Standard Spinal Fusion ERAS Pathway
Intraoperative Care

Children's Mercy KANSAS CITY | Evidence Based Practice

Inclusion Criteria:
- Idiopathic scoliosis patients

Exclusion Criteria:
- Neuromuscular patients

Preoperative Care in SDS

Preoperative Care
- Carbohydrate-rich drink up to 2 hours before surgery
- Consider IV placement in SDS
- Anxiolysis: Midazolam IV vs PO per anesthesia team

Prior to surgery patient/family meets
- Pre-op nurse
- Anesthesiologist
- Surgeon
- Child Life Specialists

QR code for mobile view

Case Setup & Induction

Equipment:
- Infusion pumps
- Hotline with blood tubing
- Prone pillow
- Bite blocks
- Tegaderm/ointment for eye protection
- Esophageal temp probe

Vascular Access:
- Have ultrasound (US) in room and order anesthesia US to capture image
- 2-3 large bore IVs (avoid antecubital location if possible)
- Arterial line

Induction:
- Consider the avoidance of non-depolarizing NMBs for intubation
- May give succinylcholine if appropriate

Intraoperative Care

Maintenance of TIVA:
- Propofol gtt: 50-150 mcg/kg/min
  - Higher dose may decrease NM signals
- Remifentanil gtt: 0.2-0.5 mcg/kg/min
- Avoidance of inhaled anesthetics
- Avoidance of dexmedetomidine gtt

PONV Prophylaxis:
- Dexamethasone 0.1 mg/kg (Max 8 mg)
- Ondansetron 0.15 mg/kg (Max 8 mg) at end of case

Antibiotics:
- Cefazolin 30 mg/kg prior to incision and every 3 hours

Coagulation:
- Tranexamic acid (TXA)
  - Loading Dose: 30 mg/kg (Max 2 grams)
- Infusion: 10 mg/kg/hour

Muscle Relaxants:
- Surgeons may ask for NMB to be given for exposure following completion of baseline neuromonitoring

Multimodal Analgesia:
- Methadone 0.15 mg/kg (Max 15 mg)
  - Administered at beginning of case
- Ketamine gtt: 5 mcg/kg/min
- Acetaminophen: 12.5 mg/kg (Max 1000 mg)
  - Administered at beginning of case and q6 hrs
- Ketorolac 0.5 mg/kg (Max 15 mg)
  - Administered at end of case (confirm with surgeon)
- Consider avoiding long-acting opioids (morphine and hydromorphone), may give fentanyl boluses PRN
- Surgeon may inject local anesthetic at incision site

MAP Management:
- Have phenylephrine or dopamine gtt in line
- Ephedrine prn
- MAP goals vary by **phase of surgery**

Fluid Management/Blood Transfusion:
- Utilize cell saver

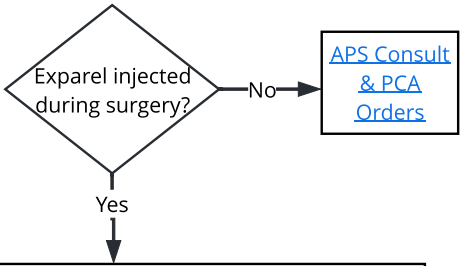
Temperature Management:
- Maintain normothermia (36 to 38 C) utilizing upper & lower Bair Hugger

Phases of Surgery & MAP Goals:
Always Confirm w/ Surgery
- Phases 1 & 2:
  - 1. Decortication of vertebral laminae, destruction of facet joints and removal of spinous processes
  - 2. Placement of pedicle screws
  - MAP goal ~65 mmHg (If < 10 yrs old, normal age based MAP)
- Phase 3: Distraction of spinal cord
  - MAP goal 75-85 mmHg (If < 10 yrs old increase to 25% above normal)

Change or Loss of Neuromuscular Signals:
- Make sure surgeon stops operating
- Verify change or loss w/ neuromonitoring team and ask for characterization (change vs loss; diffuse vs focal)
- Verify correct probe placements and patient positioning
- Increase MAP
  - Age > 15: 85-95 mmHg
  - Age 10-14: 80-90 mmHg
  - Age 5-9: 75-85 mmHg
  - Age 1-4: 70-80 mmHg
- Hypoventilate >45 mmHg
- Confirm current medications, including infusions
- Optimize ABG and O^2 carrying capacity (transfuse as needed)
- Consider lidocaine IV 1-2 mg/kg to treat possible vasospasm
- Prepare for possible wake-up test
- Coordinate postop plans w/ surgeon

Emergence & PACU Orders

Emergence:
- Upon completion of final neuromonitoring test:
  - Discontinue ketamine gtt
  - If preferred, may discontinue propofol infusion and start inhalational anesthetic
  - Continue remifentanil infusion until closing skin
  - Continue TXA until closing of skin
  - If clinically indicated or transferring to PICU, check final ABG
  - Administer ondansetron, ketorolac, & acetaminophen if have not already
  - Ok to extubate patient deep if clinically indicated



APS Consult & PCA Orders only if Exparel NOT Injected

PACU Orders:
- Fentanyl 0.5 mcg/kg q5 min PRN pain
- Hydromorphone 5 mcg/kg q5 min PRN pain
- Diazepam 0.05 - 0.1 mg/kg (Max 5 mg) IV x 1 PRN muscle spasm

- Prior to surgery algorithm
- Inpatient care algorithm

Contact: EvidenceBasedPractice @cmh.edu

Link to synopsis and references

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