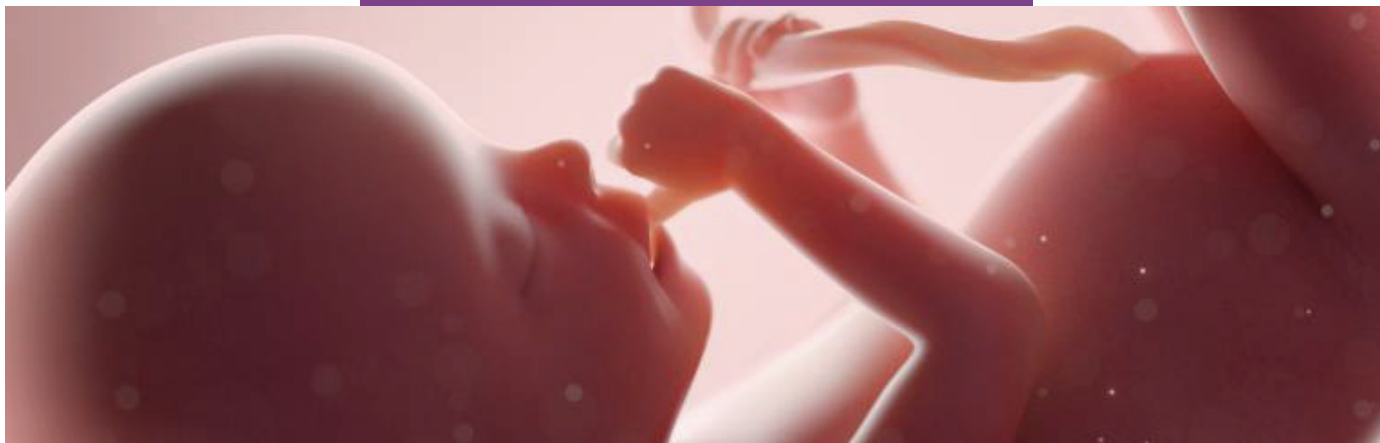


॥ fetopanishad ॥

THE FETAL BULLETIN

AMNIOTIC FLUID



FROM THE EDITOR'S DESK



Dr. Pooja Lodha
AMOGS Chairperson
Fetal Medicine Committee

Best leaders first create vision, articulate the vision, passionately own the vision and relentlessly drive it to completion. This is exactly what Dr Nandita Palshetkar, President AMOGS, has done by infusing her enthusiasm and vibrancy in us, her AMOGS Senaiks! I feel humbled yet proud, to reach out to you all as the Chairperson, Fetal Medicine Committee, AMOGS 2020-2022. The AMOGS Fetal Bulletin has been conceptualized as a quarterly E-Newsletter, on subjects of interest and practical clinical applications like - Amniotic Fluid, Antenatal Screening, Placenta, Teratogens, Fetal Care in Maternal Medical Disorders, Dopplers, and more to come. I express my heartfelt gratitude to the authors of the 1st AMOGS Fetal Bulletin, for their illustrious and academically rich contributions. Let's all work hand in hand, to ensure the best quality care for the mother, and her unborn precious! Individually, we are one drop, we may not cope. But together, we are an unstoppable ocean of HOPE.

PRESIDENT'S MESSAGE



Dr. Nandita Palshetkar
AMOGS President

Hello AMOGSians! As I take over as the President of this vibrant society of over 8000 Obstetricians and Gynecologists of Maharashtra, I aim to reach out to each corner of our state through activities like conferences, CMEs, workshops, public forums and outreach programs. The importance of e-learning in this technologically advanced yet busy day and age cannot be over-emphasized. I congratulate Dr Pooja Lodha, Chairperson, Fetal Medicine AMOGS, on successfully starting this E-newsletter series on Fetal Medicine.

As we continue our We for Stree campaign, fetus is an integral part, and Fetal Medicine is the need of the hour. I have no doubts it shall be beneficial to our members, and well received.

Happy Women's Everyday.

SECRETARY'S MESSAGE



Dr Arun Nayak
AMOGS Secretary

Dear AMOGS Colleagues, Wishing you all a very Happy Women's Day. It's a great pleasure to write to you as a Secretary of AMOGS. We have wonderful people working tirelessly, spreading health awareness, spreading knowledge, conducting health camps and social activities and so on and under vibrant and dynamic leadership of our President, Dr Nandita, AMOGS is going to witness satisfying, fruitful years ahead. Dr Pooja has compiled this news letter on one of the important topics ' Amniotic Fluid ' I am sure, you all will enjoy going through it. Happy Reading.

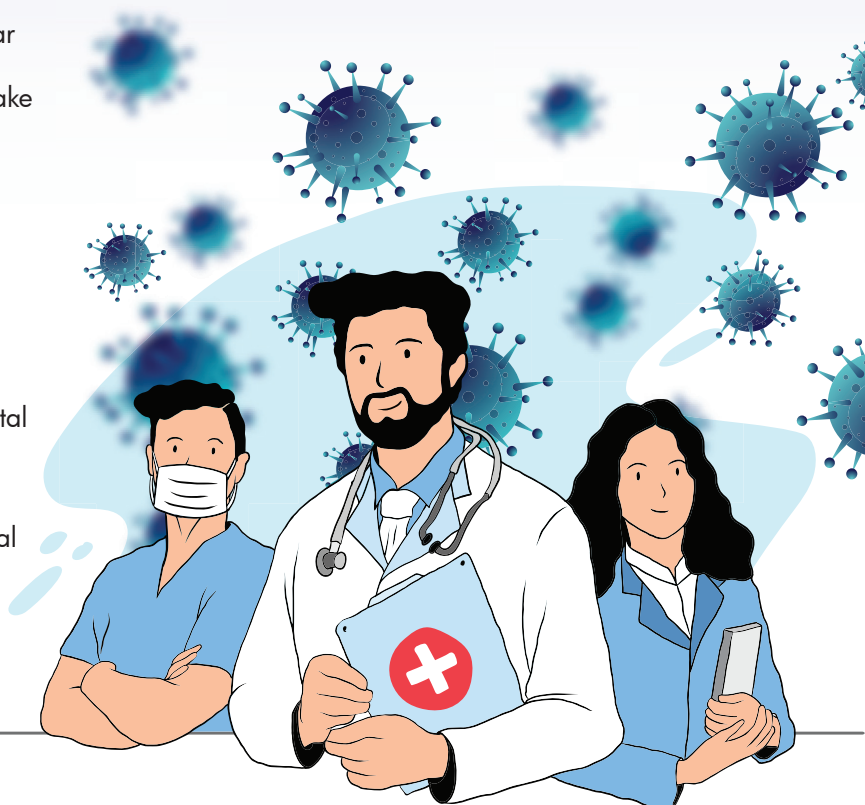
GO CORONA GO!

As this period where all of us are in a lockdown, doctors are still going out and handling emergencies on a regular level, there are some precautions we all need to take. I hope I can put a bit of a humorous spin on this. Please take it as light heartedly as possible.

