Obstetric lectures summary

#Anatomy of female pelvis and fetus:

- The pelvic brim (inlet) ➔ transverse diameter= 13.5 cm / AP diameter= 11 cm
- The angle of inlet = 60 degree ➔ if increased it may delay the fetus head entering in labor.
- The pelvic mid cavity ➔ transverse diameter = 12 cm / AP diameter = 12 cm
- Ischial spine ➔ palpable vaginally / landmark to assess station and land mark for providing the anesthesia (block pudendal nerve).
- Pelvic axis ➔ imaginary line that shows the path that the center of the fetal head takes during its passage through the pelvis.
- The pelvic outlet ➔ transverse diameter = 11 cm / AP diameter = 13.5 cm
- The pelvic measurements affected by ➔ maternal stature, previous pelvic fractures, metabolic bone disease like rickets.
- Pelvic shapes:
  - Gynecoid pelvis → most favorable for labor.
  - Android pelvis → predispose to deep transverse arrest.
  - Anthropoid pelvis → encourages occipito-positerior position.
  - Platypelloid pelvis → increase the risk of obstructed labor.
- The pelvic floor formed by ➔ two levator ani muscle + musculofasical gutter + perineal body.
- Episiotomy ➔ surgical incision of the perineum and posterior vaginal wall done during second stage of labor.
- Fetal skull made by ➔ vault, face, base.
- Vault formed by ➔ parietal bones and parts of the occipital, frontal, temporal bones.
- Membranous sutures of the vault ➔ sagittal, frontal, coronal, lambdoidal sutures.
- Anterior fontanel (bregma) ➔ diamond shape, junction of sagittal + frontal + coronal sutures.
- Posterior fontanel ➔ triangular shape, junction of sagittal + lambdoidal sutures.
- Moulding ➔ occur when the bones of the fetus skull become compressed and overlapped.
- Severe moulding can be a sign of cephalopelvic disproportion (CPD).
- Vertex ➔ is the area of the fetus skull that bounded by the two parietal eminences and the anterior and posterior fontanels.
- Attitude of the fetus head ➔ refers to the degree of flexion and extension at the upper cervical spine.
- Diameters of the fetus skull ➔ suboccipitobregmatic (9.5 cm), suboccipitofrontal (11.5 cm), occipitomental (13 cm), submentobregmatic (9.5 cm).

#Diagnosis of pregnancy:

- **Positive signs:** Demonstration of the fetal heart beats / Quickening / Visualization of the fetus and measurements of its diameters.
- **Probable signs:** Uterine enlargement / Uterine changes in size, shape and consistency / Cervical changes / Palpation of the fetus parts / Braxton hick contractions / Endocrine test.
- **Presumptive signs:** Breast changes: swelling and tenderness /Changes in the skin and mucus membrane: Chadwick's sign, linea nigra, striae gravidarum, Chloasma, abdominal striae.
- **Symptoms:** cessation of menses / Nausea with or without vomiting / Bladder irritability, frequency / Easley fatigability.

#The labor:

- Definition ➔ regular contractions bringing about progressive cervical change.
- Occur with labor ➔ loss of a show + spontaneous rapture of the membrane.
- Estimation of fetal age ➔ Naegele's rule, fundal height, quickening, fetal weight, US
- Success of labor depend on the three P:
- P1: power = uterine contractions:
  - Characterized by interval, duration, intensity.
  - Good contraction: interval = 2-3 min / duration = 45-60 sec.
  - Ideal contractions number → 4-5 contractions per 10 minutes.
  - In abnormal labor → weak and infrequent uterine contractions or uncoordinated contractions that occur in twos or threes then stop // treated by rehydration + IV oxytocin + artificial rupture of the membrane.
- P2: passenger = fetus:
  - Fetal variables that can affect labor → fetal size, lie, presentation, attitude, position, station, number of fetuses, presence of anomalies.
  - Breech and face, brow presentation → may lead to poor progress.
  - Risk factors for poor progress in labor → small women, big baby, malposition, malpresentation, early membrane rapture, soft tissue/pelvic malformation.
- P3: passage = pelvis:
  - Consists of bony pelvis and soft tissues of the birth canal (cervix, pelvic floor musculature).
  - Small pelvic outlet can result in CPD.
  - Abnormalities in the passage could be due to → abnormal pelvis, abnormalities in the uterus and cervix like fibroid, cervical dystocia.
  - Cervical dystocia → non-compliant cervix which effaces but fails to dilate because severe scarring usually as result of cone biopsy and may lead to CS.
- Diagnosis of labor pain:

- History: regular painful contractions every 5-8 min, bloody show, spontaneous rapture of membrane.
- Physical examination: reduction of interval between contractions, abdominal pain, cervical effacement (50%), cervical dilatation (2 cm).

