

ABNORMALITIES OF AMNIOTIC FLUID

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Associate professor



LEARNING OBJECTIVES

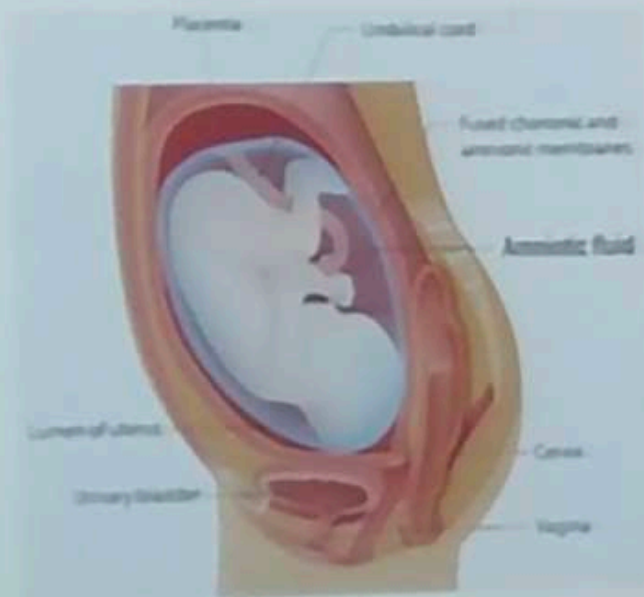
To understand the causes, complications & management of abnormalities of the amniotic fluid

