ENT Emergencies

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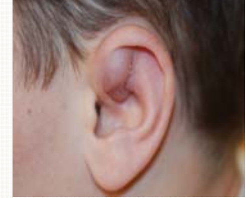
No Disclosures

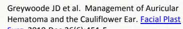
Learning Objectives

- Recognize assessment findings consistent with the following common ENT emergencies: complicated otitis (mastoiditis, intracranial abscess, facial nerve paralysis), auricular hematoma, nasal fracture, complications of sinusitis, mucormycosis.
- Identify assessment findings consistent with peritonsillar abscess, retropharyngeal abscess, Ludwig's angina, periorbital cellulitis, angioedema, adult epiglottitis.
- Order appropriate workup and perform appropriate intervention and referral when indicated for the emergencies discussed in this lecture.

Auricular Hematoma

- Result from blunt force trauma, usually from sports
- Blood accumulates in the sub-perichondrial space and can result in decreased blood flow, cartilaginous necrosis and infection.
  - Prompt I&D essential to management
- Cauliflower ear is the resulting deformity due to a delay in evacuating and treating an auricular hematoma





Greywoode JD et al. Management of Auricular Hematoma and the Cauliflower Ear. Facial Plast Surg. 2010 Dec;26(6):451-5

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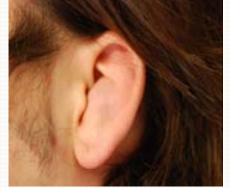
Auricular Hematoma

- History of traumatic blow
- Tender, fluctuant mass
- Dif Dx included perichondritis, abscess, relapsing polychondritis
- Prompt evacuation within 7-10 days*
- Various techniques for compression dressing to prevent re-accumulation

*Riviello RJ, Brown NA. Otolaryngologic procedures. In: Clinical Procedures in Emergency Medicine, 5th edition, Roberts JR, Hedges JR. (Eds), Saunders Elsevier, Philadelphia, PA 2010. p.1178



Large L auricular hematoma filling the concha and occluding the external acoustic meatus

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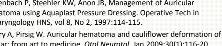
Auricular Hematoma - Treatment

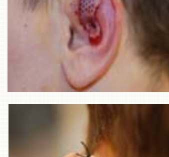
- Local / regional anesthesia
  - 1-2% lidocaine w/ epinephrine
  - Auricular block works well
- I&D vs Needle Aspiration vs penrose
- Compression dressing to prevent re-accumulation
  - Dental rolls
  - Casting agent (Aquaplast)
  - Mattress sutures

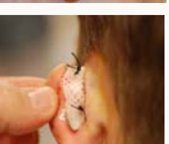
Biedenbach P, Steehler KW, Anon JB, Management of Auricular Hematoma using Aquaplast Pressure Dressing. Operative Tech in Otolaryngology HNS, vol 8, No 2, 1997:114-115.

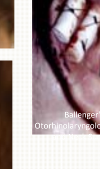
Mudry A, Pirsig W. Auricular hematoma and cauliflower deformation of the ear: from art to medicine. *Otol Neurotol*. Jan 2009;30(1):116-20

Giles WC, Iverson KC, King JD, Hill FC, Woody EA, Bouknight AL. Incision and drainage followed by mattress suture repair of auricular hematoma. *Laryngoscope*. Dec 2007;117(12):2097-9









Ballenger's Otorhinolaryngology: Head

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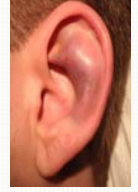
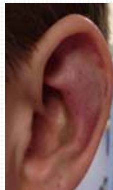
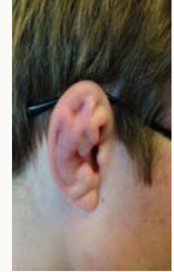
Subtle left auricular hematoma along superior aspect of the antihelix



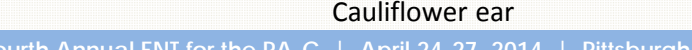


Auricular hematoma - Treatment

- Antibiotic coverage
  - Cephalexin
  - Antipseudomonal Rx
    - Levofloxacin
    - Ciprofloxacin
  - Amoxicillin / Clavulanic acid – children
  - Patients should be followed closely to assess for re-accumulation and infection

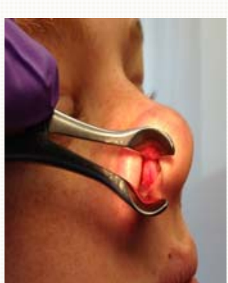


Cauliflower ear

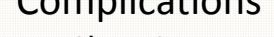


Epistaxis

- Anterior and Posterior Epistaxis presentation and management are covered in the Common Nasal Sinus lecture by Marie Gilbert, PA-C



Complications of Acute Otitis Media (AOM)

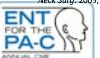


- Drastic decrease with antibiotic use
- High morbidity / mortality
- 3 routes of spread
  - Direct extension
  - Thrombophlebitis
  - Hematogenous spread

Thorne MC, Chewaproug L, Elden LM. Suppurative complications of acute otitis media: changes in frequency over time. *Arch Otolaryngol Head Neck Surg*. Jul 2009;135(7):638-41

Penido NO, Borin A, Iha LC. Intracranial complications of otitis media: 15 years of experience in 33 patients. *Otolaryngol Head Neck Surg*. 2005;132:37-42

- Complications
  - Chronic suppurative otitis media
  - Mastoiditis
  - Facial nerve paralysis / paresis
  - Post-auricular abscess
  - Intracranial abscess
  - Meningitis
  - Sigmoid sinus thrombosis
  - Labrynthitis / labrynthine fistula



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Symptoms of complicated AOM

- History:
  - Severe otalgia (worse e/ immunocompromised)
  - Vertigo
  - Fever / malaise
  - Nausea / vomiting
  - Headache
  - Mental status changes
  - Profuse otorrhea (often foul-smelling)
- Physical Examination
  - Fever / lethargy
  - Focal neurologic deficits
    - Ataxia, meningeal signs, ocular palsy
  - Mastoid tenderness / abscess
  - Facial nerve paresis
  - Papilledema
  - Otorrhea / granulation tissue / aural polyp

