ENT Final

🔊 **Podcast Style Review (Experimental Feature)**

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👨‍⚕️ **Made by: Ibrahim Al-Khatib**

- **NOTE:** Highlighted in **bold** are the important key info!
- Topics are arranged in order of most to least commonly tested
- Check the table of contents below for easier navigation
- Good luck 🍀

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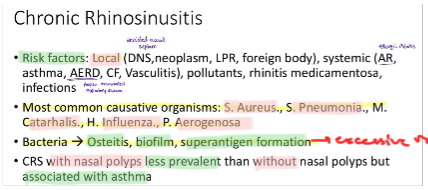
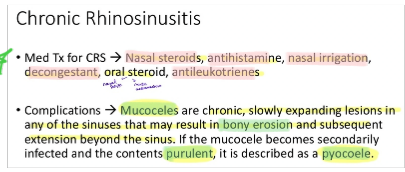
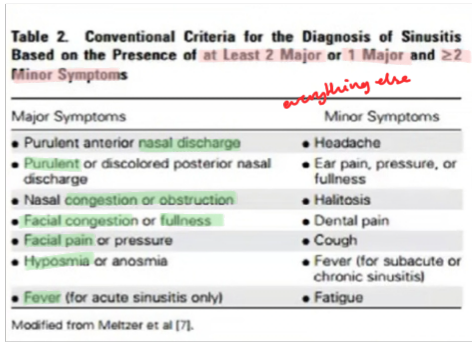
Rhinosinusitis (Acute & Chronic)

- **Acute Rhinosinusitis:**
  - **Most common cause overall:** Viral (>90%), often Rhinovirus. , adenovirus → sinusitis + conjunctivitis
    - Viral typically presents with watery discharge, low-grade fever, and resolves spontaneously without antibiotics within 7-10 days.
    - Supportive treatment (decongestants, bed rest, painkillers) is key for viral RS.
  - **Bacterial:** Less common (0.5-2%), often secondary to viral infection.
    - **Most common bacteria: *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Moraxella catarrhalis*.**
    - Suggestive features: Symptoms > 7-10 days, worsening after initial improvement ("double sickening"), high fever, purulent discharge.
    - **First-line antibiotic: Amoxicillin with clavulanic acid.**
  - Imaging (X-ray, CT) is generally *not* needed for uncomplicated acute sinusitis diagnosis.

Sx not indicated unless there are complications (orbital / intracranial / bony / chronic)
blindness / abcess / ↓visual acuity

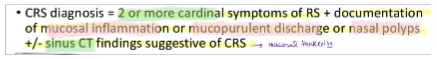




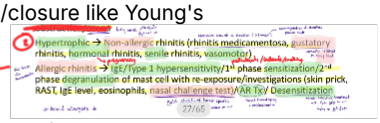


- Sinus puncture is the gold standard for diagnosis but rarely performed.
- Location-specific pain:
  - Maxillary: Jaw/dental pain.
  - **Ethmoidal: Pain between the eyes / nasal bridge.** (Common in younger children).
  - Frontal: Lower forehead pain.
  - Sphenoidal: Retro-dorbital or vertex pain.

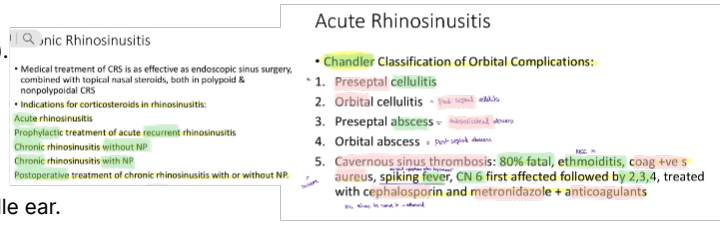
- **Chronic Rhinosinusitis:**
  - Symptoms include purulent discharge, nasal obstruction, facial pain/pressure, hyposmia.
  - Diagnosis often involves CT scan and endoscopy.



  - **Specific Infective Chronic Rhinosinusitis:** Caused by TB, Syphilis, etc. (granulomatous). Diagnosis via biopsy/culture. Septal perforation site may indicate cause (anterior=TB, posterior=Syphilis).
  - **Non-infective Chronic Rhinosinusitis (Atrophic Rhinitis):**
    - Features: **Wide nasal cavity, crusting, foul odor (ozaena), often with anosmia ("merciful anosmia").**
    - More common in young females, tropical climates.
    - Associated organism: ***Klebsiella ozaenae***.
    - Treatment: Nasal douching/lubricants to remove crusts, antibiotics. Surgery (narrowing/closure like Young's procedure) if medical treatment fails.

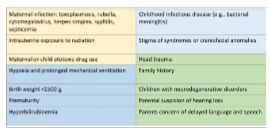


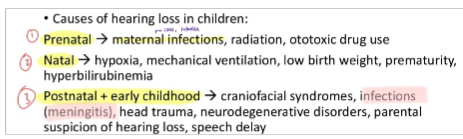
- **Sinusitis Complications:**
  - **Most common: Orbital complications** (especially from ethmoiditis due to thin lamina papyracea). Includes orbital cellulitis, subperiosteal abscess, orbital abscess.
  - Intracranial: Meningitis (most common IC complication), abscesses (epidural, subdural, intracerebral), cavernous sinus thrombosis.
  - Bony: Osteomyelitis (e.g., Pott's puffy tumour of frontal bone).