- Oligohydramnios
- Polyhydramnios

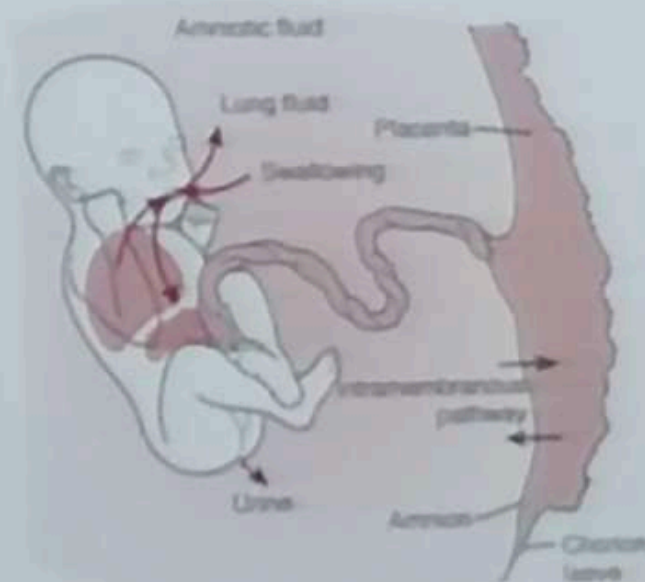


WHAT IS AMNIOTIC FLUID

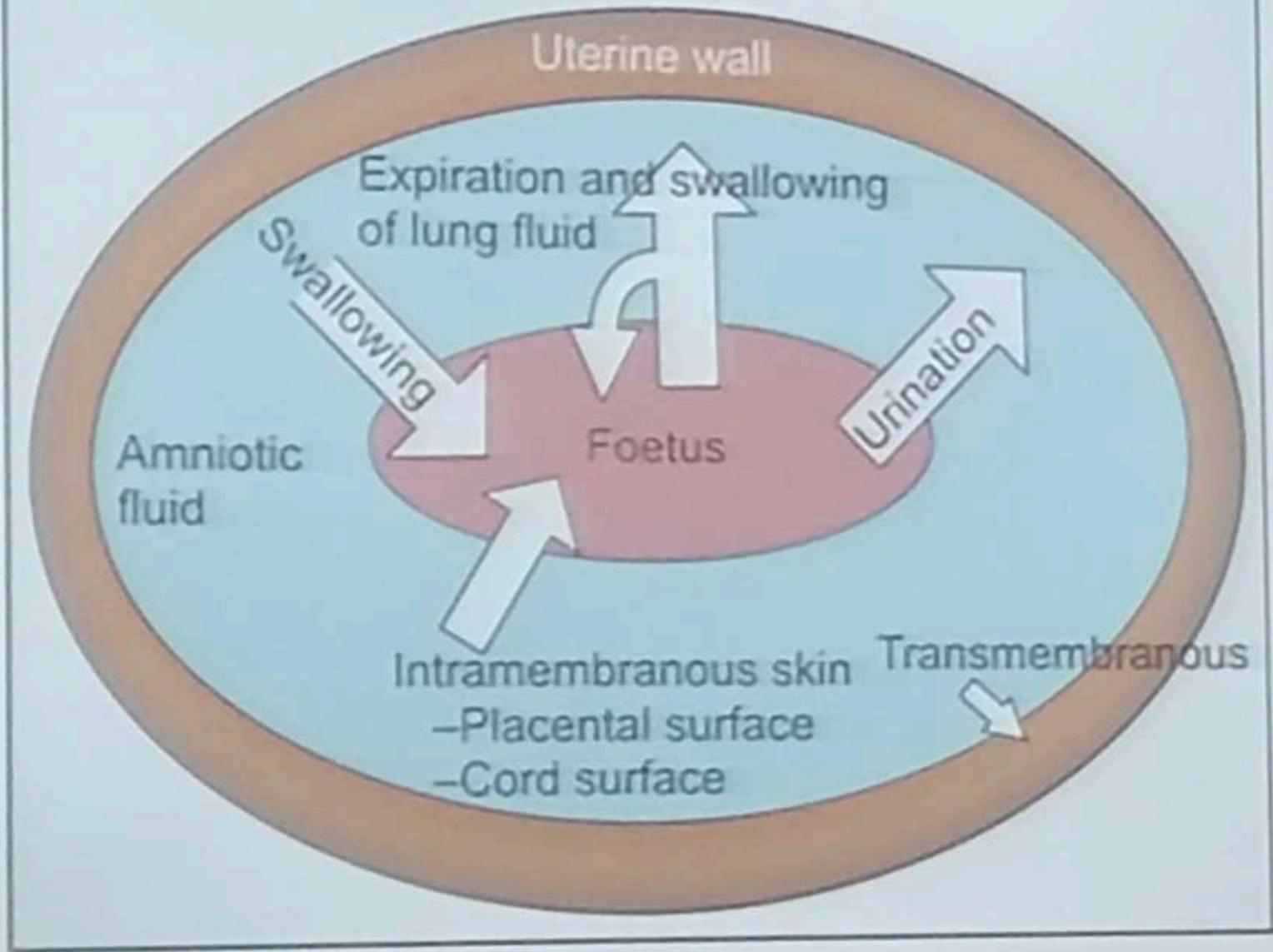
- By 12 weeks gestation, the amnion comes into contact with the inner surface of the chorion & the two membranes become adherent but never intimately fuse
- The amniotic fluid is initially secreted by the amnion, but by the 10th week it is mainly a transudate of the fetal serum via the skin & umbilical cord



- From the 16 weeks the skin becomes impermeable to water
- The net increase in the amniotic fluid is through a small imbalance b/w the contributions of:
 - Fluid through the kidneys & the lung fluids
 - Removal by the fetal swallowing
 - Fetal urine forms much of the amniotic fluid

