EYE & EARS & MOUTHS, OH MY!  
FROM BASIC TO ADVANCED HEENT PROCEDURES USED IN PRIMARY CARE AND EMERGENCY SETTINGS

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Disclosure of Commercial Relationships

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Objectives

• To review basic procedures used in assessing and treating common HEENT including dental complaints

• To understand the indications and contraindications for performing HEENT procedures

• To practice performing basic HEENT procedural skills including dental and oral anesthesia

Eye Examination Basics

• Use a systematic approach
• Explain the exam to the patient
• Wash hands and apply gloves
• Visual acuity
• Direct inspection
• Eye movements, and if appropriate, visual fields
• Ophthalmoscope
• Using adjunctive methods (Woods Lamp/Slit Lamp)
• Fluorescein staining
• TonoPen for pressure assessment
Visual Acuity

- Vital sign of the eye
- Measured using the Snellen wall or pocket chart
- Pin hole test
- First part of every eye exam
- **Exceptions include:**
  - Globe rupture, penetrating foreign body or chemical splash

Slit lamp and Wood’s light

- Used to assess corneal defects
- Slit lamp is standard of care in emergency settings

http://www.ophthobook.com/videos/slit-lamp-exam-video
Foreign bodies to eye


Penetrating Foreign Body

- Consider other trauma
- Protect from eye movement
- CT scan

“Tear Drop” Pupil

Penetrating injury

http://www.eyecasuality.co.uk/maincontent1/openeyetrauma.html

Seidel Test

Indicative of globe rupture

http://coreem.net/core/traumatic-ocular-injuries/
Chemical Burn

- **RAPID TREATMENT**
- Anesthetize the eye with a tetracaine ophthalmic solution
- Check pH (normal = 7.4)
- Acid vs. Alkali
- Call Poison Control 1-800-222-1212
- IRRIGATE with 1-2 Liters of NS
- Re-check pH and stop irrigation when pH has returned to normal = 7.0-7.2 and reassess every 15-30 minutes
- Consult or refer to Ophthalmology for follow-up
- **Morgan Lens**

(Reeves (2013), Roberts and Hedges Clinical Procedures in Emergency Medicine, 8th ed.)

Alkali Burns

- Treat acute exposures AGGRESSIVELY
- Rapid absorbed, slowly released
- Penetrates rapidly thru cornea and anterior chamber
- Often serious damage
- Ammonia, sodium hydrochlorite

(http://emedicine.medscape.com/article/1215950-overview)
Acid Burn

- Looks bad
- Coagulation
- Heals quickly
- Battery acid

External Examination

- General inspection periorbital region, eyelids, globe position, lid margins
- Observe for erythema, crusting, nodules, lashes, ulcerations
- Evert lids to assess for foreign bodies and lesions

Chalazion

- Firm, well-demarcated cystic nodule just below lid margin
- Obstructed tarsal gland
- Symptom free- non-tender
- Warm compresses
- Refer for triamcinolone injection

Pterygium vs. Pinguecula

Noncancerous fleshy conjunctival growths
**Corneal Abrasions/Ulcers**

- Swollen lids, tearing, conjunctival hyperemia
- Inspect for other trauma
- Narcotic analgesics
- Topical NSAID drops
- Antibiotic drops with antipseudomonal coverage
- Consider steroid drops and ophthalmology follow-up with ulcers and keratitis


**Herpes Simplex Keratitis**

- Unilateral
- Epithelial dendrites
- Irritation, light sensitivity and redness
- Topical antiviral
- NO STEROIDS

http://medilinks.blogspot.com/2012/01/photos-for-herpes-simplex-keratitis-hsk.html
Corneal flash burn

- Welder’s UV keratitis
- Flush eye with saline
- Treat with oral analgesics
- Avoid ointments in the eye
- May treat with topical NSAID analgesic drops and/or cycloplegics
- Consider referral to ophthalmology

RED EYE

- Painful red eye: conjunctivitis, iritis, uveitis, episcleritis, narrow angle glaucoma
- Acute, narrow angle (closed angle) glaucoma is a medical emergency and if missed can cause permanent vision loss
- Use tonometry to measure ocular pressure