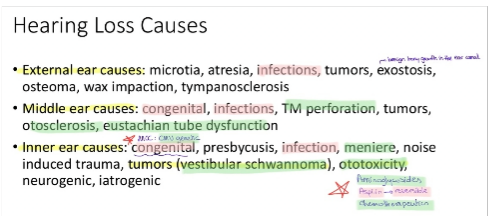
Hearing Loss & Assessment

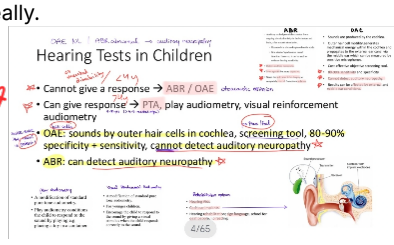
- **Types of Hearing Loss:**
  - **Conductive Hearing Loss (CHL):** Problem in external or middle ear.
    - Causes: **Wax, Otitis Externa, Otitis Media (Acute/Serous), TM perforation, Otosclerosis, Cholesteatoma, Ossicular discontinuity,** Congenital atresia.
    - Tuning Forks: **Rinne negative (BC>AC), Weber lateralizes to the affected ear.**
  - **Sensorineural Hearing Loss (SNHL):** Problem in cochlea or auditory nerve/pathway.
    - Causes: **Presbycusis, Noise exposure, Ototoxicity (e.g., aminoglycosides), Meniere's disease, Viral infections (Mumps=most common acquired SNHL cause in children, Measles), Meningitis, Acoustic neuroma,** Trauma, Genetic syndromes.
    - Tuning Forks: **Rinne positive (AC>BC), Weber lateralizes away from the affected ear.**
  - Mixed Hearing Loss: Both CHL and SNHL components.



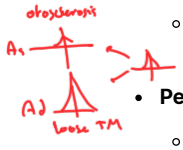


- **Presbycusis (Age-Related Hearing Loss):**
  - **Most common cause of SNHL in adults.**
  - Characteristics: **Bilateral, progressive, symmetric, high-frequency SNHL** with a sloping audiogram pattern.
  - Often associated with tinnitus and difficulty hearing in noise.
  - Management: Hearing aids.
- **Hearing Assessment:**
  - **Neonate Screening: Auditory Brainstem Response (ABR)** is the investigation of choice. Otoacoustic Emissions (OAE) are also used (screening tool, affected by middle ear status).
  - **Tuning Fork Tests (Weber & Rinne):** Used to differentiate CHL and SNHL. Use 512 Hz fork ideally.

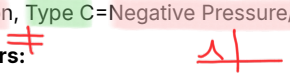




- *See interpretation under CHL/SNHL above.*



- Audiometry: Pure Tone Audiometry (PTA), Tympanometry (assesses middle ear pressure/compliance - Type A=Normal, Type B=Flat/Effusion, Type C=Negative Pressure/ETD).



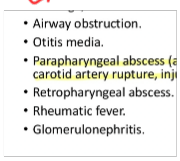
- **Pediatric Hearing Loss Risk Factors:**
  - Family history, congenital infections (TORCH), meningitis, ototoxic drug exposure, hyperbilirubinemia, prematurity (<1500g), syndromes, craniofacial anomalies, head trauma, hypoxia.
  - **History of Otitis Externa or Cesarean delivery are NOT risk factors.**

Nasopharyngeal Carcinoma (NPC)

- **Most common site of origin: Fossa of Rosenmüller.**
- Presentation:
  - **Most common presentation: Neck mass (cervical lymph node metastasis).** Usually bilateral nodes.
  - **Unilateral Otitis Media with Effusion (OME) in an adult is highly suspicious for NPC and must be ruled out.** (Due to Eustachian tube obstruction).
  - Other symptoms: Nasal obstruction, epistaxis, hearing loss, tinnitus, otalgia, cranial nerve palsies (late).
- Associated with **Epstein-Barr Virus (EBV)**, especially non-keratinizing types.
- Risk factors: Genetics (South-eastern Asia), environment (smoking, alcohol, pollution), EBV.
- Diagnosis: Examination under anesthesia with **biopsy**. FNA of neck nodes. CT/MRI for staging.
- Treatment: Primarily **Radiotherapy +/- Chemotherapy**. Surgery mainly for biopsy.

Tonsils & Adenoids (Including Tonsillitis & Tonsillectomy)

- **Tonsillitis:**
  - **Most common cause:** Viral (50-80%).
  - Most common bacterial cause: **Group A Beta-Hemolytic Streptococcus (GABHS / *S. pyogenes*)**.
  - Acute Bacterial Tonsillitis Treatment: **Penicillin or Amoxicillin**.
  - Follicular Tonsillitis: Pus in crypts.
  - Membranous Tonsillitis DDx: **Infectious Mononucleosis (EBV)**, Diphtheria, Scarlet Fever, Vincent's Angina.
    - **Infectious Mononucleosis:** Sore throat, exudate/membrane, significant cervical lymphadenopathy, **hepatosplenomegaly**, atypical lymphocytes. Avoid ampicillin (rash).
  - Peritonsillar Abscess (Quinsy): Collection of pus between tonsil capsule and pharyngeal wall. Features: Severe sore throat, dysphagia, **trismus**, muffled ("hot potato") voice, uvular deviation. Treatment: Incision & drainage or aspiration + antibiotics.



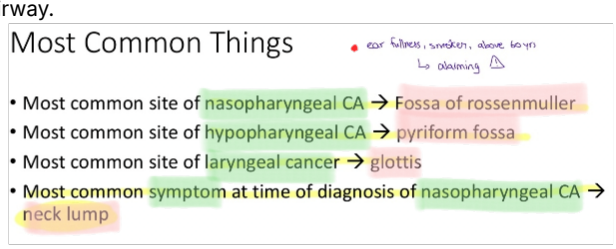
- **Tonsillectomy:**
  - **Absolute Indications: Obstructive Sleep Apnea (OSA), Suspected Malignancy.**
  - Relative Indications: Recurrent acute tonsillitis (specific criteria: e.g., >7/yr, >5/yr x2yrs, >3/yr x3yrs), recurrent febrile convulsions, recurrent OME (if tonsils are focus), history of quinsy (especially 2nd episode), tonsillolithiasis.
  - Complications:
    - **Bleeding: Primary** (within 24 hrs) vs **Secondary** (usually ~1 week post-op, often due to infection).
    - Other: Pain, infection, dental damage, TMJ dislocation, injury to uvula/palate.
- **Adenoids (Pharyngeal Tonsils):**
  - Part of Waldeyer's ring, located in the nasopharynx. Composed of B-lymphocytes.
  - Produce IgA, IgG, IgM.
  - Maximum size typically between 3-7 years, regress after 9-11 years.
  - Adenoiditis/Hypertrophy: Can cause nasal obstruction, snoring, mouth breathing, OME.

