OBSTETRICS

PAST SUMMARY

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🩺 OBSTETRICS STUDY NOTES

📘 Topic 1: Physiological Changes in Pregnancy

🔷 Cardiovascular

- ↑ Cardiac output (30–50%), ↑ HR (10–15 bpm), ↑ Stroke volume
- ↓ Peripheral vascular resistance → ↓ BP (early to mid-pregnancy)
- Common: Systolic murmur, loud S1, 3rd heart sound
- ❌ Diastolic murmurs are always abnormal

🔷 Hematologic

- ↑ Plasma volume > ↑ RBC mass → physiologic anemia
- ↑ WBCs, mild ↓ Platelets (gestational thrombocytopenia)
- ↑ Fibrinogen, factors VII–X → hypercoagulable
- ❌ Factor XI doesn't increase
- ❌ Hematocrit ↓, not ↑

🔷 Respiratory

- ↑ Tidal volume, ↑ Minute ventilation
- ↓ Functional residual capacity, ↓ pCO_2 → respiratory alkalosis
- RR unchanged
- ❌ Tidal volume doesn't decrease

🔷 Renal

- ↑ GFR, ↑ kidney size, ↑ renal blood flow
- ↓ Serum Cr, ↓ BUN

- Glycosuria is common and benign
- ❌ Glycosuria ≠ diabetes

🔷 Metabolic & Endocrine

- ↑ Insulin resistance (due to hPL)
- ↑ HDL, ↑ weight gain (avg. 12.5 kg), ↑ total body water (~6–8L)
- ↑ Calcium absorption
- ↓ TSH (due to hCG), ↑ estrogen, progesterone, prolactin

📘 Topic 2: Obstetric Ultrasound & Screening

🔷 First Trimester Screening (11–13+6 weeks)

- Uses: NT, PAPP-A, β-hCG, CRL
- ↑ NT + ↓ PAPP-A + ↑ β-hCG → Trisomy 21
- Trisomy 18 → ↓ PAPP-A, ↓ β-hCG
- CRL 45–84 mm is optimal for NT
- ❌ Free β-hCG is high, not low, in Down syndrome
- ❌ GTT is not part of 1st trimester screening

🔷 Important Timings

- Gestational sac: 4.5–5 wks
- Yolk sac: 5 wks
- Heartbeat on TVUS: 6 wks
- Dating best with CRL in first trimester
- NT done at 11–13+6 weeks
- Anomaly scan: ~20 weeks

- Amniocentesis: 14–16 weeks
- CVS: 10–12 weeks

🔷 Screening Tools

- Triple test: AFP, β-hCG, estriol → for trisomies
- Quad test: Adds inhibin A
- NIPT (cfDNA): Most sensitive non-invasive
- Amniotic fluid bilirubin is not used for aneuploidy
- ❌ Placenta previa not reliably diagnosed in 1st trimester

📘 Topic 3: Preterm Labor (PTL)

🔷 Definitions

- PTL = labor <37 weeks
- Very preterm <32 weeks
- PPROM = ROM before 37 weeks and before labor

🔷 Risk Factors

- Previous PTL, short cervix, infection (BV, UTI), multiple gestation, polyhydramnios
- Uterine anomalies, smoking, low BMI

🔷 Prediction

- Cervical length <25 mm = ↑ risk
- Fetal fibronectin should be absent between 20–35 weeks

🔷 Management

- Tocolytics (Nifedipine) to delay delivery 48 hrs
- Corticosteroids (24–34 wks) for fetal lung maturity
- $MgSO_4$ (<32 wks) for neuroprotection
- Antibiotics if PPROM or GBS positive
- ❌ Nifedipine has fewer, not more, side effects than β-agonists
- ❌ Chorioamnionitis = contraindication to tocolysis

📘 Topic 4: Gestational Trophoblastic Disease (GTD)

🔷 Types

- Complete mole: No fetus, 46XX (paternal), ↑↑ hCG, higher malignancy risk
- Partial mole: Triploid (69XXY), some fetal tissue, lower hCG
- Invasive mole, Choriocarcinoma, PSTT = malignant forms

🧠 "Complete = Completely molar, no baby"

