WHAT'S NEW IN OBSTETRIC ANESTHESIA FROM 2023?

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I have no conflicts of interest to disclose

GOALS & OBJECTIVES

Discuss how literature from the past year may:

1. Change clinical practice in obstetric anesthesia via new guidelines and policies.
2. Produce best practices for analgesic and anesthetic techniques during labor and delivery.
3. Optimize and expedite management of anesthetic and obstetric complications.
4. Alter practices affecting the fetus and newborn.

NATIONAL GUIDELINES AND POLICIES

PAIN DURING CESAREAN

An estimated 15% of patients experience pain during cesarean → medicolegal consequences per Closed Claims. The ASA COBA published a "*Statement on Pain During Cesarean Delivery*" with practical advice & best practices:

- Preoperative assessment: risk factors and consent
- Minimizing risk of inadequate block: techniques, drugs, doses
- Supplementing inadequate neuraxial: variety of options
- Conversion to GETA and conduct of the anesthetic
- Follow-up, referral and QI metrics: communicate & acknowledge!

https://www.asahq.org/standards-and-practice-parameters/statement-on-pain-during-cesarean-delivery

NEURAXIAL DRUG SHORTAGES

Drug shortages are likely to continue. The ASA COBA created a "*Statement on Neuraxial Drug Shortages*" with guidance on substitutions and dose ranges + references for their use.

- They note that many neuraxial meds may not have specific FDA approval, e.g. fentanyl, isobaric bupivacaine.
- Includes suggested options for labor analgesia and surgical cases, both spinal and epidural concentrations and doses.
- Local anesthetics, e.g. 2-CP for labor, spinal ropivacaine for CS
- Opioids, e.g. meperidine and sufentanil
- Adjuvants, e.g. clonidine and dexmedetomidine

https://www.asahq.org/standards-and-practice-parameters

ANESTHETIC NEUROLOGIC COMPLICATIONS

Peripartum neurologic complications significantly impact a new mother and her family, and anesthesiologists are often consulted early - even though most nerve injuries are related to factors other than neuraxial procedures.

- ASA COBA published "*Statement on Neurologic Complications of Neuraxial Analgesia/Anesthesia in Obstetrics*" including assessment, imaging, consultation with Neurology/Neurosurg, & mgt.
- Focus on compressive lesions: epidural hematoma or abscess.

https://www.asahq.org/standards-and-practice-parameters/statement-on-neurologic-complications-of-neuraxial-analgesia-anesthesia-in-obstetrics

MATERNAL MORTALITY UPDATE

CDC Update on National Health Statistics, 2021:

- Maternal mortality rate rose to 33 per 100K live births from 24/100K in 2020 and 20/100K in 2019.
- 30% of maternal deaths were in Black mothers. Their mortality is 2.6 times higher than White mothers.
- Deaths were more common in older mothers > 40.
- Leading pregnancy-related causes were pulmonary embolism, hemorrhage and HTN (i.e. stroke).
- COVID added ↑ severity as well as disruptions to OB care.

NCHS Health E-Stats, March 2023

IN-HOSPITAL MATERNAL MORTALITY

What are the trends and risk factors associated with maternal mortality and severe morbidity *during delivery*?

- 11.6 million discharges from a healthcare database, 2008-21
- Mortality ↓ from 10.6 to 4.6 per 100K discharges.
- ↑ risk of *mortality* for age > 35 (aOR 1.49), cesarean delivery (aOR 2.28), co-morbidities, and COVID-19 diagnosis.
- Severe morbidity ↑ from 147/100K to 180/100K.
- ↑ risk of *morbidity* for ages < 24 or > 35, cesarean delivery, ≥ 1 co-morbidities, ethnic or racial minority, and Medicaid.

JAMA Network Open 2023;6:e2317641

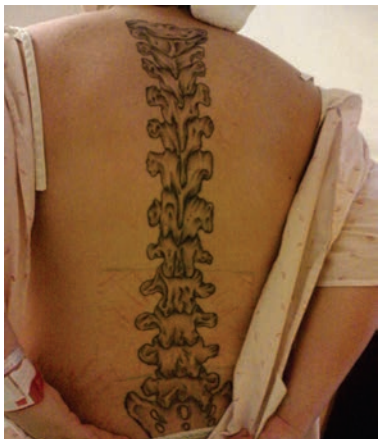
RACE & DRUG TESTING ON L&D

What is the association between race, use of drug testing, and a true positive test among parturients?