Neck Masses

- **Congenital Neck Masses:**
  - **Most common overall: Thyroglossal duct cyst.**
    - **Midline**, usually near hyoid bone.
    - **Moves upward with swallowing and tongue protrusion.**
    - Requires Sistrunk procedure for removal (includes central hyoid bone).
    - *Must check thyroid function/scan pre-op as cyst may contain only thyroid tissue.*
  - **Branchial cleft cyst: Lateral neck mass**, usually anterior border of sternocleidomastoid muscle. Most common is second arch cyst.
  - **Dermoid cyst:** Usually **midline**, firm/hard, non-tender, mobile side-to-side but not up/down. Contains ectodermal elements.
  - Lymphatic malformation (Cystic hygroma).
- **Malignant Neck Masses:**
  - **Secondary (Metastatic) are most common overall (90%).** Primary source often above clavicle (Nasopharynx, tonsil, base of tongue, larynx).
  - **Primary Malignant:** Lymphoma is most common primary neck malignancy, followed by Squamous Cell Carcinoma (SCC).
- Location Clues:
  - **Midline:** Thyroglossal duct cyst, Dermoid cyst, Thyroid pathology, Submental lymph node.
  - **Lateral:** Branchial cleft cyst, Lymph nodes (inflammatory/malignant), Salivary gland tumors, Carotid body tumor, etc.

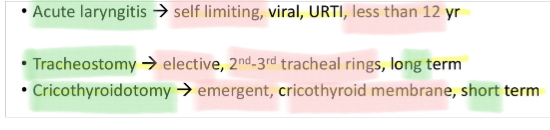
Stridor & Airway Obstruction

- **Stridor:** High-pitched noise due to turbulent airflow through a narrowed airway.
  - Inspiratory: Supraglottic obstruction.
  - Expiratory: Intrathoracic/tracheal obstruction.
  - Biphasic: Glottic or Subglottic obstruction.



- **Congenital Stridor Causes:**
  1. **Most common cause in infants: Laryngomalacia.**
     - Due to delayed cartilage development → soft, floppy supraglottic structures (omega-shaped epiglottis, short aryepiglottic folds).
     - **Inspiratory stridor**, worse when supine/crying, relieved by prone position/head extension.
     - Usually benign, self-limiting (improves by 1 year). Observation for mild/moderate cases. Severe cases may need supraglottoplasty or tracheostomy.
  2. **Vocal cord paralysis:** Can be unilateral (weak cry, hoarseness, biphasic stridor) or bilateral (aphonia, severe stridor, respiratory distress - may need tracheostomy). Can be congenital (birth trauma, Arnold-Chiari) or acquired.
  3. **Laryngeal web:** Incomplete recanalization of larynx. Usually glottic. Causes biphasic stridor and weak cry.
  4. Subglottic stenosis: Narrowing below vocal cords. Causes biphasic stridor.
     - Tracheomalacia.

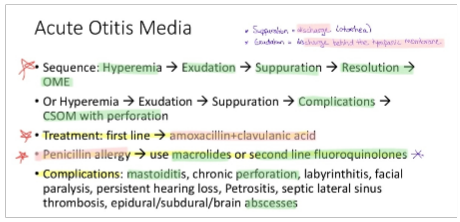
- **Acquired Stridor Causes:**
  - **Croup (Laryngotracheobronchitis):** Viral (Parainfluenza common), affects subglottic area. **Barking cough**, inspiratory stridor, low-grade fever. Steeple sign on X-ray.
  - **Epiglottitis:** Bacterial (*H. influenzae* type B historically, now others too). **Medical emergency.** High fever, dysphagia, drooling, muffled voice, "tripod" position. Thumb sign on X-ray. (Note: This is ACQUIRED, not congenital).
  - Foreign body aspiration.
  - Laryngoedema, tumors, trauma.



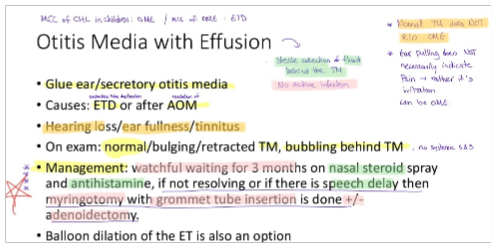
Epistaxis

- **Anterior Epistaxis:**
  - **Most common site: Kiesselbach's plexus (Little's area)** on the anteroinferior septum (90% of cases).
  - Common in children/young adults.
  - Usually caused by trauma (nose picking), inflammation, dryness.
  - Vessels involved: **Anterior Ethmoidal, Sphenopalatine, Greater Palatine, Superior Labial arteries.** (Acronym: LEGS).
  - Management: Direct pressure, topical vasoconstrictors, cautery (silver nitrate/electrical), anterior packing.
- **Posterior Epistaxis:**
  - Less common (10%), more severe.
  - Common site: **Woodruff's plexus** (posterolateral wall). Primarily involves branches of the **Sphenopalatine artery**.
  - More common in elderly, often associated with hypertension or atherosclerosis.
  - Management: Requires posterior packing (e.g., Foley catheter, balloon packs), possible hospitalization, potential surgical ligation or embolization.

