RETAINED EPIDURAL CATHETER

Case report of difficult removal; after multiple attempts by the anesthetist it was recovered minus the distal 6 cm. What now?

- Perform prompt disclosure to your patient, group leaders and hospital risk manager.
- No RCTs available, but expert opinion is to leave the tip in place. Risks of removal are thought to outweigh any benefits.
- Resolution: CT showed the remaining catheter clearly; patient requested removal so taken to OR → GA → neurosurgery easily removed fragment under fluoro with a small incision.

ASA Monitor 2017; 81: 30

ANTI-COAGULATION

Systematic review of spinal-epidural hematomas to identify cases associated with neuraxial block + thrombo-*prophylaxis*.

- None of the hematoma cases involved OB patients.
- There were 28 parturients who had neuraxial done before the recommended ASRA time limit <u>without</u> complications.
- There were 52 parturients who had neuraxial *while* receiving LMWH <u>without</u> complications.
- This is reassuring, but we need better registries and details.

Anesth Analg 2017; 125: 223

THROMBOCYTOPENIA

What is the risk of epidural hematoma requiring decompression in thrombocytopenic (defined as < 100K) parturients?

- Combined data from MPOG + a systematic review found 573 cases of thrombocytopenic parturients who received neuraxial block in MPOG + 1524 from the review.
- <u>No</u> cases of epidural hematoma were found.
- Upper limits of 95% CI: platelets 0-49K =**11%** (highest estimated risk), 50-79K = **3%** and 70-100K = **0.2%**, although results < 70K remain poorly defined due to small numbers.

Anesthesiology 2017; 126: 1053

LIPID EMULSION

Meta analysis of 26 animal studies using lipid emulsion as a treatment for local anesthetic toxicity (LAST).

- Lipid emulsion significantly reduced the odds of death in animal models of resuscitation (OR 0.24).
- Analysis of outliers when lipid was <u>not</u> successful reinforced the need for good life support measures (airway management, chest compressions) + prompt lipid treatment.
- RCTs to assess efficacy in humans are not practical.

Clin Tox 2017; 55: 617

PREGNANCY TESTING

ASA statement from the Committee on Quality Management and Departmental Administration (QMDA):

1. Indications for preoperative pregnancy screening
2. Accuracy of early pregnancy testing
3. **Medicolegal concerns** → "routine pregnancy testing may pose greater medicolegal risk to anesthesiologists due to failure to check the result or failure to document informed consent of risk of miscarriage prior to elective surgery."
4. Ethical considerations
5. Recommendations (www.asahq.org)

EPIDURAL & BREASTFEEDING

Controversial topic: does epidural analgesia for labor that includes fentanyl impair breast-feeding?

- RCT of term, multiparous women who had breastfed successfully before and who received epidural analgesia.
- Randomized to epidural bupivacaine alone, B + fentanyl 1 µg/ml, or B + fentanyl 2 µg/ml
- Frequency of breastfeeding at 6 weeks was > 94% and no different between groups.

Anesthesiology 2017; 127: 614

OBSTETRIC & MEDICAL COMPLICATIONS

COSTS OF PREECLAMPSIA

What is the annual health and cost burden of preeclampsia to mothers and infants in the U.S.?

- Epidemiologic analysis of multiple databases.
- Preeclampsia ↑ adverse events from 4.6% to 10% in mothers; from 8% to 15% in infants.
- The cost burden for infants ↑ as gestation age ↓.
- Cost burden during the first year was $1.03 billion for mothers and $1.15 billion for infants = $2.18 billion.

Am J Obstet Gynecol 2017; Sept: 235-7

PREECLAMPSIA PREVENTION

What has the effect been from the USPSTF 2014 recommendations to give aspirin for PEC prevention?

- Retrospective cohort study of 2 academic institutions before/after aspirin was used to prevent *recurrent* PEC.
- Confounders were accounted for in multivariate analysis.
- Rates of recurrent preeclampsia were <u>decreased by 30%.</u>

Am J Obstet Gynecol 2017; 217: 365

National Partnership for Maternal Safety: Consensus Bundle on Severe Hypertension During Pregnancy and the Postpartum Period

Editorial: Key considerations for the anesthesiologist.

- BP > 160/110 is a hypertensive emergency that requires treatment within 30 minutes to prevent hemorrhagic stroke.
- We have an important role in management of eclamptic seizure.
- Promote neuraxial if possible, but manage GETA safely.
- Continue magnesium during cesarean delivery to avoid sub-therapeutic levels that ↑ the risk for eclampsia.
- Be involved in safe disposition post-delivery (BP control).