- EMR review 2018-2021 from a health care system in PA.
- 11% gave a history of substance abuse: opioid use more common in White and cannabis more common in Black.
- Regardless of history, the probability of a drug test being ordered was highest among Black patients. BUT Black women did *not* have a higher probability of a + test result.

JAMA Health Forum 2023;4:e230441

LABOR ANALGESIA



WHAT DOES TIKTOK SAY ABOUT EPIDURALS?

POPSUGAR 7/17/23: What exactly is an epidural?

TikTok recently went viral for a post in which she expresses her shock at learning what's actually involved in an epidural. 'Finding out that the epidural isn't a shot, it's a tube that stays in your back for your entire labor' she wrote over video of her mouth hanging open. 'I have no words'….

"They really don't tell us anything on purpose" one person wrote. "Wait, I thought it was a pill" someone else said.

CHAT GPT AND EPIDURALS

Is ChatGPT accurate answering questions about neuraxial labor analgesia? +/- but pretty much!

- Investigators created a list of 10 commonly asked questions about labor epidurals that were given to Chat GPT v3.5. Then 20 division chiefs of OB Anesthesia at U.S. academic centers reviewed the responses as experts.
- Over half of experts somewhat or strongly agreed with the medical accuracy. There was strong disagreement with the answer to 1 question "Do epidurals prolong labor?"
- Problem: ChatGPT answers were at a college reading level.

Anesth Analg 2024;PAP (Mootz)

EPIDURALS & AUTISM, ADHD

With sufficient power in the study, is labor epidural analgesia associated with ASD and/or ADHD?

- 4.5 million singleton pregnancies in a Scandinavian registry.
- 24% were exposed to epidural analgesia during labor. 1.2% of all children were diagnosed with ASD and 4% with ADHD.
- On a population level there was a significant association with epidural, but when they controlled for *maternal* anxiety / depression & used siblings not exposed to epidural to be the control group, there was no significant association.

Am J Obstet Gynecol 2023;228:233

BENEFITS OF NEURAXIAL ANALGESIA

This is an analysis of 51K deliveries in China, where there is only a 17.3% neuraxial analgesia utilization.

- Who received neuraxial? Nulliparas, prior cesarean, hypertensive disorders and receiving labor augmentation.
- If they received neuraxial, there was ↓ risk of: intrapartum cesarean (aOR 0.68), especially for maternal request (aOR 0.48), 3rd or 4th degree lacerations (aOR 0.36) and having a baby with a 5-minute Apgar score ≤ 3 (aOR 0.15).

Anesth Analg 2023;137:1047

BENEFITS OF NEURAXIAL ANALGESIA

Neuraxial analgesia for labor has been shown to ↓ risk of PPH. Does it also ↓ risk of transfusion? YES

- National Vital Statistics data from 2015-2018 (12.5 million births) using neuraxial analgesia as the exposure.
- The overall maternal transfusion incidence was 30.5/10K for patients without NA vs 20.2/10K with NA.
- For an intrapartum cesarean after labor analgesia, there was a 45% reduction in transfusion.

Anesthesiology 2023;139:734

DURAL PUNCTURE EPIDURAL (DPE)

What are the differences in outcomes between DPE and conventional placement of epidural analgesia for labor?

- Catheter failure rates and need for replacement were lower with DPE: RR 0.61
- Time to 1st epidural top-up later with DPE: 450m vs 367m
- But there was no difference in rate of conversion to GA for cesarean, need for supplemental boluses, rate of PDPH or need for epidural blood patch.

Int J Obstet Anesth 2022;52:103590

PIEB FOR MAINTENANCE

What is the optimal time interval and bolus volume of programmed intermittent epidural bolus (PIEB) for labor analgesia? Study design: DPE and an epidural bolus (15 ml 0.1% ropivacaine + sufentanil).