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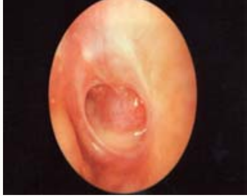
Chronic Suppurative Otitis Media

- Chronic middle ear drainage with tympanic membrane perforation
- Chronic inflammation -> edema -> infection (pseudomonas, staph)
- Can lead to bony destruction
- 0.3 – 0.9 / 100,000 patients
- Work-up
  - Audiogram
  - High resolution CT scan r/o cholesteatoma
- Tx:
  - Otic drops (quinolone 1st line)
  - Frequent aural toilet



Source: Benjamin Ear Atlas

*Vikram BK, et al.. Clinico-epidemiological study of complicated and uncomplicated chronic suppurative otitis media. *J Laryngol Otol*. May 2008;122(5):442-6

*Consensus Panel, Hannley MT, Dennenny III JC. Use of Ototopical Antibiotics in Treating 3 Common Ear Diseases. *Otol Head Neck Surg*. 2000;934-40

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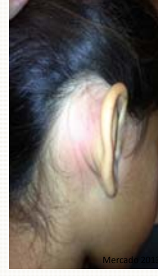
Mastoiditis

- Acute mastoiditis seen in conjunction with AOM
- *S pneumo, m catarrhalis, h influenza, s. aureus, Gr A. step*
  - Increase in MDR s. pneumo*
- Usually < 2 yrs old +/- h/o COM
- 4 cases / 100k / yr
- Approx 7% develop intracranial complications**
- Surgical disease - mastoidectomy



*Ongkasuwan J et al.. Pneumococcal mastoiditis in children and the emergence of multidrug-resistant serotype 19A isolates. *Pediatrics*. Jul 2008;122(1):34-9.

**Luntz M, Brodsky A, Nusem S, Kronenberg J, Keren G, Migirov L, et al. Acute mastoiditis--the antibiotic era: a multicenter study. *Int J Pediatr Otorhinolaryngol*. Jan 2001;57(1):1-9

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Mastoiditis cont.

- Presentation
  - Large % w/o history of recent AOM
  - Persistent otorhhea
  - +/- High, unbreakable fevers
  - Mastoid tenderness
  - Hearing loss
  - Children with high WBC more likely to have complications
- Work-up
  - CBC
    - * high WBC in kids assoc with inc. complications
  - Blood cultures
  - Ear cultures / tympanocentesis
  - Audiometry
  - High resolution CT scan attention to orbits / temporal bone
  - TX:
    - Surgery
    - IV antibitotics / otic drops

*Oestreicher-Kedem Y, et al. Complications of mastoiditis in children at the onset of a new millennium. *Ann Otol Rhinol Laryngol*. Feb 2005;114(2):147-52

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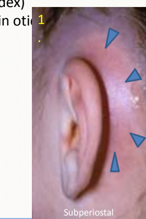
Mastoiditis Antiobiotics

- Linezolid (zyvvox)
- Cefepime (Maxipem)
- Vancomycin
- Clindamycin (Cleocin)
- Meropenem (Merrem)
- Piperacillin / tazobactom (Zosyn)
- Oxacillin
- Ceftriaxone (Rocephin) *
  - Up to 30% resistance in post-pneumococcal vaccine era
- Otic drops (adjuvant therapy)
  - Ciprofloxacin with or without steroid (Cipro HC, Ciprodex)
  - Cortisporin oti
  - Tobradex



Subperiostal abscess (arrowheads)

*Roddy MG, Glazier SS, Agrawal D. Pediatric mastoiditis in the pneumococcal conjugate vaccine era: symptom duration guides empiric antimicrobial therapy. *Pediatr Emerg Care*. Nov 2007;23(11):779-84

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Acute mastoiditis with soft tissue abscess and intracranial abscess

Yellow arrowheads = soft tissue abscess
Red arrowhead = intracranial abscess

Sagital CT showing mastoid dehiscence and intracranial abscess formation

FACIAL NERVE PARALYSIS

Causes of Facial Nerve Paralysis

- Bells Palsy
- Ramsey Hunt Syndrome
- Bacterial infection (AOM, mastoiditis)
- Lyme Disease – up to 10% Lyme patient with 25% being bilateral*
- Trauma
  - At birth (forceps) penetrating ear trauma
  - Temporal bone fracture barotrauma
- Non-infectious causes:
  - Tumor – cholesteatoma, FN tumor, parotid tumor)
  - Iatrogenic – eg parotid, neck surgery

*Clark JR, Carlson RD, Sasaki CT, et al. Facial paralysis in Lyme disease. *Laryngoscope*. Nov 1985;95(11):1341-5

Bells Palsy

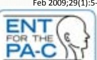
- **Bells Palsy** defined as " acute, unilateral facial nerve paresis (weakness) or paralysis(complete loss of movement) with onset in less than 72 hours and *without an identifiable cause*"
- Self-limited
- Diagnosis of exclusion
- Please refer to lecture on Bells Palsy Guidelines – Debra Munsell

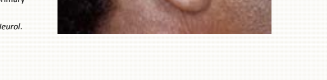
Ramsey-Hunt Syndrome

- Acute peripheral facial neuropathy affecting the auricle, external auditory canal or the mucous membranes of the oropharynx*
- +/- skin vesicles / ulcerations
- Varicella-Zoster virus (Shingles) affects the geniculate ganglion
- May be cause of up to 20% of bells palsy cases**
- Facial paralysis, hearing loss, vertigo, tinnitus, ataxia may be presenting sxs