Imagine doing a 24 hour shift, handling delivery after delivery and then coming home and you are excited to meet your family after a stressful day at work. You've ensured that you've taken all the necessary precautions.

1. Take only 1 pen, one phone, a bottle of water and money in an envelope.
2. Avoid wearing any accessories
3. Change in to OT clothes as soon as you reach hospital
4. Wear goggles and masks at all times
5. Wear plastic or rubber footwear
6. Leave your stethoscope, knee hammers, other medical stuff at the hospital itself

But what you realise as you reach home, is that your spouse has stricter rules than you had at the hospital.



AS SOON AS YOU ENTER

1. Your spouse gives you an earful for not calling them on your way home (The door could have been kept open so you don't touch anything.)
2. You are made to get rid of all of your belongings at the door (mobile, wallet, ring, watch etc) and also sanitise it (you're praying that your phone doesn't get spoilt - it's your form of entertainment during this lockdown. However, sanitise everything you've taken to the hospital)
3. The washroom door is wide open and you are made to go straight to it and shower (You were going to do that anyway!).
4. As soon as you enter the bathroom, there is detergent and a bucket and you realise how hard your maid works (wash your own clothes and dry them yourself)
5. As you come out of the room, the door handles are being sanitised, just in case you've touched anything.

After a grueling 30-45 mins of sanitisation at home, you are finally allowed to hug your child. As you entered your house, you thought your spouse was crazy but as you went through this entire checklist at home, you realised that it's important to follow these few precautions as you get back from work to ensure that your family is safe.



Dr. Rohan Palshetkar (MS OBGY, FRM)
2nd Joint Secretary AMOGS,
Managing Committee Member, MSR

TOPICS

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AMNIOTIC FLUID – KNOWING ITS WHEREABOUTS

Amniotic fluid is clear transparent fluid that serves a number of important functions in the normal development of the embryo and fetus. It consists primarily of water 98-99%.

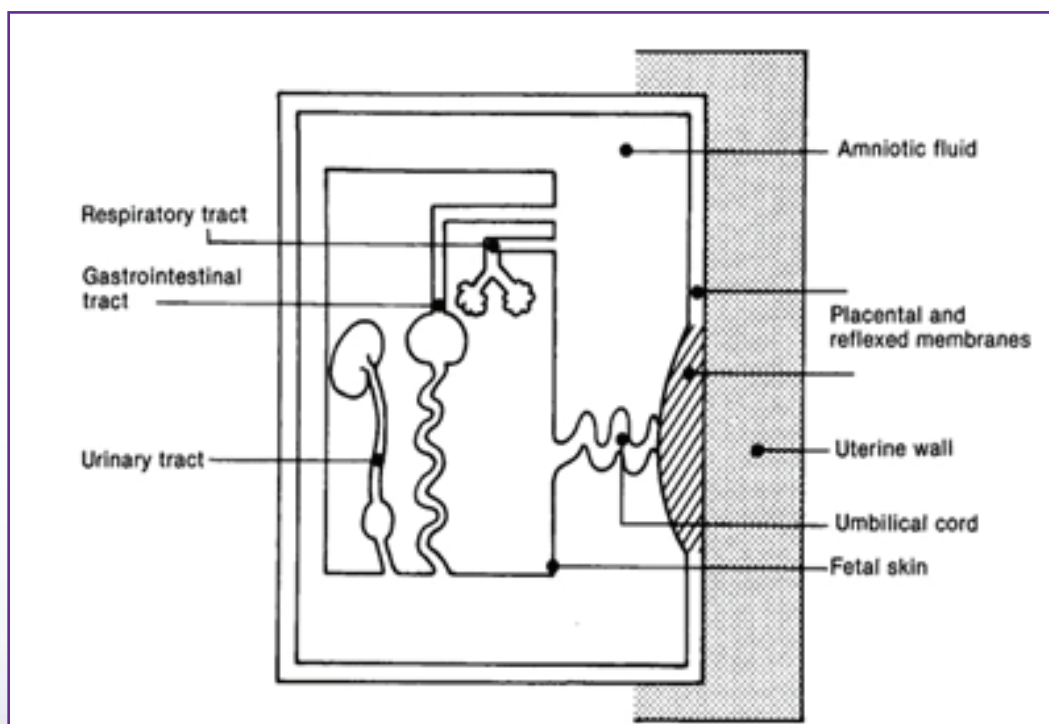
It cushions the fetus against physical trauma

Allows for growth of the fetus free from restriction or distortion by adjacent structures

Allows the respiratory and gastrointestinal tracts and musculoskeletal system to develop normally

Helps to prevent infection and provides for a thermally stable environment

May provide a short-term source of fluid and nutrients to the developing embryo.

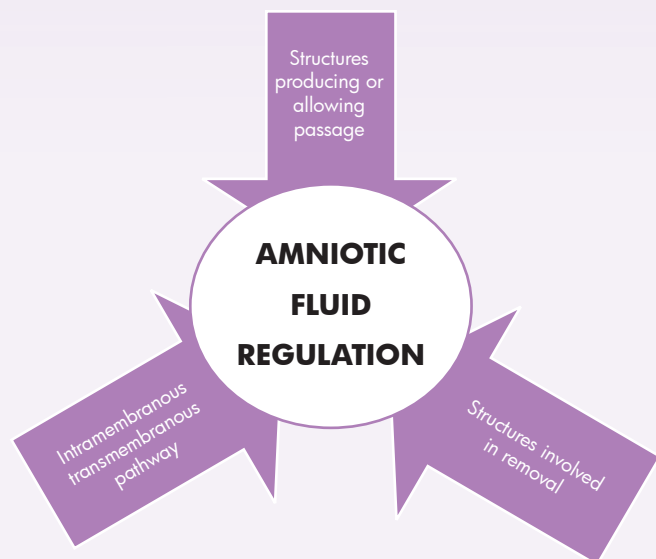


The major fetal and maternal amniotic structures involved in the formation and reabsorption of amniotic fluid

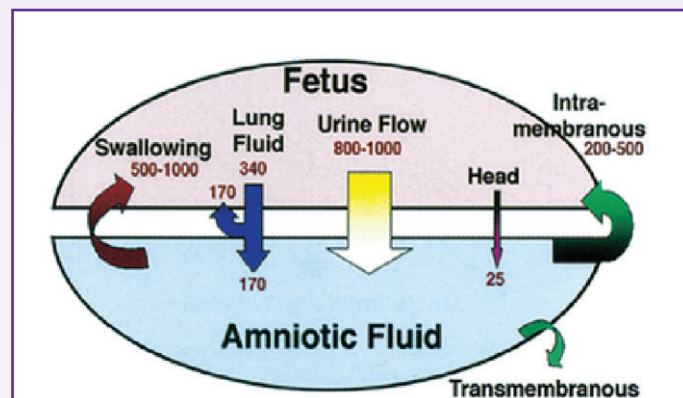
(From Wallenburg HCS: The amniotic fluid. J Perinatal Med 5:193, 1977.)

