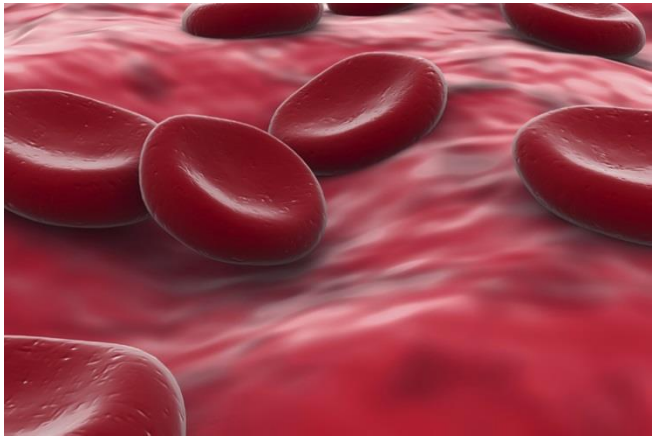

Obstetric Anesthesia Considerations in Patients on Antithrombotic Therapy

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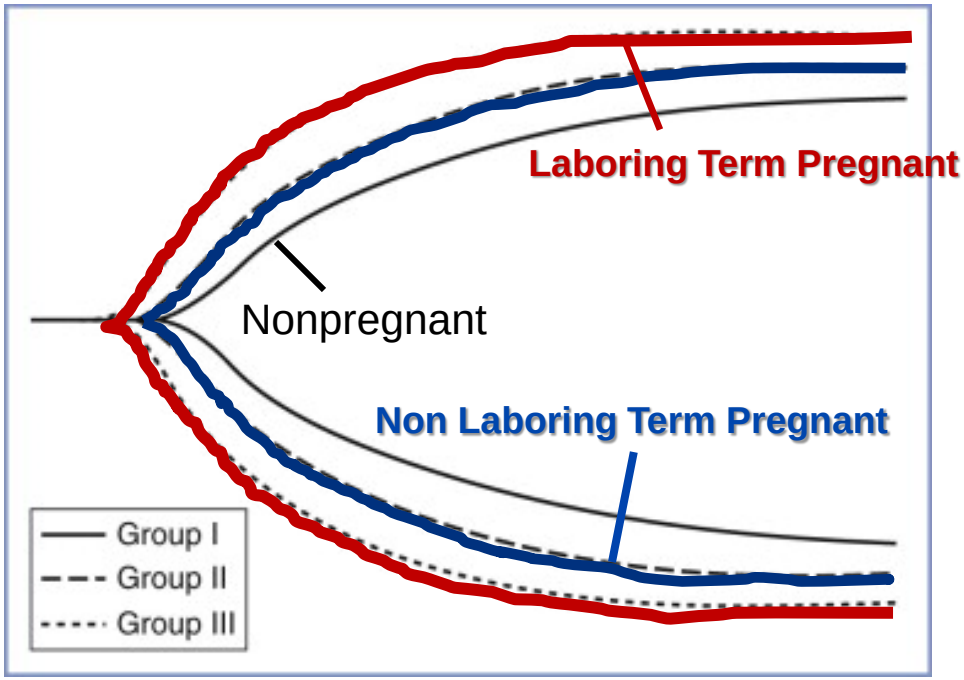
Cardiac Problems in Pregnancy
Monday, February 29, 2016, 11:15-11:30am

Coagulation and Obstetrics

- Pregnancy results in
  - ↑ Platelet turnover
  - ↑ Clotting
  - ↑ Fibrinolysis
- Labor
  - More hypercoaguable
  - Bleeding/clotting risk
- Postpartum
  - Hypercoagulable state
- Return to normal
  - 2 weeks postpartum



Graph from: Steer PL et al. J Clin Anesth 1993; 5: 419-24.

