

بِسْمِ اللّٰهِ الرَّحْمٰنِ الرَّحِیْمِ  
Rhinosinusitis.

\* Drainages-

- Frontal & Ant. ethmoid & maxillary → middle meatus.
- Post. ethmoid → Superior meatus.
- Sphenoid sinus. → Superior meatus.

\* Atopy (all inhalant allergies) → IgE mediated → Type I Cell & Coombs reaction.

Allergic rhinitis

↳ inflammation of mucosal lining of the nose caused by inappropriate hypersensitivity reaction to an aeroallergen

- IgE mediated. type I.

⊗ Mechanism:-

- Immediate → Allergen binds 2 molecules of IgE
- Intracellular degranulation & release of products.

\* in acute :-

- ↳ histamine
- ↳ wheezing, urticaria, sneezing, rhinorrhea, conjunctivitis.

\* in Chronic:

- ↳ Leukotrien
- ↳ further wheezing, sustained blockade of nose, Eczema
- ↳ edema & hypertrophy of nasal mucosa

\* Ant. rhinoscopic view → shows Ant. 2/3 of nose.

\* Direct → fiberoptic or rigid.



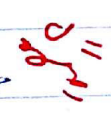
بِسْمِ اللّٰهِ الرَّحْمٰنِ الرَّحِیْمِ  
(hay fever) Allergic rhinitis:-

- Symptoms:
- 1- Sensitive to specific allergens (dust)
  - 2- Pruritus of nose, eyes, Palates, ears.
  - 3- sneezing > 2 times
  - 4- Watery rhinorrhea
  - 5- Watery eyes
  - 6- Nasal Congestion.

- ⊕ 7- coexisting asthma or eczema (~~hay fever~~) (atopy)
- 8- Post-nasal drip
  - 9- Diminished quality of life
  - 10- General Fatigue.
  - 11- Seasonal symptoms.
  - 12- Cough / sneezing

⊕ PMHx + PSHx + FHx ...

→ PEx:-

- ↳ Nasal exam with rhinoscopy: 
- ① (hypertrophied & edematous lower turbinate) hallmark
  - Polyps.
  - ② - Pale mucosa.
  - ③ - Watery secretion. = whealing of skin  
- Coats sign? wheel & flare response

→ Investigation & when? → if not responding to TT after ~~test~~ Dx

1. Blood test → IgE + eosinophilia. ←
  2. Nasal biopsy → to exclude ~~&~~ tumor. → surface not smooth
  3. Skin test → to know which allergen } Psure of Dx Allergic rhinitis.
  4. RAST → radio-allergosorbent test
- ↳ do desensitization to that specific allergen
- \* Multi test → to specific Allergen.



- Rx: 1 - avoidance of allergen  
 2 - Normal saline douching → only clean + prevent stasis

(E)

3 - Topical

↳ Vasoconstrictor nasal drops (oxymetazoline) &

Used to reduce swelling & congestion of nasal mucosa only in acute.

- For ≤ 2 weeks, short duration bcz it may cure another entity

↳ steroid Nasal Spray (Beclomethasone)

↳ mast cell stabilizer (Sodium Cromoglycate)

- prophylactic

\*main Rx → nasal steroid + non-sedating antihistaminic

4 - Oral

↳ Anti-histaminic (H1 blocker) → sedating / non-sedating

↳ Systemic steroid (if severe allergy)

5 - Surgical → For nasal obstruction only

↳ Septoplasty :- if he has deviation of septum

↳ turbinate reduction :- if severe hypertrophy not responding to Rx - submucosal Diathermy

6 - Immunotherapy :- Desensitization.

1 - 3 years.

- sub-Q

- sub-Lingual



(3)

## Vasomotor rhinitis (non-allergic rhinitis)

↳ excessive Parasympathetic activity.

↳ Symptoms: - Profuse rhinorrhea - Nasal obstruction

↳ DDx to Allergic rhinitis.

↳ boggy & erythematous mucosa.

→ you can differ by ex:-

- shape of turbinate not smooth like allergic

- Not Pale but erythematous.

→ Dx by exclusion, symptoms & -ve allergy test.

→ Do IgE & eosinophilia → if normal →

Rx:-

1. Anticholinergic medication, Locally → Ipratropium bromide, Atrovent

2. exercise → decrease Parasympathetic.

3. Antihistamin → Piriton

## Rhinitis medicamentosa

↳ bc of Long use vasoconstrictor.

→ if stopped he will → have nasal obstruction & rhinorrhea

∴ This is why vasoconstrictor should used for 2 weeks.

→ it will cur:- - reduced Production of presynaptic NE/epinephrine.

- ↓ sensitivity to  $\alpha$ -receptors.



تيسر الله امرنا

Sinusitis:-

Acute sinusitis

- Symptoms:-
  - 1- Nasal obstruction
  - 2- Purulent rhinorrhea.
  - 3- Pain depend on:-
    - Ant-ethmoidal → Periorbital throbbing
    - Post-ethmoid → Bitemporal
    - Frontal → Frontal headach
    - sphenoid → Occipital headach
    - maxillary → Cheeks.
  - 4- Preceding URTI or dental infection
    - ∴ Viral

- Signs:- Fever + Local tenderness + mucopus in nose or nasopharynx + Dental Caries
- X-ray with opacity or air Fluid Level
- ⊕ CT is better.

- microbiology :-
  - 1- Strept. Pneumonia.
  - 2- Haemophilus influenza
  - 3- Moraxella Catarrhalis.

in children more.

→ same like acute otitis media.

\* if there is no rhinoritis → complete obstruction?

\* Pansinusitis → all sinuses



(6)

## Rx of Acute Sinusitis:-

1- Antibiotics x 2-3 weeks. x depend on type  
of Antibiotic

with ↗

amoxicillin + Augmentin + ...

2- Vaso-Constrictor → nose drops. - aid drainage.

↳ ↑ of secretions 2 weeks

3- Antral washout. For resistance cases: (For maxillary only)

- Dx + Rx :-

## 4. FESS

Functional Endoscopic Sinus Surgery







9

→ FESS complications:-

Local :- - Bleeding - Adhesion - Mucocele.  
- stenosis - Recurrence

Orbital:- - orbital hematoma - Diplopia - Blindness

Intracranial:- - CSF leak - Meningitis

→ Complication of Sinusitis:-

5% Local:- - mucocele - Osteomyelitis - Pott's tumor

75% CT Orbit:- - cellulitis - abscess - Cavernous sinus thrombosis

20% MRI Intracranial:- - Epidural/subdural/Intracerebral abscess

Fungal Sinusitis:-

→ CT for ~~it~~ it.

→ DDX is malignancy.

→ Usually invasive & destroy bone

Rx:- 1- Surgical debridment.

2- Local steroid spray → Allergic f. S.

3- Anti-Fungal → Amphotericin B.

↳ invasive ~~see~~

• High recurrence.

• oral steroid → Surgical debridment → Local steroid



# Sinusitis:- (Chronic) / (Acute Recurrent)

## Predisposing Factors:-

- 1- recurrent URTI
- 2- immotile cilia
- 3- immunodeficiency
- 4- Adenoids.
- 5- CF.
- 6- Anatomic deformity.
- 7- Allergy.
- 8- GERD.

4-Sinuses:- Frontal, Maxillary, Ethmoid, Sphenoid.

## Nasal Polyps. → From ethmoidal

→ 40% of them associated with intrinsic Asthma (Atopy)

\* Samter's triad:-

- 1- Nasal Polyp
- 2- Aspirin allergy
- 3- asthma

→ edematous semitranslucent masses in the nasal or Para nasal cavities

→ transparent & high recurrence rate. \* Antrochoanal Polyp → maxillary

Rx:-

recurrence rare ← surgical → depend on allergy

1- Local steroids & up to 2 courses of oral steroids during one year. (tapering dose) → Predisinide. 90%

2- if failed or CA → Surgical

↳ depend on Facility:-

- I FESS
- II nasal Polypectomy } it will recur
- III nasal snair.
- IV



بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ  
Tonsils & Adenoid.

