ENT Crash Course

Amer M. Sawalha & Mohammad Darwish

Ear

Hearing Loss

- The most common form of sensorineural hearing loss is due to cochlear pathology (sensory hearing loss).
- Causes of hearing loss in children:

Prenatal → maternal infections, radiation, ototoxic drug use

Natal → hypoxia, mechanical ventilation, low birth weight, prematurity, hyperbilirubinemia

Postnatal + early childhood → craniofacial syndromes, infections (meningitis), head trauma, neurodegenerative disorders, parental suspicion of hearing loss, speech delay

Hearing Tests in Children

- Cannot give a response → ABR / OAE
- Can give response → PTA, play audiometry, visual reinforcement audiometry
- OAE: sounds by outer hair cells in cochlea, screening tool, 80-90% specificity + sensitivity, cannot detect auditory neuropathy
- ABR: can detect auditory neuropathy

Hearing Loss Causes

- External ear causes: microtia, atresia, infections, tumors, exostosis, osteoma, wax impaction, tympanosclerosis
- Middle ear causes: congenital, infections, TM perforation, tumors, otosclerosis, eustachian tube dysfunction
- Inner ear causes: congenital, presbycusis, infection, meniere, noise induced trauma, tumors (vestibular schwannoma), ototoxicity, neurogenic, iatrogenic

Tinnitus

- Subjective: trauma, meniere, presbycusis, ototoxicity, idiopathic, otosclerosis, acoustic neuroma, systemic disease, middle ear effusion, chronic otitis media, psychogenic, labyrinthitis, perilympahatic fisulta
- Objective: palatal myoclonus, vascular, acute middle ear infection

- Treatment: treat underlying cause, tinnitus retraining therapy, hearing aids for hearing loss, tinnitus maskers (white noise),vsurgery (labyrinthectomy)

Acute Otitis Media

- Disease of children / acute, suppurative infectious process of middle ear space lasting ≤ 3 wks
- Most common causative organism → Strep pneumonia
- Other causes: H influenzae, Moraxella catarrhalis, Staphylococcus aureus, Group A streptococcus, Mycoplasma pneumoniae
- Factors influencing AOM: Eustachian tube dysfunction, immune dysfunction, ineffective mucociliary clearance due to ciliary dyskinesia

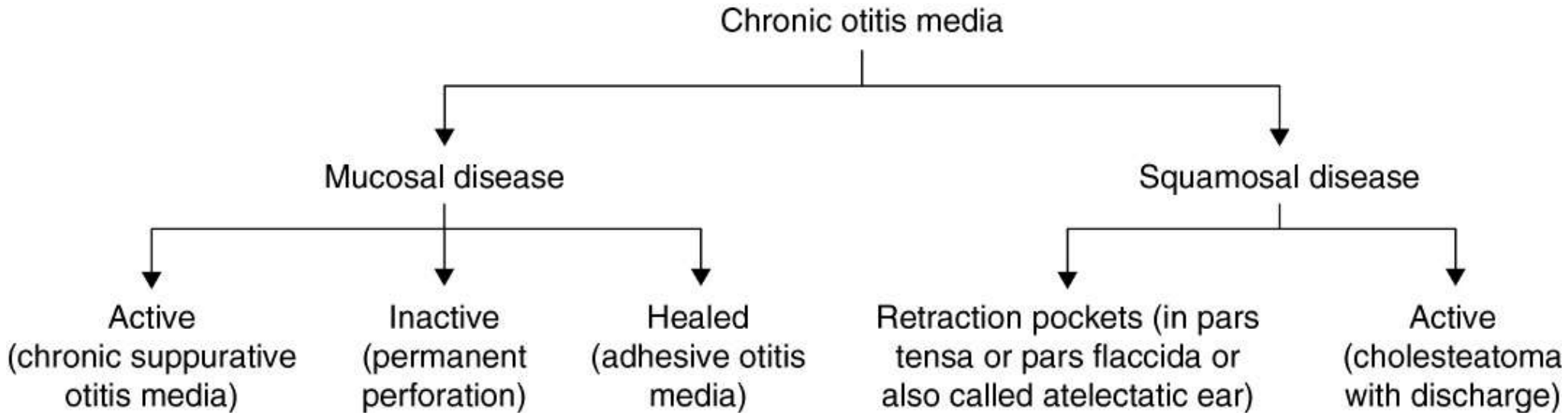
Acute Otitis Media

- Sequence: Hyperemia → Exudation → Suppuration → Resolution → OME
- Or Hyperemia → Exudation → Suppuration → Complications → CSOM with perforation
- Treatment: first line → amoxacillin+clavulanic acid
- Penicillin allergy → use macrolides or second line fluoroquinolones
- Complications: mastoiditis, chronic perforation, labyrinthitis, facial paralysis, persistent hearing loss, Petrositis, septic lateral sinus thrombosis, epidural/subdural/brain abscesses

