

[Episode 62: Problems during pregnancy with Jacqueline Galvan pt 1](#)

On this episode: Dr. Jed Wolpaw and Dr. Jacqueline Galvan

In this episode, episode 62, I discuss problems that can occur during pregnancy with Dr. Jacqueline Galvan. We discuss a wide range of high yield topics from gestational diabetes to molar pregnancies to maternal heart disease.

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Pre-Viable Pregnancy Conditions

Ectopic Pregnancy

- Definition: fertilized egg implants outside endometrial lining
- Incidence: 16 in 1000 pregnancies
- Risk factors: PID, previous ectopic pregnancy, IUD, previous tubal surgeries, assisted reproductive technologies
- Locations:
 - o Cervical → most lethal because it is highly vascularized and has no muscle contractility
 - o Tubal → most common
 - o Uterine scar
 - o Abdominal
- Demographics:
 - o Teenagers → have most lethal complications because delayed access to care
 - o Age 35 to 44 → most common
- Clinical Signs:
 - o Abdominal pain → rule out other causes such as kidney stones, ovarian torsion, etc.
 - o Delayed menses
 - o Vaginal bleeding
- Anesthetic management:
 - o If unruptured: general anesthetic w/ RSI
 - One good IV is sufficient
 - o If ruptured, significant bleeding: ensure good access, have type specific or O-ve blood

Therapeutic Abortions

- ?risk of aspiration → incidence is rare and most # are from full-term woman
 - o [Anesthesia & Analgesia 2016 study](#) → Found no incidence of pulmonary aspiration
 - NPO, majority in 1st trimester, average procedure time was 8 minutes
 - Used IV sedation with fentanyl, Midazolam, and propofol
 - Subset had paracervical block
 - o [J Clin Anesthesia 2011 study](#) → 62 000 patients for elective outpatient termination under anesthesia IV found no incidence of pulmonary aspiration or anesthesia events
 - Small minority of patients >18 weeks GA
 - Excluded BMI > 40
 - o [Contraception 2013](#) → procedural sedation with paracervical block found no incidence of anesthesia or pulmonary aspiration events
 - Most patients 5 to 18 weeks GA
 - o [Contraception 2017](#) → Deep sedation of 300 patients, more patients in 24 weeks GA mark, found no incidence of pulmonary aspiration in deep sedation
 - Patients who were intubated were intubated because of maternal reasons (eg. preference, developmental delay, risk of hemorrhage)
 - Main Takeaway: don't need to electively intubate all patients coming in for surgical abortion and paracervical is a useful adjunct
 - o Especially those who are BMI < 40, GA ≤ 18 weeks, appropriately NPO, no reason for hemorrhage, HELLP, etc.
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Intrauterine Fetal Demise

- Definition: intrauterine fetal death in patients >20 weeks GA
- Risk factors: non-Hispanic African American women, preexisting hypertension, preexisting diabetes, age > 35 years, obese patients
- Chance of DIC is ~10% after 4 weeks of a known intrauterine fetal demise → patients present earlier than this
- Epidural anesthesia should be made available prior to induction of labour → vaginal delivery is preferred method of delivery even in patients with previous C-section
 - o People with previous C-section have increased risk of requiring C-section, but still should be offered trial of vaginal labour first

Gestational Trophoblastic Disease

- Definition: abnormal tissue that normally forms placenta
- Two subcategories:
 - o Hydatidiform mole
 - Partial mole → some element of fetal parts
 - Full mole → abnormal tissue with no fetal parts
 - o Malignant gestational trophoblastic disease → could turn into neoplasm
- Clinical signs:
 - o Delayed menses
 - o Vaginal bleeding
 - o No fetal cardiac activity
 - o Uterus large of gestational age
 - o Elevated β -HCG
 - o Hyperemesis
- Associated with:
 - o Anemia
 - o Pregnancy induced hypertension
 - o DIC
 - o Hyperthyroid like state
 - o Cardiopulmonary distress
 - o Pulmonary hemorrhage
- Investigations: CBC, coagulation studies, CXR
- Management:
 - o Have type specific blood ready
 - o Rhogam if Rh negative pre-operatively ideally
 - o Large bore access
 - o Uterotonic agents available
 - o Consider avoiding volatile agents as they are associated with uterine relaxation
 - o General anesthesia

