Obstetrics and Gynecology

Pearls

- ovarian cysts >3cm have a higher rate of torsion
- if you clinically suspect ovarian torsion, ultrasound cannot reliably rule it out, thus ob-gyn should be involved
- ovarian cancer may present insidiously (bloating/ascites) and CA-125 is its tumor marker
- vaginal bleeding in a post-menopausal woman is cancer until proven otherwise
- the differential of non-pregnant vaginal bleeding can be separated into prepubertal, adolescent, reproductive, perimenopausal, and postmenopausal categories

Ovarian Cysts

- most common in reproductive years
- simple follicular cyst (most common type): 1st 2 weeks, thin walled, fluid filled
- corpus luteal cyst: last 2 weeks of cycle, more common to hemorrhage (shock)
- present as pelvic pain (dull, usually low grade)
- work-up: exclude pregnancy, check hemoglobin, pelvic ultrasound
- treatment: symptomatic, refer to gynecology, discharge with torsion precautions
- large cyst = >3cm = greater risk for torsion

Ovarian Torsion

- 50-80% have ovarian mass (cyst, fertility treatment, polycystic ovarian disease)
- twist causes venous/lymph obstruction congestion/edema ischemia/necrosis
- ovary has dual blood supply, thus arterial obstruction is rare
- clinical presentation: unilateral severe pain, nausea, no fever (but presentation can often be atypical)
- exam: unilateral tenderness
- labs: not helpful
- diagnosis: Doppler ultrasound, laparoscopy (gold standard)
- if you clinically suspect torsion in a person with ovarian cyst, ultrasound is not foolproof, call gynecology

Ovarian Cancer

- age 55-65 is peak, often advanced when diagnosed due to subtle presentation
- clinical presentation: subacute abdominal pain, bloating (pants don't fit), weight loss, ascites, pleural effusion
- diagnosis: US and CT scan, CA-125 serum tumor marker

Cervical Cancer

- risk factor: HPV
    - HPV vaccine: girls age 9-26
- AIDS defining illness in patients with HIV
- vaginal bleeding in a postmenopausal woman is cancer until proven otherwise
- post-coital bleeding
- diagnosis: pelvic exam (must visualize cervix), biopsy

Cervicitis

- inflammation of cervix; akin to urethritis in men
- etiology: trauma, irritants (latex allergy, diaphragm)
- treat for STDs (Chlamydia, GC)

Menstrual Cycle Review

menstruation marks the beginning of a cycle, ovulation is two weeks after
follicular phase ovulation luteal phase

Vaginal Bleeding

Causes of Vaginal Bleeding by Age in Descending Order of Frequency

- prepubertal: vaginitis, anovulation, genital trauma or foreign body
- adolescent: anovulation, pregnancy, exogenous hormone use, coagulopathy
- reproductive: pregnancy, anovulation, exogenous hormones, uterine leiomyomas, cervical polyps, thyroid dysfunction
- perimenopausal: anovulation, uterine leiomyomas, cervical and endometrial polyps, thyroid dysfunction
- postmenopausal: endometrial lesions/cancer (30%), exogenous hormone use (30%),
- atrophic vaginitis (30%), other tumor (10%)

Management/Treatment of Non-pregnant Vaginal Bleeding

- anovulatory bleeding: oral contraceptives, D&C, NSAIDs for pain
- severe bleeding: CBC, transfusion/resuscitation, consider IV premarin (estrogen)

Endometriosis

- endometrial tissue outside the uterus (responds to hormones)
- sites: ovaries (most common, chocolate cyst), fallopian tubes, abdomen, bladder, lung (catamenial pneumothorax)
- menses/cyclical related abdominal pain
- treatment: pain management, hormonal therapy, surgical management

Pearls

- uterine fibroids are more common in African American women, and present with pelvic pain and heavy vaginal bleeding
- pelvic inflammatory disease is an umbrella term, admit any with pregnancy, not tolerating

POs, or TOA
- you must think about Fitz-Hugh-Curtis syndrome to diagnosis it
- bacterial vaginosis = thin white discharge; candiadiasis = cottage cheese discharge; trichomonas = yellow/green frothy discharge
- hydatidiform mole presents with vaginal bleeding, uterus bigger than dates, and hyperemesis gravidarum and elevated hCG

Uterine Prolapse and Cystocele

- risk factors: age, vaginal births
- may complain of “ball coming out of vagina”
- valsalva maneuver is helpful
- treatment: pessary, surgery