AMNIOTIC FLUID REGULATION

The volume of amniotic fluid at any moment represents a balance between those structures producing or allowing passage of fluid into the amniotic cavity: chorion frondosum and membranes, skin, urinary tract, and respiratory tract and those involved in the removal of amniotic fluid: gastrointestinal tract, respiratory tract, and the amniotic-chorionic interface at the uterine wall.



Two more pathways include the intramembranous pathway includes transfer between amniotic fluid and fetal blood perfusing the fetal surface of the placenta, fetal skin, and umbilical cord and transmembranous routes pathway involves exchange across the fetal membranes between amniotic fluid and maternal blood within the wall of the uterus.



Summary of water flows into and out of the amniotic space in late gestation.

(From Brace RA: Physiology of amniotic fluid volume regulation. Clin Obstet Gynecol 40:286, 1997.)

| | Early pregnancy | Late gestation |
|----------------------|--|-------------------------------------|
| Structures producing | Chorioamnion, embryonic skin | Fetal kidneys and lungs |
| Structures removing | Fetal blood perfusing the surface of the placenta. | Gastrointestinal tract (swallowing) |

In early pregnancy, the chorioamnion acts almost as a molecular sieve, allowing for the free passage of water and solutes, electrolytes, creatinine, and urea. In the latter half of gestation, the two primary sources of amniotic fluid are the fetal kidneys and lungs. The primary sources of amniotic fluid removal are the gastrointestinal tract (swallowing) and absorption into the fetal blood perfusing the surface of the placenta. In the second and third trimesters, fetal urination plays an important role in the production of amniotic fluid. The removal of amniotic fluid throughout pregnancy is largely a result of fetal swallowing. Approximately one half of the daily urine produced is removed by fetal swallowing. Fetal swallowing has been estimated to be as low as 200 mL/day and as high as 1500 mL/day. Whereas at 20 weeks' gestation the percentage of AFV swallowed is small (approximately 5%), at term the fetus may swallow as much as 50% of the total AFV.

To conclude - Amniotic fluid provides an ideal setting for the developing fetus by providing a suitable fetal environment. Several potential variables influence the overall AFV. The physiologic pathways that influence the AFV are complex and not yet completely understood. Hence understanding the various pathways and the regulatory mechanisms concerned with amniotic fluid are to be considered.



Dr. Jagruti Murkey

DNB OBGY, FELLOW FETAL MEDICINE CHENNAI

FCPS DGO DFP

PRESENTLY CONSULTANT FETAL MEDICINE DAFFODILS AMRAVATI.

ULTRASOUND ASSESSMENT OF AMNIOTIC FLUID

A) WHAT IS THE NEED?

Amniotic fluid is vital to the well-being of the fetus, helps prevent compression of the umbilical cord, its bacteriostatic action helps prevent infection. The quantity of amniotic fluid at any time in gestation is the product of exchange between the mother, fetus, and placenta. Disorders of this regulatory process can lead to either polyhydramnios or oligohydramnios leading to abnormal fetal or maternal conditions and may be responsible for alterations of fetal well-being and outcome.

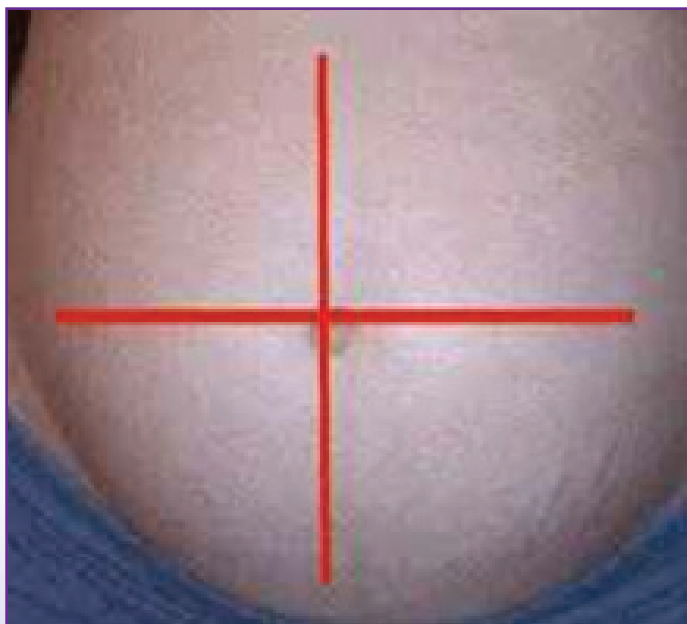
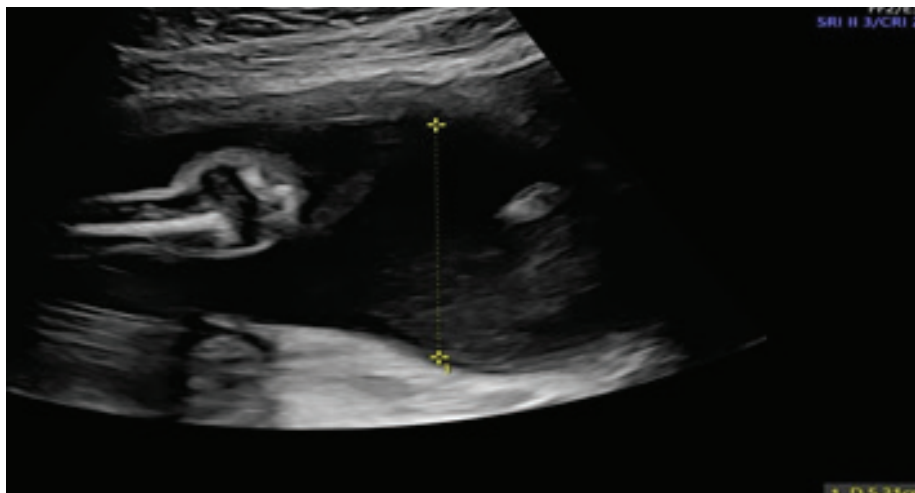
With the advent of real-time ultrasonography, assessment of amniotic fluid has been possible, resulting in earlier recognition of abnormal conditions and possible intervention.

AFI - amniotic fluid index was first described by Phelan & coworkers in 1987.

B) HOW TO MEASURE?

Basic 2 methods- a) SVP- single deepest vertical pool

- Also called Maximum vertical pocket
- The transducer is held perpendicular to the floor and parallel to the long axis of the pregnant woman.
- In sagittal plane, the largest vertical pool is identified.
- The fluid pocket may contain fetal parts, loops of cord, these are not included in the measurement.

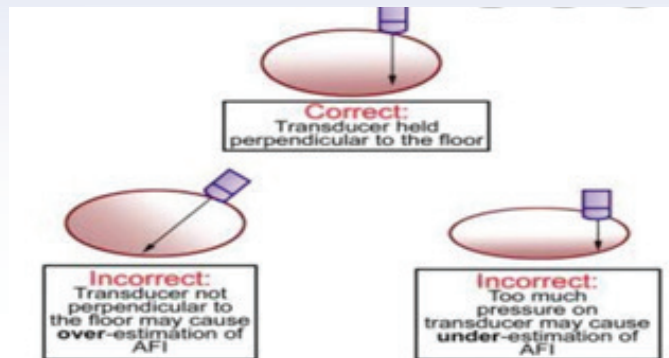


B) 4 QUADRANT METHOD-

1. Divide the uterus into 4 quadrants
2. Linea nigra- Marker for Right & Left halves
3. Umbilicus- marker for upper and lower halves
4. Transducer parallel to the patient's longitudinal axis and perpendicular to the floor.
5. The deepest, unobstructed, free of cord loops, confirmed by colour Doppler, vertical pocket of fluid is measured in each quadrant in centimeters & then added to calculate the AFI.