Using a Tono-Pen

- Calibrate device, apply disposable cover to tip
- Anesthetize the eye
- Place device on cornea 4 times and average the pressure readings
- Normal < 20, 21-30 refer urgently for evaluation, >30 emergent referral
- Contraindications

http://www.pomonline.com/hotophthal.html

Roberts (2013). Roberts and Hedges Clinical Procedures in Emergency Medicine, 6th ed.
Using an ICARE Tonometer

- No need to anesthetize the eye
- Obtain three readings and the device provides the average

[Image]

Subconjunctival Hemorrhage

- Acute, dense, blood red discoloration
- Blunt trauma, Valsalva’s
- REASSURANCE
- Examine for other trauma

[Image]
Hyphema

- Layering of red cells in the anterior chamber
- Look for foreign bodies
- Palpate orbital bones for fracture
- Admit if > 1/3 or if increased intraocular pressure


Charting an eye procedure note

- Include:
  - Visual acuity
  - Direct eye inspection, PERRLA, extraocular movements
  - Funduscopic findings
  - Medication administration
  - Irrigation or any procedure used in assessment or treatment of condition
  - Exam finding after fluorescein staining
  - Patient’s condition at the end of the exam and procedure
POINTS TO REMEMBER

• Do not patch eyes except to immobilize in cases of penetrating injury to opposite eye
  – Patches do not reduce pain or improve healing rates for corneal abrasions (2009, Cochrane Review)
    Accessed 8/29/2013 @

• Check visual acuity first except for chemical exposures or penetrating globe injuries

• Consider use of anesthetic eye drops for 24 hours to reduce pain in reliable patients

PROCEDURES FOR EAR PROBLEMS

Anesthesia, foreign body removal, ear wick insertion, wound repair
Equipment for removing foreign bodies from the ear

- Alligator forceps
- Ear curettes
- Ear lavage kit

Removing ear foreign bodies

- Inspect the tympanic membrane with an otoscope
- **Never irrigate the ear canal if there is a tympanostomy tube or TM perforation**
- If cerumen impaction irrigate with warm tap water
- If cerumen persists administer cerumen softener, wait 15 minutes and repeat
- If cerumen persists have patient use cerumen softener nightly before returning in one week

Removing insects from the ear canal

Instill mineral oil or lidocaine into ear canal and wait a couple of minutes

Immobilize head

Manually remove with alligator forceps or by irrigating with warm water


Auricular field block

Use plain lidocaine 1% or 2% w/wo epi or Bupivicane 0.25% or 0.5% w/wo epi

Never inject lidocaine or bupivicane with epinephrine into ear tissue directly

Useful for repairing auricular lacerations, removing embedded earrings, and for draining auricular hematomas

Inject 3 ml of solution while withdrawing syringe

Use caution near the temporal artery region

http://lacerationrepair.com/blocks/field-block-of-the-ear/
Ear laceration technique


Auricular Hematoma

Drain to prevent permanent deformity to cartilage

Start with auricular field block
Prep skin with Betadine®
Incise with #11 blade scalpel
Drain blood
Apply compression dressing
Recheck patient in 24 hours

Compression dressing for auricular hematoma and laceration repairs

NASAL PROCEDURES
Foreign body removal, controlling epistaxis
Nasal foreign bodies

Any foul smelling drainage from a child’s nose is a foreign body until proven otherwise
Don’t forget to look in both nostrils and in both ears too

http://www.youtube.com/watch?v=rQplOdYIc
http://momwithastethoscope.files.wordpress.com

Devices for removal of nasal FB

eMedscape.com
Nasal injuries

- Inspect the nose for a septal hematoma in any patient with a history of nasal trauma

Septal hematoma

Failure to identify and drain or refer a patient for incision and drainage of a septal hematoma can lead to a risk of infection and abscess formation or result in deformity and obstruction of the nasal passageway requiring rhinoplasty for treatment.
Incision, drainage and packing procedure for a septal hematoma

Epistaxis can result from either anterior or posterior arterial bleeds. Most cases respond to direct manual pressure. Position patient in "sniffing position." Squeeze nostrils shut and maintain pressure for 15 minutes. If bleeding persists refer for nasal packing.
Epistaxis

- Which side is bleeding?
- Which side was bleeding initially?
- What is the estimated amount of blood loss?
- Is it recurrent?
- Is it in the pharynx?
- Has any trauma recently occurred?
- Are symptoms of hypovolemia present?
- What are the patient’s past medical history and current medications (eg, aspirin, warfarin)?