Otitis Media & Complications (Including CSOM & OME)



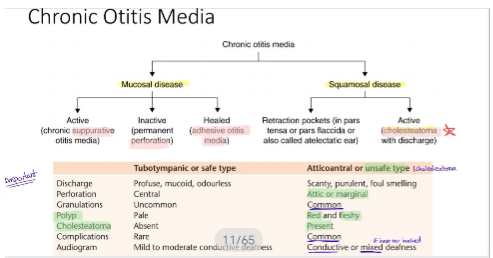
- **Acute Otitis Media (AOM):**
  - Infection of the middle ear.
  - **Most common bacterial pathogens:** ***S. pneumoniae*****,** ***H. influenzae*****,** ***M. catarrhalis*****.**
  - Risk factors: Eustachian tube dysfunction (most common factor in children), young age, daycare, smoke exposure, bottle feeding, cleft palate.
- **Otitis Media with Effusion (OME / Serous OM / Glue Ear):**

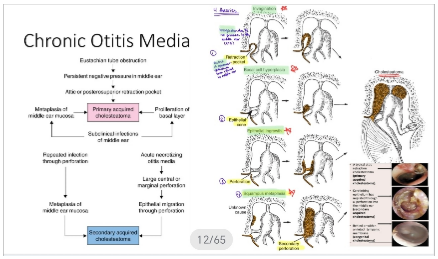


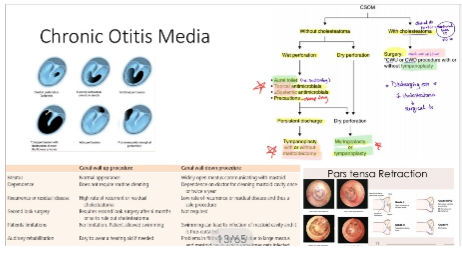
  - Fluid in the middle ear without acute inflammation.
  - **Most common cause of hearing loss in children.** Peak age 2-5 years.
  - Can follow AOM or result from chronic Eustachian tube dysfunction.
  - **Most common cause in children: Adenoid hypertrophy.**
  - **Unilateral OME in an adult raises suspicion for Nasopharyngeal Carcinoma.**
  - Complications: Hearing loss, speech delay, recurrent AOM, TM retraction, cholesteatoma (rare).
- **Chronic Suppurative Otitis Media (CSOM):**
  - Persistent TM perforation with chronic middle ear inflammation and discharge (otorrhea) > 2 weeks (or 6 weeks).
  - **Most common persistent symptom: Painless otorrhea.**
  - Types:
    - **Tubotympanic (Safe):** Central perforation, mucoid discharge (often profuse), no cholesteatoma, rare complications.
    - **Atticoantral (Unsafe):** Marginal or attic perforation, **purulent, foul-smelling discharge (often scanty)**, **cholesteatoma often present**, granulation/polyps common, **high risk of complications**.
- **Otitis Media Complications:**
  - Intratemporal: Mastoiditis, Petrositis (Gradenigo syndrome: Otorrhea, retro-orbital pain, CN VI palsy), Facial paralysis, Labyrinthitis.
  - **Intracranial: Meningitis (most common IC complication)**, Brain abscess (temporal lobe/cerebellum), Epidural/Subdural abscess, Lateral sinus thrombosis.

Ear Anatomy & Physiology (Including Cranial Nerves & Referred Otalgia)

- **External Ear Canal Innervation & Reflexes:**



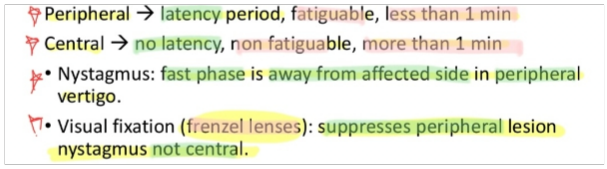




- **Vagus Nerve (CN X - Arnold's Branch):** Innervates posterior/inferior canal wall. Stimulation can cause **cough reflex (Arnold's reflex)**.
- Trigeminal Nerve (CN V3 - Auriculotemporal Branch): Innervates anterior/superior canal wall.
- Facial Nerve (CN VII): Minor contribution.
- Glossopharyngeal Nerve (CN IX): Minor contribution.

- **Referred Otalgia (Ear pain originating elsewhere):**
  - Common pathways involve shared cranial nerve innervation:
    - **CN V (Trigeminal):** Dental issues, TMJ disorders, oral cavity lesions.
    - **CN IX (Glossopharyngeal):** Pharynx, tonsils, base of tongue pathology.
    - **CN X (Vagus):** Larynx, hypopharynx, esophagus pathology.
    - **Cervical Nerves (C2, C3):** Neck pathology (spinal/muscular).
  - *Hypoglossal nerve (CN XII) is NOT typically associated with referred otalgia.*
- **Eustachian Tube:** Connects middle ear to nasopharynx. Functions: Pressure equalization, drainage, protection. Dysfunction is key in OM pathogenesis.

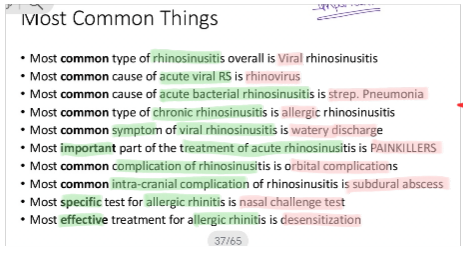
Vertigo & Balance Disorders



- **Vertigo:** Illusion of movement (self or surroundings).
- **Causes:**
  - **Peripheral (Inner ear/Vestibular nerve):**
    - **Benign Paroxysmal Positional Vertigo (BPPV): Most common cause overall.** Short episodes triggered by head movements. Diagnosed with Dix-Hallpike maneuver. Treated with repositioning maneuvers (e.g., Epley).
    - **Meniere's Disease:** Triad of **episodic vertigo, fluctuating SNHL, and tinnitus**. Often preceded by aural fullness. Due to endolymphatic hydrops.
    - **Vestibular Neuritis:** Acute onset vertigo, nausea/vomiting, *without* hearing loss. Often follows viral illness. Labyrinthitis includes hearing loss.
    - Ototoxicity, trauma.
  - **Central (Brainstem/Cerebellum):** Stroke, Multiple Sclerosis, Tumors. Less common. Central nystagmus characteristics differ (non-fatiguing, vertical, direction-changing).
- **Epidemiology:** Vertigo is more common in the **elderly (>60 years).**
- **Nystagmus:**
  - Peripheral: Usually horizontal/rotatory, fatigable, suppressed by visual fixation.
  - Central: Can be vertical, non-fatigable, not suppressed by fixation.