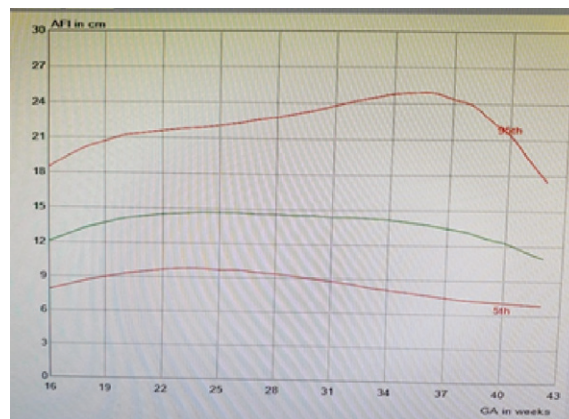
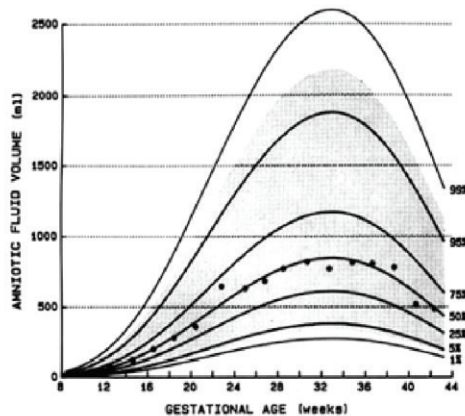
C) GA- GESTATIONAL AGE- WHEN TO MEASURE?

- Subjective evaluation in < 16 weeks gestation
- 16 – 28 weeks- SVP
- 28 wks till term- 4 quadrant AFI
- TWINS / Multifetal pregnancy - SVP only irrespective of GA



D) Normal Range

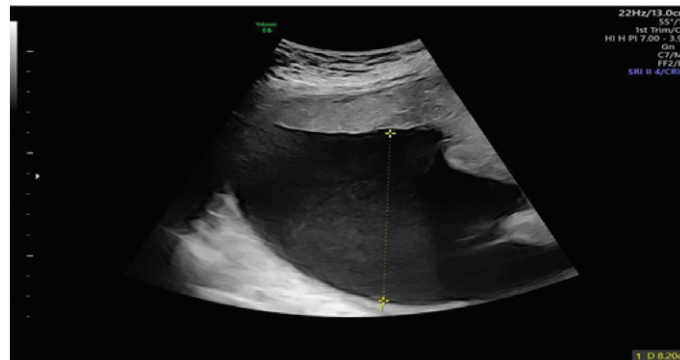
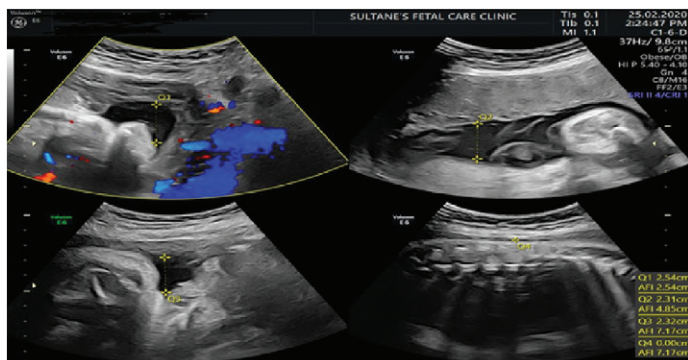
- Normal 5 to 25 cm
- < 5cm - Oligohydramnios
- 5-10 cm - decreased AFV
- 10-18cm - Normal
- 18-25 - Increased AFV
- >25cm - Polyhydramnios



Oligohydramnios

1 in 100 pregnancies at <24 weeks' gestation.

Polyhydramnios



1 in 100 pregnancies.

SVP mild (8–11 cm), moderate (12–15 cm) and severe (≥ 16 cm)

■ **Oligohydramnios:**

It is defined as reduced amniotic fluid i.e. amniotic fluid index of 5 cm or less or the deepest vertical pool < 2 cm.



■ **Polyhydramnios:**

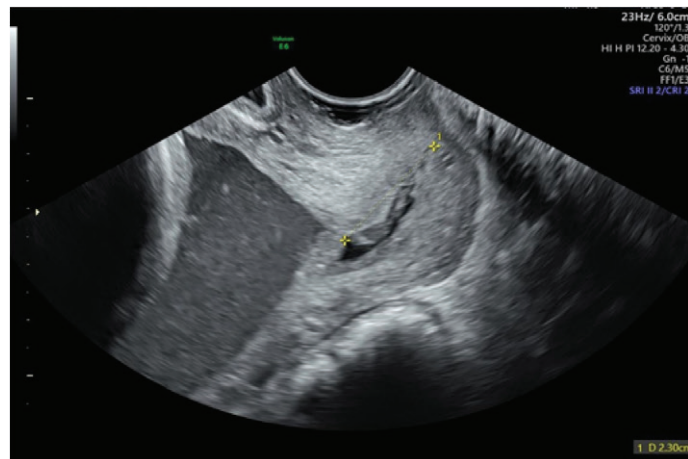
It is defined as excessive amount of amniotic fluid of 2000 ml or more

AFI of > 25 cm or the deepest vertical pool of > 8 cm



AMNIOTIC SLUDGE-

- Presence of free floating hyperechogenic material in the amniotic fluid close to cervix.
- An independent risk factor for Impending preterm delivery, PPRM, MIAC- microbial invasion of amniotic cavity
- Seen in women with H/o Previous PTL, episode of PTL , or in asymptomatic women with histologic chorioamnionitis with risk for PTL



A large study by Morris et al found that amniotic fluid index has a poor sensitivity for adverse pregnancy outcome, especially oligoamnios, and was likely to lead to increased obstetric intervention without improving outcome. [Morris JM, Thompson K, et al- The usefulness of ultrasound assessment of amniotic fluid in predicting adverse outcome in prolonged pregnancy: a prospective blinded observational study. BJOG2003 Nov;110(11):989-94.] And oligohydramnios is a poor diagnostic test to predict poor neonatal outcome Lam H, Leung WC, Lee CP, Lao TT. Amniotic fluid volume at 41 weeks and infant outcome. J Reprod Med 2006 Jun;51(6):484-8.

Single deepest vertical pocket or amniotic fluid index as evaluation test for predicting adverse pregnancy outcome (SAFE trial): a multicenter, open-label, randomized controlled trial.