Otitis Media with Effusion

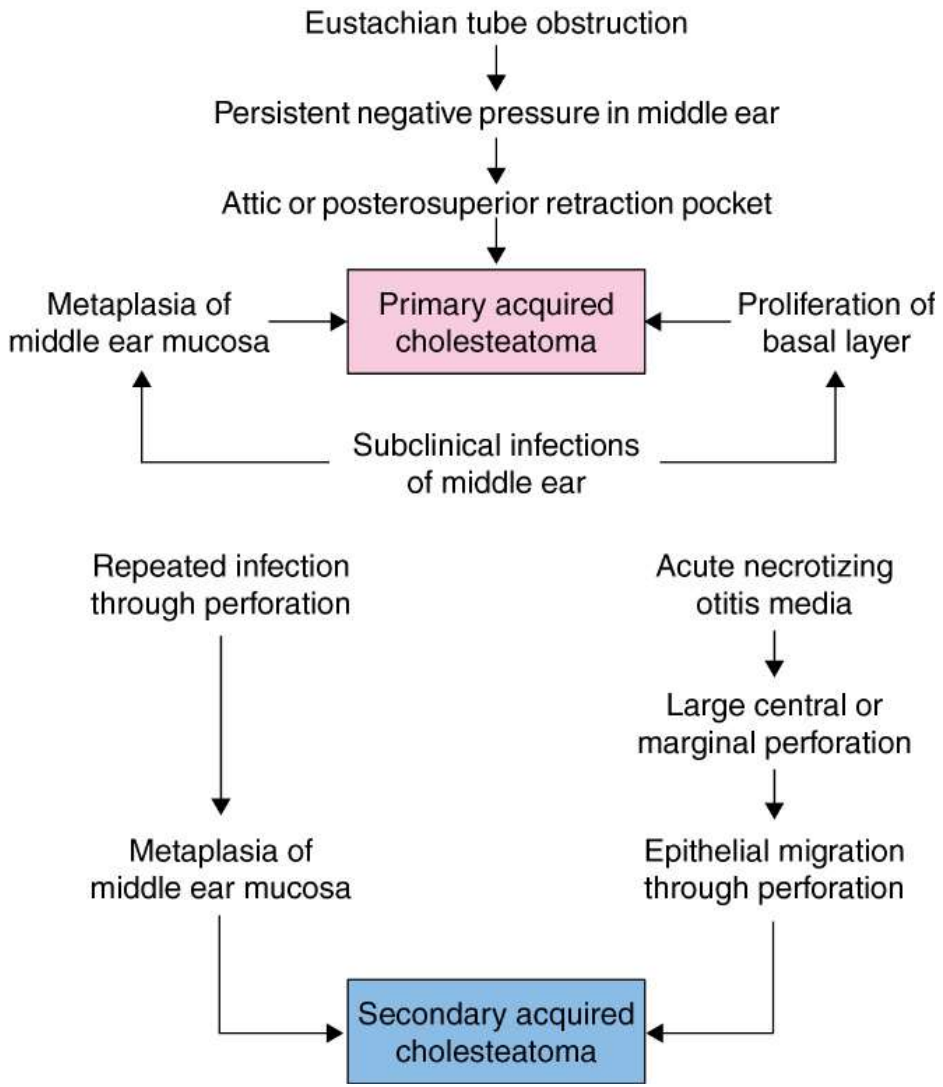
- Glue ear/secretory otitis media
- Causes: ETD or after AOM
- Hearing loss/ear fullness/tinnitus
- On exam: normal/bulging/retracted TM, bubbling behind TM
- Management: watchful waiting for 3 months on nasal steroid spray and antihistamine, if not resolving or if there is speech delay then myringotomy with grommet tube insertion is done +/- adenoidectomy.
- Balloon dilation of the ET is also an option