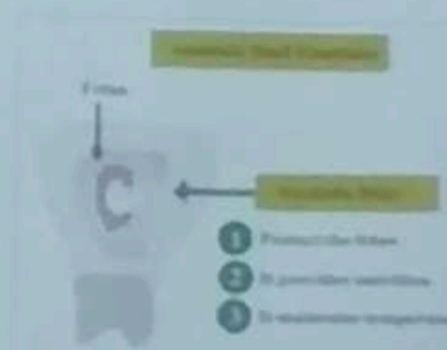


Amniotic fluid pathways



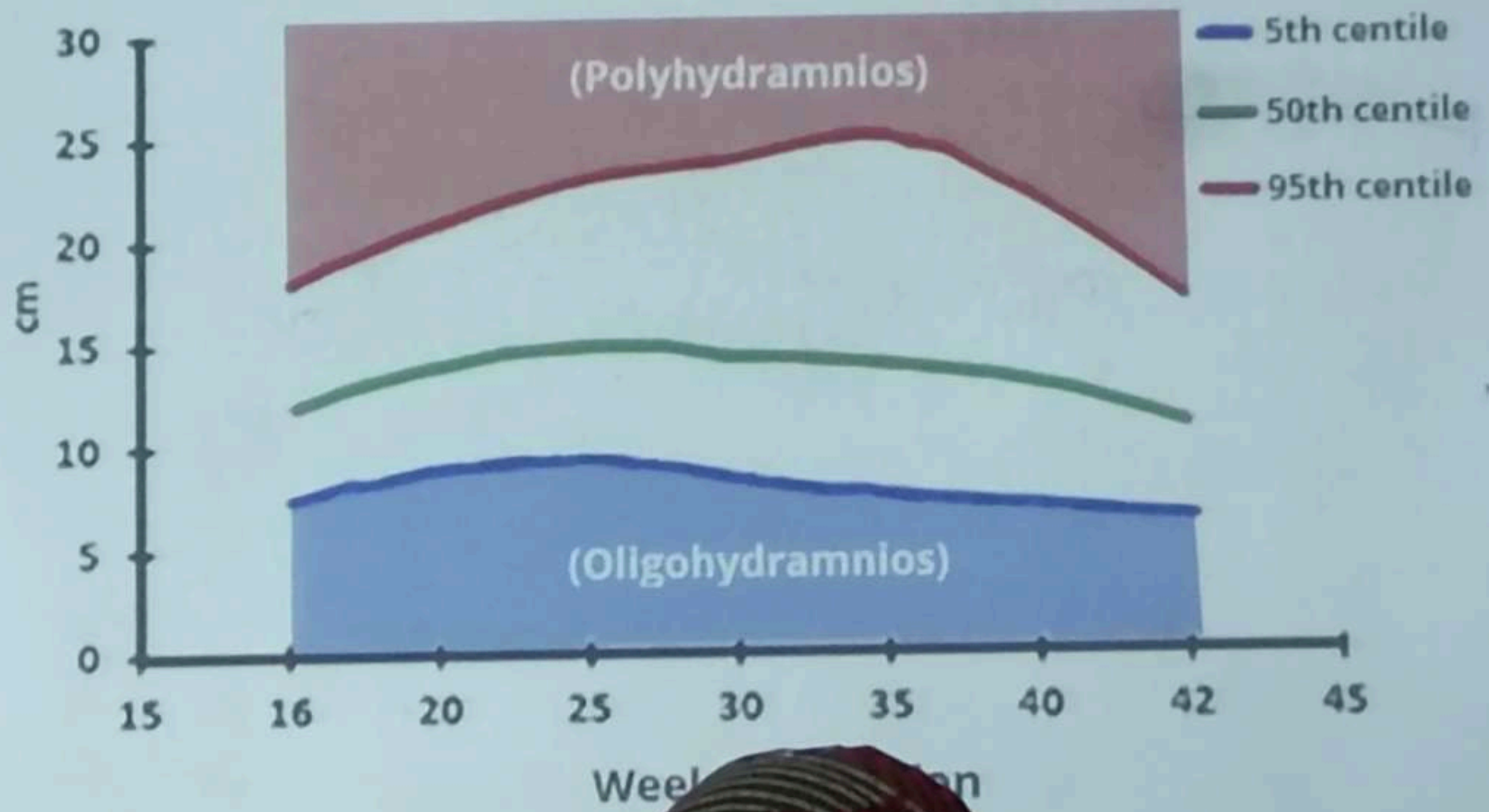
FUNCTIONS OF AMNIOTIC FLUID

- Protect the fetus from mechanical injury
- Permit movement of the fetus while preventing limb contracture
- Prevent adhesions b/w fetus & amnion
- Permit fetal lung development- two way movement of fluid into the fetal bronchioles.
- Provides nutrition
- Maintains temperature
- Absence of amniotic fluid in the second trimester is associated with pulmonary hypoplasia



- Amniotic fluid volume increases progressively
- 10 weeks - 30ml
- 20 weeks - 300ml
- 30 weeks - 600ml
- 38 weeks - 1000ml
- 40 weeks - 800ml
- 42 weeks - 350ml
- **Amniotic fluid index** is calculated as the total measurement of the deepest pool in the four quadrants of the uterus