Uterine Fibroids / Leiomyoma

- benign tumors of uterine muscle
    - location: submucosal, subserosal, intramural
- higher incidence in African American women
- presentation: heavy bleeding, pelvic pain
- diagnosis: ultrasound (don’t need to do in ER)
- treatment: hormone regulation, surgery, NSAIDs

Pelvic Inflammatory Disease (PID)

- PID: a non-specific umbrella diagnosis
- polymicrobial (mostly GC/Chlamydia), other organisms
- complication: scarring leading to infertility/ectopic pregnancy risk
- clinical presentation: lower abdominal pain, systemic symptoms, +/- fever, Cervical motion tenderness (chandelier sign), abnormal discharge
- diagnosis: DNA probe testing (for gonorrhea and chlamydia), pelvic ultrasound to rule out abscess or tubo-ovarian abscess (TOA)
- treatment: antibiotics/analgesics, consider removing IUD
    - treat partner
- admit: pregnant, oral intolerance, TOA

Fitz-Hugh-Curtis Syndrome

- infection spreads to perihepatic space
- “violin-string” adhesions

Vulvovaginitis

- vaginal discharge, itching
- etiology: infection, allergy, foreign body, atrophic vaginitis, irritant
- most common gyn problem in children
- normal vaginal pH 4.0-4.5 → any change in the vaginal milieu can cause vulvovaginitis

- “clue cells” = bacterial vaginosis

Bacterial Vaginosis

- common cause of vaginal discharge (thin white discharge)
- pH alteration Gardnerella/anaerobes take over normal lactobacillus
- diagnosis: clue cells, fishy odor with KOH whiff test
- treatment: Metronidazole (po or gel)

Candidal Vaginitis

- candida albicans is part of normal flora → overgrows to cause vaginitis
- associated with diabetes (screen for it), antibiotic, pregnancy
- symptoms: vulvar pruritus (most common)
- exam: vulvar erythema, cottage cheese discharge
- diagnosis: wet mount (pseudohyphae, budding yeast)
- treatment: Fluconazole, OTC vaginal creams

Trichomoniasis

- vaginitis from a protozoa
- vaginal discharge: yellow-green, frothy, malodorous
- exam: “strawberry cervix” in some (punctate hemorrhage)
- diagnosis: wet mount
- treatment: metronidazole PO
    - treat partner

Bartholin’s Cyst and Abscess

- cyst is painless, abscess (multi-organism) is painful
- treatment: I & D, word catheter, marsupialization is definitive

Gestational Trophoblastic Disease

- arising from the placenta (hydatidiform mole, trophoblastic tumors, choriocarcinoma)
- hydatidiform mole
    - clinical presentation: abnormal vaginal bleeding, uterus bigger than dates, hyperemesis gravidarum
    - hCG levels >100,000
    - complete: passing grape like vesicles, snowstorm on US, empty egg; 20% go on to malignancy
    - partial: non viable fetus is present; <5% go on to malignancy
- treatment depends on type
    - benign or slower-growing: chemotherapy
    - malignant, metastatic tumors: chemo/radiation/surgery

Pearls

- There are three (or four) stages of normal labor and delivery.
- Late decelerations on fetal heart monitoring are suggestive of fetal insufficiency and need to be addressed.
- In cases of cord prolapse, it is essential to elevate the presenting part to reduce pressure on the cord.
- Remember the HELPER mnemonic for shoulder dystocia.

Normal Labor and Delivery

Described by:

- Dilation of cervical os
    - expressed in centimeters (up to 10 cm)
- Effacement
    - softening and thickening of cervix; up to 100%
- Station
    - location of the presenting part relative to the ischial spines
    - spines = 0; if above → - 1 cm, - 2 cm; if its below → +1cm, +2cm

Stages of Labor

- 1st stage
    - **Usually preceded by bloody show
    - Defined as period of regular contractions to full cervical dilation
    - Lasts 6-20 hours for nulliparous; 2-14 hours for multiparous (multips)
- 2nd stage
    - From full dilation to delivery of infant
    - Lasts 30 min - 3 hours for nulliparous; 5-60 mins for multips
- 3rd stage
    - From delivery of infant to delivery of placenta
    - Lasts 0-30 mins
- 4th stage: hour after delivery
    - Treat lacerations, tears, hemorrhage