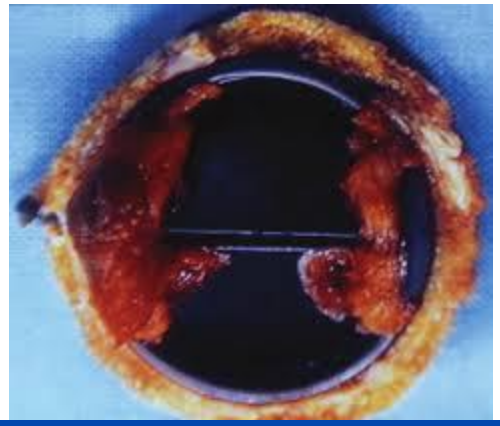
Coagulation and Obstetrics

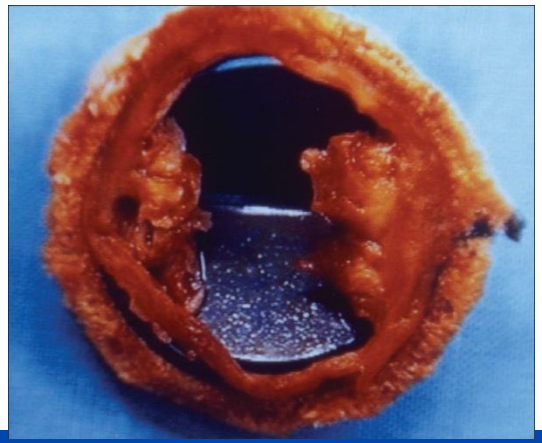
Healthy women

- DVT/ PE leading cause of maternal mortality

Cardiac patients

- Clots = catastrophe
- Fontan, pulmonary hypertension, mechanical valves

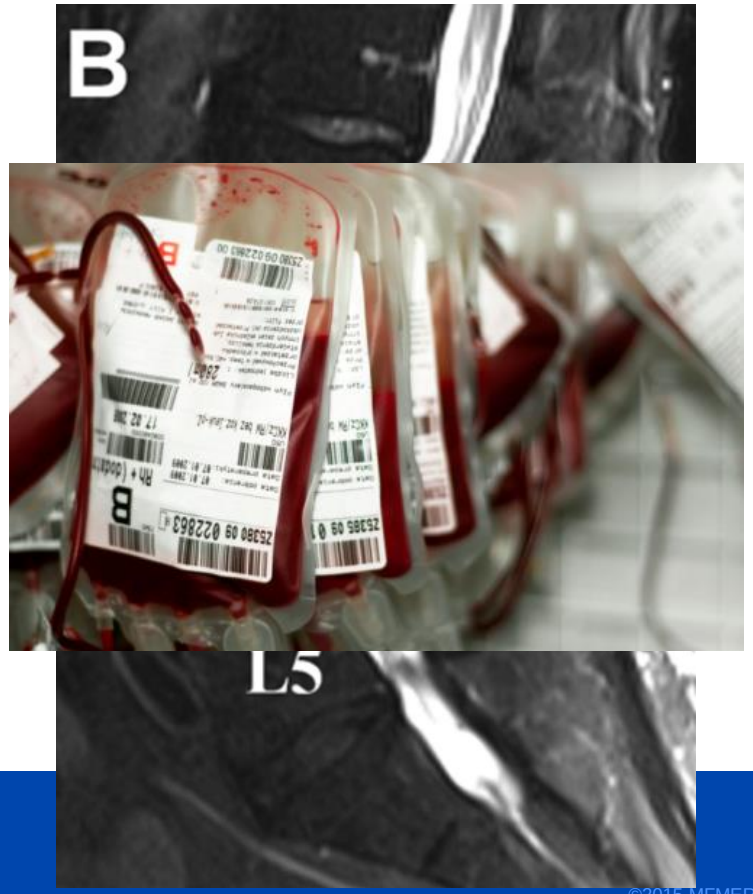




Antithrombotic Therapy in Peripartum

Obstetric Consideration

- Hemorrhage leading cause of worldwide maternal mortality
  - Hemorrhage with CS
    - Normal loss: 1000cc
  - Hemorrhage & labor
    - Normal loss: 600cc

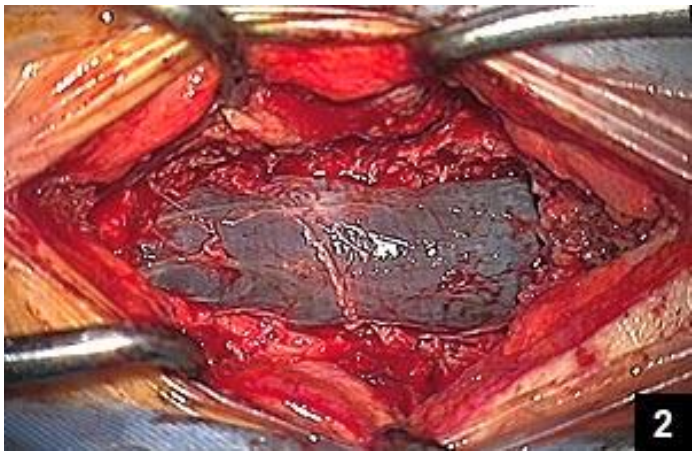


Neuraxial Considerations

- Neuraxial hematoma risk

Neuraxial Hematoma

- Rare: 1:168,000 epidurals; 1:>200,000 spinals
- Difficult to detect
  - Ongoing neuraxial anesthetic
- Devastating:
  - Paralysis
  - Surgical decompression within 7 hours



Ruppen et al. Anesthesiology 20016; 105: 394-9

Anticoagulation & Neuraxial Anesthesia Guidelines

- American Society of Regional Anesthesia (ASRA)
- American College of Chest Physicians (ACC)
- European Society of Anaesthesiology
- Scandinavian Society of Regional Anaesthesiology and Intensive Care Medicine
- Belgium Association for Regional Anesthesia
- Brazilian Society of Anesthesiology

ESA SSAI

BELGIAN ASSOCIATION FOR REGIONAL ANESTHESIA

Sociedade Brasileira de Anestesiologia

Why Guidelines Matter to YOU

Spontaneous Labor + Anticoagulation = NO epidural

Can this woman's cardiovascular system tolerate labor without epidural analgesia?