- most common surgery in children → adenotonsillectomies.

\* Adenoid: → Pharyngeal tonsil

- 3rd month of fetal life & completed at 7 months

-  $\begin{matrix} \text{§} \\ \text{§} \end{matrix}$  start to regress at age of 12y

- located Post. sup. Nasopharynx (base) & Apex to Post end of nasal cavity

- No True crypts, No capsule → removed with curettage

- Lymphatic tissue. → behind Uvula → single

\* Tonsils.

(x) Read Blood supply 100

- Paired, sit on tonsillar sinus

- limited Ant → Palatopharyngeal arch (Ant Pillar)

Post → Palatopharyngeal arch (Post Pillar)

Lat → Superior Pharyngeal constrictor

- enclosed by capsule.

\* Secondary immune response → No afferent lymphatic

\* Exposed to ingested or expired Antigens

microbiology → ① Group A  $\beta$ -hemolytic streptococcus → ②  $\beta$ -hemolysin Producing  
increases risk of → Rheumatic fever & glomerulonephritis



## Acute adenoiditis:

- Symptoms:-
1. Purulent rhinorrhea.
  2. Nasal obstruction.
  3. Fever.
  4. Associated with OM.

⊗ similar to acute rhinosinusitis.

## → recurrent acute adenoiditis:

- 4 acute adenoiditis ~~per~~ 6 months.
- nasal endoscopy to Dx from rhinosinusitis

## Chronic adenoiditis.

- Symptoms:
1. Persistent rhinorrhea.
  2. Postnasal drip.
  3. Malodorous breath.
  4. Associated Otitis Media. > 3 months.

⊗ Think of GERD → Predisposing factor to most ENT disease

## \* Corynebacterium diphtheriae.

G-bacillus - Produce exotoxin → may travel to heart & NS.

- rare bcz vaccine

- Symptoms →
1. Systemic (Fatigued, lethargy, Tachycardia, toxic) <sup>exotoxin</sup>
  2. Pharynx (grayish membrane → Fibrin + leukocytes + debris.
  3. Extensive cervical lymphadenopathy (Bull's neck)

Dx: - if not suspect not Dx:

1. Isolation of organism (culture, grow on Potassium tellurite)

Rx →



تسمم اللوزتين الحاد  
Tonsillitis.

Acute tonsillitis-

- Symptoms:
- 1- Fever ✓
  - 2- Sore throat ✓
  - 3- tender Cervical Lymphadenopathy
  - 4- Dysphagia ✓
  - 5- Erythematous tonsils with/ont exudates.

\* Clinical evaluations:-

- triad → <sup>①</sup> Odenophagia + <sup>②</sup> Fever > 38.5 + <sup>③</sup> tender Cervical Lymphadenopathy > 2cm
- Supporting 2 or more:-
  - + <sup>④</sup> tonsillar exudates
  - + <sup>⑤</sup> Positive throat culture

- \* Viral → lower grade fever + ↓ exudate + ↓ WBC, Lymphocytic shift
- Bacterial → More exudates + ↑ WBC + Granulocytic shift

\* Follicular tonsillitis → exudate filling the crypt

- \* DDX :-
- 1- EBV :- Mononucleosis (commonest)
  - 2- Scarlet fever
  - 3- e. diphtheria.
  - 4- Malignancy.

Rx → Penicillin G

⊗ recurrent acute tonsillitis:

- ↳ indication for surgery.
- 7 episodes in one year.
  - 5/year ,, in 2 years
  - 3/year ,, 3 years.

⊗ if the complaint of rhinorrhoea & cough → either adenoiditis or Acute sinusitis



→ Staph<sup>aureus</sup> + Anaerobes + Moraxella Catarrhalis

⊗ Chronic tonsillitis: > 3 months

- Chronic Sore throat.
- Malodorous breath
- tonsillitis (Food in the crypt)
- Peritonsillar erythema. (not tonsils)
- Tender cervical lymphadenopathy
- ~~Rx~~ Rx → clindamycin.

## EBV

→ Triad: Fever, Lymphadenopathy, Pharyngitis.

↳ Combined with: heterophil Ab + Atypical lymphocyte.

↳ other: Splenomegaly 50% + Hepatomegaly 10% + Rash 5%. (Pfeiffer)

⊗ Pharyngitis: - White membrane cover one or both tonsils  
- Pfeiffer rash on oral & Palat mucosa.

Dx: 1. By clinical Presentation.

2. CBC (Atypical lymphocyte)

3. Detection of heterophil antibodies:

× (Monospot test) → Most confirmatory test.

4. IgM ~~test~~ titer.

→ Complications: 1. Autoimmune hemolytic anemia

↳ sever

2. Cranial N. Palsies

3. Encephalitis

4. Hepatitis.

5. Pericarditis.

6. airway obstruction



## Rx of EBV:-

- 1- Supportive treatment
- 2- Rest.
- 3- Avoidance of contact sports (splenic rupture)
- 4- Systemic Glucocorticoid. (only in severe cases)

## Tonsillectomy-

## Indications:-

- 1- recurrent acute tonsillitis.
- 2- Hypertrophy → causing dental malocclusion or affect orofacial growth  
Upper airway obstruction, Severe dysphagia, sleep disorder.  
Cardiopulmonary complication.
- 3- Peritonsillar abscess → unresponsive to Medical Mx & drainage  
unless :- surgery performed during acute stage (2<sup>nd</sup> attack)
- 4- chronic tonsillitis → Persistent foul taste or breath + not responsive to Mx
- 5- streptococcal carrier state & not responding to  $\beta$ -lactamase resistance inhibitor
- 6- asymmetrical swelling (unilateral)
- 7- febrile convulsion.

## microbiology for tonsillitis :-

- 1- Group **A**  $\beta$  hemolytic streptococci
- 2- Group B, C, D.
- 3- H. influenzae



## Adenoidectomy :-

### Indications :-

- 1- 1-4 times of recurrent Purulent rhinorrhoea. in Prior 12 months in a child < 12. + 1 episode documented. by ex. or imaging
- 2- Persisting of adenoiditis After 2 courses of A.B. therapy
- 3- sleep disturbance with nasal airway obstruction For 3 months
- 4- hyponasal or hypernasal speech.
- 5- otitis media with effusion > 3 months. or end set of tubes
- 6- Dental malocclusion.
- 7- CardioPulmonary complications. (cor Pulmonale, Pulmonary HTN)

### Contraindications :-

↳ Adenoidectomy :-

absolute.

- 1- Overt or submucous cleft Palate.  
(in Pt with bifid Uvula)
- 2- Neurological or neuromuscular abnormalities with impaired Palatal Funx.

↳ Grisel's (~~Daesle~~ syndrome) :- laxity of ligament of antano-axial joint

relative  
CI :-

3- Anemia.

4- Disorders of ~~nerve~~ hemostasis.

↳ Tonsillectomy :-

1- anemia

2- Acute infection.

3- Disorder of hemostasis.



\* Indication For observation after surgery :-

1. age < 3.
2. Obstructive sleep apnea (to avoid RS depression)
3. Significant associated Medical Problems.
4. Neurological delay
5. Craniofacial abnormalities.
6. Living along distance From Hospital
7. Questionable Caregiver at home??
8. Known Coagulopathy

Rx of adenoid:-

1 - Penicilline ✓

if recurrent → 2 - Augmentin (β-lactamase resistance A.B)

"response in one month"

3 - ~~ritarubin~~ → For recurrent sever. & 4/month for 6 mon  
retarpen (benzathine benzylpenicillin)

Complications:-

- 1 Hemorrhage, <sup>inadequate hemostasis</sup> 1<sub>st</sub> or 2<sub>nd</sub> day.
- 2 Dehydration ? airway obstruction From edema. 4-Pulmonary edema
- 5 Fever
- 6 Velopharyngeal insufficiency.
- 7-Dental injury.
- 8-Burns
- 9-Nasopharyngeal stenosis
- 10- Atlanto-axial subluxation: trauma to cervical spine.  
(Grise's syn., down's syn)



Rx:- ABC. → before culture Confirmation.