🔷 Clinical Features

- Vaginal bleeding in early pregnancy
- Uterus > gestational age
- Very high β-hCG → hyperemesis, early preeclampsia
- Theca lutein cysts (bilateral ovarian enlargement)
- Symptoms of hyperthyroidism may appear

🔷 Diagnosis

- US: "Snowstorm" or "cluster of grapes" (complete mole)
- No fetal parts in complete mole; fetus possible in partial

- β-hCG often >100,000 IU
- Histology:
    - Complete = no fetal parts, diffuse trophoblastic hyperplasia
    - Partial = fetal parts + focal hyperplasia

🔷 Management

- Suction evacuation = treatment of choice
- Anti-D if Rh negative
- Follow β-hCG weekly until undetectable, then monthly for 6 months
- OCPs are safe during follow-up
- ❌ "OCPs are contraindicated" → ❌ They're safe and recommended
- ❌ "Partial mole has more malignancy risk" → ❌ Complete mole has more risk

🔷 When to Give Chemotherapy

- Rising/plateau β-hCG
- Histological choriocarcinoma
- Metastases (esp. lungs = cannonball lesions)
- Preferred: Methotrexate (low risk), EMA-CO (high risk)

📘 Topic 5: Hypertension in Pregnancy (GHTN, PET, Eclampsia)

🔷 Definitions

- Gestational HTN: >20 weeks, BP ≥140/90, no proteinuria
- Pre-eclampsia (PET): HTN + proteinuria or organ dysfunction
- Severe PET: BP ≥160/110 or signs of organ damage
- Eclampsia: Seizures with PET

🔷 Risk Factors

- Nulliparity, obesity, GDM, renal disease, prior PET
- ❌ "PCOS is a known risk" → ❌ PCOS is not a strong risk factor

🔷 Complications

- HELLP (Hemolysis, Elevated LFTs, Low Platelets)
- Eclampsia
- DIC, abruptio placenta, IUGR, stillbirth
- ❌ "HELLP always has HTN + proteinuria" → ❌ HELLP may occur without HTN/ proteinuria

🔷 Management

- Mild: Monitor + antihypertensives (labetalol, nifedipine, methyldopa)
- Severe: Admit + $MgSO_4$ + steroids if <34w + consider delivery
- $MgSO_4$ for seizure prophylaxis: 4g IV bolus, 1g/hr maintenance
- ❌ "Give $MgSO_4$ only if delivering" → ❌ It's given for seizure prevention, not delivery
- ❌ "Hyperreflexia is Mg toxicity" → ❌ Loss of reflexes = early sign

🔷 Eclampsia

- Magnesium sulfate = 1st line
- Control BP: Labetalol, Nifedipine
- Stabilize → deliver

🔷 Antihypertensives in Pregnancy

Safe Drugs	Contraindicated
Labetalol ✅	Enalapril ❌
Nifedipine ✅	ARBs ❌
Methyldopa ✅	Atenolol ❌
Hydralazine ✅	

📘 Topic 6: Labor, Presentations & Instrumental Delivery

🔷 Stages of Labor

- 1st stage: Onset → full dilation (10 cm)
  - Latent phase: 0–6 cm
  - Active phase: 6–10 cm
- 2nd stage: Full dilation → delivery of baby
- 3rd stage: Delivery of baby → placenta delivery

🧠 Longest stage = First (esp. in primigravida)

🧠 Most painful = Second , 🧠 Most risk of PPH = Third

🔷 Mechanism of Labor (7 Steps)

1. Engagement
2. Descent
3. Flexion
4. Internal rotation
5. Extension
6. External rotation (restitution)
7. Expulsion

❌ “Descent only at end of labor” → ❌ Descent occurs throughout, especially in 2nd stage

🔷 Terms to Know

- Lie = fetus vs. uterus (longitudinal, transverse)
- Presentation = fetal part first (vertex, breech, shoulder)
- Position = relation of presenting part to maternal pelvis (e.g. LOA)
- Engagement = BPD at ischial spines

🧠 Most common position: LOA

🧠 Most favorable: Vertex

📘 Topic 7: Breech Presentation

🔷 Types of Breech

- Frank breech: Hips flexed, knees extended (most common)
- Complete breech: Hips + knees flexed
- Footling breech: One or both feet present first
- Knee presentation: Rare