Amniotic Fluid Index in Normal Pregnancy



OLIGOHYDRAMNIOS

- Oligohydramnios (too little amniotic fluid) defined as amniotic fluid index (AFI) $< 5^{\text{th}}$ centile for gestation

ABDOMINAL EXAMINATION

- Oligohydramnios may be suspected antenatally following a H/O of clear fluid leaking from the vagina
- On abdominal palpation the fetal poles may be very obviously felt & hard with a small for dates uterus



CAUSES OF OLIGOHYDRAMNIOS & ANHYDRAMNIOS

Too little production	Diagnosed by
Renal agenesis	Ultrasound: no renal tissue, no bladder
Multicystic kidneys	Ultrasound: enlarged kidneys with multiple cysts, no visible bladder
Urinary tract abnormality /obstruction	Ultrasound: kidneys may be present but urinary tract dilatation
FGR & placental insufficiency	Clinical: reduced SFH Reduced fetal movements Possibly abnormal CTG Ultrasound: FGR, Abnormal fetal Doppler wave forms
Maternal drugs (NSAIDS)	Withholding NSAIDS may allow the amniotic fluid to reaccumulate
Post-dates pregnancy	
Leakage (PPROM)	Speculum examination pool of amniotic fluid on posterior blade

PROGNOSIS OF OLIGOHYDRAMNIOS

- Fetal prognosis depends on the cause of oligohydramnios
- Pulmonary hypoplasia
- Limb deformities (contractures, talipes) oligohydramnios (<24weeks gestation)
- Oligohydramnios due to FGR/uteroplacental insufficiency is usually of a less severe degree & less commonly causes limb & lung problems

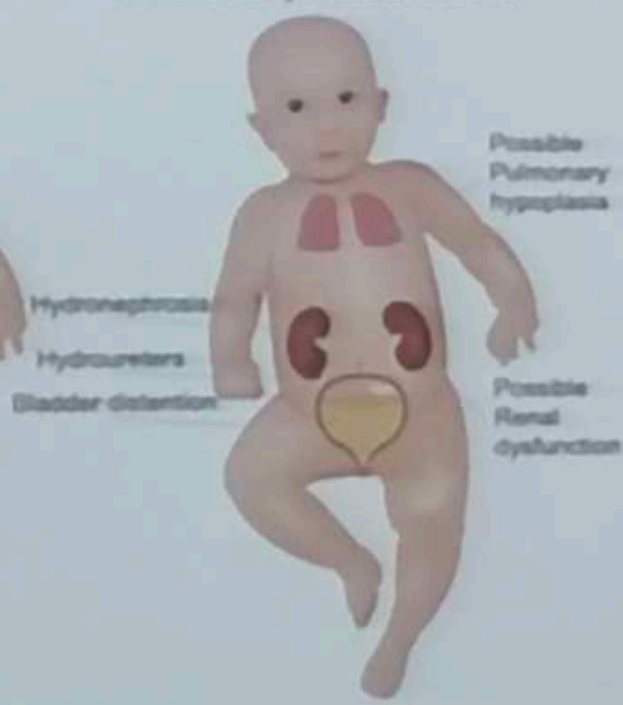


- Renal Agenesis & Bilateral Multicystic kidneys - lethal prognosis
- Fetal lungs will be hypoplastic
- Severe urinary tract obstruction