- Interval between boluses: ED50 = 52.5 minutes, ED90 = 37.
- Optimal volume / bolus: ED50 = 7.1 ml, ED90 = 11.3 ml.
- Higher volumes and longer intervals seem to be optimal.

Anesth Analg 2023; 137:532, 1233

PIEB vs PCEA FOR MAINTENANCE

If an epidural pump cannot provide PIEB settings, would a high volume PCEA bolus without background infusion provide comparable analgesia? YES

- RCT of 360 women who received either PCEA with 10 ml bolus & 30 minute lockout or PIEB with 10 ml bolus every 30 minutes, i.e. *the patient gave herself the bolus, or the pump did*.
- Breakthrough pain was similar; 11.2% PCEA vs 10.8% PIEB
- Total ropivacaine consumption was lower in PCEA group.
- Motor block, satisfaction, maternal & neonatal outcomes were similar between groups.

Anaesthesia 2023;78:1129

NITROUS OXIDE - EFFICACY

- AWHONN recommendation: Nitrous oxide should be a vital component in the provision of quality maternity care, and the bedside nurse is the ideal candidate to initiate N_2O use.

JOGNN 2018;47:239

- A comparison of IV meperidine and N_2O for laboring multi-parous patients found comparable pain control and adverse effects. N_20 is a suitable alternative to limit opioid use.

Obstet Gynecol 2023;141:1 (editorial),12

- N_2O provides negligible analgesia but provides anxiolysis and high satisfaction scores. Does not influence progress of labor.

Am J Obstet Gynecol 2023 (5);S1246 (Review)

PPTL: OPPORTUNISTIC SALPINGECTOMY

After vaginal delivery, is salpingectomy during PPTL cost effective for ovarian cancer risk reduction? YES

- Model: cost effectiveness analytic decision model
- In 10K patients desiring PPTL, adding opportunistic salpingectomy would result in 25 fewer ovarian cancer cases, 19 fewer ovarian cancer deaths, and 116 fewer unintended pregnancies than TL alone.
- Salpingectomy is more cost effective than tubal ligation alone: $26,150 per quality-adjusted life-year.

Obstet Gynecol 2023;141:819

CESAREAN DELIVERY

SALPINGECTOMY DURING CESAREAN

- Bilateral salpingectomy at the time of CD reduces risk of later ovarian cancer by 80% and is a safe, feasible, and cost-effective strategy across the population.

JAMA Surgery 2023;158:1204

- Permanent contraception in the postpartum period should include complete salpingectomy as an option, with the benefit of ovarian cancer prevention. *Obstet Gynecol 2023;142:1347*
- BRCA 1,2 gene carriers can be offered bilateral salpingo-oophorectomy at the time of indicated cesarean delivery.

Obstet Gynecol 2023;142:1500

GETA IN HYPERTENSIVE DISORDERS

Thrombocytopenia should be ruled out before neuraxial in parturients with hypertensive disorders. How often is GETA used because of confirmed ↓ platelets or unavailable lab results?

- Multicenter observational study
- 8% had confirmed thrombocytopenia < 75K → GETA.
- But 9% had GETA due to *unavailability* of a platelet count, even though 89% ultimately had platelets adequate for neuraxial.
- Clinician judgement is critical and spinal may be appropriate even without platelet count being available.

Anesth Analg 2023;136:992

NEURAXIAL MORPHINE AFTER 2-CP

Why is pain control less when epidural morphine is given after epidural 2-CP local anesthetic for cesarean?

- Parturients were randomized to epidural 2-CP or lidocaine with epi and bicarb for their cesarean delivery.
- All received 3 mg epidural morphine after delivery.
- No difference in time to first opioid or total 24-hour opioids.
- Use additional local anesthetic to cover the "window" between 2-CP wearing off and onset of morphine analgesia.

Anesth Analg 2023;136:86

ERAC: MULTI-MODAL ANALGESIA

Multi-modal regimens are underused and should be standard.

- Spinal or epidural morphine whenever neuraxial is used.
- Scheduled NSAIDs and acetaminophen given together.
- Intravenous dexamethasone 8-10 mg is opioid-sparing.
- Truncal blocks or local infiltration if neuraxial is not used.
- Avoid gabapentin; limited analgesia and excess side effects.