- 1st stage of labor:
  - Latent phase: from the onset of labor until 3-4 cm dilatation // lasts 3-8 in primi and shorter in multi.
  - Active phase: from 3-4 cm dilatation to full dilatation (10 cm)
  - Management of first stage → Maternal vital signs, Regular recording of uterine contractions and fetal heart rate, Food / IV fluid consideration, Maternal position, Analgesic drug consideration, Record and assess progress of labor.
- 2nd stage of labor:
  - From fully dilated cervix until delivery of baby.
  - Moulding → alternation of fetal cranial bones to each other as a result of compressive forces of the maternal bony pelvis.
  - Caput → localized edematous area on the fetal scalp caused by pressure of the cervix.
  - Second stage takes 2 hours in primi and 1 hour in multi.
  - Mechanism of labor: There are 8 cardinal movements in occiput anterior presentation. Refers to changes in the fetal head position during its passage through the canal ➔ Engagement → Descent → Flexion → Internal rotation → Extension → Restitution → External rotation → Expulsion.
- 3rd stage of labor:
  - From delivery of the baby until delivery of the placenta.
  - Sings of placental separation → lengthening of umbilical cord, gush of blood, fundus become globular and more anteverted against abdominal hand.
  - Controlled cord traction → The Placenta is delivered using one hand on umbilical cord with gentle downward traction, The Other hand should be on the abdomen to support the uterine fundus, this is the active management of third stage.
  - Risk factor for aggressive traction is uterine inversion.
  - Normal duration between 0-30 min for both PrimiG and MultiG.
- 4th stage of labor:
  - Refers to the time from delivery of the placenta to 1 hour immediately postpartum.
  - Blood pressure, uterine blood loss, pulse rate must be monitored closely ~ 15 min.
- Cephalopelvic disproportion (CPD):
  - Implies anatomical disproportion between the fetal head and maternal pelvis.
  - CPD is suspected if → Progress of labor is slow or arrested despite efficient uterine contractions / The fetal head is not engaged / Vaginal exam, shows severe moulding and caput formation / The head is poorly applied to the cervix.

    - Oxytocin can be given carefully to primigravida with mild to moderate CPD as long as the CTG is reactive.
    - Relative disproportion can be overcomed if the malposition is corrected (conversion to flexed OA position).
- Patterns of abnormal progress in labor:
    - Prolonged latent phase / primary dysfunctional labor / secondary arrest.
    - Causes: malposition, malpresentation, CPD, inefficient uterine contractions.

#Antepartum hemorrhage:

- **Definition:** vaginal bleeding from 24 weeks to the delivery of baby.
- **Placental causes:** placental abruption, placenta praevia, vasa praevia.
- **Local causes**: cervicitis, cervical ectorpion, cervical cancer, vaginal trauma & infection.

#Placenta praevia:

- **Definition**: abnormal location of the placenta over or in close proximity to the internal os.
- **Classification**: complete (total) placenta praevia / partial placenta praevia / marginal / low lying placenta.
- **Predisposing factors**: twin pregnancy / increasing maternal age / increasing parity / previous CS.
- **Diagnosis**: painless vaginal bleeding / transvaginal US / transabdominal US / double setup vaginal examination.
- **Management**: hospitalization / bed rest / restriction of activity / blood transfusion / amniocentesis / cesarean birth.
- **Indication of vaginal delivery**: dead fetus / major fetal malformations / delivery with minimal blood loss.
- **Complications**: placenta praevia accreta / PPH / increasing mortality.

#Vasa praevia:

- **Definition**: fetal vessels running through the membranes over the cervix and under the fetal presenting part, unprotected by placenta or umbilical cord.
- **Causes**: velamentous insertion of the cord / vessels running between lobes of placenta.
- **Lead to**: perinatal mortality / fetal exsanguinations / blood loss / fetal asphyxia and death.