🔷 Management

- Term breech:
  - External cephalic version (ECV) if no contraindication
  - If unsuccessful or contraindicated → cesarean delivery
- Breech in labor:
  - Vaginal delivery possible if:
    - Frank breech
    - Estimated fetal weight 2.5–3.5 kg
    - Experienced operator

- Piper forceps: Used to deliver the after-coming head

❌ "Vacuum used for breech" → ❌ Vacuum is not used in breech

❌ "ECV done during labor" → ❌ ECV is done before labor, around 36–37 weeks

📘 Topic 8: Instrumental (Assisted) Vaginal Delivery

🔷 Indications

- Prolonged second stage
- Maternal exhaustion
- Fetal distress
- Need to shorten 2nd stage (e.g. cardiac disease)

🔷 Requirements (Same for forceps and vacuum)

- Full dilation
- Ruptured membranes
- Engaged head
- Known fetal position
- No CPD
- Empty bladder

🔷 Forceps vs. Vacuum

Feature	Forceps	Vacuum
Maternal trauma	↑	↓
Neonatal trauma	↑ facial palsy	↑ cephalohematoma
Control	Better rotation	Less traction control
Failure rate	Lower	Higher

- Vacuum is contraindicated <34 wks (soft skull risk)
- ❌ "Vacuum → facial palsy" → ❌ Main risk = cephalohematoma
- ❌ "Fundal pressure helps shoulder dystocia" → ❌ Fundal pressure worsens it

📘 Topic 9: Miscarriage & Early Pregnancy Loss

🔷 Definitions

- Threatened: Bleeding + closed os + viable pregnancy
- Inevitable: Bleeding + open os + products in uterus
- Incomplete: Some tissue passed + retained POC + open os
- Complete: All products passed + closed os + empty uterus
- Missed: Non-viable fetus retained (no bleeding)
- Septic miscarriage: Fever + uterine tenderness + foul discharge

🔷 Causes

- Most common = Chromosomal abnormalities (esp. trisomies)
- Other causes: infection, maternal illness, uterine anomalies
- ❌ "LLETZ causes miscarriage" → ❌ LLETZ is not a proven cause

🔷 Diagnosis

- US: Check for viability, fetal pole, heartbeat
- β-hCG not rising appropriately → suggests nonviable
- Histology: Chorionic villi = intrauterine pregnancy
- ❌ "Decidual cast = viable pregnancy" → ❌ It may indicate tubal abortion

🔷 Management

- Threatened: Expectant
- Inevitable, incomplete: Misoprostol or surgical evacuation
- Missed: Medical (misoprostol) or surgical (D&C)
- ❌ "Sharp curette always used" → ❌ Vacuum or blunt curettes preferred now

🔷 Recurrent Miscarriage (≥3)

- Workup: parental karyotype, antiphospholipid antibodies, uterine US
- Causes:
  - Uterine anomaly (septate uterus)
  - APS
  - Endocrine (PCOS, thyroid, low progesterone)
  - Genetic translocations
- ❌ "Intramural fibroid causes miscarriage" → ❌ Less associated than submucosal

📘 Topic 10: Ectopic Pregnancy

🔷 Risk Factors

- Previous ectopic
- PID (esp. Chlamydia)
- Tubal surgery
- IUD in place
- IVF, smoking

🔷 Common Sites

- Ampulla (most common)
- Isthmus
- Fimbria
- Interstitial (cornual)
- Cervical, ovarian (rare)

🔷 Clinical Presentation

- Amenorrhea + abdominal pain + vaginal bleeding
- Adnexal tenderness or mass
- Shoulder tip pain → suggests hemoperitoneum
- Ruptured ectopic: hypotension, syncope

🔷 Diagnosis

- β-hCG + TVUS
- β-hCG discriminatory zone ~1500–2000 IU → sac should be visible in uterus
- No IUP + β-hCG rising → consider ectopic
- Culdocentesis or FAST → free fluid in rupture

🔷 Management

1. Medical (Methotrexate)
    - Stable, no rupture
    - β-hCG < 5000
    - No fetal cardiac activity
    - Willing for follow-up

