramnios: Summary

1. IUGR
2. Fetal distress
3. Operative delivery
4. Congenital malformation*
5. Meconium aspiration

Congenital Anomalies Associated with Oligohydramnios

- Amnionic band syndrome
- Cardiac
 - Tetralogy of Fallot
 - Septal defects
- CNS
 - Holoprosencephaly
 - Meningocele
 - Encephalocele
 - Microcephaly
- Chromosomal anomalies
 - Triploidy
 - Trisomy 18
 - Turner syndrome
- Cloacal dysgenesis
- Cystic hygroma
- Diaphragmatic hernia
- Hypothyroidism

Congenital Anomalies Associated with Oligohydramnios

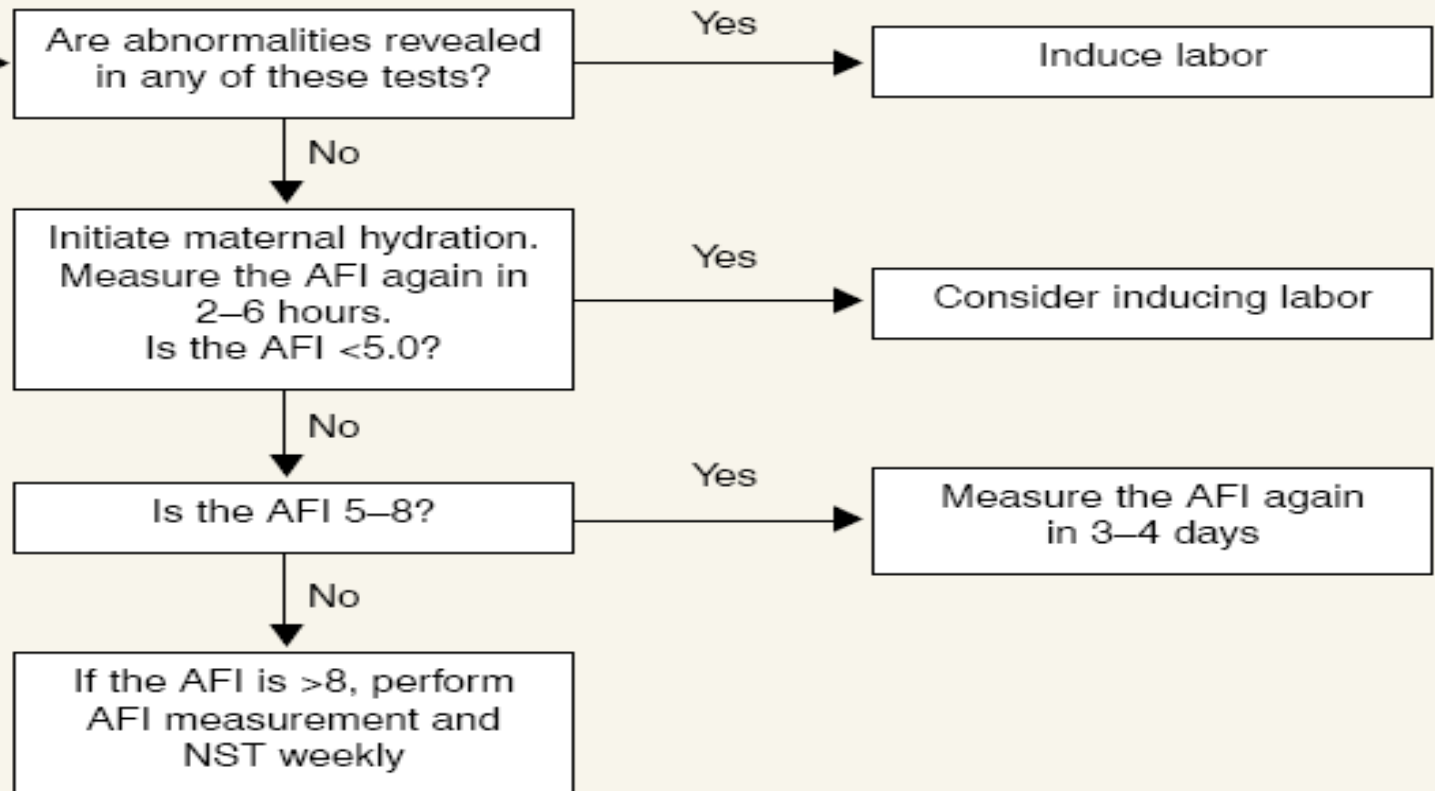
- Genitourinary
 - Renal agenesis
 - Renal dysplasia
 - Urethral obstruction
 - Bladder-exstrophy
 - Meckel-Gruber syndrome
 - Ureteropelvic junction obstruction
 - Prune-belly syndrome
- Skeletal
 - Sirenomelia
 - Sacral Agenesis
 - Absent radius
 - Facial clefting
- TRAP sequence
- Twin-twin transfer
- VACTERL

MANAGEMENT OF PATIENTS WITH OLIGOHYDRAMNIOS

Assessment of the pregnant woman with oligohydramnios at term

A woman whose pregnancy is between 37–41 weeks is discovered to have an amniotic fluid index <5.0 .