Anaesthesia 2023;78:1170 (PROSPECT guidelines)
Curr Opin Anesthesiol 2023;38:288 / Anesth Analg 2023;136:1122

ERAC: POSTOPERATIVE LIDOCAINE PATCH

Is a lidocaine patch beneficial to include for postoperative multimodal analgesia? YES

- Meta-analysis of 16 RCT and 918 *surgical* (not OB) patients
- Pain scores were significantly lower at 12, 24, and 48 hours in the lidocaine patch groups.
- Opioid requirements were less but satisfaction was similar.
- Consider using for breakthrough pain or opioid tolerance.

Clinical Journal of Pain 2023;PAP (Wu)

TRUNCAL BLOCKS: QL vs ERECTOR SPINAE

Is the quadratus lumborum block (QLB II) or erector spinae block preferable after cesarean under spinal anesthesia?

- Randomized trial using US-guided 0.25% bupivacaine blocks
- There was no difference in opioid consumption, pain scores, complications or QOL measures on POD 1,2, and discharge.
- The 2 blocks had similar analgesic efficacy and quality of recovery after cesarean delivery.

Int J Obstet Anesth 2023;53:103614

PREVENTING & TREATING PRURITUS

Meta analysis found 5 options for *treating* pruritus that were superior to placebo: sub-hypnotic doses of propofol, neuraxial and systemic opioid agonist-antagonists (e.g. nalbuphine), opioid antagonists (e.g. naloxone), and serotonin antagonists.

Br J Anaesth 2023;131:556

Meta analysis of ondansetron for *prevention* of pruritus found significant reduction: RR 0.81. Give prior to neuraxial opioids.

Anesth Analg 2024;138:70

ANESTHETIC PROBLEMS & MORBIDITY

POSTDURAL PUNCTURE HEADACHE (PDPH)

Consensus guidelines on PDPH from a multi-society, int'l working group generated these recommendations.

- Prevention: no benefit from prophylactic EBP, bed rest, IT or epidural meds, or systemic meds; IT catheter placement???
- Conservative Rx: scheduled multi-modal therapy, short-term opioids but not long term, caffeine but < 300 mg/day if breast-feeding. No other meds (steroids, theophylline, triptans, ACTH, neostigmine, methergine or gabapentin), no bed rest, usual oral hydration rather than IV, and no abdominal binders or aromatherapy.

PDPH GUIDELINES cont.

- Procedural interventions: no or minimal evidence for acupuncture, SPG blocks, greater occipital nerve blocks, spinal or epidural morphine, epidural dextran, gelatin, HES or fibrin glue.
- Consider epidural blood patch when conservative measure fail and PDPH interferes with activities of daily living. Best success when the interval from dural puncture to EBP is > 48 hours.
- When should imaging be obtained? Focal neurological deficits, visual changes, alterations in consciousness or seizures; or if the onset is > 5 days post-neuraxial; or if the headache is not orthostatic. *JAMA Network Open 2023;6:e2325387*

Advances in Anesthesia 2023;41:71

PDPH & COSYNTROPIN (ACTH)

- A retrospective cohort review of cosyntropin 1 mg for *prevention* of PDPH in postpartum women found no benefit for ↓ing PDPH or EBP. Cosyntropin for *Rx* of PDPH also had no benefit + an ↑ need for EBP (56% vs 28%).

Int J Obstet Anesth 2023;56:103917

- A retrospective review of 115 postpartum women with "wet tap"; 56% received 1 mg cosyntropin at delivery. There was no difference in PDPH or need for EBP.

Int J Obstet Anesth 2023;56:103922

CARDIAC ARREST & ANESTHESIA - BRITAIN

7TH National Audit Project by the Royal College of Anaesthetists: *Cardiac arrest in obstetric patients receiving anesthesia*.

- Incidence 1:12,700 *anesthetic* encounters; 1:17,000 with regional and 1:1220 with general anesthesia.
- Hemorrhage, high neuraxial and brady-arrhythmias after spinal accounted for 68% of arrests. Black race was over-represented (also true in the U.S.).
- At least half of all obstetric cases occur MN - 8am. Does staffing reflect this distribution of clinical activity?