1- Airway

2- resuscitation

3- Skin test → Force allergy to horse serum?

4- Definitive Rx → Diphtheria Antitoxin. (No rule for Antibiotic) in acute

5- Have epinephren available

6- Antibiotic → to eradicate carrier state.



١٢٢ . لسواله الرضه الرضه  
Peritonsillar abscess.

⊗ Abscess formation outside tonsillar capsule (supratonsillar recess)

Symptoms: 1- Fever

2- Sore throat.

3- Dysphagia / odynophagia

4- Drooling of saliva.

5- Trismus (lockjaw)

6- Unilateral swelling of soft Palat/Pharynx with uvula deviation

⊗ DDx → Pleomorphic adenoma?

Rx: → depends on age

⊗ Peritonsillar abscess has 2 stages: cellulitis & Pus forming

↳ in adults:

↳ needle aspiration drainage "if there is Pus" + Systemic antibiotic.

↳ No Pus → sys. A.b + observe → cellulitis stage

↳ Children:

↳ admission + sys. A.b + observe..

- if not improved within 3 days → incision & drainage.

- 2nd attack of quinsy → tonsillectomy. → emergency

⊗ Rx options: 1- needle aspiration 2- incision & drainage

3- Quinsy tonsillectomy



### Obstructive hypertrophied Adenoid Hyperplasia.

- Sfs → 1- obligate mouth breathing
- 2- hyponasal speech
- 3- snoring / sleep disturbances.

- indication for surgery -

- Dx → Post-nasal space X-ray  
↳ white instead of white

- DDx:- simple adenoiditis + hyperplasia + tumor.

### Obstructive tonsillar hyperplasia

- sfs:- 1- snoring / sleep disturbances.
- 2- muffled voice
- 3- dysphasia

\* Malignant → 2nd to laryngeal tumors.

- ↳ SCC common. 2nd → lymphoma (Non-Hodgkin)
- ↳ rapid, Unilateral, enlargement of cervical lymphadenopathy & Systemic symptoms
- ↳ Rx:- Surgical / radiotherapy



# تست برای سنجش شنوایی Hearing assessment.

د. صرا زنه.

## 1- Whispered Voice test.

↳ Normal PPI → Can repeat words whispered at 60 m.

↳ hearing accurately + same volume in both ears.

⊗ 2 ear muscles (Tensor Tympani + stapedius) increase transmission to decrease trauma (bcz of loud voice).

⊗ Physio of hearing:-

Sound wave → outer ear → ear canal → eardrum

→ Malleus → Incus → stapes → cochlea → auditory nerve.

↳ Abnormal:- - Unable to hear

- hearing at higher volume at one ear.

- hear sound but not understand words

## 2 tuning Fork test:

↳ Rinne. → mastoid Process.

↳ ⊕ if  $AC > BC$ .

↳ Abnormal: ① ⊖  $BC > AC$  → Conduction hearing loss

?? ② ⊕  $AC > BC$  but both depressed (sensorial)

③ Pals negative Rinne. = The sound will be conducted through the bone to opposite ear & give impression of better BC.

↳ Weber → middle of Pt forehead (lateralization)

↳ only for Asymmetric hearing loss.

↳ Sounds lateralized to ear with conductive loss.



→ No Lateralization: - Normal

- Bilateral Conductive or Sensorinural HL

↳ Lateralization to Left sides: or mixed.

- Left ear Conductive hearing loss

- Rt ear Sensorinural

↳ Lateralization to Right :-

- ~~Rt~~ Rt Conductive H.L

- Lft sensorinural

⊗ Weber is more Sensitive than Rinne in unilateral Conductive hearing Loss

⊙ Case 1 :- Rinne Rt ⊖ Lft ⊕ + Weber Lateralized to Lft

↳ Rt sensorinural hearing Loss (False negative Rinne)

⊙ Case 2 :- Rinne Rt ⊖ Lft ⊕ + Weber Lateralized to Rt

↳ Rt CHL

⊙ Case 3 :- Rinne Rt ⊕ Lft ⊕ + Weber Lateralized to Left

↳ Rt SNHL

⊙ Case 4 :- Rinne Rt ⊕ Lft ⊕ + Weber equal

↳ Normal or Bilateral CHL or SNHL or mixed.

⊕ Weber if Lateralized to healthy ear :- other SNHL

⊕ Weber " " " " worse ear :- same CHL



### 3. Audiometry

↳ **I** Pure tone audiometry PTA.

↳ test hearing sensitivity.

⊗ Degree of hearing loss:

0 - 25 dB → Normal

26 - 40 dB → Mild

41 - 55 dB → Moderate

56 - 70 dB → Moderate - severe

71 - 90 dB → Severe

≥ 91 dB → Profound.

⊗ Normal ear hears frequencies btw 20 - 20000 Hz.

⊗ human speech 500 - 2000 Hz.

⊗ Zero dB ≠ No sound but = extremely soft sound.

⊗ Conversational voice level = 65 dB.

1. CHL → otitis media & osteosclerosis.

↳ BC in normal range.

↳ AC ≅ > 25 (outside normal range)

↳ air-bone gap > 10 dB. (yes)

2. SNHL → Noise induced & Presbycusis.

↳ both BC & AC below normal

↳ air-bone gap < 10 dB. (No).

3. Mixed

↳ both BC & AC below normal

↳ air-bone gap > 10 (yes)



• examples of characteristic audiogram.

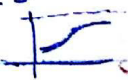
Red Bluish & SM.

- ↳ 1. Osteosclerosis: ~~at~~ Location - Meares - Shwartz's signs
- Stapedial fixation in oval window → stiffening middle ear sys
- cuz slowly Progressive Conductive hearing Loss (CHL) or mixed.
- Carhart notch: isolated depression (20-30dB) at 2000 Hz in BC.

↳ 2. Noise-induced HL.

- may be Temporary threshold shift (TTS) or Permanent (PTT)
- Degree of HL depend on:
  - time exposure, intensity, Frequency.
- greatest in 4000-6000 region.
- cuz SNHL except → in blast injuries with possible Tympanic M or middle ear damage

↳ 3. Meniere disease.

- idiopathic, linked with endolymphatic hydrops.
- affect cochlea & vestibular system
- Attacks 20 min - hours = vertigo, hearing loss, aural fullness
- All 3 tinnitus may persist + nystagmus.
- HL unilateral + in lower frequency + fluctuant.
- but develops into Permanent SNHL.
- ↑ sensitivity to loud noises + Poor word recognition. → than predicted
- Low-frequency SNHL increase during attacks 

Mx: 1- low sodium Diet.

2- Valium.

3- Diuretics.

4- surgery??



### ↳ 4. Presbycusis.

- Age related HL.
- Bilateral + Symmetric SNHL
- Higher frequencies are most severely affected.
- Poor word recognition than predicted from audiogram
- HL 2ndry to:
  - Degeneration of cochlea
  - CN. VIII<sup>th</sup> (acoustic N)
  - central auditory system.
- slowly Progressive



### I Speech audiometry.

↳ (a) speech reception threshold (SRT)

- lowest level at speech can be identified 50% of the times

↳ (b) speech detection test (SDT) (SAT) awareness.

