DukeMedicine

Enhanced Recovery after Surgery (ERAS) Pathway

Colorectal surgery August 2018

DAY of SURGERY

Carbohydrate drink:

- Given to patient by preop screening to drink 1 hour before scheduled arrival time.

DAY of SURGERY, PREOP HOLDING

1. Preop nursing staff will
    a. IDENTIFY ERAS patient and initiate protocol
    b. DOCUMENT if CHO drink was taken and document time
2. Reinforce expectations and review education of the patient about expectations for pain and pain control.
    a. Expectation: Pain of 2-3/10 is expected and reasonable.
    b. Expectation: Pain of 5/10 would be the point to ask for additional medication (if pt were at home – they would self-treat at a 5/10)
    c. Expectation: May have 'bloated' sensation if laparoscopic procedure this is residual from insufflation – normal and resolves over 12 hours or less without treatment
    d. Education: Pt may experience referred shoulder pain due to irritation of CO2 bubble under diaphragm. Walking or changing positions will relieve this "aching pain". Inform patient this will feel like an "over-use or strain" type of an ache. This resolves again over 12 hours or less.

3. Multimodal analgesia and anti-emetics to be given by preop RNs, confirmed by Anesthesiologist

    Multimodal analgesia
    - **Celecoxib** 400mg PO (not for IBD patients)
    - **Gabapentin** 600 mg PO (300mg for patients with decreased renal function or age>70)

    PONV prophylaxis for high-risk patients
    (one of the following - history of PONV or motion sickness, female < 50 years)
    a. **Scopolamine** patch if <75 years (do not give with narrow-angle glaucoma)
    b. **Emend** for > 75 years or history of failed scopolamine patch

INTRAOPERATIVE

1. STANDARD ASA MONITORS, +/- ARTERIAL LINE, FOLEY CATHETER
2. MULTIMODAL ANALGESIA: Epidural vs. Non-Epidural Pathway will generally be selected in surgery clinic based on joint surgery/anesthesia criteria. Clinical judgment of anesthesiologist on day of surgery may result in change of plan (please remember to discuss with surgeon), but the goal is for this to be rare.

EPIDURAL PATHWAY: (e.g., open surgery, complex laparoscopic, or history of chronic pain)

- **THORACIC EPIDURAL** at T8-T10 (can be placed in preop or in the OR)
    - Pre-incision epidural bolus of lidocaine 2% 2-5ml (40-100mg) recommended if open procedure
    - Run epidural bupivacaine 0.0625%/hydromorphone 10mcg/ml throughout case (3-6 ml/hour) as tolerated.

- INTRAOPERATIVE ANALGESIA:
    - GOAL IS TO MINIMIZE IV OPIOIDS DURING CASE. Prefer using epidural bolus if clinically indicated. Do not administer iv opioids without first discussing with Attending Anesthesiologist.
    - HOWEVER: If patient is chronic opioid user, replace baseline opioid requirement (discuss specifics with Attending Anesthesiologist).
    - Acetaminophen 1g iv during closing
    - For chronic pain patients consider adding pre-incision IV ketamine 0.25-0.5mg/kg and infusion 4mcg/kg/min during surgery (ideal body weight).

NON-EPIDURAL PATHWAY: (e.g., simple laparoscopic or thoracic epidural unsuccessful/contraindicated)

- Spinal with IT Duramorph 100mcg and 7.5-15mg bupivacaine (1-2ml 0.75% bupivacaine).
  Suggest doing spinal in OR immediately prior to induction.
  *** Attending to complete postop orderset - ANE intrathecal morphine (duramorph) ***

- INTRAOPERATIVE ANALGESIA:
    - Ketamine 0.25mg/kg iv bolus. Consider holding in elderly.
    - Magnesium 2g iv (if ESRD or Cr>2, consider 1g)
    - Lidocaine infusion: 1mg/kg/hr iv intraoperatively
    - GOAL IS TO MINIMIZE IV OPIOIDS DURING CASE. Do not administer iv opioids without first discussing with Attending Anesthesiologist. Remember patient has intrathecal opioids on board.
    - HOWEVER: If patient is chronic opioid user, replace baseline opioid requirement (discuss specifics with Attending Anesthesiologist).
    - Acetaminophen 1g iv during closing

- CONSIDER Bilateral Truncal blocks (TAP or QL), especially if spinal contraindicated/unsuccessful. May be done by anesthesiology or surgeon. Some surgeons will do this for all their cases. If by us:
    - Prefer doing post-induction/pre-incision, unless doing so would be difficult or inefficient (e.g., due to needing to start another room), in which case can do prior to wake-up.
    - Preferred dosing: Mix Exparel vial (266mg/20ml) with 20ml Bupivacaine 0.25% for 40ml total volume. Use 20ml of that mixture on each side.
    - IV Lidocaine infusion is NOT a contraindication to Exparel truncal block. It is specifically allowed under pharmacy Exparel Policy.
    - If Exparel is not available, may use 20ml of Bupivacaine 0.25% on each side instead

3. VTE PROPHYLAXIS - Heparin 5000U SC given after induction and before incision. There is no need to wait following spinal or epidural placement according to current ASRA guidelines.

4. ANTIBIOTIC PROPHYLAXIS

	If NOT allergic	**If h/o beta-lactam anaphylaxis**
Colorectal	**Ertapenem** 1g IV (re-dose not needed)	**Ciprofloxacin** 400mg IV + **metronidazole** 500mg IV (re-dose not needed for either)

Give within 1 hour prior to incision.

It is acceptable to administer the antibiotic for the primary posted procedure BEFORE ureteral stent placement even if the time from administration of the antibiotic to the abdominal incision is greater than one hour. In such cases no additional antibiotic is needed before skin incision

5. LOW FLOW ANESTHESIA at flows ≤1l/min
6. GASTRIC TUBE - Orogastric tube to be removed at the end of surgery
7. PONV prophylaxis for all patients – dexamethasone 4mg IV at start of case, Zofran 4mg IV when closing
8. FLUID THERAPY-

   Optimize with Goal Directed Fluid Therapy (GDFT)

   - Continue LR infusion 3ml/Kg/hour
   - GDFT with boluses of colloid to optimize SV/SVV using a CO monitor
   - Record stroke volume (SV)
   - Give a 250ml colloid bolus over <15 min (<u>can omit if SVV < 10%</u>)
     - If SV increases by >10 % repeat bolus
     - If SV increases by < 10% patient does not require a further bolus
     - Record peak value achieved
     - If still hypotensive consider phenylephrine bolus or infusion
     - Give a further colloid bolus when SV drops 10% from peak value
     - Repeat cycle

9. TRANSFUSION – Please keep surgeons informed if transfusion is needed

10. VENTILATION
    - Low-flow anesthesia at flows ≤1l/min
    - Maintain TV 6-8ml/kg (ideal body weight)
    - Minimize FiO2 30-40% to minimize atelectasis
    - Maintain PEEP as appropriate to minimize atelectasis

<u>PACU</u>

1. PACU RNs are being trained to preferentially treat pain with RN-administered epidural boluses from the pump (instead of using iv opioids as first-line). This is now in the epidural order-set.
2. PRN narcotics should still be ordered (RNs should use as second-line for patients with epidural)
3. For chronic pain patients, continue replacing baseline opioid requirement & consider ketamine infusion.
4. Re-dose acetaminophen at Q6 hours.
5. PONV treatment as indicated.

Revision History: Timothy Miller/Aaron Sandler Date: 8/1/2018