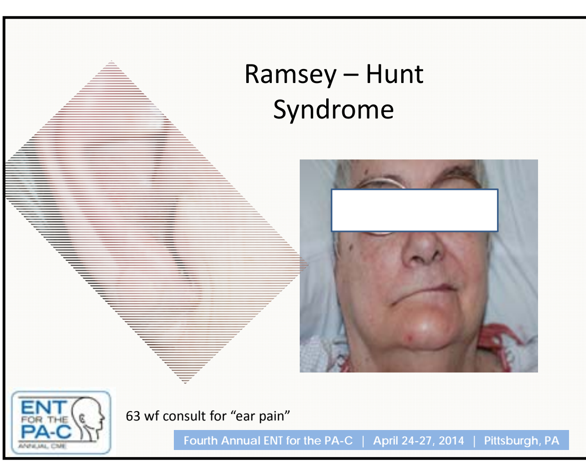
*Bhupal HK. Ramsay Hunt syndrome presenting in primary care. *Practitioner*. Mar 2010;254(1727):33-5

**Gilchrist JM. Seventh cranial neuropathy. *Semin Neurol*. Feb 2009;29(1):5-13





Ramsey – Hunt Syndrome



63 wf consult for "ear pain"

Ramsey-Hunt Presentation / work-up

- Presentation:
  - Paroxysmal pain deep in ear canal
  - Vesicular ear or mouth ulcers / preceded with pain preceding rash by hours to days
  - Facial paresis / paralysis
    - At max severity by 1 week post onset
  - Unilateral ear pain / tinnitus (up to 50%)
  - Hearing loss (unilateral)
  - Headache
- Diagnosis often obvious WBC, ESR to r/o infection / inflammation
- If CNS involvement (ie meningitis) suspected, CSF may be needed
- Imaging – CT / MRI to r/o structal lesions
- Viral studies
  - Tzank smear
  - Cultures (low specificity)
  - Direct immunofluorescence assay (DFA) has high sens/spec*

*Coffin SE, Hodinka RL. Utility of direct immunofluorescence and virus culture for detection of varicella-zoster virus in skin lesions. *J Clin Microbiol.* Oct 1995;33(10):2792-5

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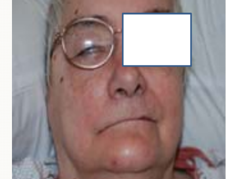
Ramsey- Hunt Treatment

- 50-60% chance of recovery of facial nerve
- Corticosteroids and antivirals are the mainstay of treatment
  - Antivirals controversial*
- Pain control
- Eye care extremely important!!
- Vestibular suppressants may be necessary for vertiginous sxs
- Carbamazepine and other neurologic agents may also be used
- No role for surgical decompression of the nerve

*Uscategui T et al. Antiviral therapy for Ramsay Hunt syndrome (herpes zoster oticus with facial palsy) in adults. *Cochrane Database Syst Rev.* Oct 8 2008



Same patient from previous slide. Not inability to close Right eye

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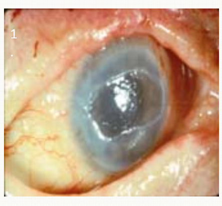
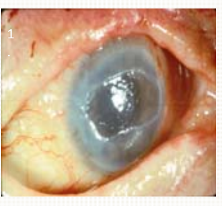
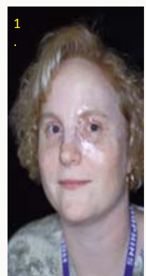
Eye Care

Corneal ulceration



Moisture chamber

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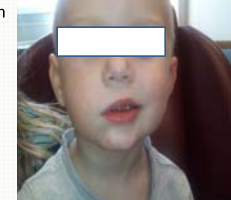
Facial Nerve paresis / paralysis - complication of otitis media

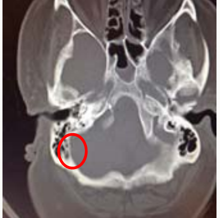
- Uncommon complication but need for recognition
- Need to r/o other causes (VZV)
- AOM results in inflammation of the facial nerve
- Most patients will recover within 1st year
- Treatment includes po / IV antibiotics
- Myringotomy with tube followed by otic drops

Popovtzer A et al. Facial palsy associated with acute otitis media. Otolaryng Head Neck Surg. 2005 Feb;132(2) 327-29.
Makeham TP et al. Infective causes of facial nerve paralysis. Otol Neurotol 2007 Jan; 28(1): 100-3.



2 yo presented to ER with 3 days of facial asymmetry following episode of AOM.

58 yo wm presents with 24 hrs of facial weakness after previous dx w/ acute sinusitis

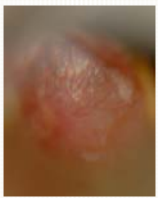


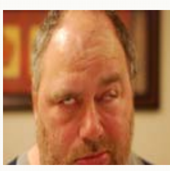
CT of the head in ER was “negative for Stroke”

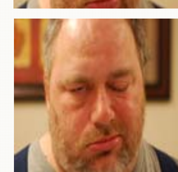
Patient given a diagnosis of Bells Palsy and told to stay on antibiotics

3 weeks later follows up in ENT office

Persistent facial nerve dysfunction (House-Brackman 5-6/6) with evidence of AOM on ear exam

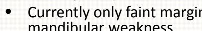


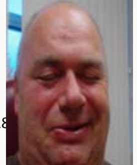




Facial Nerve Paralysis cont.