#Placental abruption:

- **Definition**: premature separation of the placenta from its site of implantation from 24 weeks until delivery of baby.
- **Grading:** Grade1 = not apparent / Grade2 = vaginal bleeding / Grade3 = fetal distress / Grade4 = maternal shock and fetal death.
- **Risk factors**: increased age and parity / vascular diseases like preeclampsia / mechanical factors like trauma / smoking / cocaine use / uterine myoma / polyhydramnious.
- **Clinical features**: vaginal bleeding / uterine tenderness or back pain / abdominal pain / shock / renal failure / change fetal heart rate / fetal distress or death / preterm labor.
- **Complications**: DIC / hypovolemic shock / amniotic fluid embolism / acute renal failure / hemorrhage / perinatal mortality / fetal growth restriction.
- **Treatment**: blood transfusion / assessment of fetus / CS or vaginal delivery.

#Post-partum hemorrhage:

- **Primary PPH**: blood loss of 500 ml or more within 24 hours of delivery.
- **Secondary PPH**: significant blood loss between 24 hours and 6 weeks after birth.
- **Causes 4Ts**:
  - Tone: Previous PPH / Prolonged labor / Age > 40 years / big baby / multiple pregnancy / Placenta praevia / Obesity / Asian ethnicity.
  - Tissue: Retained placenta / membrane / clot.
  - Thrombin: Abruption / Pre-eclamptic toxemia / Pyrexia / Intrauterine death / Amniotic fluid embolism → DIC.
  - Trauma: Caesarean section / perineal trauma / Operative delivery / Vaginal and cervical tears / Uterine rupture.
- **Causes of secondary PPH:** Retained bits of cotyledon or membranes / Separation of a slough exposing a bleeding vessel / Sub-involution at the placental site due to infection.
- **Management**:
  - Reassure the mother.
  - Monitor TPR (total physical response) and blood pressure.
  - Start IV infusion and blood transfusion according to doctor's orders.
  - Prepare sterile instruments and equipment needed for examination.
  - Empty the bladder.
  - Administer medications as ordered (broad spectrum antibiotic).
  - Follow strict aseptic technique while providing care to the woman.
  - Frequent changing of sanitary pads.

#Rh isoimmunization:

- Occur when there is a different Rh blood type between that of the pregnant mother (Rh -) and that of the fetus (Rh +).
- 15 ml packed cell is enough to produce antibodies in the mother and lead to isoimmunization.
- **Types:** Rh negative homozygous recessive (dd) / Rh positive homozygous dominant (DD) / Rh positive heterozygous (Dd).
- **Causes of RBC transfer to the mother**: abortion / ectopic pregnancy / partial molar pregnancy / antepartum hemorrhage / external version / platelet transfusion / abdominal trauma / postpartum hemorrhage / amniocentesis / cordocentesis.
- **In the affected fetus lead to:** destroy of RBCs / hemolysis / hemolytic anemia in newborn / jaundice / ascites / pericardial effusion / heart failure / hydrops fetalis / hepatosplenomegaly.
- **Signs of fetal anemia**: polyhydramnious / enlarged fetal heart / ascites and pericardial effusion / hyper-dynamic fetal circulation / reduced fetal movement / abnormal CTG.
- **Diagnosis**: Antibody screening / amniocentesis / cordocentesis / ultrasound / fetoscopy / spectrophotometry.
- **Prevention**: give anti D antibodies (300 microgram – IM route) if the mother has no sensitization to D antigen.
- **Management**: intrauterine transfusion of O- blood / delivery vaginally or by CS.

#Post-term pregnancy:

- **Definition**: it is pregnancy that is more than 42 weeks of gestation or more than 294 days from the first day of last menstrual period.
- **Post maturity**: pathologic syndrome in which the fetus experiences placental insufficiency and resultant intrauterine growth retardation IUGR.
- **Causes of post-term pregnancy**: error in dating / unknown cause / primi / previous prolonged pregnancy / genetic factors / obesity / excessive weight gain during pregnancy / congenital anomalies / male gender / irregular ovulation / extra-uterine pregnancy / decreased fetal estrogen production.
- **Complications**: oligohydroamnious / macrosomia / passage of meconium / dysmaturity / fetal distress / fetal trauma / clavicle fracture / brachial plexus injuries.
- **Monitoring post-mature baby:** recording fetal movement / electronic fetal monitoring / US scan / biophysical profile / Doppler flow study.
- **Management:** induction of labor by oxytocin or prostaglandin or CS / with monitoring of CTG + US + biophysical profile.