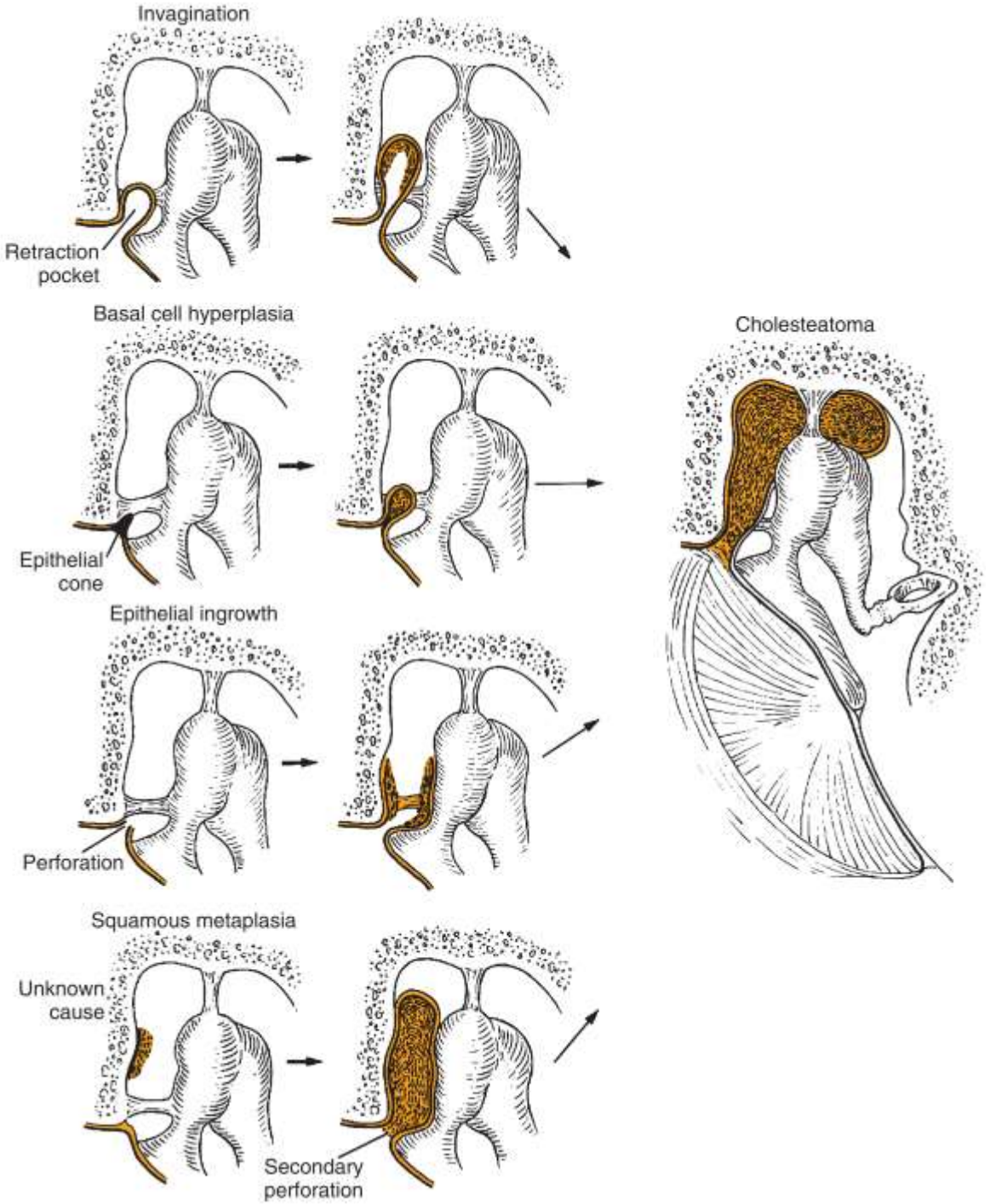
Chronic Otitis Media



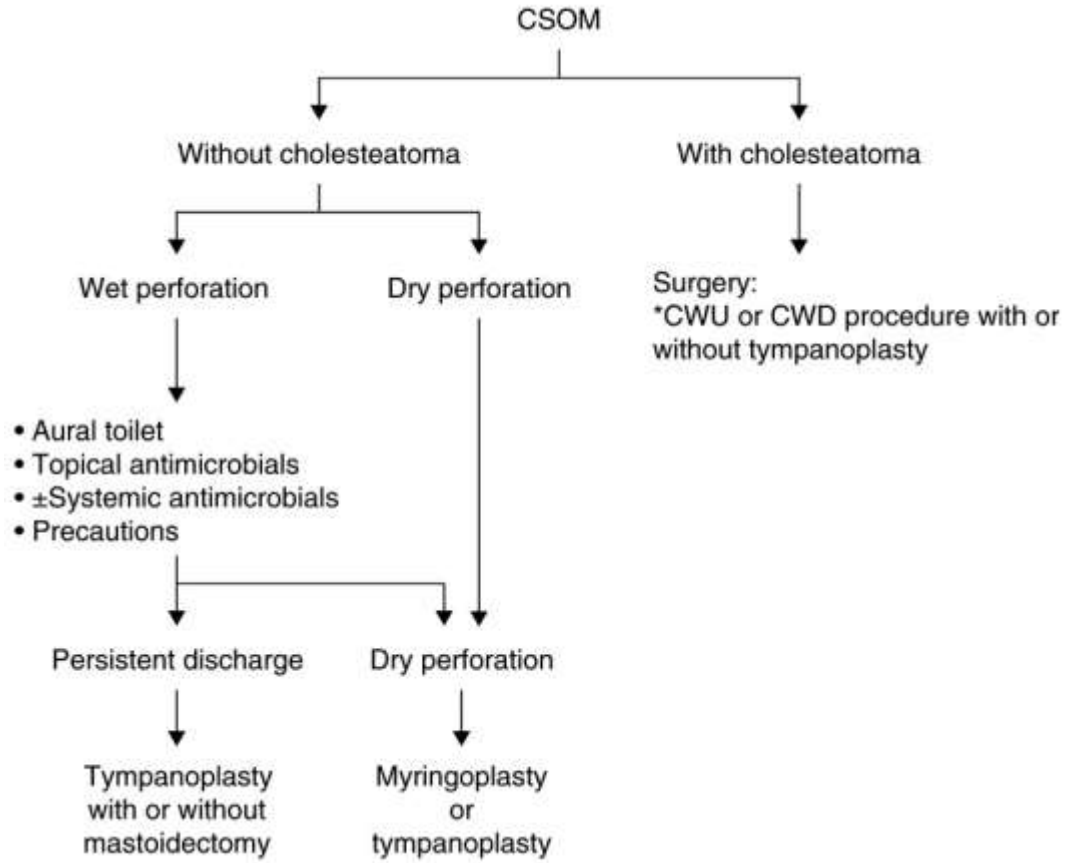
	Tubotympanic or safe type	Atticoantral or unsafe type
Discharge	Profuse, mucoid, odourless	Scanty, purulent, foul smelling
Perforation	Central	Attic or marginal
Granulations	Uncommon	Common
Polyp	Pale	Red and fleshy
Cholesteatoma	Absent	Present
Complications	Rare	Common
Audiogram	Mild to moderate conductive deafness	Conductive or mixed deafness

Chronic Otitis Media





Chronic Otitis Media



	Canal wall up procedure	Canal wall down procedure
Meatus	Normal appearance	Widely open meatus communicating with mastoid
Dependence	Does not require routine cleaning	Dependence on doctor for cleaning mastoid cavity once or twice a year
Recurrence or residual disease	High rate of recurrent or residual cholesteatoma	Low rate of recurrence or residual disease and thus a safe procedure
Second look surgery	Requires second look surgery after 6 months or so to rule out cholesteatoma	Not required
Patients limitations	No limitation. Patient allowed swimming	Swimming can lead to infection of mastoid cavity and it is thus curtailed
Auditory rehabilitation	Easy to wear a hearing aid if needed	Problems in fitting a hearing aid due to large meatus and mastoid cavity which sometimes gets infected

Chronic Otitis Media

Intratemporal complications: Petrositis (Gradenigo syndrome), Facial paralysis, Labyrinthitis

Intracranial complications: Lateral sinus thrombosis, Meningitis, Intracranial abscess

External Ear Conditions

- Congenital disorders: Anotia, Microtia, Atresia of EAC, Accessory auricle, Auricular tags, Bat ears, Pre-auricular sinus/ cyst
- Acquired disorders: Auricular hematoma, Perichondritis, Cauliflower ear, Keloids, Herpes Zoster oticus, exostosis, osteoma, malignancy (squamous cell, basal cell, melanoma)

External Ear Infections

- Perichondritis (trauma, ear piercing, IV abx, incision and drainage for abscess)
- Herpes zoster oticus (varicella zoster, Ramsay Hunt, acyclovir, steroids, corneal protection)
- Otitis Externa

