Physiology of Pregnancy

- 1Q 50-60%, SLO 30-50%, highest CO in the immediate postpartum period
- 30-50% of CO loss due to decreased systolic BP
- Cardiac output: 5 L/min
- Cardiovascular reserve: 60% of pre-gravid level
- Cardiac index: 3-4 L/min/m²
- Mean PA and CVP: <10 mmHg
- LV stroke work index: 13-14 W/m²
- Maternal arterial PG starts to fall 4-6 wk post partum

Anesthesia

- Reduces 50% of maternal CO by 20 wk
- Bupivacaine: Titrate to effect: Start at 0.25% at 1 mL/hr and titrate to effect
- Verify viability and safety for epidural insertion: at least 2 mL/hr

- Verify functionality at least 1 hr post delivery
- CAUTION BOLUSING IF HYPOTENSION OR FETAL DISTRESS

- Cefazolin as above & Azithromycin** 500 mg IV
- Gent toluene
- 0.25% at 1 mL/hr and titrate (1-3 mL/hr) to effect; no patient-controlled analgesia
- Peds should be present at delivery

- 0.25% bupiv 8 mL / 8 min / 8 mL / 32 mL
- 0.08% bupiv 8 mL / 8 min / 8 mL / 32 mL
- 0.0625% bupiv = 35 mL 0.5% bupiv added to 250 mL NS
- 0.125% bupiv = 83 mL 0.5% bupiv added to 250 mL NS

- **Gent dose based on actual weight. If actual weight > 20% of IBW, use IBW

- Dose: 1 mcg/kg IV single dose prior to c-section, no
- Maternal, fetal, placental esterases limit fetal effect
- 30-60 sec onset; peak 2.5 min; half life ~3.5 min

- **Infuse over 1 hr, faster rates associated w/ local IV site rxn

- **CAUTION BOLUSING except 2 mL dose due to high opioid risk

- Consider fentanyl 100 mcg epidural bolus in second stage.
- If volume/spreading issue, give a bolus and
- Adjuncts
- C-Section Antibiotics

- Bupivacaine w/ fentanyl: 4 mg
- Bupivacaine w/ sufentanil: 3 mg
- Bupivacaine 0.5%/10 mcg suf

- Lidocaine 1.5%/1 ml

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**Neuraxial Anesthesia**

Once ETT 6.5 placement verified, ketamine 1-2 mg/kg or thiopental 4-5 mg/kg.

**Emergent C-Section**

EMERGENT (DTI Time < 30 min): Must add bicarb to 2% lido + 1:200K epi premade vial (acidified for stability).

- Lidocaine
  - IT lidocaine 2% (3-4 mL; DOA 30-45 min); lidocaine 5% (1-1.5 mL; DOA 60-90 min)
  - Neuraxial morphine: Peaks at 2 hrs
  - Morphine +/- 100-200 mcg epinephrine
  - 12.5-15 mg 0.5-0.75% hyperbaric bupivacaine +/- 10-15 mcg fentanyl

**Clinical Trial**

Vaginal > 500 mL, Caesarean > 1000 mL

**Fetal Heart Rate Monitoring**

- Normal HR 110-160 bpm, moderate variability (0.5 bpm, peak to peak above baseline by 15 sec.), < 15 decelerations/h

**Neonatal Resuscitation**

- Bi-level ventilation (airway pressure: tidal volume ratio 0.3:1)
- P/F ratio 150-200, PaCO₂ 30-40 mmHg (Paco₂ < 30 mmHg if hypothermia)
- Consider bicapa/CO2 blower
- Consider POC testing, e.g. \( \text{ETsepsis}^{\text{TM}} \)
- Systematics + analytiX + aggeteX (Belseres) [2021]

**Emergent C-Section**

As above for Elective. 

**Neuraxial Anesthesia**

**Elective C-Section**

Goal: To infuse the least amount of anaesthetic.

Set-patient preferences for what level to reach during C-section. Use transcutaneous phone for gentle and effective laryngoscopy.

High gas flow and 2 MAC volatile.

**Clinical Trial**

**Terbutaline**

1. Prolonged (S-10 1:1000 bolus in 1.5-2 mL saline if needed)
2. Repeat if necessary after 15 min

**Neuraxial Anesthesia**

- Ensure all equipment is available, including umbilical cord clamp.
- Ensure all collytics (terbutaline, ergonovine, methylergonovine, methyloergonovine) are available.
- Uterine inversion
- Cervical cerclage
- PPTL
- Failed FFD
- Failed ECV
- Failed AVD

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