Anterior/Posterior Bleeds

Anterior bleeds

Posterior bleeds-admit for observation after control of epistaxis due to risk of bradyarrhythmias

http://emedicine.medscape.com/article/80545-overview

https://www.youtube.com/watch?v=U-i49nghGr0
Nasal Packing for Epistaxis

- Anesthetize the nostril with cotton balls soaked in 2% Lidocaine with epinephrine or topical cocaine
- Administer a topical nasal decongestant
- Insert packing material

Kucik & Clenney (2005), American Family Physician, Jan 15;71(2):305-311

ORAL AND DENTAL PROCEDURES

Nerve blocks, dental procedures, incision and drainage of peritonsillar abscess
Adult Tooth Chart

Memorize tooth numbers 8, 9 and 24, 25 that correspond to the upper and lower central incisors


Apical abscesses requiring an I&D

http://www.intelligentdental.com/2012/01/20/dangers-of-an-abscessed-tooth-part-1/
Abscess Treatment

- Nerve block
- I&D with # 11 blade
- Suction
- Pen VK 500mg QID x 10 days, Keflex 500 mg TID or Clindamycin 300mg QID x 10 days $$$
- Dental referral for definitive treatment
- NSAID for analgesia

Dental Emergencies

- Avulsed permanent teeth must be immediately re-implanted
- Facial cellulitis can rapidly worsen
- Ludwig's Angina is a potential airway emergency
Ludwig’s Angina

- Cellulitis of the floor of the mouth
- NOT AN ABSCESS
- Can rapidly lead to airway compromise
- Can occur from untreated oral/dental infections
- Palpate the floor of the mouth will be firm and painful
- Trismus is common

Medical emergency may require intubation

Types of Anesthesia

• Topical
  - LET (lidocaine, epinephrine, and tetracaine)
  - TAC (tetracaine, adrenaline, and cocaine)
  - Emla
  - Viscous xylocaine

• Injectable
  - Bupivacaine 0.25% or 0.5% (Marcaine, Sensorcaine)
    - Max. adult dose = 175 mg
    - Onset 5-10 min. Duration 1-2.5 hrs
    - If using for a regional dental block; Onset 7-21 min. Duration 2-6 hrs
  - Lidocaine (Xylocaine) 1% or 2% with/without epinephrine
    - Maximum adult dose = 300 mg
    - Can be buffered by adding 1 mL of sodium bicarb to 9 mL of anesthetic
    - Onset 3-5 min. Duration: 30-60 minutes
    - If using for regional dental block; Onset 5-10 min. Duration 1-1.5 hrs
  
  If allergic to any of these agents mix 50mg/1mL of diphenhydramine solution into 4 mL of NS and use for local infiltration


Inferior alveolar mandibular nerve block

An inferior alveolar nerve block anesthetizes the following structures:
Mandibular teeth to the midline
The anterior two thirds of the tongue
The floor of the oral cavity

Roberts (2019). Roberts and Hedges Clinical Procedures in Emergency Medicine, 6th ed.
Maxillary dental blocks

Unlike the inferior alveolar nerve block that blocks all the teeth along one side, maxillary teeth are innervated by several nerves and must be blocked separately.

Maxillary molars:
Injection is given at the region of the second molar.

Maxillary premolars:
Injection is given at the region of the second premolar.

Maxillary canine and incisors: Injection can be given above the roots of the anterior teeth or via an infraorbital nerve block.

Infraorbital Nerve Block

Best for repairing oral lacerations of upper lip and blocking the anterior upper teeth.
Mental Block

Best for repairing oral lacerations around the lower lip or anesthetizing the anterior lower teeth

Roberts (2012), Roberts and Hedges Clinical Procedures in Emergency Medicine, 9th ed.