- No evidence of hearing loss or vertigo
- Ventilation tube placed and ear aspirate cultured
  - Grew methacillin-resistant S. aureus
- Placed on Ciprodex gtts and Augmentin initially, changed to Bactrim DS
- Patient followed over 5 year period. No improvement after 18 months…..slow improvement starting at 2 years
- Currently only faint marginal mandibular weakness





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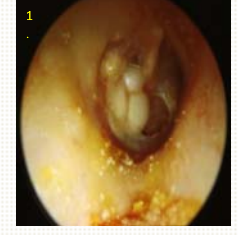
Misc causes of facial nerve paralysis

Left parotid mass



Cholesteatoma

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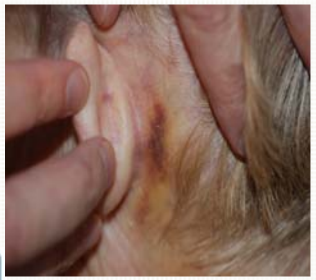
Facial nerve weakness and severe unilateral hearing loss 3 weeks after a fall



Battle's sign – indicative of temporal bone fracture

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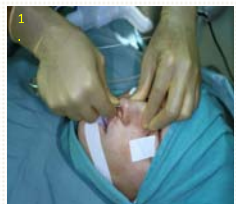
Nasal Fracture

- Very Common-
  - Most common facial fracture
  - 3rd most fractured bone
- High index of suspicion for fracture
  - Mechanism, Change in appearance
  - Epistaxis, Nasal obstruction
- Examine and palpate nose carefully
  - Instability, Mobility, Crepitation
  - Lacerations, Septal hematoma
- Nasal X-rays- variable reliability
- Early ENT referral (<5 days)
  - Closed/ Open reduction- early
  - Septorhinoplasty- late

Krause C. Nasal fractures: Evaluation and repair. In: Mathog RH, ed. Maxillofacial trauma. Baltimore: Williams & Wilkins, 1984:257

Nasal Fracture
Management

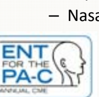
Nasal X-Ray



Closed Reduction

Nasal Bone Fracture

- Treatment:
  - Observation
  - Early referral! <5 days
  - Closed reduction – Early intervention (<10 d)
    - in-office vs outpatient
  - Septo/rhinoplasty - late
- Complications
  - Septal hematoma
  - Nasal obstruction



Septal Hematoma

- Rare complication of NB fx
- Usually present with nasal obstruction and blue-erythematous bulge from nasal septum (unilateral or bilateral)
- Prompt I&D and packing are crucial to prevent cartilaginous necrosis of septum / saddle deformity*

2 yr old who presented 3 weeks after being kicked by a horse…had presented to ER 5 days after initial visit with c/o inability to breath through nose

*Canty PA, Berkowitz RG. Hematoma and abscess of the nasal septum in children. Arch Otolaryngol Head Neck Surg 1996;122:1373-6.

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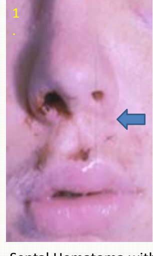
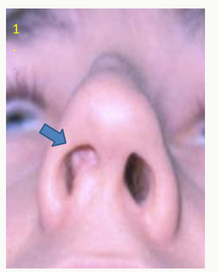
Nasal Fracture

Complications



Septal Hematoma with overlying edema and occlusion of nare



Septal Hematoma

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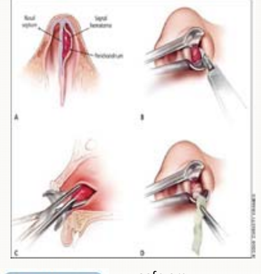
Septal Hematoma



www.aafp.org

Septal perforation following a missed hematoma

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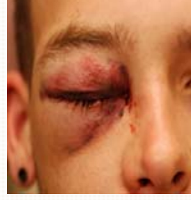
Orbital Blow Out Fracture

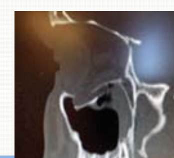
- 2nd most common mid-facial fracture (nasal bone 1st)
- Inferior wall (maxillary sinus) and Medial wall (ethmoid sinus)
- Waters view X-Ray may show fluid in maxillary sinus
- CT diagnostic
- +/- subcutaneous emphysema
- Entrapment of inferior rectus muscle can restrict eye movement causing diplopia
  - Immediate referral for surgical repair, otherwise 3-10 days



Orbital Blow-out Fracture

- Treatment:
  - Surgical repair of orbital floor
  - Observation
  - Antibiotics in ED
    - Cephalexin 500 QID x 10d
  - Referral to ophthalmology
  - 1/3 of all orbital blow out fractures with normal initial eye exam will have underlying ocular trauma
    - Abrasion, traumatic iritis, hyphema, retinal tear / detachment*

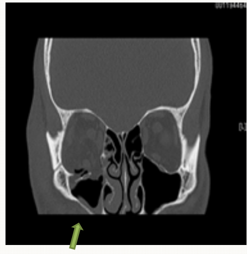
Conjunctival hemorrhage in a patient w/ orbital floor fx (CT below)



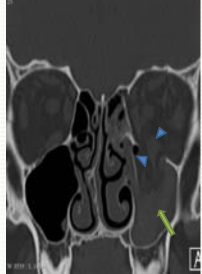
*Mitchell JD. Ocular Emergencies. In Emergency Medicine 6th ed. J Tintinalli ed. 2004. McGraw-Hill. P.1458.

*Kumar et al. Orbital Trauma: Keep an Eye out for the Details. J Contemp Dent Pract. 2012 Mar 1;13(2):232-5

Orbital blow-out fracture

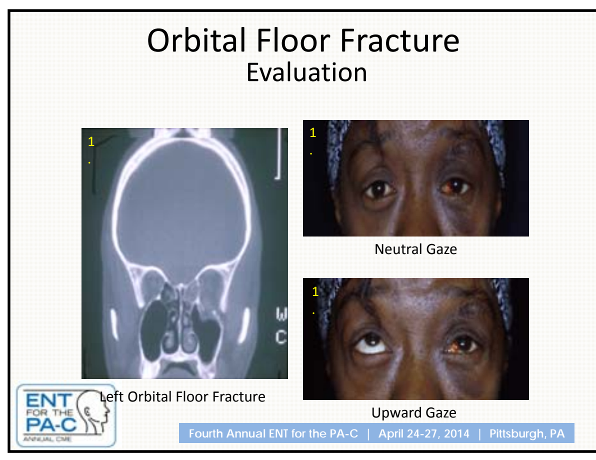


Minimally displaced fracture R orbital floor



Blood in L maxillary sinus (arrow)
Orbital contents dropping into maxillary sinus (arrowheads)