Fetal Monitoring

- External vs internal
    - External → tocodynamometer
    - Internal → electrode on fetal scalp; most accurate (but also invasive)
- Look for accelerations, analyze decelerations (decels)
- **Late decels = BAD → sign of uteroplacental insufficiency
- If concerned about fetal heart rate (FHR) → change mom's position, give oxygen, stop oxytocin

Delivery Presentations

- Normal: head (presenting part) facing backwards
- Abnormal: Breech (feet first; different forms), Face (baby's face extended), Shoulder

Provider's Role in the 3rd Stage of Delivery

- After head out → may suction nose/mouth
- Once body is out → clamp and cut cord
- Keep the infant warm
- Episiotomy may be used to "protect" perineum (see below)
- Wait for the placenta (will usually separate on its own)
    - Signs of separation: cord lengthens, fresh blood flow, uterus becomes firm/globular, fundus rises
- Examine placenta and cord (normal = 3 vessels: 2 arteries, 1 vein)
- **Retained placenta = source of infection

Apgar Scores

- Assess Apgar scores at 1 and 5 minutes
- Criteria (5): color, heart rate, respiration, reflex response, muscle tone
- Scale 0-2 for each criteria
    - 0 = absent; 2 = normal (1= "in between")

Complications of Labor and Delivery

Dystocia

- General: defined as "abnormal labor"
    - i.e. cervix not dilating, fetus not descending
- "Real" dystocia: full dilation and can't deliver
- Can be anatomical: mom (i.e. pelvic anatomy too small), baby, contractions
- Treatment: plan for C-section (if predicted prior to delivery), Oxytocin (enhance contractions), Forceps/vacuum (if pushing is inadequate or fetal distress)

Caesarean section (C-section)

- General: 25% of deliveries in United States
- Birth through incision in abdominal/uterine walls
- Who: prior C-section, dystocia, breech, fetal distress, failure to progress
- Risks: higher risk of thromboembolism, more bleeding, infection, longer hospital stay/recovery time

Nuchal cord

- Definition: cord wrapped around neck
- Tx: prevent compression of cord!
    - If loose → gently reduce manually
    - If tight → clamp and cut cord, but will need to proceed rapidly with delivery

Cord Prolapse

- General: high fetal morbidity/mortality
- Definition: cord prolapsing before baby comes out
- **Need to elevate presenting part to prevent cord compression
- Tx: immediate C-section
- Knee-chest position or Trendelenburg to may help keep pressure off cord

Shoulder Dystocia

- Difficulty delivering anterior shoulder
- “Turtlehead”: head sliding in and out because cannot deliver anterior shoulder
- HELPER mnemonic: maneuvers for shoulder dystocia
    - Help! (OB, neonatology, anesthesia)
    - Episiotomy- cut perineum to make more room (possible episioproctotomy)
    - Legs Flexed (McRoberts’ maneuver)
    - Pressure- suprapubic pressure, shoulder pressure
    - Enter vagina - Rubin’s maneuver (rotate shoulder) or Wood’s maneuver
    - Remove posterior arm- splint, sweep, grasp, and pull to extension
- **Last possible maneuver- break infant’s clavicle

Breech Birth

- Breech presentations: feet first (different forms, i.e. “Frank”)
- Call for help: OB and NICU
- Increased risk for prolapsed cord or rupture of membrane
- Maneuvers to make “more room” for delivery
    - Episiotomy, knee flexion and sweeping out of legs
    - Episiotomy- midline incision or medio-lateral incision

Pearls

- Postpartum hemorrhage is most commonly caused by uterine atony, lacerations, or retained products of conception.
- Postpartum depression occurs in 50% of women.
- Think of endometritis in a septic patient on postpartum days two or three with abdominal pain.
- Abruptio placentae can be concealed or apparent and needs to be diagnosed with fetal stress testing.
- Tocolytics like magnesium sulfate and terbutaline should be used in preterm labor.