Royal College of Anaesthetists 2023;ISBN 978-1-900936-35-4

MEDICATION ERRORS: TRANEXAMIC ACID

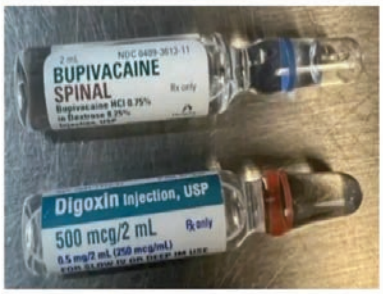
A review of 22 cases of drug swaps and accidental administration of intrathecal TXA:

- Orthopedic and obstetric cases were most common.
- Fatality rate was 36% with survivors having severe neurologic impairment.
- Presented as seizures (mistaken for eclampsia), acute pain, hemodynamic instability, and VT/VF.
- The only treatment is supportive.

Eur J Anaesthesiol 2023;40:334

LOOK-ALIKE AMPULES: SPINAL LA & TXA

FIGURE 1. Examples of Ampules of Bupivacaine Spinal by Hospira (NDC 0409-3613-11) (top) and Digoxin by Hikma Pharmaceuticals (NDC 0641-1410-31) (bottom)



A healthy patient had a planned elective CD with spinal anesthesia. Med error when digoxin was taken from the auto-dispenser instead of bupivacaine. She was declared brain dead and died soon after.

Pharmacy Times 2024;90:34

PRE-PROCEDURE PREGNANCY TESTING

Ethical principles do not support mandatory pre-anesthesia pregnancy screening tests: a narrative review

- Mandatory routine non-consented preop pregnancy testing does not respect patient autonomy.
- It can be coercive, e.g. if canceling surgery is the option.
- It can cause harm socially, medically (by delaying needed treatments), and financially (insurance implications).
- Not performing a test does not have medicolegal issues.
- There is no evidence that anesthetics harm the fetus, so what is the benefit to the patient? And how is this an anesthesia issue?

Anesth Analg 2023;PAP (Jackson)

MANAGING CHOLECYSTITIS IN PREGNANCY

What are the adverse outcomes in pregnant patients with acute cholecystitis (AC) who do/do not have cholecystectomy?

- Retrospective cohort study using an insurance database
- Having AC during pregnancy led to ↑ adverse outcomes (vs not).
- 34.5% underwent surgery during pregnancy; 42% 1st trimester, 40% 2nd trimester and 12% 3rd trimester; 65.5% medical mgt.
- Surgical management resulted in **fewer** adverse outcomes in all trimesters than medical management: OR 0.81, 0.71 and 0.45 in 1st, 2nd and 3rd trimesters.

JAMA Surgery 2023 (Hantouli)

ADNEXAL MASSES DURING PREGNANCY

What is optimal management and prognosis?

- Diagnosis is common during pregnancy because of frequent ultrasounds. Incidence ~0.2-2%; ~2% are malignant.
- Surgery may be done for symptoms, torsion or malignancy.
- Laparoscopy is preferred to open using LUD, port placement for uterine size, insufflation pressure < 12-15 mmHg, normal maternal capnography, pre/post FHR and contraction monitoring, and mechanical ± chemical thromboprophylaxis.

Am J Obstet Gynecol June 2023:601

THE PREGNANT TRAUMA PATIENT

Trauma is the leading non-obstetric cause of maternal death, most commonly MVA, domestic violence, and falls.

- Often fetal care is prioritized over maternal, e.g. fetal ultrasound and monitoring are done, while maternal vitals are not documented and FAST exam is not done.
- The fetus should not distract from conventional ATLS for the mother, including any indicated imaging studies.
- Notify obstetric & peds personnel from L&D early to assist with fetal assessment and neonatal care if delivered.

Anesth Analg 2023;136:830

SUGAMMADEX REVERSAL IN PREGNANCY

A retrospective review of 124 pregnant women having non-OB surgery found those who received sugammadex had no ↑ risk of preterm delivery or miscarriage than those who did not.