- lowest lvl at speech can be detected 50% of the time

### III Tympanogram (Impedence audiometry).

- Measure Compliance of middle ear.
- best compliance when Pressure gradient is 0
- X → air Pressure (daPa)    Y → Compliance. (mL)
- Types: -400 - +200.

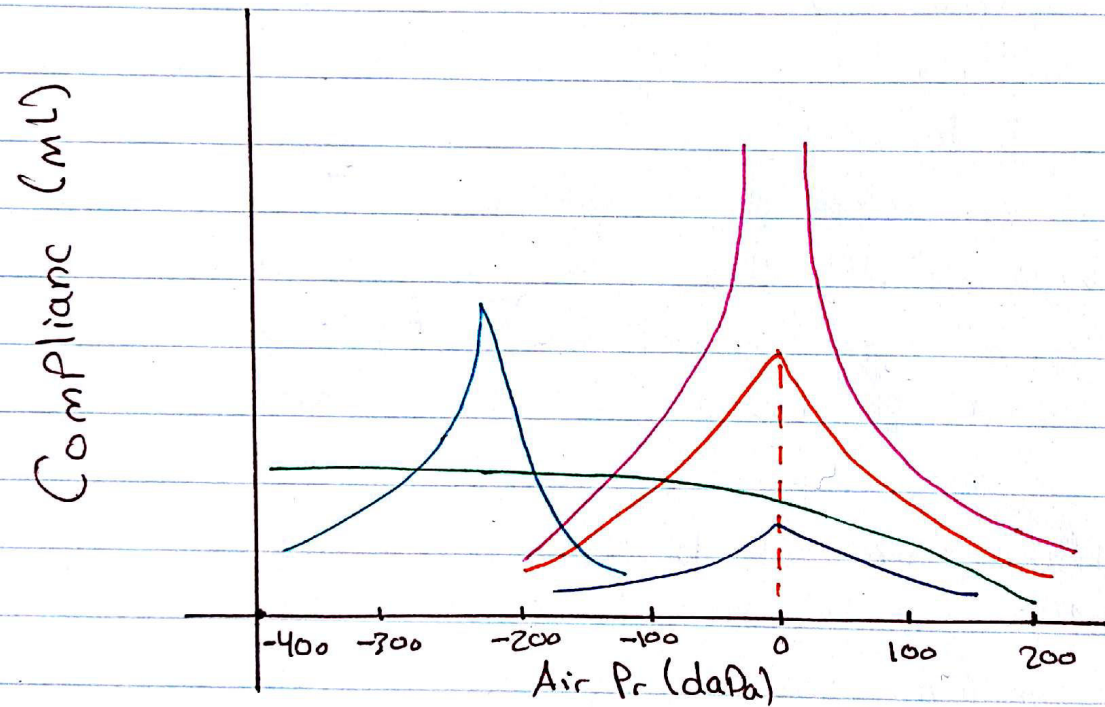




### Types:

- 1. A wave → Normal otosclerosis
- 2. A<sub>s</sub> wave → ~~otosclerosis~~ <sup>otosclerosis</sup> or TM scarring
- 3. Ad wave → Flaccid TM or middle ear (ossicular disruption)
- 4. B wave → infection or Perforated TM, otitis media with effusion
- 5. C wave → -ve Pressure in middle ear.  
(Eustachian tube dysfunction, Congestion, middle ear fluid)

A    A<sub>s</sub>    Ad    B    C



- Normal Compliance → 0.2 - 2
- A<sub>s</sub> → < 0.2
- Ad → > 2.5.
- average ear canal volume 1 - 1.5 mL in children 0.5 - 1 mL
- Type B → Normal ECV → otitis media with effusion.
  - ↳ Small ECV → occluded ear canal with wax, or probe is pushed against the side of ear canal
  - ↳ Large ECV → Perforated TM.



بِسْمِ اللّٰهِ الرَّحْمٰنِ الرَّحِیْمِ  
Tracheostomy.

→ extends From C6 - T4/5

→ adults:- 11.5 cm + 2.5 cm

→ infants:- 4-5cm + 3mm

⊗ B.S.:- upper 2/3 → inferior thyroid vessels  
lower 1/3 → bronchial arteries

⊗ Tracheostomy:- surgical airway in cervical trachea below larynx.

Types:-

↳ Temporary:- removed when Pt recover (connected)

↳ Permanent:- for the rest of his life (no connection).

↳ in Pt with difficulty weaning of ventilator.

↳ trauma ↳ catastrophic neurological insult

indications:-

↳ Acute s- 1. Max Fax injury.

2. Poisoning.

3. UPPER airway obstruction

4. acute angioedema & inflammation of head & neck

congenital infection, malignancy  
trauma, Foreign body,  
vocal cord Paralysis

↳ chronic

no 1 - Pulmonary ventilation:- any Pt on ventilation. more than 2 weeks  
need tracheostomy → bcz it reduce Respiratory dead space.

2. Pulmonary toilet:-

- Pt can't cough

- Prevent aspiration

- MG.

- in Pharyngeal & laryngeal incompetence

- RS Failer.

no 3 - Best for sleep apnea & chronic aspiration

↳ 30% & make weaning  
easier

↳ Effective:- in OP.



## ⊗ Tracheostomy tubes → شوف الصور

### Procedures:-

#### 1. Percutaneous tracheostomy

↳ ICU, Bed side tracheostomy.

↳ use guid wire & Dilator.

↳ under vision of Bronchoscope through endotracheal tube.

↳ Less time + Less expensive + reduced tissue trauma.

↳ Not suitable for thick neck or emergency.

#### ⊗ C.I.s:

1. Unstable Cervical spine.

2. obese, thick neck (inability to identify landmark)

3. refractory coagulopathy.

#### 2. Surgical Procedure → Pt under GA & supine Position

1. mark 1 cm above suprasternal notch or 2 cm below cricoid cartilage.

2. Curvi-linear skin incision along Relaxed skin tension Line (RSTL) btw sternal notch & cricoid.

3. midline vertical incision From region of Cricothyroid membrane inferiorly toward the suprasternal notch

4. with dividing of strap ms.

4. Division of thyroid isthmus inferiorly.

5. Divid 2nd tracheal ring & insert tube with concomitant withdrawal of ETT, inflate cuff, Then secure with sutures or tape.

6. Connect ventilator tubing.

7. Check the <sup>cuff</sup> is well inflated (cuff Pressure)

8. after 3 days change cuffed to uncuffed tube.

↳ to prevent stenosis



- Cuffed tube → to Prevent aspiration.
- it's done under GA & with ETT
- The incision done ~~in~~ in the 2nd or 3rd tracheal interspace

### ⊗ Pediatric tracheostomy:

- Btw 2nd & 3rd ring vertical incision.
- No ~~exc~~ excision of ant wall of trachea.
- Secure the tube with 2 sutures

### 3- Cricothyroidectomy (mini-tracheostomy)

- emergency incision.
- temporary airway 30 min only

↳ indications: 1- severe facial or nasal injuries prevent intubation.

2- Massive midfacial trauma.

3- Preventing adequate ventilation.

4- Anaphylaxis

5- Chemical inhalational injuries

↳ C/I: 1- inability to identify landmark (cricothyroid membrane)

2- tumor

3- Acute laryngeal disease (infection, trauma)

4- tracheal transection

5- small children < 10y.

6.

### Post. of care:

1- CXR → to check the tube in place + to check for Pneumothorax or Pneumomediastinum.

2- Antibiotic

3- humidification of air (room or ventilator)

4- regular suction → every 1 hour. (small DM)

↳ to avoid obstruction.

+ ↳ to avoid hypoxia

5- Swallowing & Position

6- Tube changing: after 3 days, Cuffed tube → regular deflation

↳ amount of air minimum → to prevent air leak.

to prevent Pressure necrosis.