Acute Localized otitis externa (Furuncle): staph aureus, heat, analgesia, abx, incision and drainage, icthammol on glycerin wick

Acute diffuse otitis externa: humidity, pseudomonas, staph aureus, oral and topical abx with topical steroid

Chronic otitis externa: >2 months, long term topical steroid/antibiotic cream, surgery as last resort

Otomycosis: aspergillus, candida, DM, immunosuppression, aural toileting, keep ears dry, topical antifungal

Malignant otitis externa: pseudomonas, DM, immunocompromised, osteomyelitis, technicium 99m scan, gallium scan, CT, abx for 3-4 months, glucose and pain control

Vertigo

- Vestibular causes: BPPV, Vestibular neuritis, Meniere disease, Herpes zoster oticus (Ramsay Hunt), Labyrinthine concussion, Perilymphatic fistula, Semicircular canal dehiscence, Cogan's syndrome, Recurrent vestibulopathy, Acoustic neuroma, Drug induced (aminoglycosides), Otitis media, labyrinthitis, Cholesteatoma, Postsurgical
- Central causes: Migrainous vertigo, Brainstem ischemia, Cerebellar infarction and hemorrhage, Chiari malformation, Multiple sclerosis Episodic ataxia type 2
- Other causes of non specific dizziness: Cardiovascular, DM, hypothyroidisim, dyslipidemia, vitamin deficiencies, malnutrition, alcohol, psychogenic,…

Vertigo

- Positional test: Dix Hallpike for PSCC disorder or otolith
- Corrective maneuvers: Epley, Brandt Daroff, Semont
- Nystagmus:

Peripheral → latency period, fatiguable, less than 1 min

Central → no latency, non fatiguable, more than 1 min

- Nystagmus: fast phase is away from affected side in peripheral vertigo.
- Visual fixation (frenzel lenses): suppresses peripheral lesion nystagmus not central.

Nose

Acute Rhinosinusitis

- Definition: an inflammation of the mucosal lining of the nasal passage and paranasal sinuses
- Most common causative organism? Rhinovirus
- Other causes? Adenovirus, Strep pneumo, H. influenza, M. catarrhalis, Staph aureus
- Which virus is associated with both Acute RS + conjunctivitis? Adenovirus
- Sinuses most commonly involved in descending order? M>E>F>S

Acute Rhinosinusitis

- Major and minor criteria of symptoms of RS?
- Bacterial vs viral RS? 1. worsening symptoms after initial improvement 2. persistent symptoms >10days
  3. high grade fever
- Diagnosis is clinical
- Is surgery indicated? Only in cases of complications (orbital, intracranial, bony and chronic complications like blindness, abscess, decreased visual acuity)

Table 2. Conventional Criteria for the Diagnosis of Sinusitis Based on the Presence of at Least 2 Major or 1 Major and ≥2 Minor Symptoms

Major Symptoms	Minor Symptoms
• Purulent anterior nasal discharge	• Headache
• Purulent or discolored posterior nasal discharge	• Ear pain, pressure, or fullness
• Nasal congestion or obstruction	• Halitosis
• Facial congestion or fullness	• Dental pain
• Facial pain or pressure	• Cough
• Hyposmia or anosmia	• Fever (for subacute or chronic sinusitis)
• Fever (for acute sinusitis only)	• Fatigue

Modified from Meltzer et al [7].

Acute Rhinosinusitis

- Chandler Classification of Orbital Complications:

1. Preseptal cellulitis
2. Orbital cellulitis
3. Preseptal abscess
4. Orbital abscess
5. Cavernous sinus thrombosis: 80% fatal, ethmoiditis, coag +ve s aureus, spiking fever, CN 6 first affected followed by 2,3,4, treated with cephalosporin and metronidazole + anticoagulants

Acute Rhinosinusitis

- Most common intracranial complication: subdural abscess
- Other intracranial complications: intracerebral abscess, epidural-dural abscess, meningitis, cavernous sinus thrombosis, sagittal sinus thrombosis
- Most common source of brain abscess: frontal sinus

Chronic Rhinosinusitis

- An inflammatory condition involving the paranasal sinuses and linings of the nasal passages that lasts 12 weeks or longer.
- The diagnosis requires objective evidence of mucosal inflammation.
- CRS is a proliferative process with remarkable thickening of the mucosa and lamina propria
- 2/3 are without nasal polyposis (association with asthma+aspirin intolerance)
- 1/3 with nasal polyposis

Chronic Rhinosinusitis

- Infective and Non infective
- Infective (non specific → s. pneumonia, specific → TB, syphilis)
- Non infective:

Atrophic → females/klebsiella/trauma/iatrogenic/anosmia/nasal obstruction/ozena

Hypertrophic → Non-allergic rhinitis (rhinitis medicamentosa, gustatory rhinitis, hormonal rhinitis, senile rhinitis, vasomotor)

Allergic rhinitis → IgE/Type 1 hypersensitivity/1st phase sensitization/2nd phase degranulation of mast cell with re-exposure/investigations (skin prick, RAST, IgE level, eosinophils, nasal challenge test)/ AR Tx / Desensitization

Chronic Rhinosinusitis

- Risk factors: Local (DNS,neoplasm, LPR, foreign body), systemic (AR, asthma, AERD, CF, Vasculitis), pollutants, rhinitis medicamentosa, infections
- Most common causative organisms: S. Aureus., S. Pneumonia., M. Catarhalis., H. Influenza., P. Aerogenosa
- Bacteria → Osteitis, biofilm, superantigen formation
- CRS with nasal polyps less prevalent than without nasal polyps but associated with asthma

Chronic Rhinosinusitis

- Polyps can be: **idiopathic** unilateral or bilateral, **antrochoanal** (noneosinophilic cyst like polyp from maxillary sinus), **eosinophilic polyps with asthma or AERD**, **systemic** (CF+ churg strauss syndrome)
- CRS diagnosis = 2 or more cardinal symptoms of RS + documentation of mucosal inflammation or mucopurulent discharge or nasal polyps +/- sinus CT findings suggestive of CRS
- Samter's triad: asthma/atopy , nasal polyps , aspirin sensitivity

Chronic Rhinosinusitis

- Medical treatment of CRS is as effective as endoscopic sinus surgery, combined with topical nasal steroids, both in polypoid & nonpolypoidal CRS
- Indications for corticosteroids in rhinosinusitis:

Acute rhinosinusitis

Prophylactic treatment of acute recurrent rhinosinusitis

Chronic rhinosinusitis without NP

Chronic rhinosinusitis with NP

Postoperative treatment of chronic rhinosinusitis with or without NP.