Normal Urinary Tract

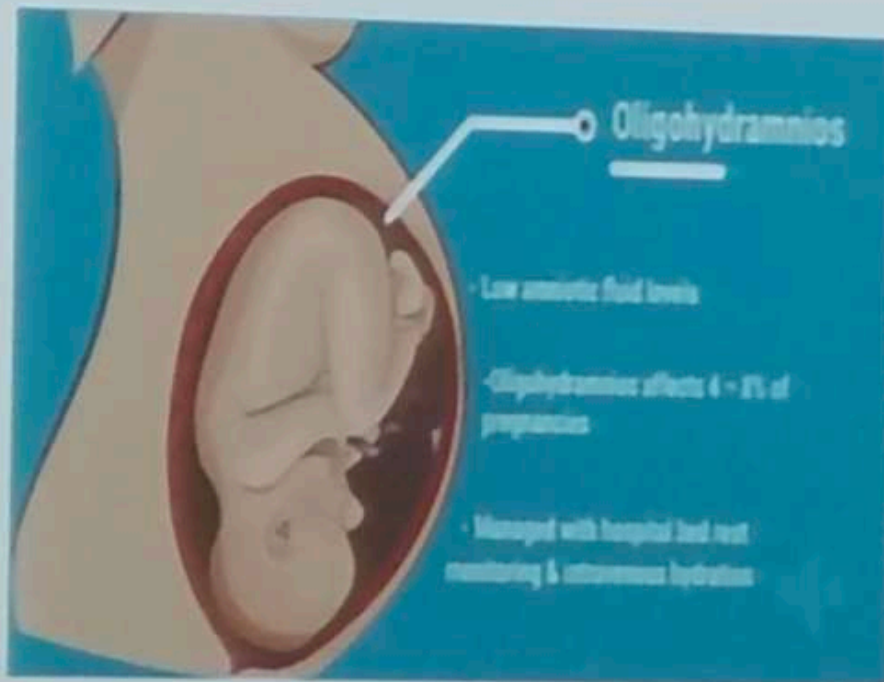


Lower Urinary Tract Obstruction



TREATMENT OF OLIGOHYDRAMNIOS

- Bed rest
- Intravenous hydration



POLYHYDRAMNIOS

- It is the term given to an excess of amniotic fluid (AFI > 95th centile for gestation on USG estimation)
- It may present as severe abdominal swelling & discomfort



ABDOMINAL EXAMINATION

- Abdomen will appear distended out of proportion to the woman's gestation (increased SFH)
- Abdomen may be tense & tender
- Fetal poles will be hard to palpate



Larger Abdomen with Excessive Stretch Marks -
A Symptom of Polyhydramnios

FEEDING LIKE CARRYING A TRUCKLOAD OF PREGNANCY-



Suspect when uterine size is larger than date

Creativemeddoses.com

Etiology

Intestinal obstruction Or Atresia in fetus

Maternal Diabetes

(Duodenal Atresia)

Fetus unable to Swallow Amniotic Fluid

Fetal Polyuria

PolyHydramnios

Excess of Amniotic Fluid

Treatment

Reduce formation

Prostaglandin inhibitors

Reduce fluid volume

Transabdominal Amniocentesis

Diagnosis

>24 cm Amniotic Fluid Index On Ultrasonography

It's your Foeit SWALLOW some fluid

or Pee LESS !!