## Closure:

- Check airway before removing
  - with gauze only & 1 week monitoring
  - may need stricture or tightening
  - in Permanent → Further surgery to widen opening
- close monitoring 2-3h

## Complications:

1. bleeding.
2. subQ emphysema
3. tracheal stenosis
4. injury to  recurrent laryngeal nerve.  
 Isthmus.  
 Thyroid Cartilage
5. wound infection
6. tracheostomy scar

## C/I:-

1. Anemia.
2. Unstable Pt.



## منه انت الحنك Epistaxis.

→ Bleeding From inside the nose

☒ Little's area:-

- ant. inf. Part of nasal septum. → just above the vestibule.
- Four arteries: 1. Ant. ethmoidal A.  
2. septal branch of Superior Labial artery. (Facial A)  
3. septal branch of sphenopalatine artery.  
4. greater Palatine
- ↳ anastomose together to form → Kiesselbach's Plexus.
- exposed to drying & finger nail trauma → common in young age.
- Ant. bleeding. - 90% of epistaxis.

☒ Woodruff's area: → Nasopharyngeal Plexus.

- under Post. end of inferior turbinate. - 2 arteries:-  
1. sphenopalatine artery  
2. Posterior Pharyngeal artery
- Responsible for Posterior bleeds.

- \*\* maxillary Sinus ostium divide Ant & Post nasal bleed
- bleeding area is not easily accessible. → difficult Rx
- in high blood Pressure.

Blood supply of nose:-



## Causes:-

↳ Local:- 1- trauma (Finger nail, Surgery, Fracture)

2- Foreign body

3- Septal deviation. → dryness & irritation

4- Neoplasms

↳ Benign or malignant

↳ may be first symptom

↳ Come with:- Nasal obstruction, rhinosinusitis, Unilateral

5- Atmospheric Changes. (high altitude)

6- Dry weather (dry climate & cold weather)

↳ bc of dehumidification of nasal mucosa.

7- Drugs → antihistamin & steroids → irritation

↳ if applied to septum instead of Lat. wall

8- infection.

↳ Acute:- Viral rhinitis, acute sinusitis.

- minor & blood-streaked nasal discharge

↳ Chronic:- All crust forming (TB, Syphilis, Atrophic rhinitis.)

- crusting & ~~fragile~~ Friable mucosa → recurrent epistaxis

9- Adenoiditis.

10- juvenile angiofibroma. → may be first manifest.

11- Malignant tumors of nasopharynx.

## ↳ General:-

1. CVS → HTN, arteriosclerosis, mitral stenosis.

2. Kidney → chronic nephritis.

3- Drugs → salicylates or anticoagulant.

4- Mediastinal masses. → ↑ venous pressure in nose

5- infection.

6- Vicarious menstruation.



## 7. Blood. dyscrasias.

↳ Congenital: suspect if: 1- + Pttx 2- easy bruising.  
3- Prolonged bleeding from minor trauma.

↳ like hemophilia & von-willbrand disease

↳ Acquired: e.g. - liver (disease) 2ndry (Rx)

↳ Thrombocytopenia & liver disease

↳ Alcoholism = Coagulopathy & epistaxis.

## 8. Vascular abnormalities.

↳ HHT's dominant disease, (osler weber Rendu), leading to arteriovenous malformation -

- bleed continuously & not resolve spontaneously

- Various organ system affected RS, GI, UG.

↳ Vascular neoplasm

↳ aneurysm

## 9. Migraine.

↳ Idiopathic 10%

## - Sites of epistaxis:-

↳ 90% in little's area

## - Classifications:-

↳ Ant:- blood flows out from front of nose. when Pt set

↳ Post:- blood back into throat & swallowed



## Ant. epistaxis

## Post. epistaxis.

Incidence: more common  
Age: children 2-10y  
Site: Little's area

Less common  
old. ~~20~~ 50-80.  
Posterior ~~lateral~~ superior part.  
often difficult to localize.  
HTN

Cause: trauma (finger nail)

Bleeding: mild & easily controlled.

sever & require hospital  
& Post nasal pack

## Approach to Pt:-

- 1- Stop bleeding & stabilize.
- 2- Careful History
- 3- ex.
- 4- investigation if needed

- ⊗ Hx:-
- 1- Mood of onset (spontaneous or trauma)
  - 2- Duration & Frequency.
  - 3- Amount
  - 4- Side of bleeding
  - 5- Ant. or Post bleeding
  - 6- Any known bleeding tendency in Pt or Family.
  - 7- Hx of systemic disease (HTN, leukemia, mitral valve disease, nephritis)
  - 8- Drug Hx (analgesic or anticoagulant etc--)



examination:

1. remove nasal Pack.
2. Ant nasal ex.
3. decongestant (if difficult visualization) (shrink mucosa) (oxymetazoline)
4. topical anesthesia (lidocaine) → to reduce Pain.
5. Insert nasal speculum.
6. exam skin → ~~to~~ Ptechia & bruising

- ⊗ i.p.:-
- 1. Ant. source cannot be visualized
  - 2. bleeding from both nares
  - 3. constant dripping seen in Pharynx
  - 4. bleeding in Pharynx with Ant. Pack
- suspect Posterior ~~late~~ epistaxis

- ⊗ massive epistaxis may confused with hemoptysis & hematemesis
- ⊗ 90% of nosebleed seen in ant portion of nasal cavity.

\*

Investigation:- - not required except in:-

- major bleeding
- recurrent epistaxis
- Coagulopathy suspected

↳ CT & MRI → to evaluate anatomy & to determine the presence of rhinosinuitis & foreign body & neoplasm

↳ Nasopharyngoscope → tumor.

↳ rigid endoscopy > fiberoptic

- 1. Superior optics
- 2. allow suction
- 3. allow cauterization



# ABC

Rx: 1 - initial & direct pressure on the nostrils & squeezed together & elevate head. → 90% will recover by this.

if not. 2 - Pressure with gauze moistened with epinephrine → vasoconstriction & active hemostasis

3 - Humidification & Moisturization

Not Rx → L Nasal saline spray & Oxymetazoline for 2-3 day  
L local bacitracin or Petrolatum.

direct

4 - Cauterization

↳ Chemical Cauterization: - silver nitrate  
Coagulate cellular protein & removes granulation tissue & antibacterial  
↳ Electrocauterization: - sever & Posterior.

4 → endoscopic lens →

5 - Nasal Packing → Anesthesia & vasoconstriction & admission

↳ Ant. Packing: Petroleum jelly gauze + antibiotic ointment.

- 5-4 days - may use absorbable (GelFoam) → Caugulopathy

- Prophylactic A.b. ~~use~~ & avoid strain 1 week.

↳ Posterior: → with ant. should & ICH.

better: 1. higher success → rolled gauze or sponges.

2. Fewer local injuries

3. Less cost

- inflated balloon devices → may cause pain & displace soft Palat (suction)

- ICH & A.b. → inflate with 30ml gas

SV

6. Packing Failure. Management: Surge (septal deviation)

↳ either from: 1. inadequate placement 2. anatomic factor

→ endoscopic ex with pt under GA + cauterization +

septoplasty + meticulous packing - submucosal resection

SMR

7 - Artrial ligation

8 - embolization



Palliative therapy for HHT. → Define → septoplasty

Complications:-

1-

2-

3-

4-

Follow up.

Complication of Packing.

1- toxic shock syndrome → most common to cure it

Packing Packing



## بسم الله الرحمن الرحيم Acute otitis media.

→ inflammation of middle ear (infectious)

(\*) AOM: middle ear effusion + signs of infection (Fever, Pain, red & bulging TM)

(\*) OME: MEE ⊖ signs of infection.

