Incidence of Epidural Resite Failure

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Outline

1. Case Study
2. Background of epidural failure
   ■ Definitions and assessment
   ■ Risk factors
   ■ Management
3. Proposed study
4. Current issues
Classic scenario: 3AM in L&D

- Labouring G3P2 parturient at 7cm who complains that her epidural is “not working”.

- Epidural has been in situ for 9 hours and was previously working fairly well though has had that “one patch that isn’t great” throughout labour.

- It was placed by a staff anesthesiologist after many attempts by the PGY2. They used ultrasound.

- BMI – 48

- Previous epidurals with other pregnancies have not worked well.
Classic scenario: 3AM in L&D

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Would you replace the epidural?

What would you tell the patient regarding the likelihood of better pain control with a new epidural?
Epidural Failure: Definition

- Temporal
  - Early
  - After epidural is established / taped

- Type of failure
  - Mechanical (dural puncture – occult vs frank, multiple attempts, intravascular catheter)
  - Functional – Is the pain control adequate?

- Functional assessment – how to assess?
  - Pain scores
  - Patient satisfaction “Are you happy with the pain relief”
  - Ability to achieve surgical anesthesia
Rate of Primary Epidural Failure

- Large retrospective chart review of 19,259 deliveries (Pan et al, 2004)
  - 12% Failure rate
  - Epidurals that failed post taping and should be replaced 6.8%
  - Epidurals that failed and were replaced 5.6%
  - (1.2% - patient refusal, other pain mgmt, had a baby)
  - Epidurals that were replaced 2 or more times – 1.5%
  - Overall “satisfaction” with labor analgesia – 98.8%

- Retrospective chart review of 2169 deliveries (2010-2011) (Thangamuthu et al, 2013)
  - 23% Failure rate (Very dependent on trainee year)
Risk Factors for Epidural Failure

Fig. 1. Etiology and contributing factors in unsatisfactory epidural block.
Management

- Patient positioning
- Bolus
- Pull back epidural
- Resite
- Other analgesia modalities
- Delivery of the newborn
Study question:

What is the incidence of failure in resited epidurals?
Study Design

Two part approach:

- Survey
- Chart review

Primary outcome:

- To assess the incidence of failure in resited epidurals in laboring women.

Secondary outcome:

- To qualitatively assess patient and procedure factors that may impact failure rates of resited epidurals.
Rough Numbers

- Prospective observational cohort study
  - Locations:
    - SJH – ~3,650 deliveries per year
    - MUMC – ~3,000 deliveries per year

- Average Canadian Epidural rate: ~57% (2012)

- Average failure rate of primary labour epidurals: 13% (Pan et al, 2004) and average resite rate ~6%

- Rough average resited epidurals / 6 months:
  - SJH ~67
  - HGH ~55

  Total = ~120
Study Power


- One study group vs Population

- Dichotomous outcome (success/failure)

- Known rate of epidural failure (~12%) (Pan, Bogard, & Owen, 2004)

- Anticipated rate of redo epidural failure (26%) (Pan, Bogard, & Owen, 2004)

- Alpha 0.05

- Power 80%

- SAMPLE SIZE = ~57
RESITED EPIDURAL STUDY

1. Reason for PRIMARY epidural failure:
☐ Catheter fell out or migrated interthecal/intravascular
☐ Generalized poor pain control
☐ One sided or patchy block
☐ Other _____________________________

2. Time and date of RESITED epidural:
DATE: _____________________   TIME: ______________________

3. Type of RESITED epidural
☐ Standard lumbar epidural
☐ Combined spinal epidural (CSE) or other

4. Level of training of anesthetist inserting RESITED epidural:
☐ PGY 1 or 2 or GPA    ☐ PGY 3 and above    ☐ Staff anesthesiologist
Following delivery please ask patient:
“We are conducting a study of satisfaction with epidurals. Were you satisfied with your pain control with your second epidural?”

5. Was the RESITED epidural satisfactory?
**No modification required beyond PCA/modification of infusion rate/Nurse administered bolus AND patient answers “yes” to “were you satisfied with your pain control” following delivery**
☐ YES ☐ NO

If “NO” continue to next section
☐ Patient delivered or transferred to OR prior to 45 minutes after reinsertion
☐ Catheter fell out or migrated interthecal/intravascular
☐ Generalized poor pain control
☐ One sided or patchy block

**PLEASE INSERT THIS SURVEY INTO DATA COLLECTION BOX AT THE NURSING STATION**
Anticipated outcomes and Potential benefits

- Presentation at McMaster-Western Anesthesia research day
- Results can inform a future larger study looking at risk factors that contribute to resited epidural failure.
- I can finish residency.
Thank you!