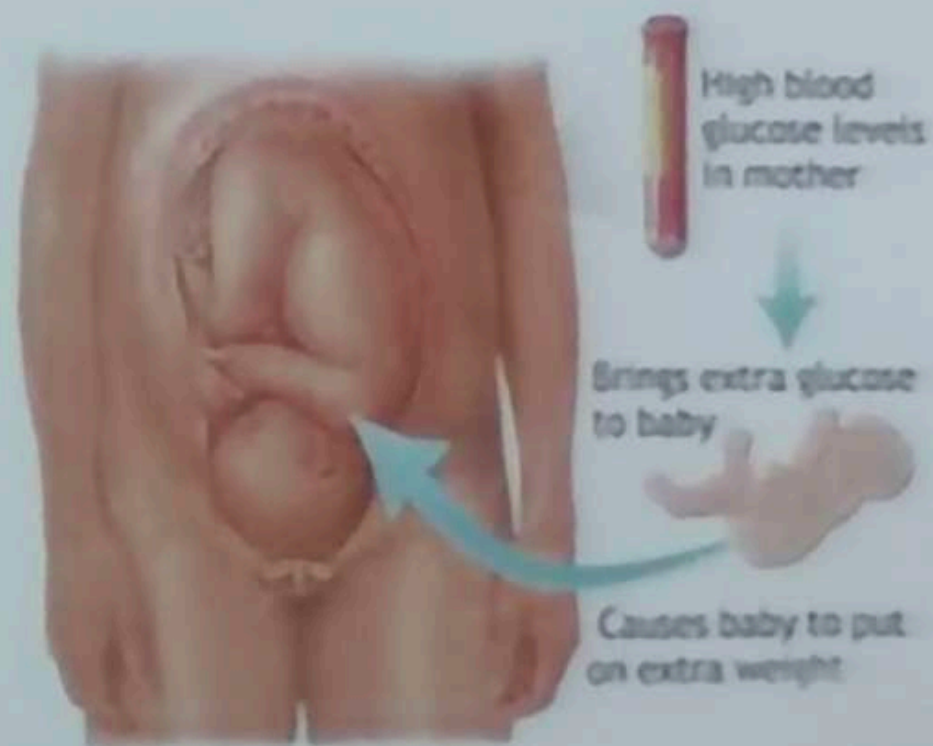


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CAUSES OF POLYHYDRAMNIOS

MATERNAL

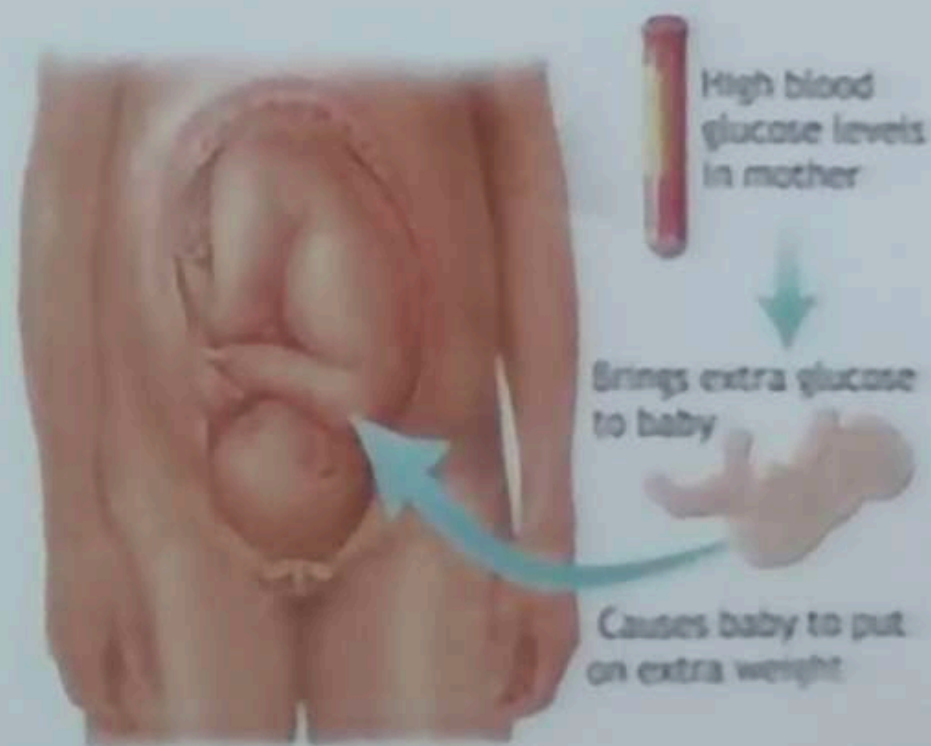
- Diabetes
- Placental
- Chorioangioma
- Arteriovenous fistula



CAUSES OF POLYHYDRAMNIOS

MATERNAL

- Diabetes
- Placental
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FETAL

- Multiple gestation (in monochorionic twins may be twin-to-twin transfusion syndrome)
- Idiopathic
- Oesophageal atresia/trachea-oesophageal fistula
- Duodenal atresia
- Neuromuscular fetal condition (preventing swallowing)
- Anencephaly