Postpartum

- Definition: the first 6 weeks after delivery
- Physiology: uterus shrinks in 2 days, descends back in pelvis in 2 weeks, and is back to normal by 6 weeks

- Lochia: sloughing of decidual tissue; normal (similar to period)
- First OB visit at 6 weeks
- Tx: vitamins (if breastfeeding), contraception

Postpartum hemorrhage

- Definition: Blood loss requiring transfusion or 10% drop in hematocrit
    - 500 milliliters after vaginal birth; 1 liter after Caesarean section (C-section)
- Causes: uterine atony, uterine rupture, retained products of conception (POC), lacerations, coagulopathy, uterine inversion
- Early vs late
    - Early: < 24 hours after delivery; lacerations, retained POC, abnormal involution
    - Late: > 24 hours after delivery; retained products
- **Uterine atony ("doughy" uterus)**
    - General: most common cause in first 24 hours
    - Tx: uterine massage, oxytocin, IV fluids/transfusion
- **Lacerations**
    - General: 2nd most common cause; early or late bleeding
    - Tx: surgical repair
- **Retained POC**
    - General: early or late bleeding
    - Diagnosis: ultrasound
    - Tx: surgical removal

Postpartum Depression

- General: up to 50% of women, underdiagnosed
- Causes: hormone imbalance, circadian rhythm disturbances

Uterine Rupture

- Causes: prior C-section, trauma
- Difficult to diagnose
- Sx: fetal distress, palpation of fetal parts, shock
- Dx: Ultrasound
- Tx: Emergency C-section

Endometritis

- Infection of endometrial lining of uterus
- Risk factors: C-section, operative delivery, prolonged rupture of membranes, prolonged labor, internal monitoring, no prenatal care
- Sx: fever, abdominal pain, foul smelling lochia
- Usually develops day 2-3 postpartum
- Mixed bacterial infection
- Tx: admit, IV antibiotics

Mastitis/Breast Abscess

- Cause: blocked duct with engorgement and subsequent infection
- Sx: breast pain, fever, redness, swelling
- Staph/Strep infections
- Tx: warm compresses, incision and drainage, antibiotics (dicloxacillin, Keflex)
- Patient needs to continue breastfeeding/pumping!

Abruptio Placentae

- Premature separation of the placenta
- Most common cause of third trimester bleeding
- Risk factors: sympathomimetic use (cocaine, meth), trauma, smoking, hypertension, heavy alcohol use, previous abruption, advanced maternal age, high parity
- Complications: DIC, fetal demise
- Apparent vs Concealed
    - Apparent: seen on ultrasound, presents with vaginal bleeding
    - Concealed: not seen on ultrasound, no vaginal bleeding
- Sx: painful vaginal bleeding (typical, but not all cases), back pain, abdominal pain
- Diagnosis: fetal stress testing; ultrasound not sensitive enough
- Tx: C-section preferred

Placenta Previa

- Placenta partially or completely covering cervical os
- NO pelvic exam
- Risk factors: advanced maternal age, smoking, high parity, scarring
- Sx: painless vaginal bleeding
- Diagnosis: ultrasound
- Can be seen <20 weeks gestation, but 50% will resolve and move up uterine wall
- Tx: expectant management, C-section preferred delivery method

Premature rupture of membranes (PROM)

- Rupture of amniotic membranes before onset of labor at > 37 weeks
- Preterm PROM (PPROM): PROM at < 37 weeks
- Occurs in 30% of preterm deliveries
- Sx: gush of fluid followed by leak
- Complications: infection (chorioamnionitis, endometritis), cord prolapse
- Diagnosis: confirm rupture of membranes with visualization, nitrazine paper (pH > 7), fern test
- Physical exam: avoid digital examination; use sterile speculum
- Treatment
    - PROM: hospitalize, fetal monitoring, induce, hasten deliver
    - <27 weeks: if no infection or distress → expectant management
    - < 34 weeks: corticosteroids to hasten lung maturity

Premature/Preterm Labor

- Contractions and cervical changes < 37 weeks
- Leading cause of neonatal mortality
- Tocolytics: Magnesium sulfate (4-6 grams, then infusion) and Terbutaline
    - Absolute contraindications to tocolysis: acute vaginal bleeding, fetal distress, lethal fetal anomaly, chorioamnionitis, preeclampsia or eclampsia, sepsis, DIC
    - Relative contraindications: chronic hypertension, cardiopulmonary disease, placenta previa, cervical dilation > 5cm, placenta abruption

Pearls

- Close management of BP is important in pregnancy
- HTN + proteinuria + >20wk = preeclampsia (edema not necessary)
- HELLP is a variant that can be seen in severe preeclampsia
- Give Rho-Gam if any question of baby's blood entering Rh (-) mom's circulation
- Serial hCGs key in 1st trimester vaginal bleeding/stable ectopic
- At hCG of ~1500mU/mL, should see IUP of TV US (discriminatory zone)
- Ectopic pregnancies can present extremely variably and may not see reflex tachycardia in ruptured ectopic