Nasal Conditions (Polyps, Furunculosis, Foreign Body, Septal Hematoma)

- **Nasal Polyps:** Benign growths from nasal/sinus mucosa.
  - **Ethmoidal Polyps: Most common type.** Usually **bilateral, multiple**, arise from ethmoid sinuses. Associated with allergy, asthma, aspirin sensitivity (Samter's triad), cystic fibrosis. Treatment: Medical (steroids), surgical (FESS). High recurrence.
  - **Antrochoanal Polyp (ACP):** Less common. Arises from **maxillary sinus**, grows into choana/nasopharynx. Usually **unilateral, single**. More common in adolescents/young adults. Often associated with infection. Treatment: **Surgical excision.** Low recurrence. **Benign.**
- **Nasal Furunculosis:** Infection of a hair follicle in the nasal vestibule (lateral 1/3).
  - Usually Staphylococcus aureus.
  - Features: **Severe localized pain**, redness, swelling.
  - Treatment: **Systemic anti-staphylococcal antibiotics** (e.g., oral). Analgesics. Incision & drainage only if localized abscess forms.



- *Danger area: Risk of spread via valveless facial veins to cavernous sinus (Cavernous Sinus Thrombosis).*

- **Nasal Foreign Body:**
  - Common in children.
  - Classic presentation: **Unilateral, foul-smelling nasal discharge.** May have epistaxis or obstruction.
  - Must be assumed in a child with these symptoms until proven otherwise. Removal required.

- **Septal Hematoma:**
  - Collection of blood between septal cartilage and perichondrium.
  - Usually result of **nasal trauma.**
  - Appearance: Bilateral (or unilateral) reddish/bluish, boggy swelling of septum.
  - **Requires urgent incision and drainage** followed by packing/sutures to prevent cartilage necrosis (saddle nose deformity) or septal abscess.

Otitis Externa (Including Otomycosis & Malignant OE)

- **Acute Diffuse Otitis Externa ("Swimmer's Ear"):**
  - Generalized inflammation of the external auditory canal (EAC) skin.
  - **Most common bacterial cause: *Pseudomonas aeruginosa*.** *Staphylococcus aureus* also common.
  - Risk factors: Water exposure, trauma (cotton buds), hearing aids, dermatologic conditions.
  - Symptoms: Ear pain (otalgia - often severe, worse on tragal pressure/pinna pull), itching, discharge, hearing loss (due to swelling/debris).
  - Treatment: Thorough **aural toilet (cleaning)**, topical antibiotic +/- steroid drops (e.g., ciprofloxacin/dexamethasone), keep ear dry.

- **Otomycosis (Fungal Otitis Externa):**
  - Fungal infection of EAC skin.
  - Common organisms: ***Aspergillus*** (black/grey/yellowish dots/fluff), ***Candida*** (white, creamy patches).
  - Symptoms: **Intense itching (pruritus)** > pain, discharge, blockage feeling.
  - Treatment: **Thorough aural toilet**, **topical antifungal drops** (e.g., clotrimazole) for several weeks, keep ear dry. Acidifying drops may help.

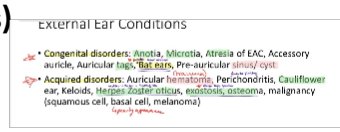
- **Malignant (Necrotizing) Otitis Externa:**
  - Aggressive, potentially lethal **osteomyelitis of the skull base**, typically starting in EAC. **NOT a malignancy.**
  - **Almost always caused by *Pseudomonas aeruginosa*.**
  - Risk factors: **Elderly, Diabetes Mellitus (uncontrolled), Immunocompromised state.**
  - Symptoms: **Severe, deep-seated, unrelenting otalgia** (out of proportion to exam), persistent purulent otorrhea, headache.
  - Signs: **Granulation tissue** at the bony-cartilaginous junction of the EAC floor is characteristic. Cranial nerve palsies (especially CN VII) indicate advanced disease and poor prognosis.
  - Diagnosis: Clinical suspicion, CT/MRI (bone erosion), Technetium/Gallium scans (inflammation/follow-up).
  - Treatment: Long-term (weeks-months) systemic anti-pseudomonal antibiotics (often IV initially), strict glycemic control, local debridement.

Laryngeal Conditions (Including Vocal Cord Paralysis & Cancer)

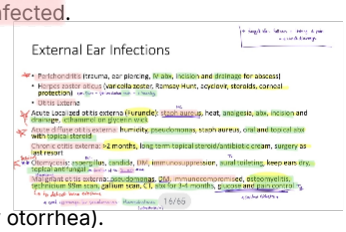
- **Vocal Cord Paralysis:**
  - Due to damage to Recurrent Laryngeal Nerve (RLN) or Vagus nerve.
  - Causes: **Malignancy (lung, thyroid, esophageal, laryngeal)**, **Thyroid surgery (most common iatrogenic cause)**, trauma, neurological disease, viral infection, idiopathic.
  - Unilateral: Hoarseness, breathy voice, weak cough, possible aspiration.
  - Bilateral: Can cause airway obstruction (especially bilateral abductor paralysis). May require tracheostomy.