Etiology of Polyhydramnios

Fetal causes

- Esophageal atresia
- Duodenal atresia

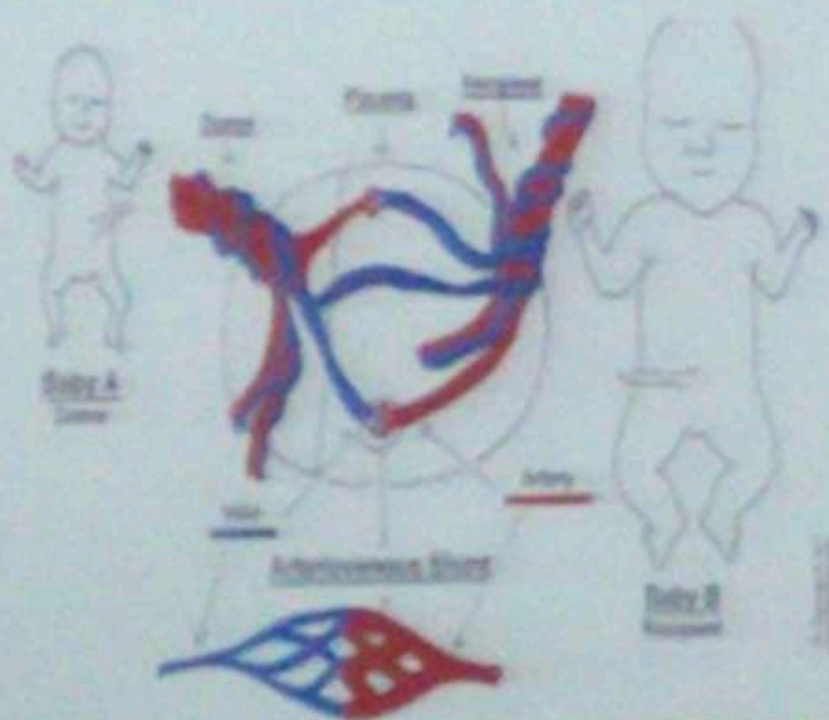


- Congenital diaphragmatic hernia



TWIN TO TWIN TRANSFUSION SYNDROME

- It is a rare cause of acute polyhydramnios in the recipient sac of the monochorionic twins
- Associated with oligohydramnios & a small baby in the other sac
- Rapidly fatal for both twins



Twin-Twin Transfusion Syndrome

Serious complication of monochorionic multiple gestations



Recipient

- Polycythemia
- Hypertension
- Polyuria
- Polyhydramnios
- Circulatory overload
- Heart failure
- Hydrops fetalis
- Fetal demise

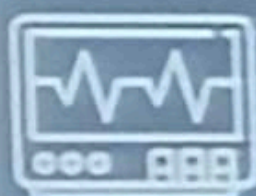
Donor

- Anemia
- Hypotension
- Oliguria
- Oligohydramnios
- Circulatory insufficient
- Growth restriction
- Renal failure
- Fetal demise

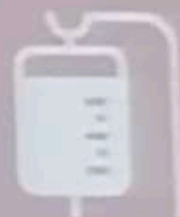


Risks of Polyhydramnios

too much amniotic fluid
raises these risk factors before,
during, and after labor &
delivery.