#Pre-term labor:

- **Definition:** starting of onset of labor associated with uterine contraction and effacement of the cervix between the viability of the fetus and 37 week of gestation.
- **Pre-term labor increase**: the mortality and morbidity of baby / the neonatal respiratory distress syndrome / necrotizing enterocolitis / periventricular leukomalacia / intraventricular hemorrhage / jaundice / retinopathy / hypoglycemia / metabolic diseases / long term cerebral palsy.
- **Causes**: genital tract infection by bacterial vaginosis and chlamydia trachomonas / pyelonephritis, meningitis, pneumonia, malaria / placenta praevia and abruption / congenital diseases of the uterus / fetal abnormality / increase fetal weight / congenital anomaly / idiopathic / iatrogenic / social factors like maternal age, smoking, drug abuse, stress, anemia, DM, race, STDs.
- **Investigations**: midstream urine to detect infections / complete blood picture / urine culture / speculum / US / fibronectin / amniocentesis for lung maturity.
- **Prophylaxis**: stop smoking / stop alcohol / stop drug abuse / correct anemia / correct D.M / take folic acid / correct congenital anomalies of uterus.
- **Management**: treatment of infections / cervical suture / progesterone / steroids / antibiotics / analgesia / tocoletic to enhance steroid action and to transfer the patient to the tertiary hospital.

#Premature rapture of membrane:

- **Definition:** leakage of amniotic fluid in the absence of uterine activity or with presence of uterine activity or before the labor in patient less than 37 weeks.
- **Predisposing factors**: genital and general infection / cervical weakness / in adequate nutrition.
- **Clinical assessment**: history / examination / neutralization test / ferning test / US / culture / vaginal swap / fibronectin / amniocentesis / detection of any sign of infection.
- **Management**: hospital admission / give antibiotics like erythromycin / cortisol.
- **Complications:** infection / respiratory distress syndrome / intraventricular hemorrhage / placenta abruption / pulmonary hypoplasia / fetal distress / skeleton deformity / retenplacenta / increase incidence of CS / prenatal death.

#Fetal Growth Restriction (FGR)

- **DEFINITION**: Fetus whose growth velocity slows down or stops completely because of inadequate oxygenation or nutrition supply or utilization
- **AETIOLOGY**:

- MATERNAL FACTORS: Nutrition: BMI<19 starvation, Smoking: 460 gm lighter than fetus with nonsmoker woman, Alcohol and drug abuse, Maternal therapeutic drugs e.g. B blockers & Anticonvulsant , Maternal diseases (Cardiorespiratory compromise Sickle cell dis, Collagen vascular disease, Maternal DM, Maternal chronic hypertension, Abnormalities in the uterus)
- FETAL FACTORS: Fetal abnormalities (Chromosomal, Structural, Cardiac disease, Gastroschisis) Infection (Varicella, CMV, Rubella, Syphilis, Toxoplasma, Malaria)
- PLACENTAL FACTORS: Placental mosaicisim –16,22 chromosome , PE -- ↓ blood supply to placental bed

- **PREDICTION**: BMI<19, Smoking, Past history of FGR, Congenital uterine abnormalities, Big fibroid, Old mother>40 nulliparous, PE, Retro placental hemorrhage in 2nd & 3rd Trim , Maternal serum screening : 2nd Tim (Alfa Feto Protein (AFP) , E3 , Human Placental Lactogen , hCG), ULTRASOUND MARKERS
- **CLINICAL ASSESSMENT**: Weight gain in pregnancy, Fundal height, Clinical weight estimation of the fetus – liquor amount estimation, U/S assessment, Biometrical measurement of the fetus, Umbilical artery Doppler velocity study
- **PROPHYLAXIS**: Small dose aspirin, Protein energy, Stop smoking, Anti malaria, Stop medications
- **LABOR**: <37wk → C/S because at high risk of hypoxia & academia, If >37wk→ induction – continuous CTG, fetal scalp monitoring
- Not all FGR are SGA or all SGA are FGR:
  - SGA can be categorized according to the etiology into:
    - Normal SGA: No structural anomalies, normal liquor, normal Doppler study of umbilical artery & normal growth velocity.
    - Abnormal SGA: those with structural or genetic abnormalities
    - FGR: those with impaired placental function identified by abnormal UADW & reduced growth velocity.
  - SGA is divided into symmetrical or unsymmetrical according to Biometrical measurement

#Intrauterine death (still birth)

- **DEFINITION:** Baby delivery at 24wk complete with no sign of life
- **AETIOLOGY**:
  - MATERNAL FACTORS: Obstetric. Cholestasis, Metabolic disturbances (DM Ketoacidosis), Reduced oxygen saturation (Cystic fibrosis, Sleep apnea) , Uterine abnormalities, Ascherman syndrome, Antibodies production (Rh, Platelet) Alloimmunization, Congenital heart block