Kehl S1,2, Schelkle A2, Thomas A3, - ISUOG 2015- The SDP method is the favorable method to estimate amniotic

PARTICULATE AF

- seen in 4% of pregnancies
- In first 2 trimesters- associated with bleeding episodes
- In 3rd trimester- due to interaction between pulmonary surfactant and vernix caseosa. It is not predictive of fetal distress & not a reliable indicator of meconium or blood in Amniotic fluid and should not typically alter management.
- Congenital anomalies associated include acrania, Herlequin ichthyosis & epidermolysis bullosa letalis.

Sludge with particulate AF with Short cervix- more risk of preterm labour than short cervix alone.

| Morris JM et al | AFI superior to SVP | |
|------------------|---------------------------------|--------------------------------------|
| Megann et al | SVP superior to AFI | Least FP diagnosis of Oligo / poly |
| Chauhan SP et al | SVP better, & with modified BPP | Decrease rate of IOL for oligoamnios |

fluid volume, especially in a population with many low-risk pregnancies.

The use of AFI resulted in more interventions for diagnoses of oligohydramnios with no benefit, thereby making SDP the preferable approach for assessing amniotic fluid, especially in low risk women. -The SAFE trial (Ultrasound Obstet Gynecol, 2016), a multicentered randomized controlled trial (RCT), included 1052 pregnant, high and low risk women.

However AFI identification of polyhydramnios might be helpful in identifying large for gestational age fetuses and fetuses at risk for congenital anomalies



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Fellowship OBGY Ultrasound
FMF ID 67958

OLIGOHYDRAMNIOS

Oligohydramnios - The DRY STATE

ULTRASOUND DIAGNOSIS:

- The vertical measurement of the deepest pocket of amniotic fluid free of fetal parts is <2 cm or
- The amniotic fluid index (sum of vertical pockets in the four quadrants) is <5 cm

ETIOLOGY-

Fetal-

- PROM
- Chromosomal abnormalities
- Congenital anomalies
- IUGR
- IUFD
- Post-term pregnancy

Placental

- Chronic abruption
- TTTS
- CVS

Maternal-

- Preeclampsia
- APLA syndrome
- Chronic hypertension

DRUGS-

- PD synthetase inhibitors
- ACE inhibitors

IDIOPATHIC

Oligohydramnios in the First trimester



- Subjective diagnosis
- The difference between mean sac diameter and CRL of less than 5mm
- Prognosis is bad
- Except in cases where it follows chorionic villus sampling
- Trisomy 13 and triploidy are the most common chromosomal abnormalities associated with early oligohydramnios

Oligohydramnios in the Second trimester

DETERMINE ETIOLOGY

- Rule out PROM
- Rule out congenital anomalies- renal
- History of medical illness
- Rule out IUGR , IUFD when suspected
- Amniocentesis- if chromosomal abnormalities are suspected
- Tests for APLA syndrome if suspected

FETAL ANOMALY

- 4.5 to 37% of fetuses with oligohydramnios
- The fetal defects associated with oligohydramnios usually involve the urinary tract:
 1. Bilateral renal agenesis
 2. Bilateral multicystic dysplastic kidneys with or without aneuploidy association
 3. Bladder outlet obstruction, particularly severe early-onset lower urinary tract obstruction such as posterior urethral valves and urethral atresia

Oligohydramnios in third trimester

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

Are abnormalities revealed in any of these tests?

Yes

Induce labor

No

Initiate maternal hydration. Measure the AFI again in 2–6 hours. Is the AFI <5.0?

Yes

Consider inducing labor

No

Is the AFI 5–8?

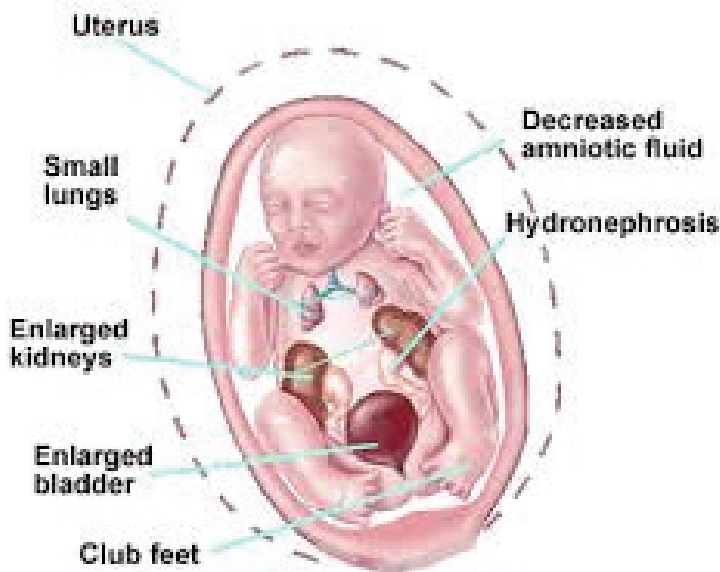
Yes

Measure the AFI again in 3–4 days

No

If the AFI is >8, perform AFI measurement and NST weekly

The Fetal Sequelae of Oligohydramnios



1. Pulmonary hypoplasia
2. Skeletal deformities- Potter syndrome /sequence

Recurrence:

- Renal abnormalities: agenesis or multicystic 1-3%, infantile polycystic 25%.
- Preterm rupture of membranes: 10-25%, but can be reduced by cervical cerclage and progesterone
- Uteroplacental insufficiency: 10% but can be reduced by aspirin (150 mg/day) from 12 weeks' gestation.



Dr. Priya Deshpande

Fetal Medicine Consultant at

- Apollo Hospital Navi Mumbai
- Sai Siddhi Diagnostic Center Nerul
- Treasurer of The Association of Fetal Medicine Consultants Maharashtra
- Motherhood Hospital Kharghar

POLYHYDRAMNIOS

POLYHYDRAMNIOS

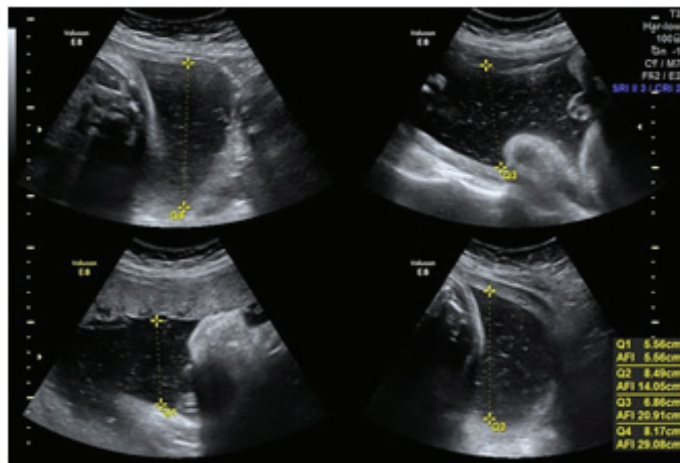


I THINK I HAVE LANDED IN THE DEEPER SIDE OF THE POOL

DEFINITION OF POLYHYDRAMNIOS :