2. Surgical (Laparoscopy preferred)
    - Ruptured
    - Hemodynamic instability
    - Contraindication to MTX

❌ Incorrect Statements Fixed

- "Methotrexate used for miscarriage" → ❌ No. MTX is for ectopic, not intrauterine loss
- "You must operate all ectopics" → ❌ Stable patients may get MTX
- "β-hCG must be >5000 to suspect ectopic" → ❌ Suspicion is clinical + US, not cut-off based

📘 Topic 11: Antepartum Hemorrhage (APH)

🔷 APH = Bleeding after 24 weeks

🔷 Placenta Previa

- Definition: Placenta partially or completely covers internal os
- Types:
    - Major (complete)
    - Minor (marginal or low-lying)
- Presentation: Painless, recurrent, bright red bleeding
- Diagnosis: TVUS = gold standard
- Management:
    - Admit + monitor
    - No VE unless in theatre
    - Delivery by C-section if persistent or type III–IV

- ❌ “Diagnosed only by abdominal US” → ❌ TVUS is more accurate and safe

🔷 Placental Abruption

- Definition: Premature separation of normally implanted placenta
- Presentation:
  - Painful, dark bleeding
  - Uterine tenderness, hypertonus
  - Fetal distress or death
- Types:
  - Concealed (no external bleeding)
  - Revealed (visible bleeding)
- Risk factors: HTN, trauma, smoking, cocaine, thrombophilia
- Complications:
  - DIC, fetal hypoxia/death, maternal shock
- Management:
  - Stabilize → assess fetal & maternal status
  - Delivery if severe, fetal distress, or bleeding continues

🧠 Abruption = painful + firm uterus , 🧠 Previa = painless + soft uterus

📘 Topic 12: Gestational Diabetes Mellitus (GDM)

🔷 Screening & Diagnosis

- When: 24–28 weeks (universal or high-risk)
- Tests:
  - One-step: 75g OGTT — fasting ≥92, 1h ≥180, 2h ≥153
  - Two-step (US): 50g screen → 100g diagnostic if screen +ve

🔷 Risk Factors

- BMI >30
- Previous macrosomia
- GDM in past pregnancy
- PCOS
- Family history (1st-degree relative with diabetes)

🔷 Management

- First-line: Diet and exercise
- If not controlled → Insulin
- Oral meds (e.g. metformin) may be used but not preferred in some guidelines

🔷 Complications

Maternal:

- PET, polyhydramnios, increased risk of C-section
- Later risk of type 2 diabetes

Fetal:

- Macrosomia
- Shoulder dystocia
- Neonatal hypoglycemia
- RDS (even if term)
- Stillbirth if uncontrolled

❌ Incorrect Statement Fixes

- "GDM is usually treated with oral agents" → ❌ Insulin is preferred if diet fails
- "Macrosomia is rare in GDM" → ❌ It's a classic complication
- "No risk of stillbirth in GDM" → ❌ Poorly controlled GDM ↑ stillbirth risk

📘 Topic 13: Multiple Pregnancy

🔷 Types

- Dizygotic (fraternal): 2 eggs, 2 sperm → always dichorionic diamniotic
- Monozygotic (identical): 1 egg → can be:
    - Dichorionic diamniotic (split before day 3)
    - Monochorionic diamniotic (day 4–8)
    - Monochorionic monoamniotic (day 8–12)
    - Conjoined (after day 13)

🔷 Complications

Maternal:

- Hyperemesis, PET, anemia, polyhydramnios
- Preterm labor
- Uterine atony → ↑ risk of PPH

Fetal:

- Discordant growth
- Twin-to-Twin Transfusion Syndrome (TTTS): occurs only in monochorionic twins
- Prematurity, IUGR, malpresentation

❌ Incorrect Statements Fixed

- "TTTS can happen in dichorionic twins" → ❌ TTTS occurs only in monochorionic twins
- "Multiple pregnancy reduces risk of PET" → ❌ It increases the risk

📘 Topic 14: Intrauterine Fetal Death (IUFD)

🔷 Definition

- Fetal death after 20 weeks and before delivery

🔷 Causes

- Placental: abruption, previa, insufficiency
- Fetal: anomalies, infection, aneuploidy
- Maternal: PET, diabetes, thrombophilia
- Umbilical cord accidents

