Evidence-based Cesarean Techniques To Reduce Infection

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Evidence-based Cesarean Techniques To Reduce Infection

Educational Objectives

• Participant will be able to describe the health and economic burden associated with puerperal infection
• Participant will be able to describe the impact of cesarean delivery and other risk factors on puerperal infection
• Participant will be able to list five strategies to prevent post-cesarean infection
• Participant will be able to describe the benefits of adjunctive azithromycin
• Participant will be able to describe strategies of surgical skin prep to reduce infection

Outline

1. Health and economic burden of puerperal infection
   • Cause of maternal mortality in the United States
   • Types of post-cesarean infection
   • Costs of post-cesarean infection
2. Cesarean delivery and other risk factors of puerperal infection
   • Cesarean delivery
   • Other risk factors of infection
   • Frequency of post-cesarean infection
3. Strategies to prevent post-cesarean infection
   • Adjunctive azithromycin
   • Weight-based dosing of cefazolin
   • Pre-incision timing of antibiotic administration
   • Surgical skin preparation
   • Vaginal preparation
   • Hair removal
4. Benefits of adjunctive azithromycin
   • Effect on infections
   • Health resource utilization
5. Surgical skin preparation
   • Effect on infections
Select References
An Update on Thromboprophylaxis in Obstetrics

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Educational Objectives

After this session, the participant will be able to:

1. Describe the anticoagulation options during pregnancy, as well as side effects, dosing recommendations, and safety in breastfeeding.
2. Describe the indications and duration of outpatient anticoagulation use in pregnancy in the setting of:
   a. Personal history of a VTE
   b. Maternal medical conditions
   c. Inherited thrombophilias.
3. Describe indications for anticoagulation in the hospitalized patient:
   a. Antepartum indications
   b. Postpartum indications

Outline

I. VTE in pregnancy: Background
   a. Incidence
   b. Risk factors

II. Anticoagulant options during pregnancy
   a. LMWH
   b. UFH
   c. Others

III. Dosing and Timing
   a. Prophylactic
   b. Therapeutic

IV. Risk stratification (Antepartum and Postpartum Management)
   a. Personal VTE history
b. Medical conditions
c. Inherited thrombophilias
   i. High risk thrombophilias
   ii. Low risk thrombophilias

V. Antepartum prophylaxis
VI. Postpartum prophylaxis

References

11. Therapeutic Enoxaparin Dosing. UAB Pharmacy and Therapeutics Committee Medication Guideline. Document created 05/08. Last revised 05/15.
OB CASE STUDIES
Lorie Harper, MD, MCSI
Sheri Jenkins, MD
Joseph Biggio, MD
Akila Subramaniam, MD, MPH

Case #1
- 27 yo G4P3 @ 18 weeks for routine prenatal care
- PMHx: None
- PSHx: prior cesarean x 3
- Anatomy US: normal
  - Noted complete placenta previa

Continues routine prenatal care
Repeat US for placenta evaluation at 31 weeks
- Complete placenta previa
Case #1

- Referred to UAB for US evaluation
  - Confirmed placenta previa
  - ? Placental invasion of bladder
  - High concern for morbidly adherent placenta

Case #1

- Discussed delivery at UAB as a referral center
- Planned delivery at 35 weeks
- Planned steroids immediately prior to delivery
- Referral/consultation with GYN ONC

Case #1

- Patient presented to OSH
  - Severe abdominal pain
  - Significant vaginal bleeding
  - Given instability taken to OR
Case #1

- Intraoperative hemorrhage
  - Placenta manually removed
  - Hysterotomy closed
  - Bladder injury repaired by general surgeon
  - Transfusion of blood products begun with continued bleeding
  - EBL 3500cc
  - Transferred emergently

Case #1

- Arrival to UAB
  - Patient hemodynamically stable
  - Transfusion protocol initiated
  - CT scan obtained
  - Noted vascular extravasation

Case #1

- Taken immediately to interventional radiology
  - Uterine artery embolization attempted
  - Hypogastric artery embolized
  - Continued decrease in hemodynamic parameters consistent with intraabdominal bleeding
Case #1

- Continued decrease in hemodynamic parameters consistent with intraabdominal bleeding
  - Taken to OR with Gyn Oncology
    - Hysterectomy performed
    - Recognized defect in left uterus

Postoperatively extubated
- Minimum additional blood product requirement
- Complete recovery