    - FETAL FACTORS: Cord accident, Fetofetal transfusion, Feto maternal hemorrhage, Chromosomal and genetic diseases, Structural abnormalities, Infection, Anemia of fetal origin
- **DIAGNOSIS**: ↓ FM, Routine U/S, Abruption or ruptured membrane, Color Flow Mapping is definitive
- **INVESTIGATION**: Kleihauer test, Full blood count with platelet, Blood gr, Antibody screen, Urea & Creatinine, LFT, Uric acid, Bile acid, Syphilis & Parvovirus & CMV & Toxoplasma serology
- **HOW TO DELIVER?**
    - Over 90% of women will deliver spontaneously within 3 weeks, conservative management is an option that can be offered
    - Vaginal delivery is the best option unless there is obstetric indications
    - Induction of labor : A standard protocol for mifepristol induction, Prevention of Rh iso immunization, Contraception, Psychological support, Follow up

#Nausea and vomiting in pregnancy:

- **Morning sickness:** when symptoms disappear after the first trimester.
- **Hyperemesis gravidarum:** severe nausea and vomiting that require hospital admission and result in dehydration and electrolytes abnormalities.
- **Causes:** endocrine (increase in hCG and estrogen) / metabolic (B6 deficiency) / psychological / liver enzymes deficiency.
- **Diagnosis:** liver enzymes / CBC / urine ketones / BUN / urine specific gravity / serum electrolytes / US /
- **Benefits of uncomplicated morning sickness:** decrease abortion, stillbirth, preterm deliveries, low birth weight, growth retardation and mortality.
- **Complications:** increased maternal adverse effects like Mallory Weiss tears and preeclampsia / increased fetal growth restriction and death / weight loss / dehydration / metabolic acidosis / alkalosis / hypokalemia.
- **Management:** dietary measures / emotional support / acupressure /ginger / chiropractic / antiemetic drugs / IV fluid /IV B complex and steroids / termination of pregnancy.

#Liver diseases in pregnancy:

- **Types:** intrahepatic cholestasis / gallstones and sludge / acute fatty liver / vascular diseases like preeclampsia and HELLP syndrome / viral hepatitis B and C.
- **Causes:** unknown / genetic polymorphisms / familial / hormonal.

- **Clinical features:** itching / jaundice / anorexia / pale stool / dark urine / steatorrhea / fetal death / preterm labor / fetal distress / nausea and vomiting / abdominal pain / headache / coagulopathy / encephalopathy.
- **Investigations:** liver function test / bile acids / full blood count / clotting profile / renal function test / hepatitis serology / autoimmune antibodies / liver ultrasound / fetal US and CTG.
- **Management:** termination of pregnancy by vaginal delivery or CS / supportive treatment like blood transfusion, fresh frozen plasma. Vit K, platelets, dialysis, 50% glucose, cysteine, relive itching by emollients and antihistamine.
- **HELLP syndrome:** hemolysis, elevated liver enzymes, low platelets / associated with DIC, placenta abruption, fetal death / managed by control blood pressure, stop fit, give hydralazine or valium.

#Pre-eclampsia:

- **Definition:** blood pressure above 140/90 and 300 mg protein in two separate occasion after 20 weeks of gestation.
- **Risk factors:** young patient and primi / multi with history of preeclampsia / spacing for 10 years or more / BMI more than 35 / age 40 years or more / family history / multiple pregnancy / booking diastolic BP = 80 or more / booking proteinuria more than one / medical conditions like preexisting hypertension, renal disease, diabetes, antiphospholipid antibodies.
- **Symptoms:** frontal headache / visual disturbance / epigastric pain and tenderness / general malaise and nausea / restlessness.
- **Signs:** agitation / hyperreflexia and clonus hand / facial and peripheral edema / poor urine output / right upper quadrant tenderness.
- **Investigations:** urinalysis / 24 hours urine collection / full blood count like PCV, platelets / blood chemistry / renal function / protein concentration / plasma concentration / liver function / coagulation profile / US / amniotic fluid volume / Doppler.
- **Management:**
  - Anti-hypertensive drugs: mild cases (oral methyldopa, oral nifidipine, oral labetalol) severe cases (IV hydralazine, IV labetalol, IV Mg sulphate).
  - Iatrogenic premature delivery of fetus: dexamethasone, CS, epidural anesthesia.
  - Management of eclampsia: hospital admission, resuscitate, O2, Mg sulphate, monitor urine output, termination of pregnancy.