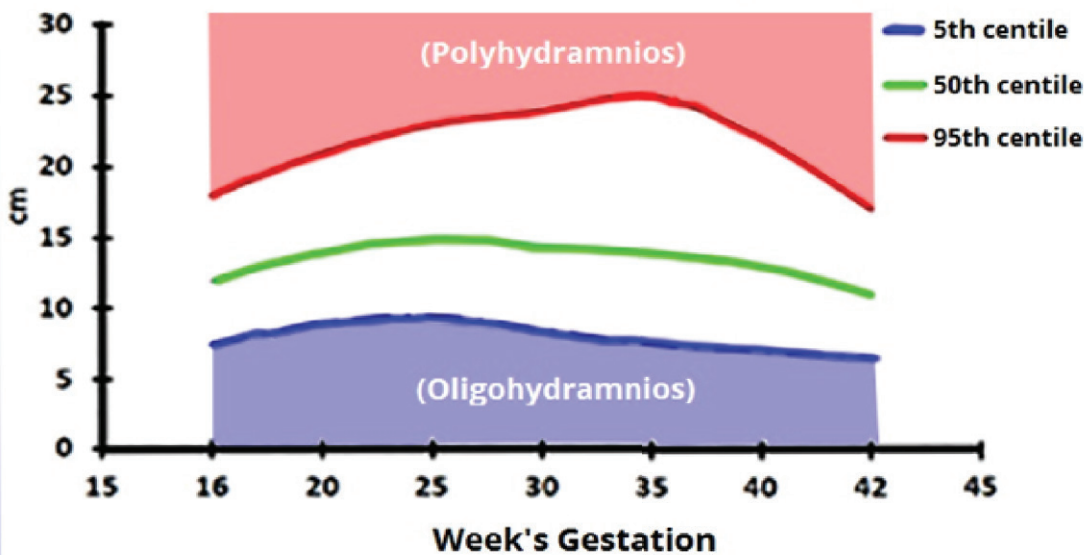
Single deepest vertical pool $\geq 8\text{cm}$
 Ideal method in cases of multiple gestation

Amniotic Fluid Index (AFI) $\geq 24\text{cm}$ or 25cm
 more relevant ≥ 28 weeks (4 quadrant method)



CAN USE AMNIOTIC FLUID NOMOGRAMS:

Amniotic Fluid Index in Normal Pregnancy



Fetal and neonatal etiologies for polyhydramnios

| IMPAIRED FETAL SWALLOWING | | EXCESS URINE PRODUCTION | | | |
|---------------------------|--|-------------------------|----------------------|--------------------------------|-------------------------|
| GI OBSTRUCTION | NEURO-MUSCULAR | CRANIOFACIAL | RENAL / URINARY | CARDIAC | OSMOTIC DIURESIS/ OTHER |
| Duodenal atresia | Arthrogyroposis | Cleft lip/palate | PUJ obstruction | Cardiac structural abnormality | Diabetes |
| TE fistula | Myotonic Dystrophy | Neck masses | Mesoblastic nephroma | Tachyarrhythmias | Hydrops |
| Thoracic mass | Intracranial Anomaly (for eg; anencephaly) | Micrognathia | Barter's syndrome | Sacrococcygeal Teratoma | Idiopathic |
| Diaphragmatic hernia | | | | Chorioangioma | |

EVALUATION OF THE CASE-

Polyhydramnios on USG

1st visit irrespective of Gestational age

Detail USG for fetal

- abnormalities
- weight
- stomach and small bowel
- movements

Maternal investigations

- RBS/GTT/HbA1C
- Toxoplasma, CMV, Parvovirus B19 IGM & IGG
- Blood group Rh typing
If Rh negative & multigravida then Rh ab titres

Consider anenatal steroids if cervix is short

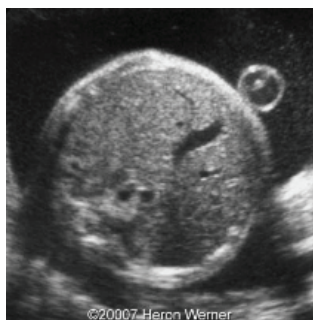


SCENARIO 1

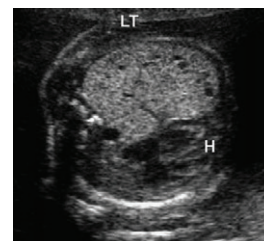
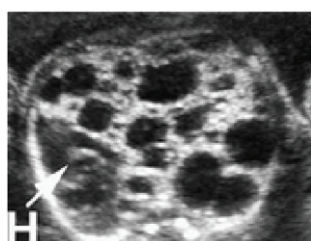
POLYHYDRAMNIOS AT MID 2ND TRIMESTER

A EXAMINE FETAL STRUCTURE

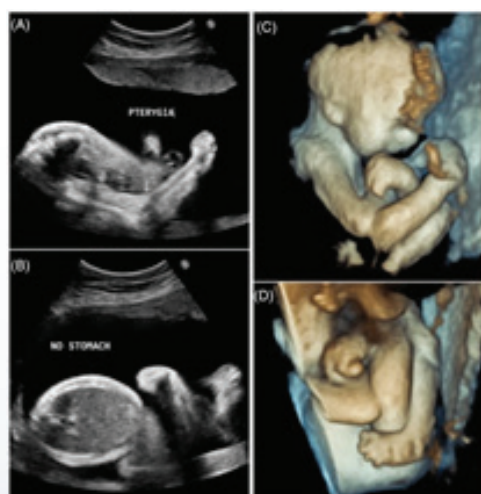
FETAL STRUCTURAL ABNORMALITY



- Confirm fetal abnormality
- Isolated and the cause for hydramnios ?
- Multisystem involvement s/o of genetic abnormality ?
- Prognosticate the case as per the diagnosis (lethal or correctable, its severity and its association with other system abnormalities)
- Multidisciplinary team for counselling
- Prenatal diagnostic tests: FISH/QFPCR 5 probes with CGH microarray + storage of DNA (depending on the diagnosis made)



B EXAMINE FETAL MOVEMENTS



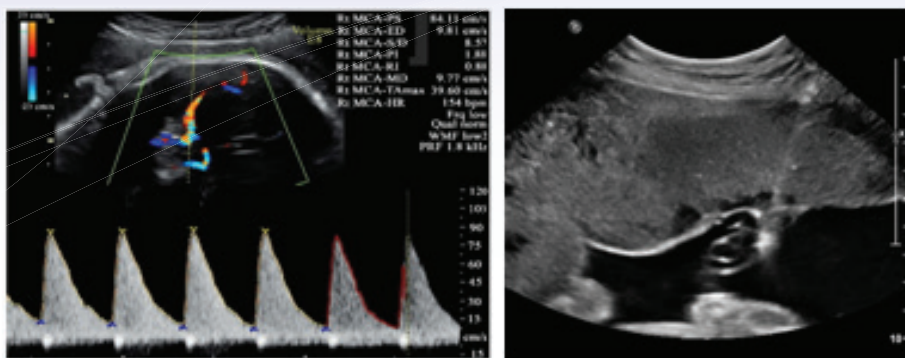
- Absent fetal movements / akinesia
- Abnormal posture
- Poor prognosis