Morbidly Adherent Placenta
- Placenta invades or is inseparable from uterine wall
  - Average blood loss if 3000-5000cc
  - Other complications:
    - Blood transfusion requirement (90%)
      - >10 units PRBCs (40%)
    - Maternal mortality (7%)
### Morbidly Adherent Placenta

**Risk factors**
- Previous myometrial surgery
- History of cesarean ± placenta previa

### Management

- Suspected morbidly adherent placenta based on risk
  - Targeted placental imaging by US
  - Suspected on US or high probability
  - Transfer to appropriate level of care for delivery

### Management

- **Antenatal Planning**
  - Multidisciplinary approach (MFM, Gyn Oncology, Anesthesia, Blood Bank)
  - Timing: 34-35\(\frac{1}{2}\) weeks
  - Location and resources
  - Technique:
    - Vertical skin incision with classical/fundal uterine incision
    - No manipulation of placenta
    - Immediate hysterectomy
Management

- Unexpected at Laparotomy
  - If prior to hysterotomy and patient stable
    - Delay uterine incision, close, transfer
  - If noted after hysterotomy
    - Call for help
    - Maintain hemodynamic stability
    - Consider conversion to General Anesthesia
    - Proceed with hysterectomy

Case #2

- 24 yo G1P0 @ 32\(\frac{4}{7}\) weeks by early US
  - PMHx: none
  - PSHx: none
  - Uncomplicated prenatal course to date

Case #2

- Presents with decreased fetal movement
- BP: 180/110
- Ultrasound: Intrauterine fetal demise
- Exam: Cervix closed, no bleeding
Case #2
- Admitted to L&D
  - Magnesium started
  - Labs:
    - HCT: 24  PLT: 100
    - INR: 1.2  Fibrinogen: 100

Case #2
- Transferred to UAB
  - BP: 80/60  HR: 120  T: 92°
  - Exam: Minimal vaginal bleeding
  - Labs: HCT: 16  PLT: 75
    - INR: 2.2  Fibrinogen: undetectable

Case #2
- Transfusion protocol initiated
- IV fluids administered
- Rapid rewarming
Case #2

- Underwent spontaneous and extremely rapid labor during resuscitation
  - Significant hemorrhage intrapartum and postpartum
  - Transfusions continued

Case #2

- Massive transfusion protocol initiated
- Uterotonics attempted
- Bakri placed and successful
- Complete recovery

Stillbirth

- 25000 stillbirths annually
- Causes:
  - Genetic
  - Infectious
  - Placental abruption (#1)
Stillbirth

• Evaluation
  • Maternal and pregnancy history
  • Maternal status as time of demise
    • CBC, K-B, APLS, HgA1c, TSH, toxicology
  • Fetal autopsy and genetic studies
  • Placental evaluation

Placental Abruption

• Management
  • Treat underlying cause
  • Vaginal delivery
  • Anesthesia evaluation for likelihood of coagulopathy
  • Rapid intervention for coagulopathy even prior to delivery
### Case #3

- 33yo G3P2 presents at 27 weeks with fevers, chills, cough, rhinorrhea x 3 days
- VS: T 100  RR 18  HR 105  BP 110/86
- O2 sat: 96%
- Fetal status: reassuring
- Discharged home with symptomatic tx

### Case #3

- Re-presents with worsening symptoms, SOB, N/V
- VS: T 102  RR 30  HR 135  BP 90/76
- O2 sat: 92%
- Fetal status: reassuring

### Case #3

- Patient admitted
- O2 placed
- IV Fluids started
- UA: negative
- SSE: unremarkable
- Rapid flu: positive
- CXR: ground-glass opacities with infiltrates
Case #3

- Oseltamivir started
- Additional coverage for pneumonia (abx)
- Continued supportive measures
  - IV fluids
  - O2
- Full recovery

Influenza

- Pregnant women are high-risk
  - Increased risk of hospitalizations
    - Especially in 3rd trimester (3-4x)
    - Even higher if comorbid conditions
  - Increased ICU admission
  - Increased risk of death

Influenza

- Increased risk of adverse pregnancy outcomes
  - Preterm labor
  - Small for gestational age
  - Fetal loss
Influenza

Management
- Vaccination is key!
- Recognizing and treating with antiviral
  - Initiate treatment within 48 hrs of sx
  - Still beneficial up to 4 days of sx
  - Oseltamivir 75mg BID x 5 days

Influenza

Management
- Recognizing patients requiring admission:
  - Respiratory distress
  - Clinical instability
  - Severe N/V
  - Chest pain
  - Non-reassuring fetal status