1. Evaluate for ruptured membranes
2. Review pregnancy dating
3. Order nonstress test (NST) to evaluate fetal well-being
4. Determine presence of pregnancy-induced hypertension, diabetes, or other conditions associated with uteroplacental insufficiency
5. Order ultrasound for intra-uterine growth restriction and fetal anomalies



POLYHYDRAMNIOS

- **INCIDENCE:** 0.5: 1.5%
- **DIAGNOSIS:**
 - **Clinically** : uterus $>$ period of amenorrhea , difficulty to feel fetal parts, fetal ballotment positive , maternal respiratory distress.
 - **Ultrasound:** AFI $>$ 25 CM or sigle pocket $>$ 16 cm
 - **Delivery:** AF $>$ 2000 CC

CAUSES OF POLYHYDRAMNIOS

- **MATERNAL CAUSES:**

(1). Diabetes mellitus. (2). Immune hydropes (Rh –ve). (3). Idiopathic

- **FETAL CAUSES :**

1-GIT abnormalities that block the passage of fluid e.g. pyloric stenosis

2-Abnormal swallowing due to problems with the central nervous system or chromosomal abnormalities. 3-twin-to-twin transfusion syndrome

4-heart failure 5-congenital infection (acquired in pregnancy)

6- Placenta: chorioangioma, circumvallate placenta. 7- Osteogenesis imperfecta

8- fetal tumors (teratomas). 9- Spina bifida aperta, meningocele. 10- Trisomies

11. Congenital infections (TORCH, Syphilis).

12- Non -immune fetal hydrops.

TABLE 1
Fetal/neonatal etiologies of polyhydramnios

Impaired Swallowing			Excess Urine Production		
GI Obstruction	Neuro-muscular	Craniofacial	Renal/Urinary	Cardiac	Osmotic diuresis/Other
Duodenal atresia	Myotonic dystrophy	Cleft lip/palate	UPJ obstruction	Cardiac structural anomaly	Diabetes
TE Fistula	Arthrogryposis	Micrognathia	Mesoblastic nephroma	Tachyarrhythmia	Hydrops
Thoracic mass	Intracranial anomaly	Neck mass	Bartter syndrome	Sacroccocygeal teratoma	Idiopathic
Diaphragmatic hernia				Chorioangioma	

GI, gastrointestinal; TE, tracheoesophageal; UPJ, ureteropelvic junction.

Society for Maternal-Fetal Medicine. Polyhydramnios. *Am J Obstet Gynecol* 2018.

COMPLICATIONS OF POLYHYDRAMNIOS

- Too much amniotic fluid can *cause the mother's uterus to become overdistended and may lead to preterm labor or premature rupture of membranes* .
- Hydramnios is also associated with *birth defects in the fetus*.
- When the amniotic sac ruptures, large amounts of fluid leaving the uterus may *increase the risk of placental abruption or umbilical cord prolapse* where it may be compressed.

COMPLICATIONS OF POLYHYDRAMNIOS

SUMMARY

- Fetal abnormalities
- Preterm delivery
- Erythroblastosis
- Maternal diabetes
- Abnormal presentations
- Prolapsed cord
- Placental abruption
- Uterine dysfunction
- Postpartum hemorrhage
- Operative delivery

SMFM Recommendation for management (2018)

1. **We suggest that polyhydramnios in singleton pregnancies be defined as either a DVP of > 8 cm or an amniotic fluid index of >24 cm.**
2. **We recommend that amnioreduction be considered only for the indication of severe maternal discomfort, dyspnea, or both in the setting of severe polyhydramnios.**
3. **We recommend that indomethacin should not be used for the sole purpose of decreasing amniotic fluid in the setting of polyhydramnios.**
4. **We suggest that antenatal fetal surveillance is not required for the sole indication of mild idiopathic polyhydramnios.**
5. **We recommend that labor should be allowed to occur spontaneously at term for women with mild idiopathic polyhydramnios; that induction, if planned, should not occur at <39 weeks of gestation in the absence of other indications; and that mode of delivery should be determined based on usual obstetric indications.**
6. **We recommend that women with severe polyhydramnios deliver at a tertiary center due to the significant possibility that fetal anomalies may be present.**



○ THANK YOU FOR
ATTENTION