#### Amniotic fluid & its abnormalities

AF. or liquor amnii is the protective fluid contained in amniotic sac of pregnant female & surrounded the fetus in the intrauterine life , provided the protective , low resistance space suitable for fetal growth &development.

### Development of AF

The AF. can be detected as early as the formation of gestational sac . This is firstly water-like fluid orginate from maternal plasma , and passes through fetal membrane by osmatic & hydrostatic forces .

As the placental & fetal vessels develop, the fluid passes through fetal tissues. After  $20^{th}-25^{th}$  weeks, of pregnancy when the keratinization of skin occurs, the quantity of AF begins to depend on the factors that affect the AF circulation (swallowing & urination).

In early pregnancy, AF. is only fluid (water) & electrolytes About  $12^{th}$ - $14^{th}$  weeks, the liquid also contains proteins carbohydrates, lipids & phospholipids with urea which are aiding in fetal growth.

The volume of AF. is positively correlated with fetal growth , from  $10^{th}-20^{th}$  weeks , it increases from 25-400ml & reachs plateau of 800ml at the  $34^{th}$  weeks gestational age .The amount of fluid declines to = 400ml at 42 weeks gestational .

The clinical assessment of AFV. is unreliable by U/S ,these include:

- a. Deepest vertical pocket (DVT) = 2-8cm.
- b. Amniotic fluid index: it's the sum of DVT. in 4 uterine quadrants, which is empty from fetal parts or umbilical

cord . normally the AFI is 10-25cm . AFI < 10 cm decreased , below 5cm is Severe oligohydramnios .

## Amniotic fluid functions

- 1. Reduced the effects of external trauma.
- 2. Decreases the effects of uterine contraction on fetus.
- 3. Forms a room in which baby swimming.
- 4. Maintains fetal body temperature.
- 5. Acts as nutrients for fetus.
- 6. Forms a wedge at dilated os before birth.
- 7. Washes the cervix & vagina by its bacteriostatic function ( its PH = 7-7.5).
- 8. Prevents compression of umbilical cord.

The AF. volume increases steadily throughout pregnancy to a maximum of 400-1200ml at 34-38 weeks & net increase of AF. is only 5-10ml/day in third trimester & after 38 weeks, the volume declines by =125ml per week

## **Polyhydramnios**

Polyhydramnios or hydramnios is an excessive volume of AF. relative to gestational age, which may be acute or chronic, it complicates 1-3.5% of all pregnancies. Its defined as DVT > 8cm or AFI above 95<sup>th</sup> centile for gestational age, chronic polyhydramnios is more common than acute one.

## Risk factors

- 1. Idiopathic in 90% of cases.
- 2. Maternal causes: such as DM & Rh- isoimmunization.
- 3. Placental causes such as chorioangioma or circumvallate placenta.
- 4. Placental causes such as:
  - Multiple pregnancy (TTTS)

- Gastrointestinal (GI) eosophegeal atresia , duodenal atresia , annular pancrease & amphalocele.
- CNS lesion : anencephaly ----spina bifida

Hydrocephaly –microcephaly

Encephalocele – hydroneoncephaly

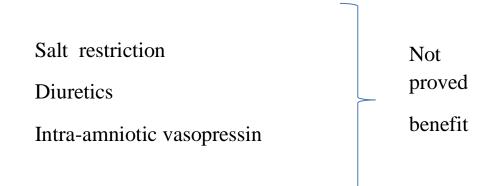
- Skeletal malformation such as osteogenesis imperfect.
- Fetal tumours : sacrococeygeal teratoma.
- Cardiac disease: CHD, fetal arrhythmia.
- Genetic disorders: triosomy 13,18.
- Hematological:α-thalassemia,fetomaternal haemorrage.
- Intrauterine infections: TORch infection & parvo B19 virus.2
- Others : non-immune hydrops fetalis

### **Management of polyhydramnios**: is either

- 1. Conservative
- 2. Medical
- 3. Surgical
- 4. Both

Depending an etiology, severity, clinical symptoms & GA at diagnosis with any associated abnormalities.

- a. Conservation Mx, by treatment of underlying causes (infection anemia.. etc, in a gradual, mild polyhydramnios
- b. Medical Mx:



Indomethacin (NSAID) is suggested as therapeutic modality to reduce AFV because it decrease fetal urinary output.

Indomethacin should be used prior to 30weeks because of risk of premature closure of ductus arteriosus resulting in pulmonary hypertension postnatally.

c. Surgical managements by therapeutic amniocentesis or complicated in 30-45min & volume aspirated ranging from 200-4000 ml . Extension compression results in placental separation ,preterm labour & even IUFD

### **Oligohydramnios**

It's a decrease in AFV relative to gestational age or DVP < 2cm & AFV is below 5<sup>th</sup> centile for GA its incidence = 3.9%, which is either acute or chronic.

Acute oligohydramnios results from premature rupture of fetal membrane &fetal abnormalities .

## <u>Causes:</u>

- 1. Fetal anomalies : such as renal agenesis , multi cystic or poly cystic kidney, posterior Urethral valve .
- 2. NSAIDS.
- 3. TTTS.
- 4. RROM.
- 5. IUGR & placenta insufficiency.
- 6. Post term pregnancy (post maturity).
- 7. Repetition of cord compression.

## *DX* :

- 1. Easily palpated fetal parts
- 2. Small for date fundal height

# 3. By U/S ( DVT & AFI )

Its management is by management of under lying cause accordingly.