Hypertension in Pregnancy

Ddx:

- Chronic hypertension
    - If <20 weeks
    - Treat with methyldopa or labetalol
    - Follow with BP checks, US, urine protein
- Pregnancy-induced hypertension
    - If >20 weeks but no other symptoms (ie edema, proteinuria)
    - Treat same as chronic htn in pregnancy
    - Also needs to be followed as above
- Preeclampsia/eclampsia
    - If >20 weeks +symptoms

Preeclampsia/eclampsia

- General
    - Cause not well-understood
    - Vascular endothelial dysfunction with multiple organ systems affected
    - Can occur up to 6 weeks postpartum
- Risk factors
    - 1st preg, age extremes (<20 or >35), multiple gestation, HTN, DM
- Classic triad: HTN, proteinuria, edema* (not needed for dx)

Mild preeclampsia

- BP: 140-160/90-110
- Proteinuria: >300mg/24h but <5g/24h
- May have hyperreflexia

Severe preeclampsia

- BP: 160-180 systolic or >110 diastolic on 2 occasions at least 6h apart + on bed rest
- Proteinuria: 5g/24h or cath urine dip with 4+ protein
- Creatinine and liver enzymes elevated
- Often presents with headaches, blurred vision, RUQ pain, clonus
- Complications: progression of disease to eclampsia, DIC, ICH, pulmonary edema, abruptio placentae, renal failure, fetal hypoxia, low birth weight, preterm L&D
- Treatment
    - Delivery!
    - Hydralazine/labetalol to closely regulate BP
    - Corticosteroids if <36w to promote fetal lung maturity
    - Magnesium sulfate IV inpt to prevent/treat seizures
    - Severe disease – delivery fast!

HELLP Syndrome

- Preeclampsia variant – can occur with severe dz
- Can present with epigastric/RUQ pain
- Dx: Hemolysis, Elevated Liver enzymes, Low Platelets (<100K)
    - schistocytes on smear (fragmented RBCs)
- Tx: bedrest, delivery, control BP, corticosteroids if <36 weeks

Rh incompatibility

- Rhesus factor most common blood incompatibility (98%)
- 15% of the population is Rh negative
- Rh (-) mom and Rh (+) baby mom can make antibodies to baby's blood resulting in hemolysis
- Tx: Rh immunoglobulin (RhoGam)
    - Given at 28-29 weeks to Rh (-) moms AND with any chance that fetal blood entered mom's circulation (i.e. vaginal bleeding)
    - Also given again at delivery if baby is Rh (+)
- Complications: fetal hydrops (fetal anemia) if antibodies attack baby's RBCs

First Trimester Bleeding/Spontaneous Abortion

- About 25% of pregnancies have some bleeding in 1st trimester → 50% progress to abortion
- Important to determine that the pregnancy is intrauterine (i.e. r/o ectopic)
- Types

    - Vaginal bleeding + closed os = threatened abortion
    - Vaginal bleeding + open os + IUP = inevitable abortion
    - Vaginal bleeding + open os + some POC expelled = incomplete abortion
- Spontaneous abortion increases with age of mother, smoking, infection, maternal comorbidities, drug use
- Workup: serial HCGs, ultrasound
- Management: conservative pelvic rest, follow-up
    - Give Rho-Gam to Rh (-) moms
    - If incomplete/missed → may need evacuation for POC

Ectopic Pregnancy

- Implantation of pregnancy anywhere but endometrium
    - 95% occur in fallopian tube (ampulla)
- Most common cause: adhesions
- Risk factors: previous ectopic, PID, tubal/abdominal surgery, IUD, ART
- Sx: VARIABLE
    - Classic: unilateral pain, abnormal vaginal bleeding, adnexal mass
    - Can also see syncope, GI upset, no vaginal bleeding, no pain
    - In ruptured ectopic, can see hypotension, shoulder pain (Kehr's sign), peritonitis, bradycardia or tachycardia
- Labs: hCG doubles every 48h in normal pregnancy (14:38)
- Imaging: transvaginal US
    - Discriminatory zone: hCG ~1500mU/mL – should see IUP on TV US
- Tx
    - Methotrexate if early, stable, has follow-up
    - Surgery: laparoscopy vs laparotomy
    - f/u hCG is key!