Maternal Systemic Disease

Autoimmune Disorders

- **Systemic Lupus Erythematosus:** antibodies against nuclear, cytoplasmic and cell membranes
 - o More common in women of child bearing age
 - o Medical management in peripartum area: hydroxychloroquine, azathioprine, prednisone
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- Effect on pregnancy: unknown if lupus will worsen
 - General rule: if had major active disease in 6mos prior to contraception, likely will have disease flare during pregnancy
 - Cerebritis and seizures may overlap with preeclampsia → estimated 5 to 38%
 - Worsening hypertension, edema, proteinuria, anemia, thrombocytopenia
 - To distinguish, look for casts in urine samples, complement levels (decrease in lupus flare)
 - Accelerated atherosclerosis
 - Nephritis may become worse → treat with immunosuppressants
 - Hematologic disturbances may appear
 - Effect of SLE flare on fetus:
 - Increased rate of fetal loss
 - IUGR
 - Prematurity
 - Preterm delivery
 - C/S rate is reported as high as 40%
 - Fetal congenital heart block because transplacental transfer of maternal antibodies → pre-delivery assessment by neonatologist
 - Management: full head to toe assessment
 - Baseline level of urine protein, antibodies, anti-phospholipid, complement
 - Up to 50% of SLE patients will develop some sort of cardiac dysfunction in lifetime (eg. cardiomyopathy)
 - Vaginal delivery still preferred
 - Look at hematologic profile prior to neuraxial
 - **Anti-phospholipid Syndrome:** auto-antibody against cell membrane phospholipids → activate platelets, etc. → abnormally formed clots
 - Primary vs. secondary: secondary if associated w/ SLE, etc.
 - Patients are in hypercoagulable state
 - Effect on pregnancy:
 - Recurrent fetal loss in third trimester because of chronic placental infarction
 - Management:
 - If recurrent pregnancy loss or vascular thrombosis not provoked → work-up
 - If have anti-phospholipid syndrome, but no history of vascular thrombosis → on prophylactic anti-coagulation throughout pregnancy and up to 6 weeks post-partum
 - If have anti-phospholipid syndrome, and history of vascular thrombosis → on full anti-coagulation throughout pregnancy and up to 6 weeks post-partum
 - Anti-coagulation starts when they are pregnant and/or have positive work-up
 - If going to have C-section, time neuraxial with anti-coagulation and time restarting sometime after neuraxial is in place
 - Example anticoagulation: LMWH (eg. enoxaparin)
 - Anticoagulation Guidelines:
 - [The Society for Obstetric Anesthesia and Perinatology Consensus Statement on the Anesthetic Management of Pregnant and Postpartum Women Receiving Thromboprophylaxis For Higher Dose Anticoagulants.](#)
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Endocrine Disorders