- **Laryngeal Cancer:**
  - Most common type: **Squamous Cell Carcinoma (SCC).**
  - Risk factors: **Tobacco (primary risk factor)**, Alcohol (synergistic with tobacco), industrial exposure, radiation.
  - Location:
    - **Glottic (Vocal cords): Most common site (60%).** Presents **early** with **Hoarseness.** Good prognosis due to limited lymphatics. T2 involves both cords or extends slightly.
    - Supraglottic: Presents later with dysphagia, odynophagia, referred otalgia, muffled voice, neck mass (early LN mets).
    - Subglottic: Rare (1%). Presents late with stridor/airway obstruction.
- **Laryngeal Trauma:**
  - Can involve cartilage fracture, hematoma, mucosal tears.
  - **Priority is to secure the airway.**
  - Cartilage framework *can* fracture.

Ear Drum Conditions (Perforation, Bullous Myringitis, Tympanosclerosis)



- **Tympanic Membrane (TM) Perforation:**
  - Causes: Infection (AOM/CSOM), **Trauma (direct blow, penetrating injury, barotrauma)**.
  - Symptoms: Pain (often sudden onset with trauma), hearing loss (conductive), bleeding, tinnitus, vertigo (if ossicles involved).
  - **Dry traumatic perforations often heal spontaneously.** Management: **Keep ear dry.** Antibiotics if infected. Myringoplasty if non-healing.



- **Bullous Myringitis:**
  - Inflammation of the TM with formation of vesicles (bullae).
  - **Usually caused by viruses.** Sometimes associated with *Mycoplasma pneumoniae*.
  - Symptoms: **Sudden onset of severe ear pain.** Hearing usually normal unless blebs rupture (bloody otorrhea).
  - Treatment: Analgesics. Topical antibiotics may prevent secondary infection. Incision of blebs usually unnecessary. Self-limiting.
- **Tympanosclerosis:**
  - Scarring (hyalinization, calcification) on the TM +/- middle ear structures. Appears as white patches/plaques.
  - Usually caused by previous infection or ventilation tube insertion.
  - Often asymptomatic and does not cause significant hearing loss unless ossicles are fixed.

Cholesteatoma

- Accumulation of keratinizing squamous epithelium in the middle ear or mastoid. **Benign but locally destructive.**
- Types: Congenital (rare), Acquired (Primary - retraction pocket; Secondary - through TM perforation).
- Associated with **atticoantral (unsafe) CSOM** and marginal/attic perforations.
- Appearance: White/pearly mass behind TM, often associated with foul-smelling discharge and conductive hearing loss.
- **Can erode bone**, leading to complications (ossicular erosion, facial paralysis, labyrinthine fistula, intracranial complications).
- Diagnosis: Otoscopy suggestive. **CT scan essential** to assess extent and bony erosion.
- Treatment: **Surgical excision** (Mastoidectomy).

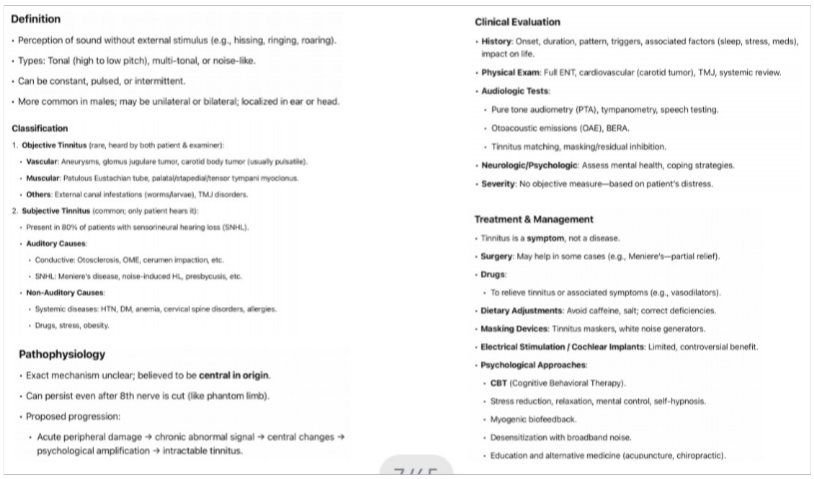
Croup (Laryngotracheobronchitis)

- **Viral infection** (Parainfluenza most common) causing inflammation of larynx, trachea, bronchi.
- Affects mainly children 6 months - 2 years.

- Symptoms: **Inspiratory stridor, Barking cough, Hoarseness,** low-grade fever. Symptoms often worse at night.
- Diagnosis: Clinical. Lateral neck X-ray may show **"Steeple sign"** (subglottic narrowing).
- Treatment: Supportive (cool mist, fluids), **Corticosteroids** (oral/IM/nebulized), **Nebulized epinephrine** for moderate/severe stridor. **Antibiotics generally NOT indicated.**

Tinnitus

- Perception of sound in the absence of external acoustic stimulus.
- Types:
  - **Subjective:** Most common. Only heard by the patient. Causes numerous (hearing loss - presbycusis/noise, Meniere's, ototoxicity, trauma, TMJ, etc.).
  - **Objective:** Rare (<1%). Heard by both patient and examiner. Causes: **Vascular** (AVMs, glomus tumors, aneurysms), **Muscular** (palatal myoclonus, middle ear muscle spasms).
- Management: Treat underlying cause if identifiable, reassurance, masking devices, hearing aids (if HL present), tinnitus retraining therapy.