C EXAMINE PLACENTA



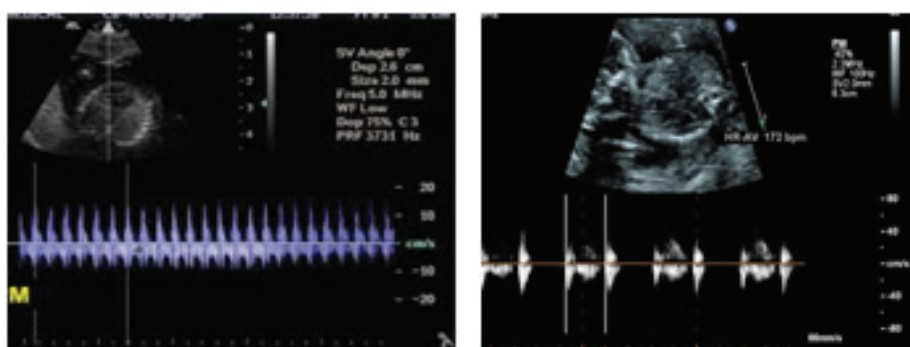
- Placental vascular mass =/+hyperdynamic circulation
- Check MCA PSV for fetal anemia
- Specific management for angioma and treat Intrauterine Transfusion (IUT)

D EXAMINE FETAL ANEMIA CHECK FOR MATERNAL AB



- MCA PSV – high
- Rh isoimmunisation or other cause for fetal anemia
- Intrauterine transfusion

E FETAL ECHOCARDIOGRAPHY

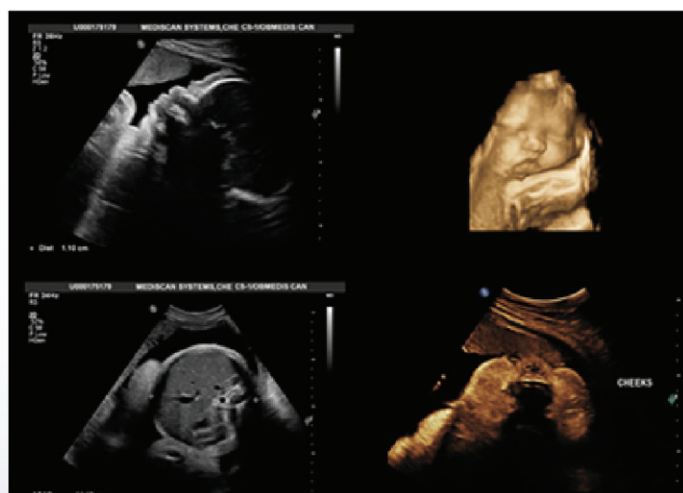


- Tachy / bradyarrhythmias
- Anti RO and anti LA antibodies
- Pediatric cardiologist opinion
- Treatment as per the case

SCENARIO 2

POLYHYDRAMNIOS AT 3RD TRIMESTER

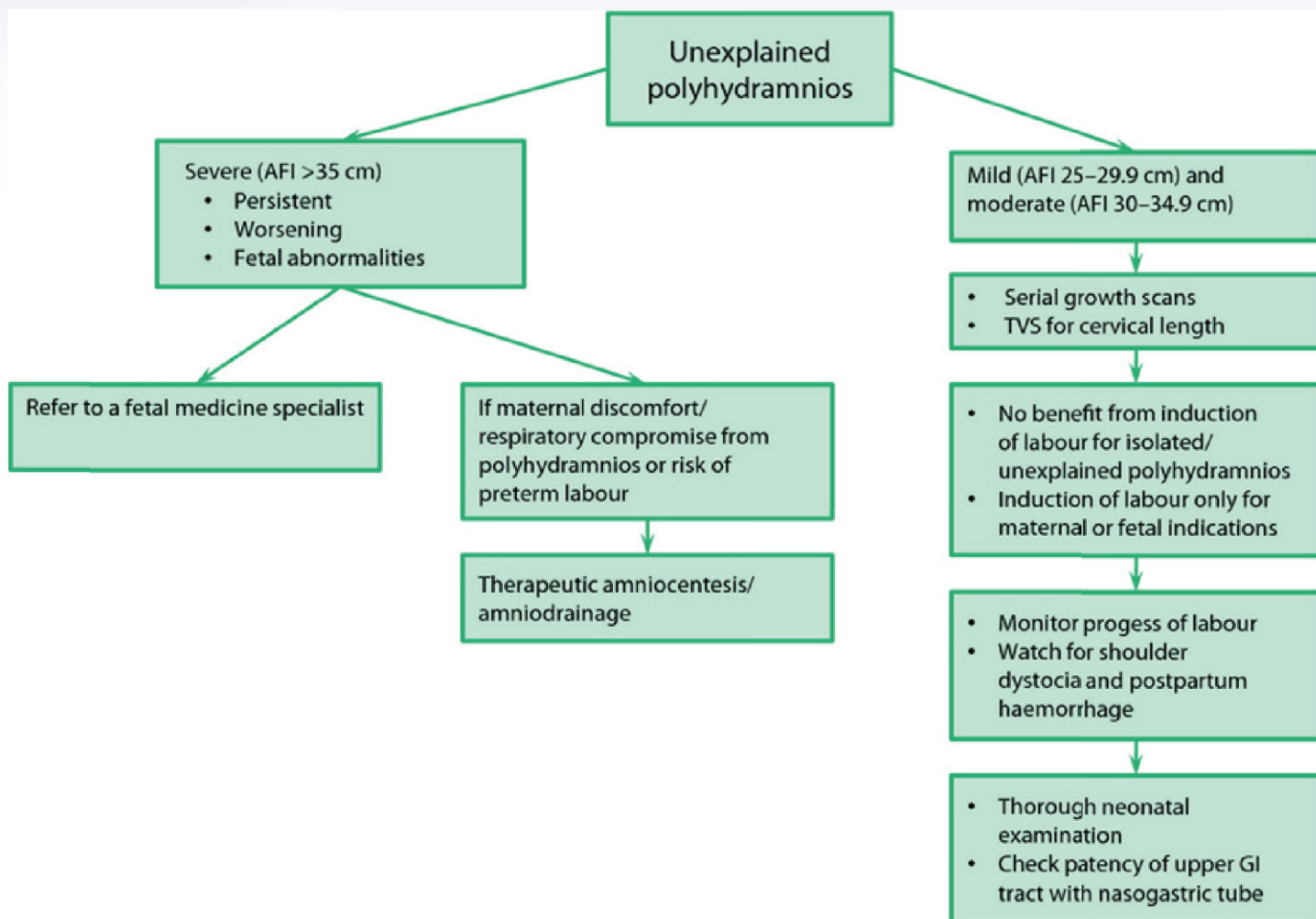
- **COMMONEST CAUSE =MATERNAL DIABETES /GESTATIONAL OR K/C/O DM**
- **MATERNAL BLOOD SUGARS**



- Maternal diabetes
- Fetal macrosomia
- Fetal somatic fetopathy
- Monitor blood sugars
- Team management - obgyn, endocrinologist and sonologist

Counsel regarding risk of

- Preterm labour
- Unstable lie
- Cord prolapse
- Antepartum and postpartum haemorrhage
- Increased operative intervention

SCENARIO 3**IF NO OBVIOUS ETIOLOGY IS KNOWN THEN MANAGE AS UNEXPLAINED POLYHYDRAMNIOS**

Inform patient and pediatric team

1. It is not possible to exclude esophageal atresia or subtle abnormalities.
2. Detail postnatal assessment of the baby is mandatory

Thus article is meant for a brief approach and management of polyhydramnios in pregnancy and it is not possible to go in details of each etiology and specific management.