Orbital Floor Fracture
Evaluation



Neutral Gaze

Upward Gaze

Left Orbital Floor Fracture

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Sudden Sensorineural Hearing Loss (SSNHL)

- Rapid-onset of subjective hearing loss (within 72 hrs) in 1 or both ears
  - May only complain of “blocked” or “plugged” ear!
    - May be only sign of serious problem
  - 90% have tinnitus
  - Vertigo +/- assoc w/ worse prognosis*
- At least 30dB loss in 3 consecutive frequencies
- 5-20 / 100k people 4000 cases / yr
- Cause only identifiable 10-15% of the time at presentation**

*Ben-David J et al. Vertigo as a prognostic sign in idiopathic sensorineural hearing loss. Intl Tinnitus J. 2001;7(1): 62.

**Stachler, RJ et al. Clinical Practice Guideline: Sudden Hearing Loss. *Otolaryngol Head Neck Surg*. March 2012;146:S1 - S35

Audiogram showing severe asymmetrical hearing loss (SNHL)

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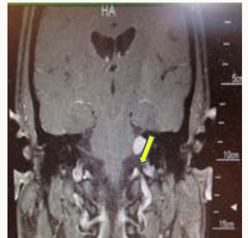
Sudden Sensorineural Hearing Loss

- Etiologies:
  - Infectious
    - Viral*, meningitis, lyme disease, syphilis
  - Medication
    - aminoglycosides, chemotherapeutics, antimalarials, loop diuretics
  - Trauma
    - Temporal bone fx, barotrauma
  - Neoplasm
    - Acoustic neuroma (2-10% of SSNHL)
  - Autoimmune
  - Vascular (CVA, cochlear infarct)
  - Idiopathic
    - Viral, autoimmune, vascular



Coronal MRI slice demonstrating left-sided acoustic neuroma

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Sudden Sensorineural Hearing Loss

- Physical Exam
  - Tuning forks (Weber, Rinne)
  - Pneumatic otoscopy
- Work-up
  - r/o treatable etiology
  - Audiogram
  - Blood tests not routine
    - Lyme exception if suspicion
  - MRI with gadolinium contrast attention to the IACs (orbits)
  - ABR – not as sensitive as MRI
- Distinguish SSNHL and acute CVA based on neurological findings
  - Ataxia
  - Facial weakness
  - Unilateral Horner's syndrome
  - Diplopia

* CT scanning not recommended for routine work-up of SSNHL unless neurological findings suggest otherwise

*Stachler, RJ et al. Clinical Practice Guideline: Sudden Hearing Loss. *Otolaryngol Head Neck Surg*. March 2012;146:S1 - S35

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SSNHL - Treatment

- Oral glucocorticoids – high dose
  - Ideally within 14 days of onset of SSNHL, but benefits shown up to 6 weeks
  - Prednisone 1mg/kg (60mg taper)
    - or
  - Dexamethasone 10mg/d
    - or
  - Methylprednisolone 48mg/d
- Trans-tympanic membrane glucocorticoid injection
  - Dexamethasone 24, 16 or 10mg/ml
  - Roughly 0.5ml
  - Repeat q3-7 days for 3-4 weeks
  - Monitor with serial audiograms
- Prognosis:
  - Worse if HL profound
  - If no improvement at 3 mos, usually will not improve
  - Approx 2/3 of all SSNHL patients experience some degree of recovery
    - Often within 10 days
  - Follow up audiogram at 6 months
  - Patient education and counseling are integral parts of treatment

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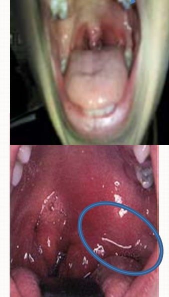
Peritonsillar Abscess

- Complication of acute suppurative tonsillitis
- Accumulation of purulent debris in the potential space between tonsil capsule and pharyngeal musculature
- Often a history of recurrent tonsillitis but not necessarily
- 30 cases per 100k in US
- No race or sex predilection
- Usually 3rd-4th decades and children over 10
- Strep and anaerobes most common



Subtle effacement and erythema of L palatoglossal fold and tonsil bed

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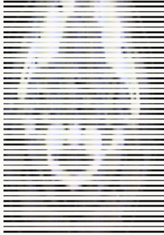
Peritonsillar Abscess

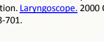
- Symptoms
  - Malaise
  - Fever
  - Sever pain – “razor blades”
  - Drooling
  - Trismus
  - “hot potatoe” voice
  - Referred ear pain
  - Dehydration
- Physical Exam
  - +/- Fever
  - Appear uncomf
  - Trismus
  - Asymmetry of tonsillar pole often with bulging and displacement of the uvula to the midline or contralateral side
  - +/- palpable fluctuance in tonsillar bed
  - Halitosis
  - Cervical adenopathy

Peritonsillar Abscess

- Work-up:
  - Rapid Strep / culture
  - Monospot
  - CBC
  - Computed tomography is frequently used in the emergency setting, however this can often be avoided by ENT consultation when available. *
  - Trans-oral US also of utility in trained hands



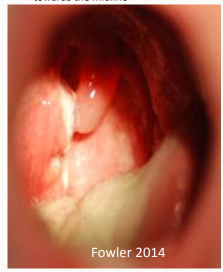
*Blotter et al. Otolaryngology consultation for peritonsillar abscess in the pediatric population. Laryngoscope. 2000 Oct;110(10 Pt 1):1698-701.