🔷 Diagnosis

- No fetal heart motion on US
- Confirmed with absent cardiac activity

🔷 Management

- Expectant (if no infection/coagulopathy)
- Induction with misoprostol or oxytocin
- Monitor for DIC (esp. >4 weeks retained fetus)
- Offer psychological support and investigation for cause

❌ Incorrect Statements Fixed

- “IUFD must always be delivered by C-section” → ❌ Vaginal delivery is usually preferred
- “DIC happens immediately after fetal death” → ❌ Risk rises only after prolonged retention

📘 Topic 15: Postpartum Hemorrhage (PPH)

🔷 Definition

- Blood loss >500 mL (vaginal) or >1000 mL (C-section)
- Primary = within 24 hours
- Secondary = 24h–6 weeks

🔷 Causes (The 4 Ts)

1. Tone (uterine atony) — most common
2. Tissue (retained placenta)
3. Trauma (lacerations, rupture)
4. Thrombin (coagulopathy)

🔷 Management

- Initial: Fundal massage + IV fluids + oxygen
- Uterotonics:
  - Oxytocin (first-line)
  - Ergometrine (contraindicated in HTN)
  - Carboprost
  - Misoprostol
- Mechanical: Balloon tamponade

- Surgical: Uterine artery ligation → B-Lynch → hysterectomy (last resort)

❌ Incorrect Statements Fixed

- "Ergometrine is safe in PET" → ❌ It's contraindicated due to vasoconstriction
- "Misoprostol is first-line drug" → ❌ Oxytocin is first-line for PPH
- "PPH mostly caused by tears" → ❌ Atony is most common cause

📘 Topic 16: Eclampsia & HELLP Syndrome

🔷 Eclampsia

- Definition: Seizures in a woman with pre-eclampsia, not due to another cause
- Often preceded by: Headache, visual changes, RUQ pain, hyperreflexia

🔷 Management of Eclampsia

- Airway + Oxygen + IV access
- Magnesium sulfate:
  - 4g IV bolus over 5–10 min, then 1g/hr IV infusion
  - Continue for 24h after last seizure
- Control BP: Labetalol or Nifedipine
- Delivery after maternal stabilization
- Monitor urine output, reflexes, RR

🔷 $MgSO_4$ Toxicity Signs

- Early: Loss of reflexes
- Later: ↓ RR, respiratory arrest, cardiac arrest

- Antidote: Calcium gluconate 10% IV over 10 minutes

❌ "Hyperreflexia is a sign of toxicity" → ❌ First sign = loss of reflexes

📘 Topic 17: HELLP Syndrome

🔷 Components

- Hemolysis
- Elevated Liver enzymes
- Low Platelets

🔷 Features

- RUQ or epigastric pain
- Nausea, vomiting, malaise
- Can occur with or without HTN/proteinuria

🔷 Labs

- ↑ LDH (hemolysis marker)
- ↑ AST, ALT
- ↓ Platelets (<100,000)
- Abnormal peripheral smear

🔷 Management

- Stabilize mother
- Magnesium sulfate for seizure prevention
- Urgent delivery (regardless of gestational age if unstable)
- Platelet transfusion if <50,000 and C-section planned

❌ “HELLP always presents with high BP and proteinuria” → ❌ It can occur without classic PET signs

📘 Topic 18: Shoulder Dystocia

🔷 Definition

- Failure of shoulders to deliver after fetal head due to impaction (usually anterior shoulder behind pubic symphysis)
- Emergency — can cause brachial plexus injury, fetal death

🔷 Risk Factors

- Macrosomia
- Maternal diabetes
- Prolonged second stage
- Previous shoulder dystocia
- Post-term pregnancy

🔷 Management (ALARMER Mnemonic)

1. Ask for help
2. Legs: McRoberts maneuver
3. Anterior shoulder: suprapubic pressure
4. Rotate (Woods corkscrew maneuver)
5. Manual delivery of posterior arm
6. Episiotomy if needed
7. Roll patient to hands and knees (Gaskin maneuver)

❌ Incorrect Beliefs Corrected

- "Use fundal pressure" → ❌ Contraindicated — worsens impaction
- "McRoberts is done with fundal pressure" → ❌ Suprapubic pressure is correct
- "C-section should be immediate" → ❌ Vaginal maneuvers are first step

📘 Topic 19: Amniotic Fluid Disorders

🔷 Oligohydramnios (AFI <5 cm or SDP <2 cm)