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BRAIN-FLEXERS



1) Which of below mentioned option is not a role of amniotic fluid?

- a) Protecting fetus from trauma
- b) Important in fetal neural development
- c) Important in development of gastrointestinal & pulmonary systems

2) Which one of the following is not a source of amniotic fluid?

- a) Fetal urine
- b) Placenta & membranes
- c) Fetal biliary system

3) One of the following is not standardized technique of amniotic fluid measurement?

- a) Total volume of amniotic fluid
- b) Four quadrant method (AFI)
- c) Single deepest pocket

4) The most widely accepted cutoff for oligohydramnios using 4 quadrant AFI method is -

- a) AFI < 7 cm
- b) AFI < 5 cm
- c) AFI < 2 cm

5) Most common etiology for oligohydramnios is

- a) Bilateral Renal agenesis
- b) Fetal aneuploidy
- c) PPRM

6) One of the below mentioned drugs does not cause Iatrogenic Oligohydramnios

- a) NSAIDS
- b) ACE Inhibitors
- c) MgSo4

7) Fetal anomalies of this system are the most commonly searched for in case of oligohydramnios

- a) Renal system
- b) CNS
- c) CVS

8) Most serious complication of oligohydramnios in second trimester

- a) Low birth Weight
- b) Preterm delivery
- c) Pulmonary hypoplasia

9) The only therapy of probable help in isolated oligohydramnios in third trimester

- a) Maternal hydration
- b) Indomethacin
- c) Steroid Therapy

10) One of the following is not a complication of second trimester oligohydramnios

- a) Pulmonary hypoplasia
- b) Potter's syndrome
- c) Micrognathia

11) In general, it is called polyhydramnios when Deepest vertical pool exceeds

- a) 7 cm
- b) 8 cm
- c) 9 cm

12) Most notable maternal condition associated with polyhydramnios is

- a) DM
- b) Hypothyroidism
- c) Preeclampsia

13) Most common fetal abnormalities which are associated with polyhydramnios

- a) CNS
- b) GIT
- c) Musculoskeletal

14) Polyhydramnios with persistently absent stomach bubble raises suspicion of

- a) Gastric agenesis
- b) duodenal atresia
- c) esophageal atresia

15) Association of skeletal dysplasia with polyhydramnios probably points towards

- a) its diagnosis
- b) its lethality
- c) Presence of other undiagnosed abnormalities

16) Mechanism behind association with fetal akinesia disorder with polyhydramnios is

- a) Increased diuresis
- b) Decreased swallowing
- c) hyper dynamic circulation

17) In following situation, Amnioreduction is commonly indicated

- a) Twin gestation
- b) maternal breathing distress
- c) PPRM

18) In context of speed of aspiration of fluid, One complication of Amnioreduction to be kept in mind,

- a) PPRM
- b) Infection
- c) placental abruption

19) When in twin gestation, polyhydramnios in one twin & oligohydramnios noted in other, which first consideration comes in picture

- a) chorionicity
- b) gestation age
- c) type of conception

20) While investigating polyhydramnios, one of the following is not a primary tool

- a) Fetal chromosomal study
- b) TORCH
- c) Fetal ECHO

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To participate, write the correct answer against each question number (Eg. 1 a; 2 b; 3 a) and send in your entries to **Dr. Pooja Lodha** at **drpoojalodha@gmail.com**



**THE TOP THREE WINNERS STAND
 A CHANCE TO WIN A SURPRISE PRIZE.**

The winners will be announced in the next edition. So keep participating and keep reading!

IN OUTSIDE WORLD IN INTRAUTERINE LIFE

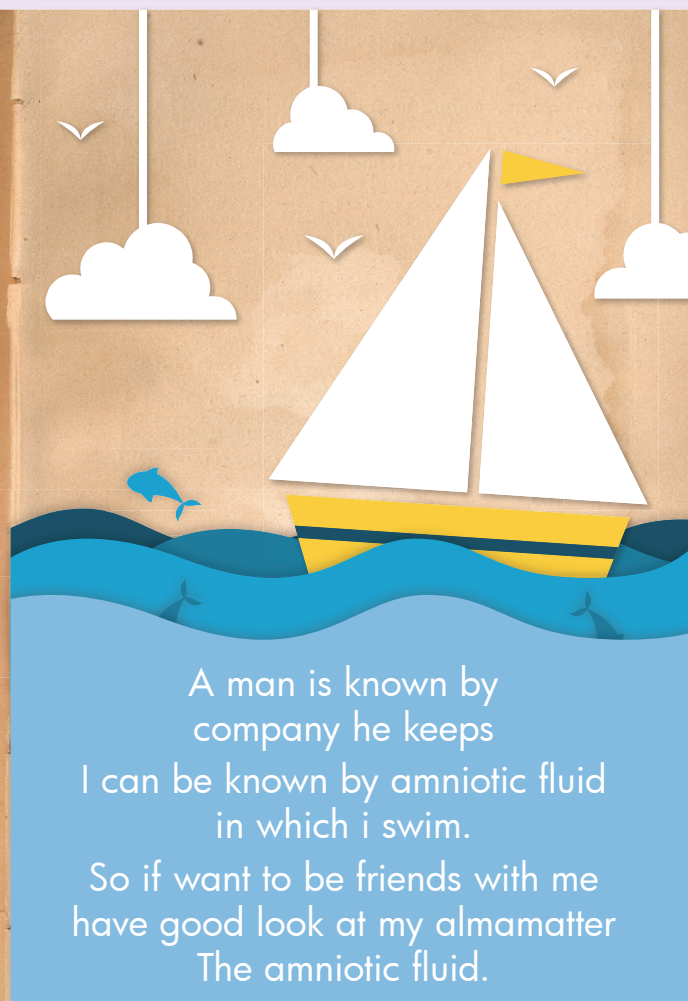
Dr. Sudesh Doshi



My world Amniotic Fluid.

Amniotic fluid is my world
I live in it.
I play in it i swim in it.
I float in it.
I make it I swallow it
I drink it i pee it.
You want to know me
You can measure it you can
see on usg
Want to know more about me
You can take it out and analyse it
Either by spectrophotmetry or
biochemistry.

When i am sad i make it less
When i am bad i make it more
When i am in distress i colour it.
When i am dead still i color it.



A man is known by
company he keeps
I can be known by amniotic fluid
in which i swim.
So if want to be friends with me
have good look at my almanmatter
The amniotic fluid.

If you wish to contribute to this newsletter further, please write in to
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