Peritonsillar Abscess

- Treatment
  - Broad-spectrum antibiotics with good anaerobic coverage
    - Augmentin or Clindamycin po
    - Ceftriazone or Clindamycin IV
  - Corticosteroids for severe swelling / edema
    - Decreased pain *
  - Needle aspiration with large bore needle
  - Open I&D
  - Quinsy tonsillectomy
  - IV fluid for rehydration

Significant protrusion of R tonsil with displacement towards the midline

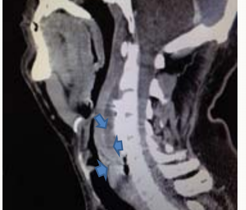


Fowler 2014

* Chau et al. Corticosteroids in peritonsillar abscess treatment: a blinded placebo-controlled study. Laryngoscope 2014 Jan; 124(1): 97-103

Retropharyngeal Abscess

- Deep neck infection secondary to suppurative pharyngitis
- Children > adults
- High morbidity and mortality if left untreated.
- Group B strep, anaerobes, and gram negative species most common.
- MRSA on the rise

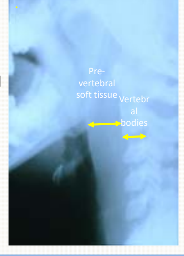


Large inferior pharyngeal abscess (arrowheads)

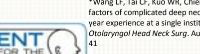
Abdel-Haq N, Quezada M, Asmar BI. Retropharyngeal Abscess in Children: The Rising Incidence of Methicillin-Resistant Staphylococcus aureus. *Pediatr Infect Dis J*. Jul 2012;31(7):696-9

Retropharyngeal Abscess

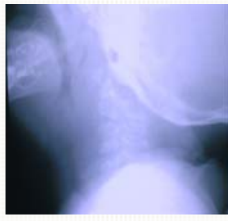
- Work-up / Management
  - Secure airway / supplemental O2
  - CBC, blood cultures
  - CRP > 100 may be indicative of complications and increased hospital stay*
  - Lateral neck film may not be sensitive enough – use clinical suspicion
    - A-P diameter of pre-vertebral soft tissue should not exceed that of the vertebral bodies
  - CT w/ IV contrast is gold standard



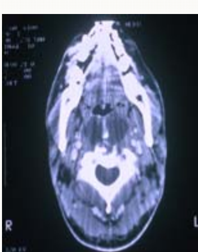
*Wang LF, Tai CF, Kuo WR, Chien CY. Predisposing factors of complicated deep neck infections: 12-year experience at a single institution. *J Otolaryngol Head Neck Surg*. Aug 2010;39(4):335-41



Retropharyngeal Abscess



False Positive Lateral Neck X-Ray



CT with Contrast

Retropharyngeal Abscess

- Treatment
  - Aggressive IV antibiotic therapy
  - Tracheostomy may be required for airway compromise
  - Majority will require either needle aspiration or surgical I&D
    - Review of 162 patients at St. Louis CHP revealed 126 required initial surgical intervention and of 36 observed, 17 subsequently required surgery.*
- Medications
  - Clindamycin + metronidazole
  - Pen G + metronidazole
  - Cefoxitin
  - Ticarcillin and clavulonic acid (Timentin)
  - Piparacillin and tazobactam (Zosyn)

*Page NC, Bauer EM, Lieu JE. Clinical features and treatment of retropharyngeal abscess in children. *Otolaryngol Head Neck Surg*. Mar 2008;138(3):300-6

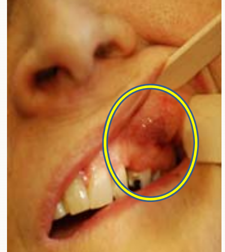
The Red Herring Tonsil

- 45 male presents with 1 mo h/o worsening difficulty swallowing and enlarged left tonsil on exam. Referred from urgent care with dx of PTA
  - No fever, Normal WBC
  - Minimal throat pain
  - Moderate trismus
  - No referred otalgia
  - Non-smoker
  - Left neck nodes enlarged but non-tender

Primary Lymphoma of the Tonsil

Dental Abscess

- Common entity often encountered in the primary care / ER setting
- Periapical – originates in pulp secondary to caries (kids)
- Periodontal – usually due to impacted FB / food in the gingiva
- No race or sex predilection
- Present with localized pain / swelling, occasional fever
- *Bacteroides, Fusobacterium, Actinomyces, Peptococcus, Peptostreptococcus, Strep viridans, Prevotela oralis*



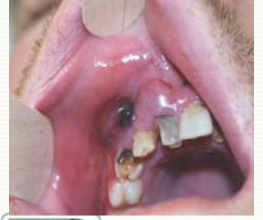
Fluctuant area in ginigival-labial sulcus underlying 1st L maxillary premolar (#12) – note dental caries

Dental Abscess – Workup / Treatment

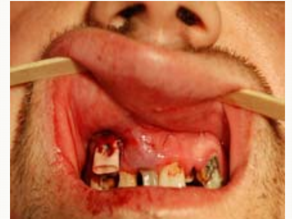
- No workup necessary if uncomplicated – tear
- Complicated Abscess:
  - CBC
  - Blood cultures
    - Aerobic / anaerobic
    - Prior to IV antibiotics
  - Needle aspiration or open I&D with cultures (aerobic / anaerobic)
- Treatment
  - Assess airway if severe presentation
  - I&D facilitates rapid resolution
  - Empiric broad-spectrum antibx coverage
  - Parental antibiotics if complicated (ie facial cellulitis)
  - Antibiotics:
    - PCN – not sufficient coverage
      - 30% beta-lactamase + organisms*
      - Can add metronidazole or azithromycin
    - Clindamycin
    - Amox / clav

*Brook I. Microbiology and management of endodontic infections in children. *J Clin Pediatr Dent*. 2003;28(1):13-7

Dental Abscess I&D



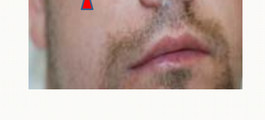
Right maxillary abscess



Post I&D with penrose drain sewn in place

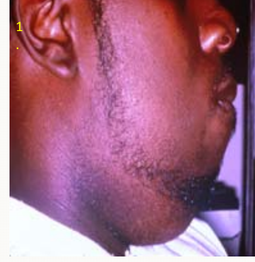
Facial Cellulitis – complication of dental abscess