Causes:

- Renal agenesis or obstruction
- IUGR
- PROM
- Post-term pregnancy
- Uteroplacental insufficiency
- ACE inhibitors (renal toxicity)

Complications:

- Potter sequence (limb, lung, facial deformities)
- Cord compression → fetal distress
- Pulmonary hypoplasia

Management:

- Monitor growth, Doppler, NST
- Deliver if term or fetal compromise

🔷 Polyhydramnios (AFI >24 cm or SDP >8 cm)

Causes:

- Idiopathic (most common)
- Diabetes mellitus
- Fetal anomalies (anencephaly, TE fistula, duodenal atresia)
- Multiple gestation
- Isoimmunization

Complications:

- Malpresentation
- Preterm labor
- Cord prolapse
- Uterine atony → PPH

Management:

- Mild: Monitor
- Severe: Amnioreduction, treat cause

❌ Incorrect Statement Fixes

- "Polyhydramnios prevents malpresentation" → ❌ It increases risk
- "ACE inhibitors increase amniotic fluid" → ❌ They cause oligohydramnios

📘 Topic 20: Fetal Distress & Intrapartum Monitoring

🔷 Fetal Monitoring Tools

- Non-Stress Test (NST):

    - Reactive = ≥2 accelerations in 20 mins (good)
    - Non-reactive = needs further testing
- Biophysical Profile (BPP):
    - Score 8–10 = normal
    - Combines NST + US (breathing, movement, tone, AFI)
- CTG (Cardiotocography):
    - Baseline HR: 110–160
    - Variability: 5–25 bpm
    - Accelerations = reassuring
    - Late decelerations = uteroplacental insufficiency
    - Variable decelerations = cord compression

🔷 Causes of Fetal Distress

- Uteroplacental insufficiency
- Cord compression
- Tachysystole
- Maternal hypotension
- Abruption

🔷 Management

- Change maternal position (left lateral)
- Stop oxytocin
- Oxygen and fluids
- Tocolytics if tachysystole
- Delivery if distress persists

❌ Incorrect Beliefs Corrected

- "Variable decelerations mean uteroplacental insufficiency" → ❌ They suggest cord compression
- "NST must show contractions" → ❌ NST is done without contractions

📘 Topic 21: Ectopic vs Miscarriage: Differentiation

Feature	Ectopic Pregnancy	Miscarriage
Location	Outside uterus (mostly fallopian tube)	Intrauterine
Bleeding	Often light, spotting	Heavy, may pass tissue
Pain	Localized, sharp, unilateral	Cramping, lower abdomen
Cervical os	Closed or open	Often open (if inevitable/incomplete)
Uterus on US	Empty or no sac seen	Gestational sac/fetal parts usually seen
β-hCG	Abnormal rise or plateau	Drops after pregnancy loss
US findings	Adnexal mass, no IUP	Retained POC or empty sac (missed/complete)
Management	Methotrexate or surgery	Misoprostol or D&C

📘 Topic 22: Flash One-Liner Review: MCQ Killers

🔷 Firsts & Most Common

- First sign of pregnancy: Amenorrhea
- First US finding: Gestational sac
- Most common site of ectopic: Ampulla
- Most common breech: Frank
- Most common cause of 1st trimester bleeding: Threatened miscarriage
- Most common cause of 3rd trimester bleeding: Placenta previa

- Most common cause of maternal death: PPH
- Most common cause of IUFD: Abruption
- Most common cause of miscarriage: Chromosomal abnormality (esp. trisomy)

🔷 Key Cutoffs

- Viable fetal heartbeat on TVUS: ≥6 weeks
- β-hCG discriminatory zone: ~1500–2000 mIU/mL
- NT screening window: 11–13+6 weeks
- GDM screening: 24–28 weeks
- Viability threshold: 24 weeks (modern definition)
- Steroids for lung maturity: 24–34 weeks

🔷 Danger Signs

- Loss of reflexes on $MgSO_4$ = toxicity
- RUQ pain + HTN + low platelets = suspect HELLP
- Shoulder pain + syncope in early pregnancy = ectopic rupture
- Painful, firm uterus + bleeding = placental abruption
- Sudden painless bleeding at 30+ weeks = placenta previa