Chronic Rhinosinusitis

- Med Tx for CRS → Nasal steroids, antihistamine, nasal irrigation, decongestant, oral steroid, antileukotrienes

- Complications → Mucoceles are chronic, slowly expanding lesions in any of the sinuses that may result in bony erosion and subsequent extension beyond the sinus. If the mucocele becomes secondarily infected and the contents purulent, it is described as a pyocoele.

Epistaxis

- 2 age peaks (less than 10 and more than 50)
- Benign, self limiting, spontaneous, or recurrent
- Blood supply of the septum → ICA and ECA
- ICA → Ophthalmic artery + anterior and posterior ethmoid arteries
- ECA → Internal maxillary (greater palatine and sphenopalatine) and facial artery
- Little's area → Kiesselbach's plexus → septum anteriorly
- Woodruff's plexus → lateral nasal cavity wall

Epistaxis

- Anterior epistaxis → 90% / children / kiesselbach's plexus / bleeding from nostrils
- Posterior epistaxis → 10% / eldery / woodruff's plexus / bleeding into throat (hemoptysis/hematemesis) / aspiration / airway compromise
- Causes → idiopathic, local (trauma, inflammation, tumor, incorrect use of nasal sprays), systemic (coagulopathies, AVM, HTN, Cardiovasc)

Epistaxis Management

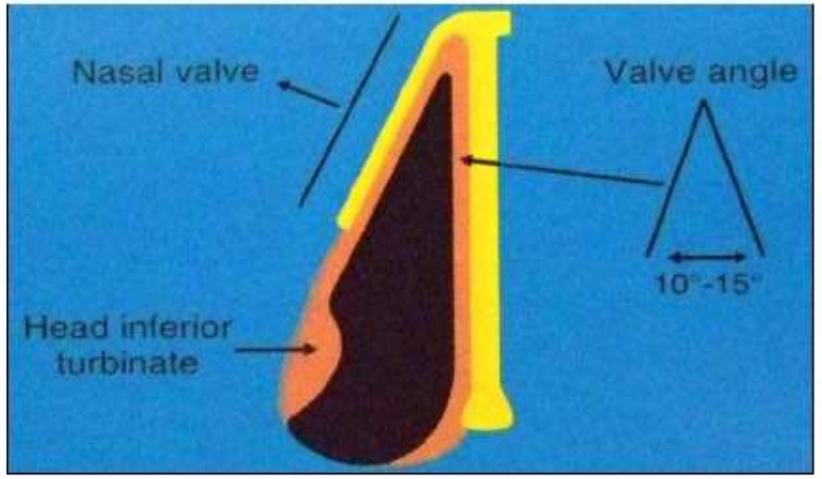
1. Tamponade: pressure on septum for 10 min, ice packs, topical decongestant
2. If persistent and visible source of bleeding, cauterize with silver nitrate (chemical cautery) or electrocautery
3. If persistent and source of bleeding not clear, ballooning or foley's catheter posterior pack with anterior pack
4. If persistent after the above measures and removal of packs, surgery (ligation of arteries or surgery i.e. septodermoplasty)
5. If still intractable, embolization

**Hemodynamic stability and ABCs are first line in management.

Nasal Trauma

- Consequences: epistaxis, fracture of nasal bone, fracture and dislocation of septum, septal hematoma
- Types of fractures: 1) Only nasal bone 2) 2 bones due to lateral trauma 3) ethmoid, skull base, orbit, mandible
- Xray is enough
- CT if: 1) type 3 fracture 2) CSF leak 3) multiple facial fractures
- Trauma: reduce fracture within 1 hour of injury, or wait 1 week for edema to subside then fix fracture, or surgery (septorhinoplasty) if trauma was months ago
- Complications: septal dislocation + septal hematoma → septal abscess → septal perforation/saddle nose deformity

Foreign Bodies in Nose



- Organic material → inflammatory reaction
- Inorganic/inert material → no inflammation
- FB in nose → risk of aspiration
- Common in children and usually visible on anterior rhinoscopy
- Presentation: parents witnessing insertion of FB, nasal discharge, foul odor, epistaxis, nasal obstruction, moutbreathing
- Magnets and disc batteries → septal perforation +/- saddle nose deformity +/- inferior turbinate necrosis +/- nasal meatal stenosis +/- collapse of alar cartilage

Most Common Things

- Most **common** type of rhinosinusitis overall is Viral rhinosinusitis
- Most **common** cause of acute viral RS is rhinovirus
- Most **common** cause of acute bacterial rhinosinusitis is strep. Pneumonia
- Most **common** type of chronic rhinosinusitis is allergic rhinosinusitis
- Most **common** symptom of viral rhinosinusitis is watery discharge
- Most **important** part of the treatment of acute rhinosinusitis is PAINKILLERS
- Most **common** complication of rhinosinusitis is orbital complications
- Most **common** intra-cranial complication of rhinosinusitis is subdural abscess
- Most **specific** test for allergic rhinitis is nasal challenge test
- Most **effective** treatment for allergic rhinitis is desensitization