- Patient from previous images:
  - c/o facial pain, HA and malaise
  - had low grade fever 100.1 F
  - WBC of 26,000
  - Mild infra-orbital erythema/edema (arrowhead)
- Treatment:
  - I&D as above
  - IV clindamycin 900mg TID
  - Referral to tertiary oral surgery service



Ludwig's Angina

- Submandibular/Sublingual Infection
  - Odontogenic Source (70%)
  - Edema/ Induration- Floor of Mouth
- Management
  - **Secure Airway** **Early**
    - Rapid progression common
    - Respiratory distress (>25%)
  - Panorex/ CT with Contrast
    - Determine source and extent of infection
  - IV antibiotics- Strep, anaerobes
    - MRSA on the rise*
  - I&D
  - +/- Tracheotomy



*Patel et al. Isolation of Staphylococcus aureus and black-pigmented bacteroides indicate a high risk for the development of Ludwig's angina. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2009;108(5):667

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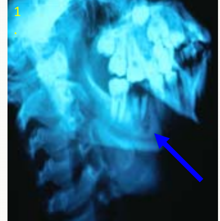
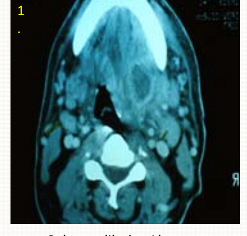
Ludwig's Angina

Radiology



Periapical Abscess



Submandibular Abscess

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Deep Neck Space Infections

- Source of Infection
  - Pediatric- tonsil/ sinus/ otitis
  - Adult- teeth/ salivary gland/skin
  - Unidentified source (50%)
- Signs and Symptoms- depends on space
  - Fever, Pain, Swelling (>90%)
  - Dysphagia, Trismus (18%)
  - Fluctuance - uncommon(27%)
- Microbiology
  - Strep and Staph- most common
  - Gram negative
  - Mixed flora(40%)
  - Anaerobes

Left Neck Abscess

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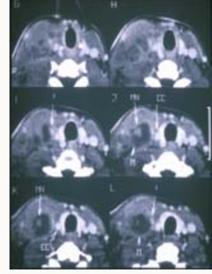
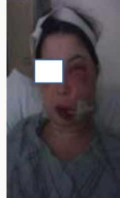
Deep Neck Space Infections:
Management

- Secure airway- as needed
- CT scan with contrast
  - Cellulitis vs. Abscess
  - Identifies neck space involved
- Cultures- blood and aspirates
- IV antibiotics
- Incision and Drainage
  - Obvious abscess
  - Failure to improve on antibiotics
  - Impending complication
- Complications
  - Mediastinitis/ Sepsis, IJ thrombosis
  - Osteomyelitis (mandible, C-spine),
  - Cerebrovascular complications



CT with Contrast

Severe Facial / Deep Neck Infection



28 yo wf status post dental extraction. Presented with increasing pain, swelling and erythema of left face and neck....continued despite p.o. clindamycin.
Required tracheostomy and debridement x5 over 7 days
Penrose drains placed in lat canthus of eye and intra-orally

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Angioedema

- Acute painless mucosal edema
  - Face, Lips, Tongue, Larynx
  - Airway obstruction- 20%
- Etiology
  - ACE Inhibitor- most common
  - Hereditary Angioedema- rare
  - Idiopathic- unknown trigger (allergic reaction?)
- Aggressive Early Treatment- Required
  - Secure Airway Early
  - Epinephrine (airway compromise), Corticosteroids, Antihistamines
  - Discontinue ACE inhibitors, NSAIDs
    - Medical consult- blood pressure control

Early angioedema of the uvula attributed to NSAID intake

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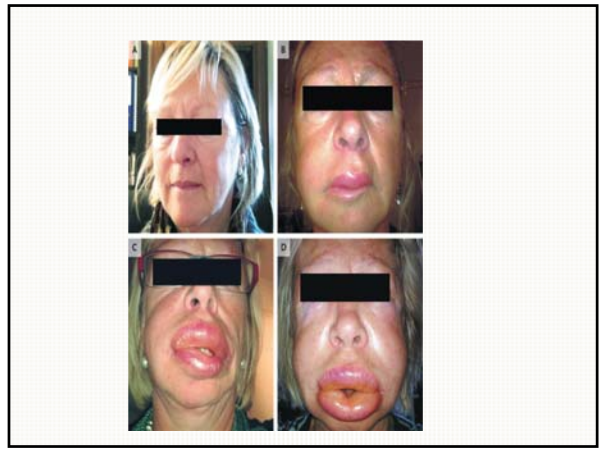