Oral Trauma and Emergencies

- Palpate TMJ, orbits, sinus, check in nose for septal hematoma
- Feel each tooth for looseness, fractures, is there any bleeding?
- Does the jaw line up normally, can pt open and close normally?
- Tongue depressor can be used to determine jaw strength
Oral Injuries

Ellis Classification of Tooth Fractures

Roberts (2013), Roberts and Hedges Clinical Procedures in Emergency Medicine, 6th ed.
Tooth fractures

- Ellis I (Enamel involved)
  - Refer to dentist nonurgently for filing and cosmetic repair (file with emory board)
- Ellis II (Dentin involved)
  - Cover injured tooth with composite or wax
  - See dentist urgently (within 24 hours)
  - Infection can spread quickly through the dentin layer into the pulp

Tooth fractures

- Ellis III (Pulp involved)
  - Differentiate from II's by presence of pink blush or blood
  - See dentist immediately
  - Cover with moist gauze and dry foil
  - Provide adequate analgesia
  - Consider root involvement (Dx with x-ray)

Roberts (2013), Roberts and Hedge Clinical Procedures in Emergency Medicine, 6th ed.
Tooth fracture

Ellis I  
Ellis II  
Ellis III

Subluxed teeth

- If they move at all but are still in the socket
- Management
  - Minimally mobile
    - Soft diet for 2 weeks
  - Markedly mobile
    - Refer urgently to dentist for stabilization
    - Can stabilize emergently by using dental floss as a brace
### Tooth Luxation

- **Intrusive:** Dental referral. Tooth may re-erupt spontaneously.
  
  [Image of intruded tooth]
  
  http://www.dentaltraumaguide.org/Primary_Intrusion_Description.aspx

- **Extrusive:** Splint tooth and refer.
  
  [Image of splinted tooth]
  
  http://www.dentaltraumaguide.org/Primary_Extrusion_Description.aspx

### Avulsed Tooth

- **Tooth completely removed from the socket**
- **Check for associated trauma**
- **Management**
  - Find tooth
  - Keep tooth moist (milk, saline, Hank’s solution)
  - Clean tooth (rinse with saline, handle only by crown)
  - Place in socket as soon as possible
  - Refer to dentist within 24 hours if permanent tooth
  - Primary teeth do not need to be re-implanted but refer to rule out damage to forming permanent teeth

[Image of avulsed tooth]
Mucous retention cyst
Mucocele

- Benign
- May need to refer for excision
- May be able to aspirate contents

http://hubpages.com/health/Oral-Mucocele

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TMJ dislocation vs. fracture

- Present with mouth fixed in open position
- Anterior dislocation most common
- Get a panorex or CT if a traumatic dislocation to r/o fractures
- Advise patient that they are at risk of recurrence
- Splint for 48 hours
- Pain medication
- Soft diet
- Consider ENT referral

**TMJ dislocation**

http://www.youtube.com/watch?v=aGknbegDkl4


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**Sore throat**

- Is there trismus? If so, consider admission
- Differential diagnosis includes mono, strep, viral
- Rapid strep swabs and monospot screening can reduce unnecessary antibiotic administration
- Consider treating symptoms with steroids

Consider Fusobacterium necrophorum

- Adolescents & young adults
  - 10% incidence (pharyngitis)
  - Treat pharyngitis with Penicillin, Cephalosporins or Metronidazole
- Associated with Lemierre syndrome
  - Avoid macrolides
- Can lead to bacteremia and thrombophlebitis of the internal jugular and septic emboli
  - Blood cultures can aid in diagnosis
  - Consider vascular ultrasound of neck
  - Admit for anticoagulation and IV antibiotics


Incision and drainage or needle aspiration of a peritonsillar abscess

- Provide suction to protect airway
- Risks include carotid artery incision with I&D
- Administer analgesia and topical anesthetic to pharynx
- Apply a needle guard on the syringe to avoid deep penetration and risk of carotid injury

http://www.acep.org/Clinical---Practice-Management/
Tricks-of-the-Trade---Say-%E2%80%98Ah%E2%80%99%E2%80%94Needle-Aspiration-of-Peritonsillar-Abscess/
https://www.youtube.com/watch?v=I5W27zV-dwI
Draining a peritonsillar abscess


Oral laceration repair techniques

- Use Vicryl for intraoral repair
- Interrupted or subcuticular techniques
- Use nylon 5-0 to 6-0 for lip repairs and always start at the vermilion border

Recommended Resources

- For wound care and suturing

- For basic procedures

- For emergency procedures

- For eye procedures and examination
  - http://www.ophthobook.com/

- For dental procedures and care
  - http://www.smilesforlifeoralhealth.org
  - http://www.dentaltraumaguide.org

References