\* Risk Factors:

URTI, < 6 years old, Allergic rhinitis, bottle feeding, mother smoker (Passive smoking), Immunocompromised, ET dysfunction, cleft palate, Nasal Polyps, Adenoid hypertrophy, Flx (Parental),

\* microorganisms - common

1 - strep. Pneumonia. 35%

2 - Hemophilus influenzae 25%

3. moraxella ~~catarrhalis~~ catarrhalis. 15%

Less common

→ Viral:  
RSV

influenza A, B

Rhinovirus  
adenovirus

\* OM occurs in children more than adults -- why?

↳ bcz most of bacterial infection to the middle ear ascend via Eustachian tube, & it is shorter, straighter, more compliant ~~&~~ in children than adults. → so entrance easier.

+ URTI more + Adenoid hypertrophy + Regurgitation more.

Phases.

↳ 1st Phase → exudative inflammation 1-2 days.

- Fever, chills, rigors, meningism, Pain (wors at night)

muffled noise in ear, deafness, sensitive mastoid, tinnitus.

↳ 2nd Phase → resistance & demarcation. 3-8 days.

- Pus & middle ear exudate discharge spontaneously & ↓ Pain ↓ Fever

↳ 3rd Phase → Healing Phase 2-4 weeks.

- Aural discharge dries up & hearing become normal.



S&S: → Typical Presentation.

↳ triad: 1- otalgia      2. Fever      3- CHL.

↳ 1- otalgia: mild & throbbing, sever

2- Otorrhea → Perforation

3- Dizziness.

4- Hearing Loss (CHL) may associated with tinnitus

5- Fever

6- N&V      7- Anorexia

8- Irritability

} Specific symptoms

↳ Signs: 1- Flushed ill child.

2- Fever  $>40^{\circ}$

3- tender mastoid antrum.

4- Otoscope: Red, Bulg TM, Opacification, impaired visibility in landmarks (sever).

5- Pneumatic Otoscopy: ↓ TM mobility.

→ Tympanometry:

↳ early before bulging :- Type C.

↳ early Bulging :- Type B. + normal ECV

→ if Perforated. :- Type B + high ECV.

• in OME → TM retraction not bulging

} د. مرازية

\* First Presentation:

↳ Neonates: - hard Feeding & irritability.

↳ Child: - otalgia. & Itching

↳ adults: - CHL & tinnitus.



Rxs: - Depend on stage → Early, Bulging, Discharging

↳ **I** Early: **1** Antibiotics: First choice :- **Amoxicillin** → improve in 48-72 hr

↳ Second line: amox-clavulanate, 2nd & 3rd cephalosporin.

↳ Co-amoxiclav → in case of moraxella catarrhalis.

↳ If not respond to amoxicillin in 48-72 hr

\* Be guided by sensitivity reports from Lab.

**2** analgesics:

↳ avoid Aspirin in children → bez Reye's syndrome??

**3** Nasal vasoconstrictor → ephedrine nasal drops.

↳ **II** Bulging :- surgery !!

↳ Myringotomy → if bulging persist despite A.B. therapy.

↳ Best quadrant to be incised → Anterior-inferior Quadrant :- why?

1- Less complications      2- gravity effect (collection fluids at bottom)

3- Longer time to heal of TM → good. 

\* Avoid it in Post-superior → bez incus or stapes injury

↳ **III** Discharging Phase:- → nature's myringotomy.

↳ topical & systemic AB + culture + Regular aural toilet

∴ OM not cured till:- 1- TM normal      2- Hearing normal.

↳ gray, concave, translucent, move briskly.

\* In Recurrent AOM:- long term antibiotic may be beneficial.

↳ myringotomy & grommet or tympanostomy tube ← <sup>مراجعة</sup>

For 6-12 months.

\* Complication of om:-

1- TM Perforation

2- OME.      3- cholesteatoma

4- Ossicular necrosis      5- chronic otomhea.      6- chronic suppurative OM.

→ Intracranial - meningitis, brain abscess.

→ mastoiditis, labyrinthitis, sigmoid sinus thrombophlebitis

\* Read ~~through~~ tympanocentesis from slides. ...

Indications: 1- > 3 times AOM / 6 months  
2- > 4 / year + one episode in 6 months.  
**in recurrent AOM**



. *مفهوم و امراض*  
(OME) → Otitis Media with Effusion

- \* Secretory OM = collection of fluids in middle ear space as a result of -ve pressure as a result of ET Dysfunction.
- \* Glue-ear → common in children, Bilateral
- \* inflammation without infection

\* Causes:-

- 1- Nasopharyngeal tumor → (adults)
- 2- Adenoid hypertrophy → (children) → may be associated with: recurrent OM.
- 3- Acute otitis media untreated ? recurrent OM ← most common cause *مكرر*
- 4- Allergic rhinitis & chronic sinusitis → swelling of ET mucosa. *تورم*
- 5- Parental (Passive) smoking ?
- 6- Otitis barotrauma → failure of middle ear ventilation in scuba divers.
- 7- Idiopathic ?

Symptoms:-

- 1- Otolgia & Fullness (may be painless) *مكرر common*
- 2- Deafness → may be the only symptom. Fr
- 3- mild discomfort. - early severe.
4. tinnitus or unsteadiness

Signs:- Dx:- Otoscopy →

1. Retracted, hypomobile or immobile TM
2. Fluid filled tympanum that obscure visualization of Long Process of incus.
3. negative pressure in middle ear / ear drum not moving
4. air bubble & dull TM. & scar → Pathognomonic / But not always Present *مميز*
5. yellow orange tinge to TM.
6. Tuning Fork test → CHL



Pneumatic Otoscopy → Try Dx method.

- TM moves outward briskly when Pressure in the ear Canal is sharply reduced.

Tympanometry:-

↳ Type B - normal ECV.

Audio-metry:-

↳ Unilateral CHL

Rx:- Depend on age:-

↳ children:- 1 - may resolve spontaneously → observe 3 months before surgery.

2 - Antihistamin & mucolytics - may used to restore ET Funct. hopefully but it's controversial "shows No benefit"

✗ No Antibiotics علاج

↳ Surgery:- → if Hearing loss > 3 months or recurring Pain.

↳ Myringotomy with grommet:- Under GA

\* to ventilate middle ear not to drain fluid.

\* it's still in place & extrude & spontaneously after 6-12 months.

& incision in anterior inferior quadrant of TM

\* May need repeat insertion if OME recurs.

complications of it in MR

↳ In adults:-

\* Examine Nasopharynx to exclude tumor (especially Unilateral)

↳ Using:- Fiberoptic & rigid Nasopharyngoscopy & CT, MRI Post nasal

\* if there is no tumor it usually follows cold & resolution spontaneous.

But may take 6 weeks

↳ Under Same GA → Grommit may be inserted.



T-Tube may be used under specific indications ??

↳ not removed by its own & its drain fluid it may still for years

Chronic OM.

→ Persistent inflammation of middle ear & mastoid with Perforated TM & otorrhea & hearing loss >12 weeks

\* ↳ COME without Perforation

Causes:-

1- Late Rx of acute Otitis media.

2- inappropriate Antibiotic.

3- Upper airway sepsis

4- lowered resistance.

COM

Suppurative

Non-suppurative.

Tubo-Tympanic (mucosal).

Attico-Atrial (Boay)

Mucoid or serous!

\* chronic suppurative OM:

↳ chronic infection of middle ear + non-healing Perforation of TM

\* associated with central Perforation

→ I Tubo-Tympanic (mucosa) (safe) type:!

↳ affecting mucosa & less liable to produce complications

- Symptoms: 1- Deafness      2- tinnitus      3- intermittent discharge

- Signs: 1- Profuse mucopurulent, odorless discharge } otoscope  
2- Perforation

\* mucoid discharge means that there is Perforation even if you can't identify it!!

middle ear mucosa: 1- thin pale & dry (inactive)

2- congested (active)      3- granulations

4- Polyps (pedunculated mucosa)



Dx:- 1- Hx      2- Physical ex  
mr → 3- High resolution **CT** of temporal bone

Rxs:

- ↳ **I** ear discharges: 1- Swab → sent for culture  
2- regular aural toilet → mainstay of Rx.  
3- Topical Antibiotics → make ear dry so healing faster.  
4- if no response → admission to do toilet?

