Episode 21: ERAS Pathway

On this episode: Dr. Jed Wolpaw and Dr. Christoper Wu

What is ERAS?

- Enhanced Recovery After Surgery
  - Stemming from Dr. Henrik Kehlet's "fast-track methodology" in Denmark
- ↓ Length of Stay (LOS) ~ 2 days
- ↓ SSI 15 → 5% for colorectal
  - Multifactorial
- ↑ Patient satisfaction

How is ERAS incorporated?

- Elective colorectal first - based on this data

Initial components

- Anesthesia, surgery, nursing, patient education
- Anesthesia:
  - Evidence-based standardized - pathway: TIVA ± epidural or IV lidocaine
  - Multimodal analgesia regimen, reduce opioid use (N/V/ileus/etc.)

Preop

- Up to 2 hours before surgery, drink 20 oz. Gatorade to carbo load → ↓ insulin resistance during a catabolic state
  - Follows ASA guidelines re: aspiration risks (March 2017 guideline)
  - Helps maintain euvolemic state
  - Avoid if < 2 hours
- **Multimodal** Regimen
  - Pain - PO:
    - Acetaminophen (usually 1g)
    - Celecoxib (200 mg --- up to 600mg does not affect platelets)
    - Gabapentin (100 mg TID postop)
    - Renally excreted
    - Sedating
  - Nausea/Vomiting
    - Scopolamine patch
      - Acute glaucoma, sedating, blurry vision
      - No hard cut-off for age
    - In addition to Zofran
    - Not dexamethasone because immunosuppress
- Midazolam

Intraop

- BIS monitor < 50

How to attenuate stress response from surgery? What to avoid?

- In open abdominal cases*
  - Give TIVA with Propofol +
    - Avoid
      - Ketamine [immunosuppressant]
      - Remifentanil [opioid, "immunosuppressant"]
      - Volatiles
      - Opioids
    - Epidural anesthetic [6-10 cc of 2% lido, run 4-6cc/hour]
      - Usually open abdominal cases*
    - If hypotension
      - Consider pressor (phenylephrine)
        - or ↓ Propofol
        - or epinephrine infusion
      - Rather than bolus fluids (postop adverse effects)
- In laparoscopic*
  - Avoid epidural, consider TAP block
  - Before or after awake?
    - Meta-analysis from Northwestern suggests preop
    - Internal oblique and transversus abdominus in fascial plane
  - IV lidocaine infusion
    - Bolus 1.5 mg/kg, same infusion
    - Unclear when exactly to end

**Both cases can get IV Mg, which is similar to lido [2g over 1-2 hours]*

Postop

- 100 mg gabapentin TID
- IV Tylenol or PO NSAID
  - Toradol - 5 days
    - Bleeding
    - Renal function [cr 1.5, older]
- Breakthrough
  - Tramadol → opioid
- Celecoxib
  - Not as much a worry about MI as it is cost (~2$ vs 10 c for Tylenol)
- Epidural stay in until can tolerate PO
  - Not generally weaned off unless individual concerns

What are some other ERAS pathways in addition to colorectal?

- Liver resection
  - Hold acetaminophen
- Orthopedics
  - Different regional
  - Not epi since anticoagulation issues - very potent (LMWH)
  - More peripheral nerve block
- Cystoprostatectomy

- Pediatric thoracic surgery
    - Fluids more restricted
- Modified (not full)
    - Postop analgesic pathway
    - Breast re-implant pathway

Fluid restriction - goldilocks

- Too much
    - Ileus, mucosal edema → affect anastomosis healing and infections
- Too little
    - Renal damage
- Zero balance load
    - 2-3 cc/kg/hour
    - Fluid boluses
    - Plasmalyte or LR not NS (met acidosis → potential renal injury)

Other Resources

- American Society for Enhanced Recovery
- ERAS Society