Surgical Emergencies II

BRIEF OVERVIEW OF ENT, UROLOGY, AND PLASTIC/HAND SURGICAL EMERGENCIES
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Objectives

- Identify the clinical presentation, evaluation and treatment of:
  - Testicular torsion
  - Paraphimosis
  - Peritonsillar abscess
  - Airway foreign body
  - Compartment syndrome
  - Nailbed injury/Seymour fracture
Urology
Case #1

- 12 yo M presents to the EC complaining of severe left testicular pain that started suddenly one hour prior to arrival and has been persistent since the onset of symptoms. He denies changes in severity of pain with change of position. He admits associated nausea, vomiting. He is not sexually active. He denies dysuria, penile discharge.
  - What is the most concerning diagnosis?
  - What is the next step in evaluation of this patient?
Etiology:

- Intravaginal torsion that results from inadequate fixation of the testis to the tunica vaginalis through the gubernaculum testis

- Typically results from the testicle lacking normal attachment to the tunica vaginalis, permitting increased mobility, and therefore, the testicle rests transverse within the tunica
Testicular Torsion

- Twisting of the spermatic cord within the tunica vaginalis causes venous compression
- Leads to edema of the testicle and cord
- Results in ischemia of the testicle caused by arterial occlusion
Testicular Torsion

- **Prevalence:**
  - Each year, estimated to affect 1:4000 males less than 25 years old
  - 65% of cases occur in boys between 12 and 18 years old
    - Increased incidence in adolescence thought to be secondary to increasing weight of the testes during pubertal development
Testicular Torsion

- **Treatment**
  - **Detorsion**
    - If emergency operative care not rapidly available, recommend manual detorsion
  - **Orchiopexy +/- orchiectomy**
    - Contralateral side is fixed to prevent torsion

- **Prognosis**
  - Ischemic damage begins about 4-8 hours after onset
    - Detorsion within 4-6 hours – 100% viability
    - Detorsion after 12 hours – 20% viability
    - Detorsion after 24 hours – 0% viability
Testicular Torsion

- Complications
  - Wound hematoma
  - Infection
  - Torsion in pre-pubertal boys does not seem to affect subsequent fertility
Case #2

- 3 yo male brought into the EC by his parents after they noticed swelling of the penis, inability to retract the foreskin during diaper change this evening. Parents were bathing him earlier this afternoon and did not retract the foreskin after cleaning. Patients is irritable.
  - What is the treatment for this patient’s condition?
  - What is the primary cause of paraphimosis?
Paraphimosis

- **Definition:**
  - Retracted foreskin in uncircumcised male that cannot be returned to normal position

- **Pathophysiology**
  - Foreskin becomes entrapped behind the coronal sulcus
  - Lymphatic and venous flow is impaired from the constriction of the ring of foreskin which leads to engorgement of glans penis
  - Arterial flow to glans penis is subsequently compromised
Paraphimosis

**Etiology**

- In infants and young boys, commonly occurs after caregivers fail to retract foreskin after cleaning or bathing
  - More common due to physiologic phimosis that is present at birth
- In older males, can occur after cleaning, urination, sexual intercourse, or urologic procedure if foreskin is not retracted
- May be more common after balanoposthitis due to inflammation of penis that is present
Paraphimosis

Treatment

- Manual reduction
  - Pain control (+/- sedation)
  - Check for hair tourniquet, evaluate for other causes of penile swelling
  - Inspect for signs of penile necrosis – if present, consult urology emergently

- Techniques to reduce swelling may improve success of reduction
  - Ice – reevaluate every 15 minutes to ensure no cold injury to penis
  - Compression bandage with manual compression or elastic bandage
  - Osmotic agents: granulated sugar, 50% dextrose, 20% mannitol
Paraphimosis

- Complications
  - Local skin necrosis
  - (rarely) penile necrosis
  - Infarction of the glans
ENT
10 yo F with history of sore throat x 1 week, acutely worse since this morning, worse on the left side. Mom reports fever (Tmax 101.8) at home. Patient admits decreased PO intake, though she denies drooling, difficulty tolerating oral secretions. She admits difficulty opening her mouth, and her mom recently noticed changes to her voice. She is up to date on vaccines, and she denies difficulty breathing.

What is the next step in evaluating this patient?

Are any imaging studies indicated?
Peritonsillar Abscess

- **Definition**
  - Collection of pus between the capsule of the palatine tonsils and the pharyngeal muscles

- **Prevalence**
  - Most common deep space neck infection in children and adolescents
  - Estimated incidence of 40 per 100,000 adolescents annually
  - Concerning because may compromise upper airway or spread to the surrounding structures: masseter and pterygoid muscles, carotid sheath
Peritonsillar Abscess

- **Etiology**
  - Typically occurs after tonsillitis, pharyngitis
  - Often polymicrobial
- **Pathophysiology**
  - Cellulitis $\rightarrow$ phlegmon $\rightarrow$ abscess
  - Abscess usually occurs in the superior pole of the tonsil – between tonsillar capsule, superior constrictor, and palatopharyngeal muscle
Peritonsillar Abscess