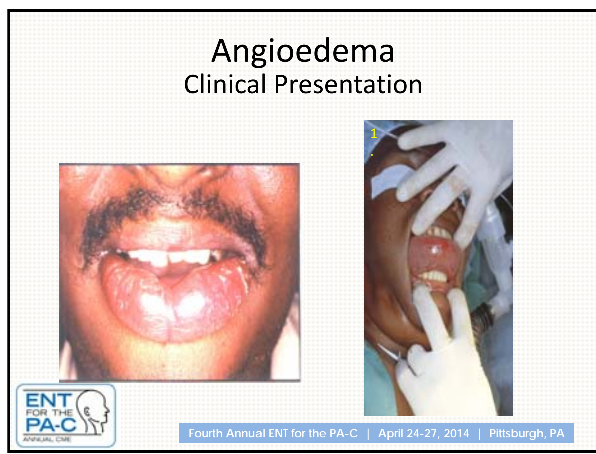
Angioedema
Clinical Presentation
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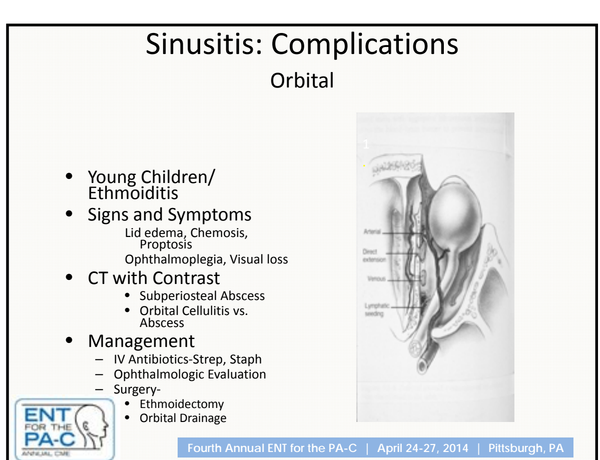
Sinusitis: Complications
Orbital
• Young Children/ Ethmoiditis
• Signs and Symptoms
Lid edema, Chemosis, Proptosis
Ophthalmoplegia, Visual loss
• CT with Contrast
• Subperiosteal Abscess
• Orbital Cellulitis vs. Abscess
• Management
– IV Antibiotics-Strep, Staph
– Ophthalmologic Evaluation
– Surgery-
• Ethmoidectomy
• Orbital Drainage
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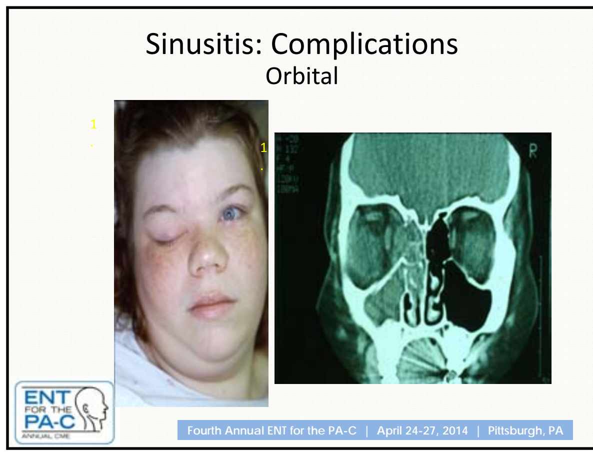
Sinusitis: Complications
Orbital
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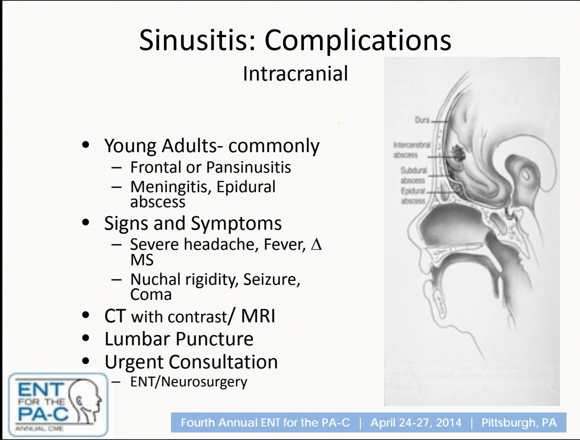
Sinusitis: Complications
Intracranial
• Young Adults- commonly
– Frontal or Pansinusitis
– Meningitis, Epidural abscess
• Signs and Symptoms
– Severe headache, Fever, Δ MS
– Nuchal rigidity, Seizure, Coma
• CT with contrast/ MRI
• Lumbar Puncture
• Urgent Consultation
– ENT/Neurosurgery
Dura
Intercerebral abscess
Subdural abscess
Epidural abscess
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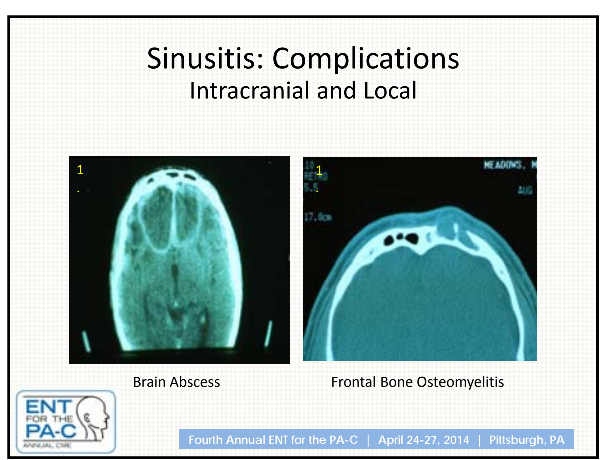
Sinusitis: Complications
Intracranial and Local
Brain Abscess
Frontal Bone Osteomyelitis
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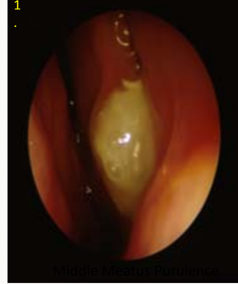
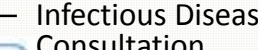
Sinusitis:Complications
Immunocompromised Host

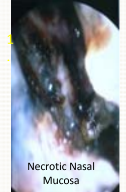
- Sinusitis Common
  - HIV/AIDS-75%
  - Chemotherapy/ Neutropenia
- Signs and Symptoms
  - Fever, Progressive symptoms
  - Poor response to antibiotics
- Management
  - Culture Directed Therapy
  - Early CT/ IV Antibiotics
  - Infectious Disease Consultation





Sinusitis: Complications
Invasive Fungal Rhinosinusitis (mucormycosis)

- Immunocompromised Patient
  - Uncontrolled diabetic (ketoacidosis)
  - Oncologic patient (neutropenia)
- Few symptoms- discharge, pain
- Intranasal exam- blackened mucosa
- CT/ MRI to evaluate invasion
- Tx*:
  - aggressive surgical debridement
  - Antifungal agents – amphotericin B, posaconazole
- Prognosis- very poor
  - Correct underlying immunodeficiency
    - Control blood sugar



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