Throat

Tonsils and Adenoid

- Waldeyer's ring: Adenoid, tubal tonsil, palatine tonsils, lingual tonsils
- Pharyngitis: most common cause of sore throat
- Common causes are respiratory viruses rhinovirus, influenza, adenovirus, coronavirus, and parainfluenza
- Streptococcus is the most common bacterial cause.
- Tonsillitis causes are like pharyngitis
- Acute tonsillitis: follicular, membranous (EBV, doesn't improve with abx, infectious mononucleosis, rash, lymphadenopathy, hepatosplenomegaly, also scarlet fever, diptheria, Vincent angina), parenchymatous

Tonsillitis Complications

- Most common complication: Peritonsillar abscess (quinsy): high fever, trismus, drooling, hot potato, enlarged jugulodigastric node, incision and drainage, abx
- Airway obstruction.
- Otitis media.
- Parapharyngeal abscess (abx, drainage, thrombosis of internal jugular vein, carotid artery rupture, injury to CN 9-12, mediastinitis, septicemia)
- Retropharyngeal abscess.
- Rheumatic fever.
- Glomerulonephritis.

Tonsillectomy

- Indications: absolute → failure to thrive, OSA, malignancy

relative → 6 weeks after 2nd quinsy, recurrent tonsillitis, tonsillar hypertrophy, tonsilolith

- Complications: tonsillar remnants, bleeding, infection

Adenoid

- Size peaks at 6 yrs, then atrophies until 16 yrs.
- Obstruction of nasal airway and eustachian tube
- Treatment is nasal steroid, nasal irrigation, abx if needed, surgery if OSA or if chronic otitis media with effusion, CRS in children, recurrent AOM, or failure of medical therapy for adenoid hypertrophy)

Stridor

- Congenital: Laryngomalacia(most common cause of inspiratory sounds in infants in general), Vocal cord paralysis, Subglottic stenosis, Laryngeal webs, Hemangiomas and Lymphangiomas, Vascular causes, e.g. double aortic arch, Laryngeal Cysts.
- Acquired: Neoplastic, inflammation, trauma
- Laryngomalacia → self limiting, resolves in 1 year of age
- VC paralysis → CNS abnormality, biphasic stridor, improves with lying on affected side down if unilateral
- Subglottic stenosis → congenital, idiopathic, autoimmune, trauma, prolonged intubation, GERD
- Laryngeal web → biphasic stridor,

Stridor

- Acute epiglottitis → sorethroat, drooling of saliva, hot potato voice, thumb print sign, IV abx, IV steroids, nebulizer with adrenaline
- Acute tracheolaryngobronchitis → 6m-2yrs, parainfluenza virus, steeple sign
- Acute laryngitis → self limiting, viral, URTI, less than 12 yr

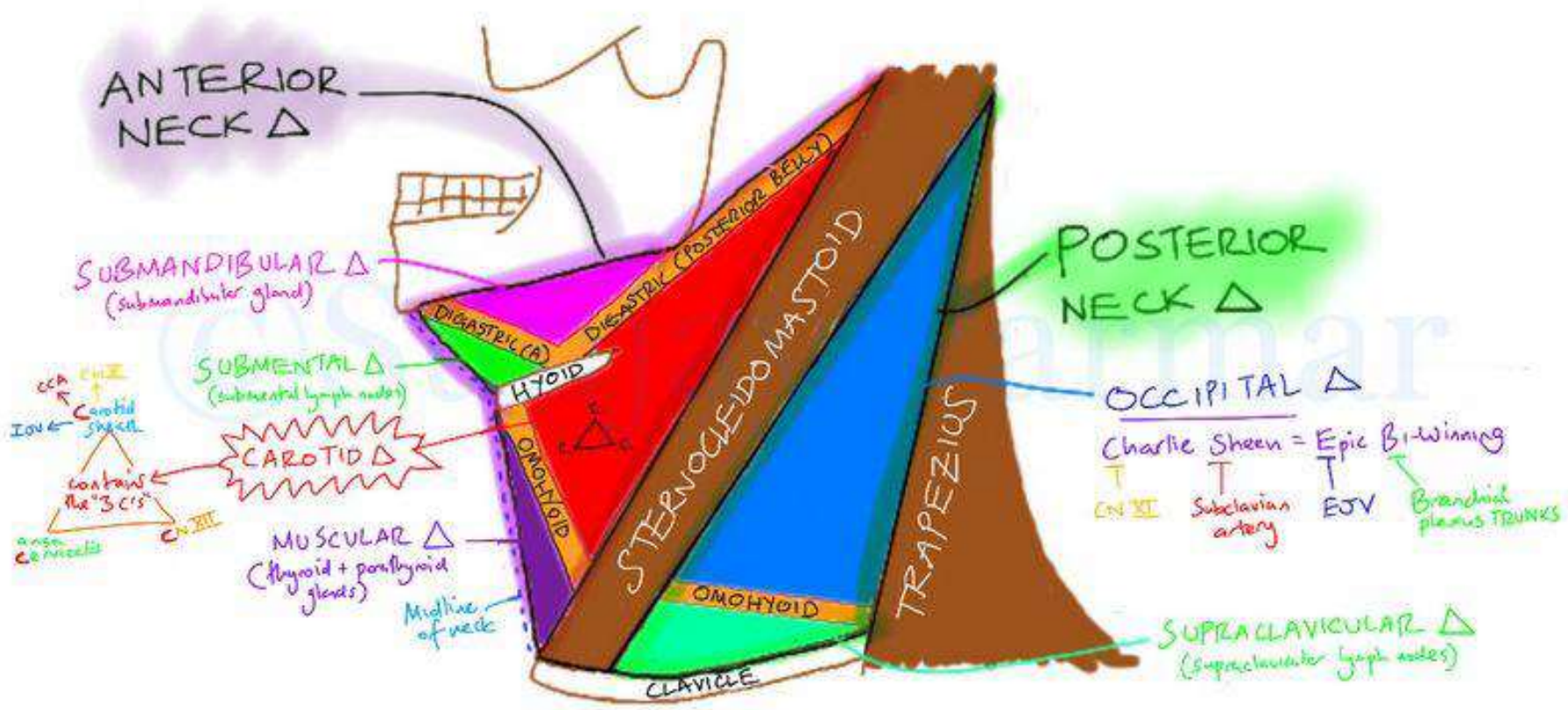
- Tracheostomy → elective, 2^{nd}-3^{rd} tracheal rings, long term
- Cricothyroidotomy → emergent, cricothyroid membrane, short term