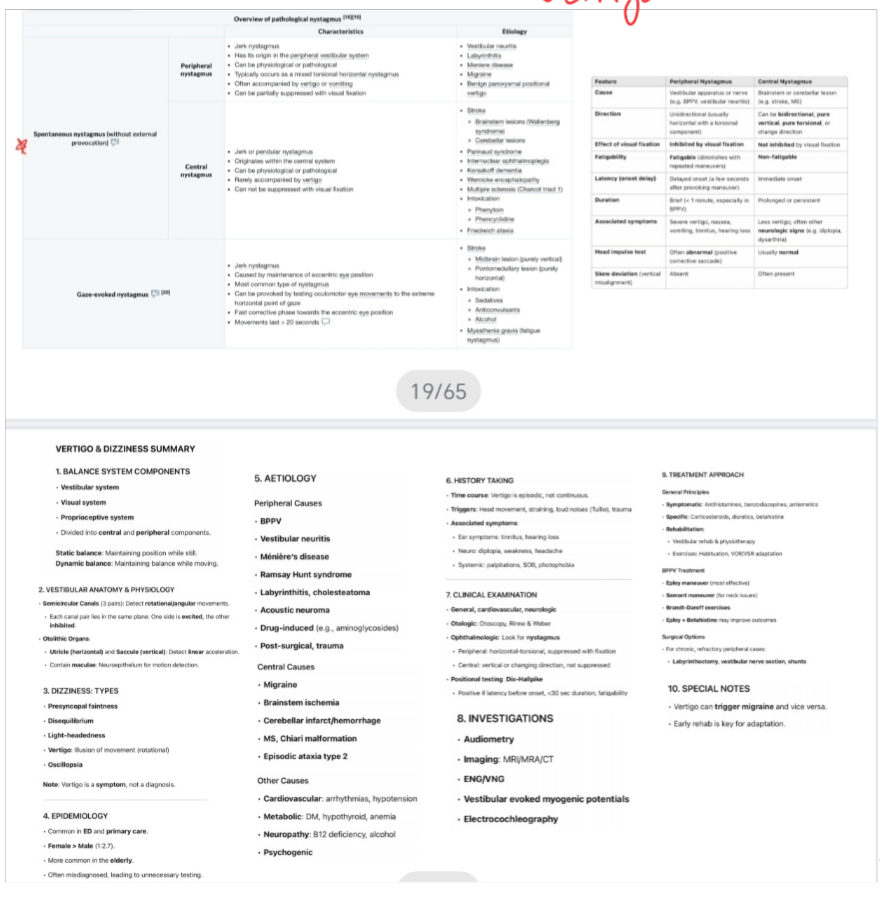
Definition
- Perception of sound without external stimulus (e.g., hissing, ringing, roaring).
- Types: Tonal (high to low pitch), multi-tonal, or noise-like.
- Can be constant, pulsed, or intermittent.
- More common in males; may be unilateral or bilateral; localized in ear or head.

Classification
1. **Objective Tinnitus** (rare, heard by both patient & examiner):
   - **Vascular**: Aneurysms, glomus jugulare tumor, carotid body tumor (usually pulsatile).
   - **Muscular**: Patulous Eustachian tube, palatal/stapedial/tensor tympani myoclonus.
   - **Others**: External canal infestations (worms/larvae), TMJ disorders.
2. **Subjective Tinnitus** (common; only patient hears it):
   - Present in 80% of patients with sensorineural hearing loss (SNHL).
   - **Auditory Causes**:
     - Conductive: Otosclerosis, OME, cerumen impaction, etc.
     - SNHL: Meniere's disease, noise-induced HL, presbycusis, etc.
   - **Non-Auditory Causes**:
     - Systemic diseases: HTN, DM, anemia, cervical spine disorders, allergies.
     - Drugs, stress, obesity.

Pathophysiology
- Exact mechanism unclear; believed to be **central in origin**.
- Can persist even after 8th nerve is cut (like phantom limb).
- Proposed progression:
  - Acute peripheral damage → chronic abnormal signal → central changes → psychological amplification → intractable tinnitus.

Clinical Evaluation
- **History**: Onset, duration, pattern, triggers, associated factors (sleep, stress, meds), impact on life.
- **Physical Exam**: Full ENT, cardiovascular (carotid tumor), TMJ, systemic review.
- **Audiologic Tests**:
  - Pure tone audiometry (PTA), tympanometry, speech testing.
  - Otoacoustic emissions (OAE), BERA.
  - Tinnitus matching, masking/residual inhibition.
- **Neurologic/Psychologic**: Assess mental health, coping strategies.
- **Severity**: No objective measure—based on patient's distress.

Treatment & Management
- Tinnitus is a **symptom**, not a disease.
- **Surgery**: May help in some cases (e.g., Meniere's—partial relief).
- **Drugs**:
  - To relieve tinnitus or associated symptoms (e.g., vasodilators).
- **Dietary Adjustments**: Avoid caffeine, salt; correct deficiencies.
- **Masking Devices**: Tinnitus maskers, white noise generators.
- **Electrical Stimulation / Cochlear Implants**: Limited, controversial benefit.
- **Psychological Approaches**:
  - **CBT** (Cognitive Behavioral Therapy).
  - Stress reduction, relaxation, mental control, self-hypnosis.
  - Myogenic biofeedback.
  - Desensitization with broadband noise.
  - Education and alternative medicine (acupuncture, chiropractic).