Anesth Analg 2017; 125: 383 & 540

AMNIOTIC FLUID EMBOLISM

Four recent research publications on AFE and the implications:

- Insulin-like growth factor binding protein-1 has been validated as the only lab test that can confirm a diagnosis of AFE.
- A registry from Australia-New Zealand reported "only" a 15% mortality rate in 33 AFE cases – survival is improving.
- Report of 3 cases where AFE presented as an isolated coagulopathy without cardiac or respiratory collapse.
- 90% of parturients survived when transfused with FFP:PRBC ≥ 1 compared with only 40% survival if transfusion ratio < 1.

Obstet Gynecol 2017; 129: 941

LIPID THERAPY FOR AFE

<u>Case report:</u> G1 at 41 weeks was induced and had a low-dose epidural for analgesia. Fetal decelerations and bleeding from the epidural site occurred intermittently for several hours before vacuum-assisted delivery, which was followed by postpartum hemorrhage. INR 2.0, PT 23 (nl 11-14). Dyspnea and confusion were followed by cardiac arrest → presumed diagnosis of amniotic fluid embolism. No PE on TEE. No response to ACLS so intralipid administered as a last resort. Within 1 minute → ROSC → decompensated several minutes later → lipid → ROSC → transported to ICU → full recovery.

A&A Case Reports 2017; 8: 64

THE WOMAN TRIAL

Early administration of TXA reduces death in bleeding trauma patients. What are the effects in postpartum hemorrhage?

- 20K women, 193 hospitals in 21 countries were randomized to receive 1 gram TXA or placebo + usual care during PPH after vaginal delivery or CS.
- Death due to bleeding ↓ 19% overall (1.5% vs. 1.9%), RR 0.81.
- Death ↓ 31% if given within 3 hours (1.2% vs. 1.7%), RR 0.69.
- No difference in hysterectomy rate or in other causes of death.
- No difference in venous or arterial thromboembolic events.

Lancet 2017; 389: 2105

TXA IN OBSTETRICS

- Byproducts of fibrinolysis (D-dimer and plasmin-antiplasmin complexes) are ↑ in bleeding parturients. These increases are attenuated by TXA → good rationale for use.
- The WOMAN Trial demonstrated both efficacy and safety.
- However, most subjects were from Central Africa and South Asia. 7% were not even transfused before death. Interventions such as Bakri balloon or B-Lynch sutures were uncommon.
- So….are the results generalizable to high resource countries?
- Adverse effects can occur with TXA → seizures, thrombosis, death after accidental neuraxial injection.

APSF Newsletter 2017; October: 34

MANAGEMENT OF PPH

ACOG Practice Bulletin: *Postpartum Hemorrhage*

- Have guidelines for routine use of uterotonics.
- Escalate quickly to other interventions if uterotonics fail.
- Consider TXA when initial medical therapy fails.
- Have a multi-disciplinary response team, an escalating PPH protocol, and a functioning massive transfusion protocol.
- Transfuse fixed ratios of PRBC, FFP and platelets.
- Adopt and implement a hemorrhage bundle for your L&D.

Obstet Gynecol 2017; 130: e168

BUPRENORPHINE DOSING

Pharmacokinetic study on buprenorphine dosing during pregnancy:

- 14 pregnant and postpartum women + 62 followed in the clinic.
- Plasma concentrations were sub-therapeutic for 50-80% of the 12-hour dosing interval when BID dosing was used.
- When the dosing interval was determined by patient preference, 68% chose TID or QID dosing.
- More frequent dosing may be required during pregnancy to prevent withdrawal symptoms and to ↑ maternal adherence.

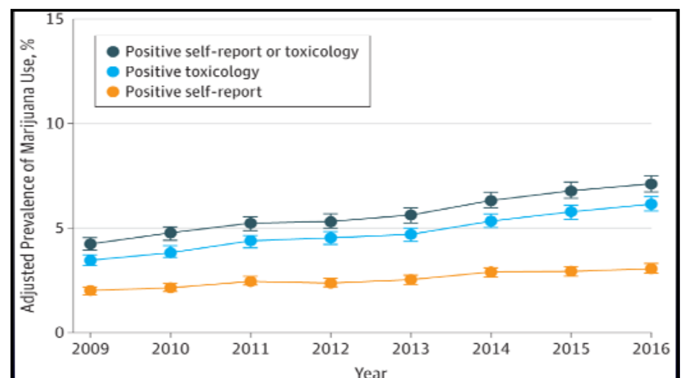
Am J Obstet Gynecol 2017; 217: 459

MARIJUANA USE

Trends in prenatal marijuana use 2009-16:

- Kaiser Permanente Northern California does universal marijuana screening via self-report and by urine toxicology.
- Prevalence of marijuana use increased significantly over time from 4% to 7% of pregnant women, especially ≤ age 24.
- 22% of pregnant patients < age 18 and 19% ages 18-24 tested positive by toxicology.
- 79% perceived little to no harm in prenatal use of marijuana.

