Anesthesia Keyword Review 2022
Pediatric Pathologies

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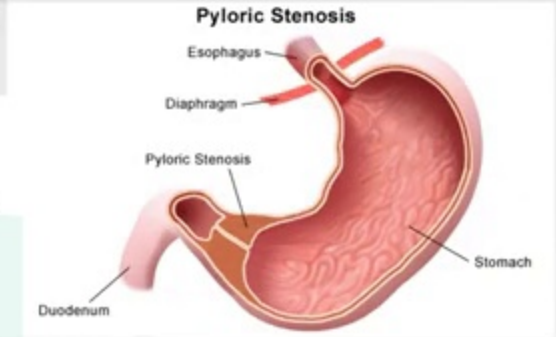
Pyloric Stenosis

- Hypertrophy of the pylorus muscle of the stomach causing obstruction to gastric emptying
- Males > females; Often 2-6 weeks old
- Clinical manifestations
  - Non-bilious, (often projectile) vomiting (especially after eating); May have palpable olive-shaped mass in epigastrium
  - Hypochloremic metabolic alkalosis; can also be hypokalemic and/or hyponatremic
  - Will almost certainly be dehydrated!
- NOT a surgical emergency; Should be optimized with medical management PRIOR to surgery
  - Use NS IVF, add K once urinating; also w/ dextrose
  - Signs of adequate optimization: Vitals HR < 120/min, SBP 60-90 mmHg; pH 7.3-7.5; K > 3 mEq/L; Cl > 90 mEq/L; Na > 130 mEq/L; HCO3 < 30 mEq/L; UOP > 1 mL/kg/hr
- Treatment is with pyloromyotomy (typically laparoscopic)
- Anesthetic considerations
  - Prone to aspiration; OG suction 3 times (supine, left lateral, right lateral)
  - PREOXYGENATE at least 3-5 minutes (will desaturate quickly)
  - Intubate either awake or with RSI (prop/ketamine/roc good choice; sux also ok, but premed with atropine or glyco)
  - Minimize opioids as much as possible (prone to postoperative apnea and/or respiratory depression)
  - Extubate AWAKE



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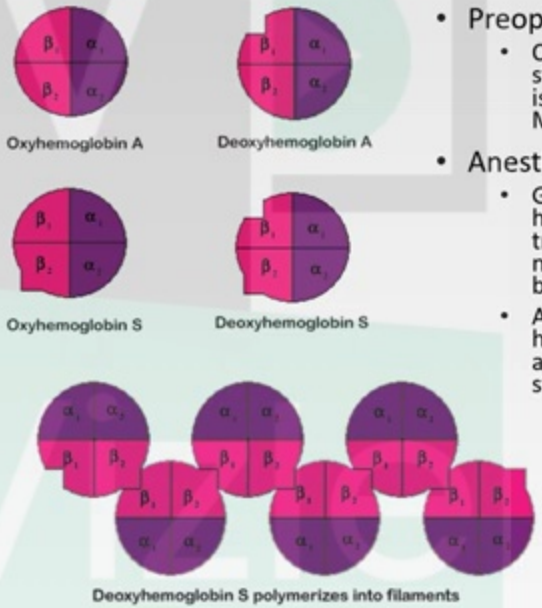
Hemoglobinopathies – Sickle Cell Disease

- HbS – Mutation substituting valine for glutamine on β-globin chain
- Clinical manifestations
  - In hypoxic environment, HbS aggregates and polymerizes > RBC deformation & precipitation > hemolysis, microvascular occlusion, & end-organ ischemia
- Crises:
  - Vaso-occlusive (microinfarcts)
  - Aplastic (bone marrow suppression)
  - Splenic sequestration/asplenia (risk for infection)
  - Hemolytic (esp if G6PD deficient)
  - Acute chest (respiratory failure/pneumonia)



- Preop assess
  - Crises hx, s/s infection, volume status, evidence of end-organ ischemia (CVA, AVN, lung infarction, MI, etc.)
- Anesthetic considerations
  - Goal Hb ≥ 10 g/dL in moderate & high risk surgery (exchange transfusion to goal of HbSS < 30% not shown to be of significant benefit)
  - Avoid hypo/hyperthermia, hypovolemia/hypotension, hypoxia, acidosis (hypercarbia), infection, stasis (tourniquet), anemia

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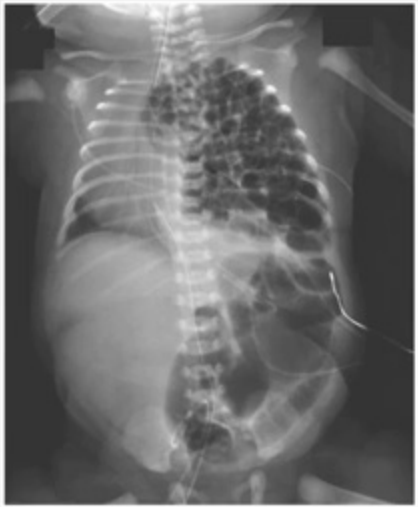
Congenital Diaphragmatic Hernia



- Defect in diaphragm > extrusion of abdominal organs into the thoracic cavity (usually left side)
  - Most commonly Bochdalek's hernia (posterolateral)
- Clinical manifestations
  - Pulmonary hypoplasia, pulmonary hypertension
  - Respiratory distress, scaphoid abdomen, bowel sounds in left chest
- Surgical interventions delayed until medically stable
- Associated with other congenital anomalies (should be evaluated prior to surgery)
- Anesthetic considerations
  - "Gentle" ventilation strategy to prevent further damage to hypoplastic (ipsilateral) lung and PTX to contralateral lung
    - Low tidal volumes
    - Permissive hypercapnia ($PaCO_2$ up to 65 mmHg)
    - PIP < 25 cm H_2O
    - FiO_2 and PEEP titrated to goal preductal SpO_2 90-95% (at LEAST > 85%)
    - Consider HFOV
  - Prevent worsening pHTN (causes further shunting through PDA and/or PFO, worsening hypoxia, metabolic acidosis, etc.)
  - Consider iNO, epoprostenol, milrinone
  - Maintain normothermia (hypothermia causes increased oxygen demand, acidosis, PVR, infection, coagulopathy, etc.)
  - ***Watch for deterioration with return of bowel contents; Surgeon may need to place silastic silo and delay closure***

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Emergence Delirium

- Non-purposeful restlessness and inconsolability
- Risk factors
  - Age 2-9
  - Preop anxiety (including *parental* anxiety)
  - Previous hx
  - Less-soluble VA (sevoflurane, desflurane)
  - Pain
  - Surgery type (ENT, T&A, ophtho)
- Treatment
  - Pain medications (ketorolac, fentanyl, etc.), especially when given intraoperatively
  - Precedex, clonidine
  - Propofol
  - WILL resolve spontaneously (within 45 minutes), whether treated or not