Most Common Things

- Most common site of nasopharyngeal CA → Fossa of rossenmuller
- Most common site of hypopharyngeal CA → pyriform fossa
- Most common site of laryngeal cancer → glottis
- Most common symptom at time of diagnosis of nasopharyngeal CA → neck lump

Neck Triangles

- Anterior: submental, submandibular, carotid, muscular triangle
- Posterior: supraclavicular, occipital



Lymph Node Groups in the Neck

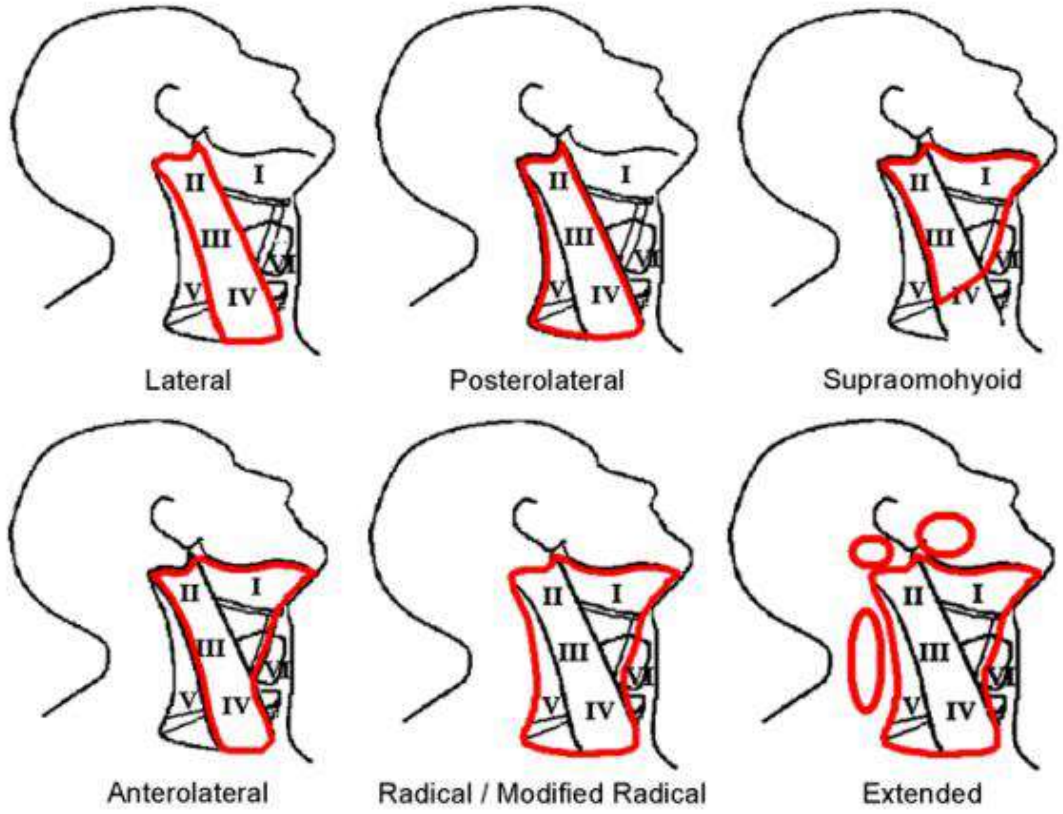
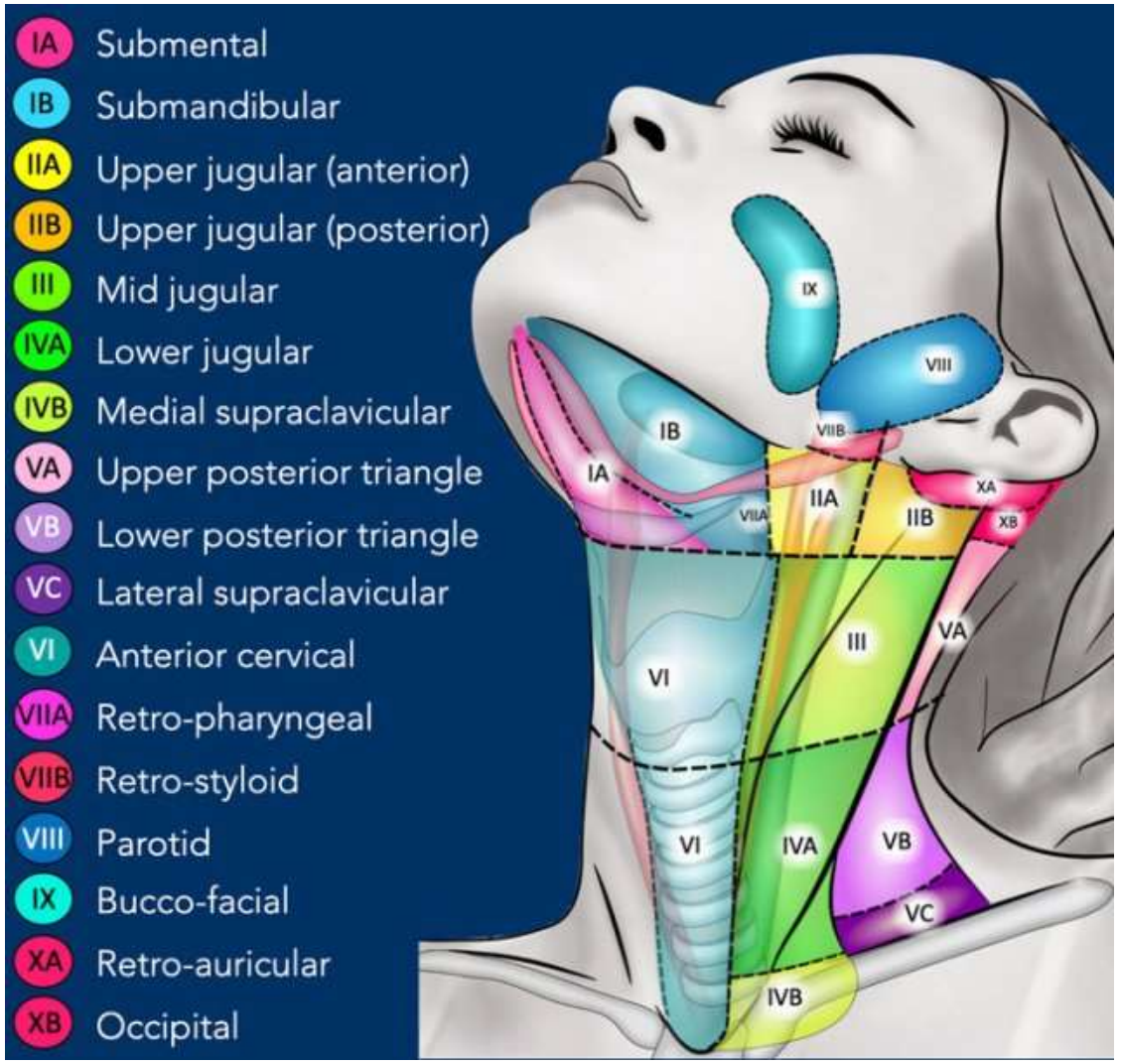