- **Hyperthyroid:** more common than hypothyroid in pregnancy
 - Physiology: serum T4 are determinate of thyroid function
 - Thyroxine binding globulin increases during pregnancy
 - Pregnancy is euthyroid state
 - Treatment: propylthiouracil, methimazole
 - Thyroid storm:
 - Tx: cooling, IV hydration, correct electrolytes and glucose, aspirin for increased temperature, propranolol, dexamethasone
 - Risks during pregnancy: preterm labour, preeclampsia, IUGR, non-reassuring fetal heart rate patterns (resolve with treating mom's hyperthyroid)
 - **Hypothyroid:** risk for chronic anovulation
 - Treatment: levothyroxine
 - Risks during pregnancy: increased fetal loss, preeclampsia, placental abruption, IUGR, impaired neurological development
 - Anesthetic concerns: myocardial dysfunction, coronary artery disease, sensitive to induction drugs, impaired CNS response to hypercarbia → well monitored setting
 - **Pheochromocytoma:** exceedingly rare (0.007%)
 - Maternal-fetal mortality rate is 40-50% if untreated → 5-15% mortality rate if treated
 - Hard diagnosis because mimics a lot of other things
 - Treatment: alpha blockade, BP management, surgical resection BEFORE 24 weeks
 - If found after, no preferred method of delivery
 - If vaginal → early epidural to prevent catecholamines
 - Densen block in 2nd stage
 - Assisted forceps to limit pushing which can aggravate pheo
 - If C/S → be prepared to resect pheo; no preferred for GA vs. epidural
 - Invasive central line, arterial line, slowly titrated neuraxial
 - Have vasodilatory agents ready
 - Medications to avoid:
 - Succinylcholine because of histamine release → risk benefit analysis with airway management
 - Morphine
 - Metoclopramide
 - Glucocorticoids
 - Ketamine
 - **Gestational Diabetes:** 6-9% of pregnancies; rate is increasing
 - Two types:
 - Type 1 is adequately controlled with diet and lifestyle
 - Type 2 requires medication
 - Risk factors: race, advanced maternal age, obesity, history, PCOS
 - Risks to mom: preeclampsia, increased risk of C-section, preterm labour, surgical site infections, previous gestational diabetes
 - Increased risk of developing type II diabetes mellitus
 - Risk to fetus: neonatal hypoglycemia, macrosomia (4000 to 5000 grams), shoulder dystocia, birth trauma, IUFD
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Heart Disease

- One of five leading causes of maternal death
- Physiological changes in pregnancy are not congruent with heart disease
 - Increased blood volume
 - Maternal HR increases
 - Stroke volume increases
 - O₂ consumption increases
 - Decreased pulmonary reserves
- **Supraventricular Tachycardia (SVT):**
 - 50% of women will have tachyarrhythmia during pregnancy (some may just be PVCs)
 - More common in women with structural heart diseases (eg. ASD, VSD)
 - Stable SVT: vagal maneuvers → adenosine 6mg followed by 12mg if it doesn't break through antecubital IV because of the rapid degradation
 - Unstable SVT: consider synchronized cardioversion, consultation
- **Pulmonary hypertension:**
 - Risks to pregnancy: IUGR, fetal loss, preterm delivery
 - Maternal mortality ~36% because increased cardio demands cannot be met
 - Post-partum is dangerous period because get auto-transfusion of blood from uterus back to central circulation
 - Anesthetic goals are to:
 - Avoid increasing pulmonary vascular resistance
 - Maintenance of intravascular volume
 - Avoid myocardial depression
 - Monitors:
 - Central line for cardio-active drugs
 - Arterial line with cardiac output monitoring; if don't have this, decision dependent on patient's disease severity and options available at your institution
 - Slowly titrated epidural for vaginal delivery; dense block for 2nd stage and controlled forceps to avoid increased maternal oxygen consumption
 - Medications:
 - Inotropic agents on hand (eg. dobutamine, milrinone)
 - Inhaled NO
 - Avoid methylergonovine (2nd line Uterotonic)
- **Coronary Artery Disease/Ischemic Heart Disease:**
 - Incidence of myocardial infarction from coronary disease is 3-6 cases per 100 000
 - Higher metabolic rate during pregnancy and hemodynamic during labour and delivery may negatively affect a fixed lesion
 - Management:
 - Good multidisciplinary meetings
 - Awareness of anticoagulation agents used by mom
 - Evaluate recent imaging and cardiac function
 - Epidural during labour with assisted second stage to decrease maternal expulsive efforts

#How do you manage this obstetric patients with these diseases

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