Overview of pathological nystagmus

	Characteristics	Etiology
Peripheral nystagmus	• Jerk nystagmus • Has its origin in the peripheral vestibular system • Can be physiological or pathological • Typically occurs as a mixed torsional horizontal nystagmus • Often accompanied by vertigo or vomiting • Can be partially suppressed with visual fixation	• Vestibular neuritis • Labyrinthitis • Meniere disease • Migraine • Benign paroxysmal positional vertigo

Spontaneous nystagmus (without external provocation) — Central nystagmus	• Jerk or pendular nystagmus
	• Originates within the central system
	• Can be physiological or pathological
	• Rarely accompanied by vertigo
	• Can not be suppressed with visual fixation
		• Stroke
		  ◦ Brainstem lesions (Wallenberg syndrome)
		  ◦ Cerebellar lesions
		• Parinaud syndrome
		• Internuclear ophthalmoplegia
		• Korsakoff dementia
		• Wernicke encephalopathy
		• Multiple sclerosis (Charcot triad 1)
		• Intoxication
		  ◦ Phenytoin
		  ◦ Phencyclidine
		• Friedreich ataxia

Gaze-evoked nystagmus	• Jerk nystagmus
	• Caused by maintenance of eccentric eye position
	• Most common type of nystagmus
	• Can be provoked by testing oculomotor eye movements to the extreme horizontal point of gaze
	• Fast corrective phase towards the eccentric eye position
	• Movements last > 20 seconds
		• Stroke
		  ◦ Midbrain lesion (purely vertical)
		  ◦ Pontomedullary lesion (purely horizontal)
		• Intoxication
		  ◦ Sedatives
		  ◦ Anticonvulsants
		  ◦ Alcohol
		• Myasthenia gravis (fatigue nystagmus)

Feature	Peripheral Nystagmus	Central Nystagmus
Cause	Vestibular apparatus or nerve (e.g. BPPV, vestibular neuritis)	Brainstem or cerebellar lesion (e.g. stroke, MS)
Direction	Unidirectional (usually horizontal with a torsional component)	Can be **bidirectional, pure vertical, pure torsional**, or change direction
Effect of visual fixation	**Inhibited by visual fixation**	**Not inhibited** by visual fixation
Fatigability	**Fatigable** (diminishes with repeated maneuvers)	**Non-fatigable**
Latency (onset delay)	Delayed onset (a few seconds after provoking maneuver)	Immediate onset
Duration	Brief (< 1 minute, especially in BPPV)	Prolonged or persistent
Associated symptoms	Severe vertigo, nausea, vomiting, tinnitus, hearing loss	Less vertigo; often other **neurologic signs** (e.g. diplopia, dysarthria)
Head impulse test	Often **abnormal** (positive corrective saccade)	Usually **normal**
Skew deviation (vertical misalignment)	Absent	Often present

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VERTIGO & DIZZINESS SUMMARY

1. BALANCE SYSTEM COMPONENTS
- **Vestibular system**
- **Visual system**
- **Proprioceptive system**
- Divided into **central** and **peripheral** components.

Static balance: Maintaining position while still.
Dynamic balance: Maintaining balance while moving.

2. VESTIBULAR ANATOMY & PHYSIOLOGY
- **Semicircular Canals** (3 pairs): Detect **rotational/angular** movements.
  - Each canal pair lies in the same plane: One side is **excited**, the other **inhibited**.
- **Otolithic Organs**:
  - **Utricle (horizontal)** and **Saccule (vertical)**: Detect **linear** acceleration.
  - Contain **macular**: Neuroepithelium for motion detection.

3. DIZZINESS: TYPES
- **Presyncopal faintness**
- **Disequilibrium**
- **Light-headedness**
- **Vertigo**: Illusion of movement (rotational)
- **Oscillopsia**

Note: Vertigo is a **symptom**, not a diagnosis.

4. EPIDEMIOLOGY
- Common in **ED** and **primary care**.
- **Female > Male** (1:2.7).
- More common in the **elderly**.
- Often misdiagnosed, leading to unnecessary testing.

5. AETIOLOGY

Peripheral Causes
- **BPPV**
- **Vestibular neuritis**
- **Ménière's disease**
- **Ramsay Hunt syndrome**
- **Labyrinthitis, cholesteatoma**
- **Acoustic neuroma**
- **Drug-induced** (e.g., aminoglycosides)
- **Post-surgical, trauma**

Central Causes
- **Migraine**
- **Brainstem ischemia**
- **Cerebellar infarct/hemorrhage**
- **MS, Chiari malformation**
- **Episodic ataxia type 2**

Other Causes
- **Cardiovascular**: arrhythmias, hypotension
- **Metabolic**: DM, hypothyroid, anemia
- **Neuropathy**: B12 deficiency, alcohol
- **Psychogenic**

6. HISTORY TAKING
- **Time course**: Vertigo is episodic, not continuous.
- **Triggers**: Head movement, straining, loud noises (Tullio), trauma
- **Associated symptoms**:
  - Ear symptoms: tinnitus, hearing loss
  - Neuro: diplopia, weakness, headache
  - Systemic: palpitations, SOB, photophobia

7. CLINICAL EXAMINATION
- **General, cardiovascular, neurologic**
- **Otologic**: Otoscopy, Rinne & Weber
- **Ophthalmologic**: Look for **nystagmus**
  - Peripheral: horizontal-torsional, suppressed with fixation
  - Central: vertical or changing direction, not suppressed
- **Positional testing**: **Dix-Hallpike**
  - Positive if latency before onset, <30 sec duration, fatigability

8. INVESTIGATIONS
- **Audiometry**
- **Imaging**: MRI/MRA/CT
- **ENG/VNG**
- **Vestibular evoked myogenic potentials**
- **Electrocochleography**

9. TREATMENT APPROACH

General Principles
- **Symptomatic**: Antihistamines, benzodiazepines, antiemetics
- **Specific**: Corticosteroids, diuretics, betahistine
- **Rehabilitation**:
  - Vestibular rehab & physiotherapy
  - Exercises: Habituation, VOR/VSR adaptation

BPPV Treatment
- **Epley maneuver** (most effective)
- **Semont maneuver** (for neck issues)
- **Brandt-Daroff exercises**
- **Epley + Betahistine** may improve outcomes

Surgical Options
- For chronic, refractory peripheral cases:
  - **Labyrinthectomy, vestibular nerve section, shunts**

10. SPECIAL NOTES
- Vertigo can **trigger migraine** and vice versa.
- Early rehab is key for adaptation.