JAMA 2017; 318: 2490



MARIJUANA RISKS

- Data suggest that pregnant women use marijuana as an anti-emetic, especially first trimester when fetal risks are greatest.
- Marijuana available today is more concentrated and used in ways that expose the user to higher THC concentrations → different than when earlier teratogenicity studies were done.
- The potential for marijuana to interfere with neuro-development is theoretical but justified → the endocannabinoid system is present from 16 days gestation.

JAMA 2017; 317: 129 (editorial)

THE FETUS AND NEONATE

TERATOGENICITY

Is maternal use of anti-epileptic drugs during pregnancy associated with major congenital malformations in children?

- 50 studies published between 1974 and 2014.
- Offspring of women without epilepsy were used as baseline → 2.5% incidence of congenital anomalies.
- Lamotrigine (Lamictal®) at 2.3% and levetiracetam (Keppra®) at 1.8% had lowest risk while valproate (Depakote®) at 11% had the highest risk.

JAMA 2017; 318: 1700

DELAYED CORD CLAMPING

ACOG Opinion: Delayed umbilical cord clamping after birth

- ACOG recommends delay of cord clamping for at least 30-60 seconds after birth for all vigorous infants.
- Term infants: ↑ Hgb levels, improves iron stores, and may have developmental benefits. May ↑ jaundice, so must monitor.
- Preterm infants → improved transitional circulation, better red blood cell volume, ↓ need for transfusion, ↓ risk of NEC, IVH.
- No ↑ risk of postpartum hemorrhage for the mother.

Obstet Gynecol 2017; 129: e5

MECONIUM STAINING

ACOG Opinion***: Delivery of a newborn with meconium-stained amniotic fluid***

- Do not routinely provide suctioning at delivery whether vigorous or not.
- A full Pediatrics team should be present in case intubation is needed.
- Resuscitation should follow the same principles whether meconium-stained or not.

Obstet Gynecol 2017; 129: e33

ASA CLOSED CLAIMS DATA

What is the anesthesiologist's liability in newborn death and brain damage cases, and when participating in newborn resuscitation?

- 29% of OB anesthesia malpractice claims are for newborn death and brain damage (vs. 71% related to maternal care).
- Anesthesia care was felt to have contributed in 33% of cases due to delay of delivery, poor communication (level of urgency), or sub-standard care (mismanagement of difficult intubation or high block).
- Cases involving anesthesia delay → didn't respond when not in hospital; inappropriate choice of regional anesthesia versus general.
- Most resuscitation claims are dropped → "Good Samaritan".

ASA Monitor 2017; 81: 16 (February)

EXTREME PREMATURITY

What is the expected survival and neuro-developmental outcome for infants born at 22-24 weeks gestation?

- 4274 infants at 11 centers comparing 2000-3 to 2008-11.
- Survival ↑ from 30% to 36%.
- Survival *without* impairment ↑ 16% to 20%.
- Survival with disability did not change: 15% to 16%.

N Engl J Med 2017; 376: 617

NEWBORN INFECTION

Case report (Oregon): Infant with respiratory distress was diagnosed as having GBS infection at birth. Treated and discharged. Recurrence 5 days later – same sensitivities as initial infection. The mother had asked to keep her placenta, and registered with a company that turns it into "pills" to be taken like vitamins for mood and energy boosts. She was taking 2-3/day, and cultures showed the same GBS cultured from the baby → "high maternal colonization from consumption of GBS-infected placental tissue".

JAMA 2017; 318: 511

NEONATAL ABSTINENCE SYNDROME

Is buprenorphine a better treatment than morphine for NAS due to maternal opioid use? Yes.

- Double-blind RCT of 63 infants with signs of NAS
- Duration of treatment was shorter with B: 15 vs. 28 days.
- Median length of stay was shorter with B: 21 vs. 33 days.
- Only 15% needed adjunct phenobarbital in the B group vs. 23% in the morphine group.

N Engl J Med 2017; 376: 2341

NEUROTOXICITY - CLINICAL

What is the association between anesthesia and surgery before age 4 and academic performance at 16 + IQ testing at military conscription (Sweden)?

- 2 million children born from 1973-1993; compared those with 1 surgical exposure before age 4 to unexposed children.
- Mean difference of 0.41% lower school grades and 0.97% lower IQ scores in the exposed group.
- The surgery vs. no surgery differences were markedly *less* than the differences associated with sex, maternal educational level, or month of birth during the same year.

JAMA Pediatr 2017; 171: e163470

NEUROTOXICITY - ANIMAL

Does dexmedetomidine provide protection in the developing brain against anesthesia with sevoflurane?

- Infant rats received 2.5% sevoflurane + dexmedetomidine in varying doses.
- Co-administration of dex 1 µg/kg with sevoflurane significantly reduced apoptosis in all brain areas.
- Dex 5 µg/kg or higher *plus* S increased mortality.

Br J Anaesth 2017; 119: 506