↳ **III** Dry Perforation:

- Perforation may heal spontaneously But if it is Persist → Surgery:

1- ~~Mastoidectomy~~ myringoplasty → repair of Perforation

↳ Only Prevent complications!

2- Tympanoplasty: Repair TM + ossicular reconstruction

↳ to restore hearing!

\* Microbiology For ~~SSOM~~ COM

1- Pseudomonas aeruginosa. (40-60%)

2- Staphylococcus aureus (10-20%)

3- ~~AAO~~ Anaerobes.



Acute OM

vs

Chronic OM.

1- Preceding URIT.

2- Fever, otalgia, Hearing loss

3. < 8 weeks

4- May have systemic  
symptoms

1. Unresolved AOM.

2. Asymptomatic except Hearing loss.  
(if not complicated)

3. > 12 weeks

4- Granulomas.

Cholesteatomas.

Tympanosclerosis



**II** Attico-Antral or (bony) CSOM ~~type~~ (unsafe) type.

↳ Bone erosion & include:

Tympanic ring, ossicles, mastoid air cells, bony walls of attic,

<sup>marginal</sup> aditus & antrum.

\* Perforation in Posterosuperior or in Pars Flaccida & involves bony annulus

↳ More liable to produce complication → meningitis, brain abscess

→ Santy, Persistent, Foul smelling discharge

↳ Granulation → in osteitis.

↳ Aural Polyp → Formed of granulation tissue (infected cholestatoma)

↳ cholestatoma !!

### - Cholestatoma:

↳ epidermal inclusion cysts of middle ear or mastoid contain desquamated debris (Keratin) from their keratinizing squ. epith.

± cholesterol ??

⊙ lethal if not treated ?

↳ Congenital cholestatoma:-

↳ inclusion cysts in anterior superior quadrant of middle ear near to ET ?

↳ Dx:- white mass behind an intact TM with no th of OM

↳ Acquired cholestatoma

اكتسابي

⊙ Pathogenesis :- 4 theories:

1- Invagination of TM (retraction pocket cholestatoma)

2- Basal cell hyperplasia.

3- epithelial ingrowth through perforation (migration theory)

4- Squamous metaplasia. (unknown cause)



- \* Pt usually :- 1. Hx of otitis media (+) 2. ventilation tube or surgery
- \* Symptoms:- 1. Progressive hearing loss. (CHL)

2. in late stages (SMHL)

may 3. otalgia 4. aural fullness 5. Fever.

↳ Dry cholesteatoma:-

- Typical → Retraction Pocket cholesteatoma adjacent to Posterosuperior TM or Pars Flaccida, & center of it contains keratin

(x) invagination theory! ← (x) secondary to ETD

↳ Dry cholesteatomas

- As the TM try to heal, keratinizing squ. epithelium migrates through a Perforation into middle ear

(x) migration theory! ←

Dx:- 1. otoscopic examination.

2. CT high resolution high res. - m

3. MRI.

As

\* CHL → AC threshold within 40 dB → TM Perforation + intact ossicular chain

↳ Air-bone gap >40 dB → ~~also~~ discontinuity of ossicular chain

- Physical Findings:-

- 1 - Defect in Pars tensa or Pars Flaccida or both (<sup>marginal</sup> Perforation)
2. Atelectatic lesion in TM. (tensa or Flaccida)
3. invasion of squ. epith. to middle ear. (migration)
4. Granubmas, Aural Polyp, tympanosclerotic Plaques in middle ear



Rx:-

- 1 - Regular aural toilet:- → in early cases of annular osteitis
- 2 - Suction toilet → under microscope → evacuate pocket of cholesteatoma  
& dry ear may result??

3 - Mastoidectomy. ← always necessary.

↳ + Tympanoplasty ← [m] to improve hearing.  
↳ Several types according to the extent of disease.  
(simple / Canal wall-up / canal wall-down / Radical / modified radical)

(\*) in case of ETD → high failure rate.

↳ we may use antihistamin & mucolytics hopefully to restore ET Funx. → but it's controversial??

(x) Severity of CHL depend on ossicular involvement.

~~Read~~

Read about CSOM -ve cholesteatoma



تسميته الرضخ الرضخ

# Facial Nerve Palsy.

MR

## - Anatomy -

- Motor root 70%
- Sensory root 30%
- Parasympathetic
- Secromotor root
- minor. salivary glands:
- ms of Facial expression
- taste ant. 2/3 of the tongue, Floor, mouth, Palate
- + Digastric ms + stylohyoid ms
- + stapedius ms ← MR
- Concha & retroauricular skin.
- submandibular + sublingual + Lacrimal + Nasal.

- Facial nucleus
- Central Nuclei (Solitarius nucleus, Geniculate ganglion)
- No Parotid ← MR
- Sup salivatory Nerve

Courses: btw Pons & olive } intracranial → Lacrimal nucleus → Lacrimal gland.  
 Cerebro-Pontine angle → internal auditory meatus → Facial Canal  
 → geniculate ganglion → Backward on medial wall of middle ear  
 → downward to reach stylomastoid Foramen. → enters Parotid gland

"but not supply it" → divides into 5 terminal Branches:

- extra-Parotid Br:
  - 1- Post. auricular.
  - 2- stylohyoid.
  - 3- Post. digastric
- 1- Temporal
- 2- Zygomatic
- 3- Buccal
- 4- mandibular
- 5- Cervical.

- nucleus can divide into:

1- upper Part

↳ receiving Projections bilaterally & to the upper Part of the Face

including forehead

2- lower Part

↳ **Crossed** Projections, to lower Facial muscles :- (stylohyoid, Post. belly of digastric, Buccinator, Platysma)

## \* Acoustic reflex:-

in response to high intensity sound or vocalize, contraction of stapedius & tensor tympani to decreases the transmission of vibrational energy to the cochlea, where it's converted to electrical impulse to reach brain

\* This explain hyperacusis → MR



→ i.e. → increase in impedance & decrease in admittance.

## Facial Nerve examination:

- ↳ motor Funx: 1. inspection (asymmetry)  
2. spontaneous movement.  
3. Wrinkling of forehead.  
4. close eyes tightly & try to open them  
5. Bare teeth.  
6. Blow out cheeks.

slide 23

↳ Sensory:-

1. taste

2. hearing

3. Schirmer's test  
↳ for dry eye

## → Facial N. Palsy. FNP

- usually unilateral

- \* The most common cause of FNP: Bell's Palsy "idiopathic" } MR
- \* The 2nd most " " " " : Ramsay Hunt syndrome } MR

Features ↓

Supranuclear Lesion

infranuclear L.

UMNL

LMNL

- Forehead wrinkling → B/L ~~absent~~ (spared)  
Present

Same side absent

- Eye closure → B/L ~~absent~~ (spared)  
Present

Same side "

- Naso-labial fold → contralateral absent

Same side "

- Drooping of angle of mouth → contralateral side  
MR

Same side  
MR



- if Unilateral Lower Face + normal eye closure:-

↳ Suprapontine, (Supranuclear, Contralateral) Lesion

Cuses: Vascular, infectio, demyelination, tumor

↳ emotional expression unaffected with subcortical lesion.

- if Unilateral Upper & lower Face (Bell's Palsy) + defective eye closure

↳ Ipsilateral nuclear or infranuclear Lesions.

↳ emotional expression affected.

- if Bilateral Upper & lower Face:-

↳ Bilateral nuclear lesion.

Cuses: Pontine lesion.

↳ Bilateral infranuclear Lesion.