Int J Obstet Anesth 2023;53:103620

Although Merck and SOAP advise against sugammadex use in pregnancy and the FDA has not approved it (based on theoretical binding to progesterone), several case series have found no harm. Sugammadex is a safe and superior agent for reversal – should that outweigh theoretical harms?

Anesth Analg 2023;136:1217

OBSTETRIC & MEDICAL COMPLICATIONS

"I'm going to give it to you straight, Mrs Watson, for a 27 year old you're in pretty bad shape."

MECHANICAL ADJUNCTS TO TREATING PPH

- REBOA device used in 31-week pregnancy with ruptured splenic aneurysm and shock after other measures failed.

Acta Anaesthesiol Scand 2023;67:230

- Post-market review of 800 cases that used the JADA device. 94% were uterine atony. Success rate 93% after vaginal birth and 84% after cesarean delivery. No perforations or deaths.

Obstet Gynecol 2023;142:1006

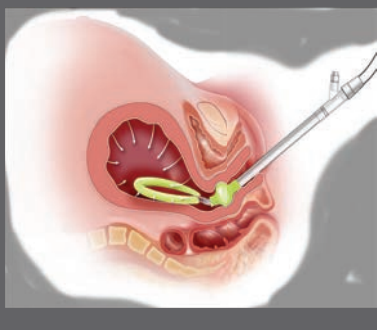
- Intrauterine balloon tamponade (e.g. Bakri) was 87% effective in a recent meta-analysis, 6.5% complication rate.

Obstet Gynecol 2023;142:1000, 998 (editorial)

INTRAUTERINE VACUUM DEVICE (JADA)

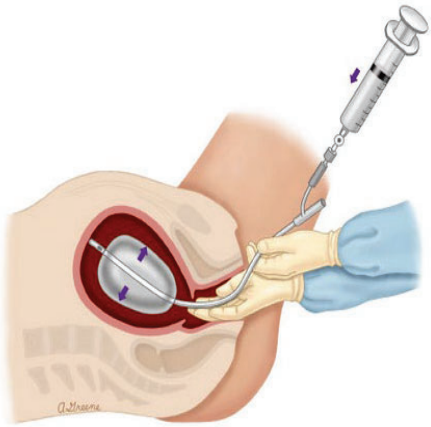
Intrauterine vacuum-induced hemorrhage control is a new rapid and effective treatment option for postpartum hemorrhage, with the potential to prevent severe maternal morbidity and mortality. Control of PPH occurred in 3 minutes; 98% found it easy to use.

Obstet Gynecol 2021;136:882



Uterine balloon tamponade has a success rate of 87% in treating PPH, especially due to atony or placenta previa, and has a low complication rate of < 6.5%.

Obstet Gynecol 2023; 142: 998



PPH: ANESTHESIA NOTIFICATION

The anesthesia team should be alerted for PPH after vaginal delivery to assist with resuscitation. How to prevent delays?

- QI initiative after near-misses from delayed notification
- Notifications based on EBL or vital sign changes failed.
- Automated process was initiated in Epic: when a 2nd-line uterotonic was administered → text sent to L&D anesthesia.
- Since introducing the system, no failures to alert for PPH.
- At UCH, anesthesia team is required to be present for TXA administration which occurs at QBL > 1000 ml.

A&A Practice 2023;17:e01687

REVIEWS RELATED TO HEMORRHAGE

- Placenta Accreta Spectrum: Obstet Gynecol 2023;142:31

"*Coordination with an anesthesiologist accustomed to PAS care or to managing massive obstetric hemorrhage, rapid large-volume transfusion, and invasive hemodynamic monitoring is crucially important…The optimal approach to anesthesia for PAS surgery is unknown. Although GETA is often chosen, many referral centers use neuraxial for either all of the case of part of the case until after the time of delivery.*"

- Von Willebrand Disease, Hemophilia, and other Inherited Bleeding Disorders in Pregnancy: Obstet Gynecol 2023;141:493

NEW AHA STATEMENT: ANESTHETIC CARE OF THE PREGNANT PATIENT WITH CV DISEASE

- Cardiovascular disease is the leading cause of maternal mortality in the US, accounting for >25% of maternal deaths, most common in Black patients.
- Cardio-obstetrics = multi-disciplinary care of pregnant patients with congenital or acquired heart disease.
- As well as anesthetic management, anesthesiologists can prevent or promptly recognize CV decompensation, monitor and treat with inotrope and vasopressor support, use TTE, choose delivery location, arrange mechanical support → ICU.