Figure 2: Common types of neck dissection



Revision MCQ

Question 1

- 5 year old patient with a history of URTI 2 weeks ago presented to the clinic with his parents complaining of decreased hearing. Examination is unremarkable other than some bubbling noted behind the tympanic membrane. What is expected tympanogram type and what is the the most appropriate next step?

A. Type B, myringotomy with grommet tube insertion
B. Type B, give nasal treatment and observe
C. Type C, myringotomy with grommet tube insertion
D. Type C, give nasal treatment and observe
E. None of the above

Question 2

- What is the most common causative agent of acute rhinosinusitis?

A. Strep pneumoniae
B. Staph aureus
C. H. Influenza
D. Rhinovirus
E. Adenovirus

Question 3

- Choose the correct order of the classification of orbital complications in ascending order according to severity

1: Orbital cellulitis

2: Subperiosteal abscess

3: Cavernous sinus thrombosis

4: Preseptal cellulitis

5: Orbital Abscess

A. 1,2,3,4,5
B. 2,3,4,5,1
C. 4,1,3,5,2
D. 4,1,2,5,3
E. 5,1,2,4,3

Question 4

- Which of the following viral infections may result in SNHL?

A. Measles
B. Mumps
C. Rubella
D. HIV
E. All of the above

Question 5

- Which of the following viral infections may result in CHL?

A. Measles
B. Mumps
C. Rubella
D. HIV
E. All of the above

Question 6

- 1 month old was brought to the clinic for hearing tests due to family history of hearing loss so a battery of tests was done. OAE test was unremarkable, but ABR was abnormal. What is most likely affected?

A. External ear
B. Middle ear
C. Cochlea
D. Brainstem and cortex
E. More than one of the above

Question 7

- 35 year old patient presented to the clinic complaining of hearing loss. Examination of the ear is unremarkable, tympanogram is unremarkable, PTA is abnormal, OAE is normal, ABR is normal. What is the most likely type of hearing loss?

A. Conductive hearing loss
B. Sensorineural hearing loss
C. Mixed hearing loss
D. Non organic hearing loss
E. Central hearing loss

Question 8

- What is the most common causative organism of furunculosis?

A. Strep pneumonia
B. H influenza
C. Moraxella catarrhalis
D. Staph aureus
E. None of the above

Question 9

- What is the best and most effective treatment of allergic rhinitis?

A. Allergen avoidance
B. Topical steroid
C. Oral steroid
D. Antihistamine
E. None of the above

Question 10

- 25 year old male patient presented to the ER with epistaxis, all of the following are part of the blood supply of the anterior septum EXCEPT:

A. Anterior ethmoid artery
B. Superior labial artery
C. Greater palatine artery
D. Sphenopalatine artery
E. None of the above

Question 11

- 51 year old female patient presented to the ER with epistaxis. On exam, the patient is hypotensive and tachycardic and there is no visible point of bleeding on the septum of the nose. What is the most appropriate next step?

A. Vaseline nasal pack
B. Posterior balloon with anterior packing
C. Ligation of sphenopalatine artery
D. Embolization
E. IV fluids and compression of the nose

Question 12

- 12 year old complains of right ear pain and fever since 3 days. Patient was given antibiotic and analgesia as well as nasal sprays for his runny nose by another doctor but he presented to your clinic complaining of severe pain not improving with analgesia, what is an appropriate form of analgesia for his otalgia?

A. Cold compresses
B. Dry heat
C. Olive oil drops
D. Oral steroid
E. More than one of the above

Question 13

- 10 year old female patient complains of spiking fever, neck pain, severe otalgia, dizziness and ear discharge since 5 days not improving on antibiotics. What is the most probable diagnosis?

A. Mastoiditis
B. Meningitis
C. Lateral Sinus Thrombosis
D. Epidural Abscess
E. None of the above


Thank you