- **Presentation**
  - **Symptoms**
    - Severe sore throat, typically unilateral
    - Fever
    - “hot potato” or muffled voice
    - Drooling or pooling of saliva
  
- **PE findings**
  - Trismus (present in 2/3 of patients with PTA)
  - Swollen +/- fluctuant tonsil
  - Uvular deviation
  - Fullness or bulging of posterior soft palate with fluctuance
Peritonsillar Abscess

- **Diagnosis**
  - Clinical diagnosis, no labs or imaging studies necessary to make diagnosis

- **Differential diagnoses**
  - Epliglottitis
  - Retropharyngeal abscess or cellulitis
  - Severe tonsillopharyngitis
Peritonsillar Abscess

Treatment
- Aspiration or I&D for drainage
- If unable to drain, consider observation and IV antibiotics
- +/- tonsillectomy
- Antibiotics of choice
  - IV: Unasyn or Clindamycin
  - PO: Augmentin or Clindamycin
18 mo M, healthy with no known past medical history, who presents to his pediatrician’s office. Mom states that she walked into her office where he had pulled down a box of office supplies including tacks and magnets, to find him coughing and choking. She states that after about 2 minutes, he stopped coughing and his symptoms resolved. He is now playing in the exam room, in no respiratory distress, and his vital signs are stable.

- What is our primary diagnosis for this patient?
- What is the first step in evaluating him?
Airway foreign body

- Prevalence
  - In 2013, responsible for 1 in 100,000 deaths in children ages 0-4 yo
  - ~80% of episodes occur in children less than 3 yo
  - Typically in 1-2 yo as they become mobile and begin to explore via oral route
  - Fine motor skills are developed enough to put small objects in mouth, molars not developed adequately to chew
  - Most commonly foods in small children: peanuts, seeds, popcorn
  - Can also be small toys, balls, marbles, small objects
Airway foreign body

- **Presentation**
  - Emergency if severe respiratory distress, cyanosis, altered mental status
    - Treatment: emergent rigid bronchoscopy
  - More commonly
    - Partial airway obstruction
    - +/- witnessed episode
    - Sudden onset of cough +/- dyspnea +/- cyanosis
    - Choking is typically self-limited followed by a symptom free period which may make diagnosis difficult
Airway foreign body

- **Evaluation**
  - If unstable and high suspicion, rigid bronchoscopy for removal of foreign body
  - If stable
    - Chest x-ray
    - If negative or inconclusive and moderate to high suspicion, non-contrast CT of airway or bronchoscopy
    - If low suspicion, treat for suspected underlying cause, follow up in 2-3 days for re-evaluation

- **Treatment**: foreign body removal via bronchoscopy
Plastic/Hand Surgery
Case #5

- 19 mo M with swelling of left forearm after receiving IV contrast for CT scan earlier today through a peripheral IV in that site. Skin remains intact though there is significant swelling of the forearm. There is no erythema. Capillary refill is brisk. Radial pulse palpable.
- What are some complications that can occur after IV infiltrate?
IV infiltrate

Definition
- Leakage of fluid, medication, or blood products out of the peripheral vessels into extravascular space

Predisposing factors
- Previous IV attempts
- Brittle vessels
- Poor IV positioning
- Small diameter and fragility of veins in infants
IV infiltrate

- Treatment
  - Stop infusion
  - Remove IV
  - Elevate extremity above the level of the heart
  - Monitor for signs of compartment syndrome, skin breakdown, necrosis
Compartment syndrome

- **Definition**
  - Increased pressure within a compartment bounded by unyielding fascial membranes which compromises the circulation and function of tissues within that space

- **Etiologies**
  - Severe IV infiltrate
  - Fracture
  - Crush injury
  - Burns
  - Casting an extremity
Compartment syndrome

- Clinical presentation
  - Pain (specifically with passive extension)
  - Paresthesia
  - Pallor
  - Poikilothermia
  - Paralysis
  - Pulselessness
Compartment syndrome

- **Diagnosis**
  - Clinical – serial exams
    - Impending compartment syndrome—swelling is worsening, careful serial examination is required, sometimes prophylactic fasciotomy is performed
  - Measure compartment pressures
    - >30 mm Hg is standard in normotensive patient
    - 20 mm Hg below diastolic is patient is hypotensive
    - > 15-20 mm Hg in the hand
Compartment syndrome

- Treatment
  - Extremity fasciotomy
  - In late compartment syndrome (more than 4 hours of elevated pathologic tissue pressure elevation), necrotic tissue, if present, will require debridement to decrease severity of subsequent muscle fibrosis and joint contracture
  - Removal of extrinsic causes of increased pressure: cast, dressings, repositioning patient
Case #6

- 10 yo F presents to the EC with injury to right index finger after she slammed her finger in the door. The proximal edge of the nail is elevated out of the nail fold, and there is a moderate amount of bleeding.
Nailbed injury/Seymour fracture

- Evaluation of nailbed injuries
  - X-rays prior to intervention to evaluate for Seymour fracture
Seymour fracture

- Definition: displaced fracture at the base of distal phalanx with associated nailbed injury
- Open fracture
- Treatment
  - operative intervention to ensure there is no interposed tissue in the fracture site
  - Reduction, +/- pinning, splinting