Circulation 2023;147:e657

NEW AHA STATEMENT: PULMONARY HTN MANAGEMENT IN NON-CARDIAC SURGERY

Specific comments related to OB cases & *anesthetic management*:

- Assure appropriate monitoring, promptly mitigate anesthesia-induced hemodynamic effects, assure pain control and provide expertise in management of PH and right heart failure.
- Avoid hypercarbia, Trendelenberg position, hypo- or hyper-volemia, hypoxia, bradycardia and N_2O (↑ PVR).
- Consider pre-induction placement of sheaths for VA ECMO.
- Mode of delivery is based on obstetric indications, not on PH.
- If neuraxial is used, plan slow titration of CSA or epidural and pressor support with norepinephrine or vasopressin.

Circulation 2023;47 (Rajagopal)

NEW BLOOD TEST TO PREDICT PREECLAMPSIA

A newly approved blood test predicts development of PEC and whether severe features will develop in the next 2 weeks. It can rule out preeclampsia if suspected but criteria aren't met.

- A ratio of sFlt1 (anti-angiogenic protein) to placental growth factor (PlGF = pro-angiogenic protein) ≤ 38 rules out PEC.
- Ratio > 38 was predictive of PEC with severe features that would require delivery within 2 weeks.
- Thermo Fisher's test was approved by the FDA in May 2023.

Am J Obstet Gynecol 2023;228:573

CV RISKS ASSOCIATED WITH PEC/HTN

- PEC is associated with adverse *cardiac events* during delivery (aOR 4.74) and within 90 days postpartum (aOR 2.32).

Anesth Analg 2023;136:728

- Preeclampsia is associated with ↑ risk of *thromboembolism* during and after delivery from a US sample of 523K primips.

JAMA Network Open 2023;6:e2343804

- 43% of pregnancy-associated *stroke* had associated HTN. Stroke associated with HTN had ↑ adverse outcomes: seizures, mechanical ventilation, and prolonged hospital stay.

Obstet Gynecol 2023;142:393

CANNABIS USE DURING PREGNANCY

Why do so many pregnant women use cannabis?

- Focus groups with pregnant women who reported using.
- 70% reported daily use, 25% weekly use and 6% monthly.
- They preferred it over other medications they could take for sleep, nausea, pain or mood and thought it was safer.
- Many believed cannabis use was safe in pregnancy or perceived a lack of *any* scientific evidence, but all wanted more information from their obstetrician.

Obstet Gynecol 2023;142:1153

Cannabis use and perinatal health research ***JAMA 2023;330:913***

ASRA-PM GUIDELINES ON PERIOP CANNABIS

Nine key questions were developed to address safe management of surgical patients using cannabinoids. Question #4 addresses parturients for labor or cesarean.

- Fetal effects: cannabis readily crosses the placenta; ↓ birth weights, adverse neurodevelopmental changes
- Maternal effects: ↑ N&V, altered temp regulation
- Breastfeeding: half-life of THC in breast milk up to 17 days
- Chronic use may lead to opioid tolerance while acute intoxication may reduce need for opioids.

Reg Anesth Pain Med 2023;48:97

URINE TOXICOLOGY STUDIES

A positive urine fentanyl test has major consequences. Does fentanyl in labor epidural infusions lead to a + test? YES

- Prospective cohort study obtained urine samples before and after initiation of epidural analgesia, at intervals during labor, up to 4 times postpartum, and a neonatal urine sample.
- No specimens were + before neuraxial. But intrapartum 77% had a + mass spec for fentanyl.
- Postpartum 91% had + mass spec and 62% had + immuno-assay. Neonatal samples were + in 77% of cases.