**PRETERM
LABOR**



PROM



PPROM



**PRE-
ECLAMPSIA**



**FETAL MAL-
PRESENTATION**



**UMBILICAL
CORD
PROLAPSE**

MACROSOMIA



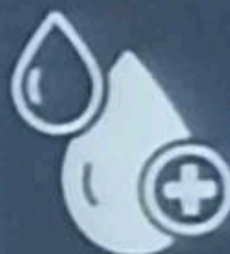
**PULMONARY
EMBOLISM**

**POSTPARTUM
HEMORRHAGE**



**PLACENTAL
ABRUPTION**

**EMERGENCY
OR
UNPLANNED
C-SECTIONS**



**AMNIOTIC
FLUID
EMBOLISM**

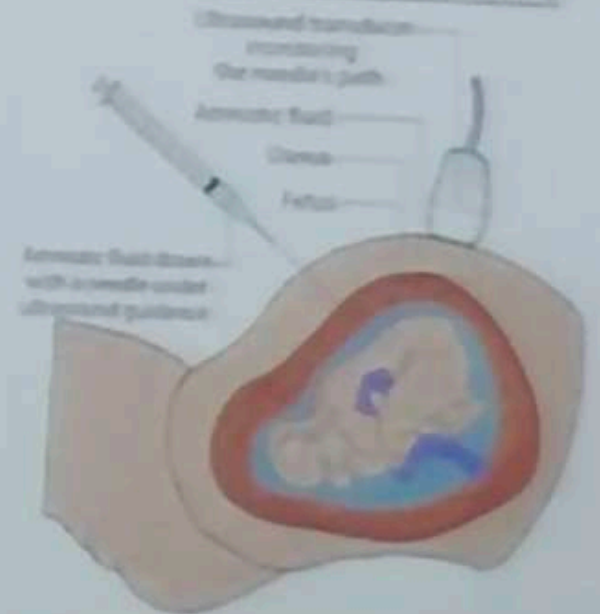
STILLBIRTH



MANAGEMENT OF POLYHYDRAMNIOS

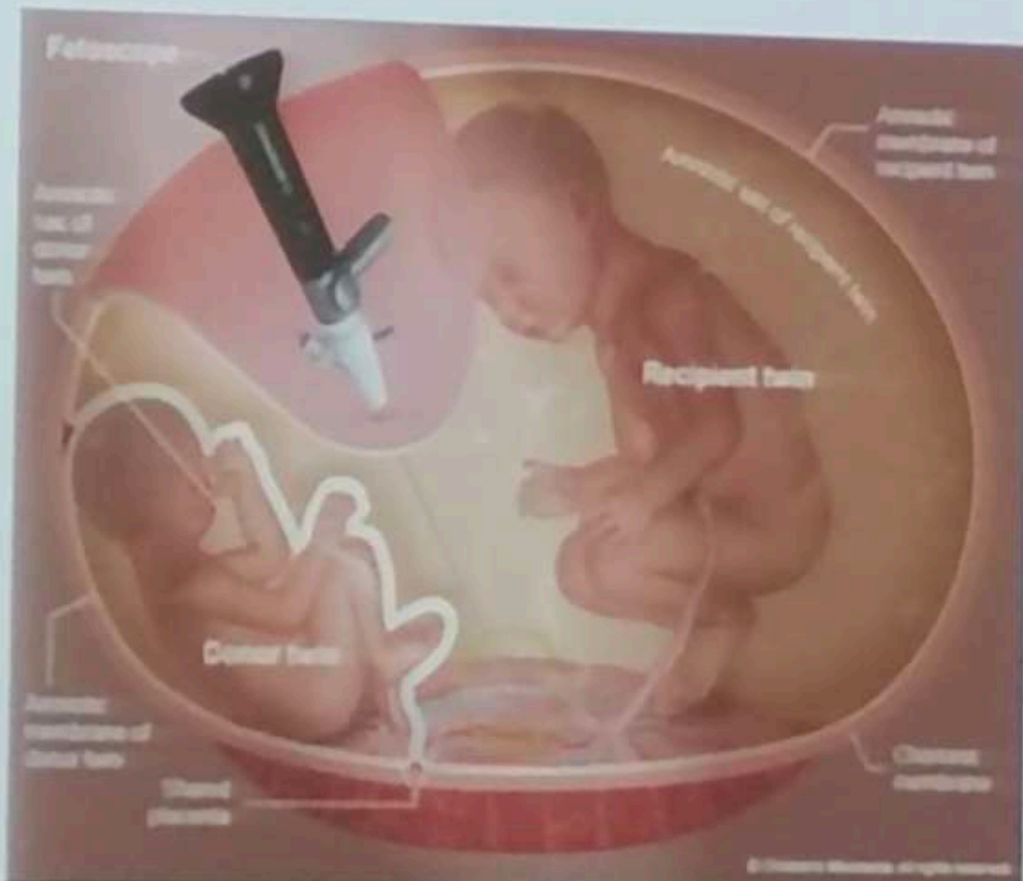
- Directed towards establishing the cause
- Relieving the discomfort by amniodrainage
- Assessing the risk of preterm labour due to uterine overdistension
- If due to maternal DM, needs urgent investigation

AMNIOCENTESIS PROCEDURE



Treatment of Twin-to-twin transfusion syndrome

- Amniodrainage
- Removal by laser of the placental vascular connections



QUESTIONS

- 1. What is oligohydramnios?
- 2. What is polyhydramnios?
- 3. What are the causes of oligohydramnios?
- 4. What are causes of polyhydramnios?
- 5. What are the risks of oligohydramnios to fetus?
- 6. Risks of polyhydramnios to the fetus?