ASRA Guidelines*

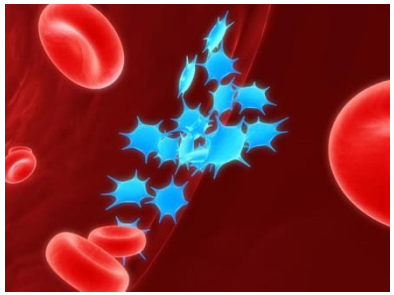
There's an app for that!

*Horlocker TT, et al. Reg Anesth Pain Med 2010; 35: 64-101

ASRA Guidelines*

Antiplatelet agents

- **NSAIDS & Aspirin**
  - **No contraindications** to regional anesthesia



- **Clopidogrel**
  - No neuraxial for ***7 days*** since last dose

*Horlocker TT, et al. Reg Anesth Pain Med 2010; 35: 64-101

ASRA Guidelines*

- **Warfarin**
  - Normal INR prior to neuraxial technique
  - Catheter *removal* with INR ≤ 1.5

- **Thrombolytic therapy**
  - Absolute contraindication

*Horlocker TT, et al. Reg Anesth Pain Med 2010; 35: 64-101

ASRA Guidelines

Unfractionated heparin

- **Subcutaneous**
  - Check platelets to r/o HIT (>4 days since initiation)
  - No contraindication in b.i.d. dosing if total ≤ 10,000U,* check APTT for greater doses.
  - Time catheter placement: 4-6 hrs from last dose
  - Time catheter removal: 4-6 hrs from last dost

*Horlocker TT, et al. Reg Anesth Pain Med 2010; 35: 64-101

ASRA Guidelines*

Unfractionated heparin

- **Intravenous**
  - Check platelets to r/o HIT (>4 days since initiation)
  - For placement: Check APTT & await normalization
  - After catheter is in: Restart heparin infusion 1 hr after neuraxial technique
  - For removal: wait 2-4 hrs after last heparin dose

*Horlocker TT, et al. Reg Anesth Pain Med 2010; 35: 64-101

ASRA Guidelines

Fractionated heparin

- "Prophylactic" dosing
  - Enoxaparin 40mg per day or Dalteparin 5000u per day
  - Neuraxial placement: Wait **12 hours**

- "Therapeutic" dosing
  - Essentially anything greater than above doses falls into this category.
  - Neuraxial placement: Wait **24 hours**

*Horlocker TT, et al. Reg Anesth Pain Med 2010; 35: 64-101

ASRA Guidelines

- New Anticoagulants
  - Platelet aggregation inhibitors
    - Ticagrelor 7 days
  - Glycoprotein IIb/IIIa antagonist
    - Abciximab 2 days
  - Factor Xa Inhibitors
    - Apixiban 3 days
    - Rivaroxaban 3 days
    - Fondaparinux (No recommendation possible)
  - Direct or competitive thrombin inhibitor
    - Dabigatran 5 days

*Horlocker TT, et al. Reg Anesth Pain Med 2010; 35: 64-101

ASRA Recommendations

- 36 wks gestation
  - Change oral anticoagulants to LMWH or UFH
- In high risk patients
  - Consider scheduling IOL or CS to manage anticoagulation & allow for neuraxial techniques
- 36 hrs prior to IOL or CS
  - Change LMWH → IV or SQ UFH
- If labor suspected, withhold SQ LMWH or UFH
- Hold prophylactic anticoagulation for 24 hours after CS
- Hold therapeutic for 24 hours after CS or vaginal delivery

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*Horlocker TT, et al. Reg Anesth Pain Med 2010; 35: 64-101

Anticoagulation & Anesthesia for CS

- Can avoid neuraxial with General Anesthesia
- Still need coagulation for surgery
  - *Extreme caution* when reversing for CS
    - Heparin reverses with protamine
      - *Protamine → pulmonary hypertension*
    - Coumadin reverses with FFP
    - Other reversal options for other agents:
      - Hemodialysis
      - Prothrombin complex concentrates
      - Recombinant factor VIIa
      - Emerging: specific antidotes to rivaroxaban, dabigatran, apixaban

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Thank you!

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