Am J Obstet Gynecol 2023;228:741

MATERNAL SEPSIS

The multi-disciplinary Alliance for Innovation on Maternal Health (AIM group) published their *Consensus Bundle on Sepsis in Obstetric Care.* Lead author is an Anesthesiologist!

- Sepsis is the 2nd leading cause of maternal mortality in the US, unchanged since 1987, and 73% of deaths are preventable.
- Treatment is often delayed because vital sign changes and symptoms overlap with normal physiologic changes of pregnancy.
- Use a pregnancy-adjusted screening tool, although false + remain high. Consider sepsis in any patient with deteriorating status.

Obstet Gynecol 2023;142:481

INFECTION PREVENTION DURING CESAREAN DELIVERY (Box 2)

1. Use of electric clippers rather than a razor for hair removal
2. Avoid perioperative hyperglycemia
3. Advise patients to shower with soap or an antiseptic agent the night before
4. Preoperative surgical site skin preparation with an alcohol-based agent
5. Vaginal cleansing with povidone-iodine or chlorhexidine for labor or ruptured membranes
6. Closure of subcutaneous tissue 2 cm or greater
7. Use of subcuticular suture
8. Cesarean delivery: cefazolin administered within 60 min before incision (weight-adjusted dosing to cefazolin 3 g can be considered for patients with weight more than 120 kg)
9. Redose after 1,500 mL estimated blood loss or long procedures
10. For patients in labor or with ruptured membranes, add azithromycin 500mg to antibiotic prophylaxis for cesarean delivery

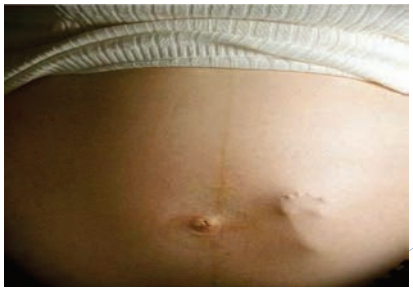
PREGNANCY AFTER BREAST CANCER

Can women safely interrupt endocrine therapy to attempt pregnancy after breast cancer? YES

- 516 women ≤ 42 years, treated with endocrine therapy for breast cancer for 18-30 months, & who desired pregnancy.
- Median time since diagnosis was 29 months, 93% Stage I or II.
- The 3-year incidence of breast cancer events was 8.9% in the treatment-interruption group and 9.2% in the controls.

N Engl J Med 2023;388:1645

THE FETUS AND NEONATE



TERATOGENS DURING PREGNANCY

How often and when are pregnancies exposed to teratogenic meds?

- Health insurance database of ~ 640K pregnancies; looked for 137 teratogenic meds + timing of initiation of prenatal care.
- 5.8% of all live births were exposed to teratogens.
- Most common exposures: fluconazole, valproate, lisinopril, and immunomodulators.
- 25% occurred before 6 weeks gestation and 49% before 15 weeks, i.e. before prenatal care and risk-benefit discussions occur and after the option of termination for teratogenic effects.

JAMA Network Open 2024;e2354298

MATERNAL VACCINATIONS

In addition to being safe for mother and baby to receive during pregnancy, by vaccinating the mother, infants receive immunity for 6 months or more from:

- Influenza *JAMA Pediatr* 2023 (Sahni)
- COVID *JAMA Pediatr* 2023;177:1314
- RSV *N Engl J Med* 2023;388:1451

Vaccination prevents infant disease and ↓ hospitalization and death from severe disease while infants cannot be vaccinated.

MATERNAL OXYGEN DELIVERY

Does maternal oxygen during labor affect cord gases at delivery? NO

- 5 RCTs have shown that acute short-term oxygen delivery to the mother does not improve fetal acid-base status or other neonatal outcomes. Would long-duration, high concentration delivery improve umbilical cord gas oxygen? NO
- 140 healthy women with Cat I FHR tracings in labor received 10L oxygen by tight face mask for ~5.5 hours vs. receiving room air.
- There were no differences in umbilical cord oxygen levels or in the development of non-reassuring Cat II FHR tracings.
- The cord arterial pH was actually lower in the oxygen group.

Am J Obstet Gynecol 2022;227:629