Cuses: Guillian Barre syndrom, Lyme disease, Sarcoidosis

↳ Muscle disease:-

Cuses:- MG, muscular dystrophy.

\* Bell's Phenomenon:- eyes move outwards & upwards on attempt to close



## - Bell's Palsy.

- Acute Paralysis of the Face.

- Unilateral.

- Family History → ~~is~~ evident.

→ Causes: "Idiopathic" → maybe with viral infection (HSV), autoimmune disease, Allergy

- incidence ↑ in DM pt. , ↑ in 3rd trimester Pregnancy, 10-30 yrs old.

- related to inflammation of F.N. within Facial canal or stylomastoid Foramen.

Symptoms:- 1- Hyperacusis → Bcz of acoustic reflex "mentioned before"

2- Unilateral weakness of Face

3- Post auricular Pain over ipsilateral mastoid Precedes weakness 48h

4- Tear flow → "mentioned"

5- Altered taste.

6- Dry eyes ← mr

Signs:- 1- Facial asymmetry

2- Eyebrow droop

3- Loss of naso-labial fold

4- Drooping of mouth angle

5- epiphora

6- Inability to close eyes. mr

7- Facial muscle atrophy.

⊛ Bell's Palsy → Peripheral Facial Palsy so:- Upper & lower Face.

1- Loss of forehead & brow movement.

2- inability to close eyes & droop of eyelid.

3- Loss of naso-labial folds & drooping of lower lip.

\* Physical ex:-

1- Forehead wrinkling.

2- Eye closure.

3- wide smile.

4- Blowing



DDx: 1. DM <sub>rr</sub> 2. Fracture 3. HZV 4. MS 5. Sarcoidosis  
6. Tick-Borne Disease or Lyme disease.

Investigation:-

1. CT & MRI → indicated if:- a) symptoms > 4 weeks.  
b) specific cause suspected.

2. ElectroDx: minimal & maximal stimulation test (MST)  
& Electroneurography (ENog)  
↳ to assess the degree of involvement of the nerve

Rxs: 1. Prednisolone (main Rx) → in high dose 80mg daily & reduce  
the dose to zero in 2 weeks (to avoid adrenal insufficiency)  
↳ should not be delayed → in the first ~~24~~ 24-48h.

2. artificial tears → very important to protect the exposed eye.

3. Antiviral → acyclovir → in the 1st 72 hours. ? + PPI + multivitamins

4. if it is not working or delayed:-

↳ Physiotherapy.

5. Last choice → surgery :- bcz. of additional injury may occur

↳ a) F.N decompression.

b) Cross-facial grafting.

c) hypoglossal-facial anastomosis → to restore face symmetry

? d) Tarsorrhaphy → to protect eye. (suture both eyelids together)

Prognosis:- -70% recover in 4 weeks without treatment.

- Incomplete paralysis → good prognosis.

Bad Prognostic Signs → DM, old, Progressive, complete, Pregnant.

→



## Complications:

- 1 - Synkinesis. (involuntary movement) → improved with Prednisolone
2. Face weakness. 30%
3. Contracture. 20%
4. Crocodile tears - 6% - Lacrimation After Salivary stimulus.  
↳ misregeneration of Parasympathetic fibers that grow & enter "major superficial Petrosal nerve".

## Ramsay hunt Syndrome:

- Herpes Zoster infection to geniculate ganglion.
- reactivation of ~~VZV~~ Latent VZV. (when decreased immunity)

**S&S:**

1. Severe facial weakness.
2. Skin vesicles on the Pinna, retroauricular area, Face, mouth
3. Pain
4. Herpes Zoster Oticus: hyperacusis, SNHL, Serousanguineous Discharge  
↳ 8th nerve involvement.
5. Herpes Zoster ophthalmicus: Uveitis, Keratoconjunctivitis, Ophthalmitis  
↳ ophthalmic division of trigeminal nerve
6. eruption of tongue & Palate → hypoglossal nerve (XII)
7. Vertigo.

## Inrx:-

1. Topographic test → absent of stapedial reflex
2. Audiometry → SNHL.
3. ELISA.
4. MRI → enhancement of facial nerve

- Rx:
1. Corticosteroids → To relieve symptoms. 1- ↓ acute Pain
  2. Acyclovir (antiviral). 2- ↓ vertigo.
  - 3- ↓ Postherpetic neuralgia.



## Hoarseness

- \* The most common infection  $\rightarrow$  Acute Laryngitis
- \* The most common benign  $\rightarrow$  Polyp.
  - $\rightarrow$  abnormal deep harsh voice
- $\rightarrow$  acute  $\therefore$   $< 3$  weeks  $\rightarrow$  self limiting.
  - $\rightarrow$  Viral URTI or voice abuse.
- $\rightarrow$  Chronic  $\therefore$   $> 3$  weeks  $\rightarrow$  Careful assessment
  - $\rightarrow$  Laryngeal Ca, damage to recurrent L.N, etc..

① recurrent Laryngeal Nerve innervate all ms except

Cricothyroid ms  $\rightarrow$  From sup. laryngeal Nerve.  
 $\rightarrow$  both are branches of Vagus Nerve

## ① Acute Laryngitis:

- most common cause of acute hoarseness
- swelling of vocal cord  $\rightarrow$  Common cold, URTI, voice strain  
speaking loud, excessive use, inappropriate pitch

## ② Vocal Hemorrhage

- after strenuous vocal use
- emergency.

Rx  $\rightarrow$  absolute voice rest



Cases:-

↳ Acute:- Acute laryngitis, Acute laryngeal edema, Acute epiglottitis

↳ Chronic: Chronic laryngitis, Benign lesions, Laryngeal Ca, Paralysis etc, Trauma.

→ May be secondary to: 

GERD, LPRD, Smoking, Neurologic disease, Allergies, Thyroid Problem

Trauma, Laryngeal Ca, anticoagulant use

⊕ Benign Vocal Fold Lesions:

① Polyp.

- Unilateral

- Cause: Trauma to SLP & vasculature

- Found btw ant & middle third.

- > 3mm.

SfS:- 1. abrupt onset of hoarseness during extreme vocal effort.

2. chronic vocal rasping.

3. breathy hoarseness

on examination: 1. asymmetrical (unilateral)

2. sessile or pedunculated.

3. ant. 1/3 of VC

Rx → 1. stop anticoagulant therapy & stop smoking

2. Voice therapy.

3. Surgical → microscopic surgical incision, MicroSpot CO<sub>2</sub> Laser.



## II Nodules

- Bilateral

- Phonotrauma "singer & teacher"

- at junx btw ant  $\frac{2}{3}$  & Post  $\frac{1}{3}$  of true vocal cord

S&S:- 1- Chronic hoarseness or recurrent acute.

2- Decreased closure :- hour-glass shape glottal closure  
# - breaths

Rx:-  $\rightarrow$  In children :- leave it, it will regress alone

$\rightarrow$  in adults:-

$\rightarrow$  < 6 months:- ~~wait and see~~:-

$\rightarrow$  1- laryngeal lubrication through general hydration

2- Local steroids.

3- Mx of Allergy & GERD -- etc. ~~steroids~~

4- Voice rest

5- speech therapy

$\rightarrow$  if Persist  $> 6m \rightarrow$  Surgical excision

Polyp

Nodule

- Unilateral

- bilateral

- on mucous membrane

- on the epithelium

cuz - Voice abuse, chronic laryngeal Allergy  
inhalation irritants, smoke.

- Vocal abuse

- Not happen in children

- in children regress alone



### III] Varices & ectasia

- microvascular trauma in SLP
- in middle musculomembranous Vocal cord
- striking zone
- deceleration force

Rx:-

- 1- epithelial Cordotomy then vascular lesion removal
- or 2- Microspot CO<sub>2</sub> laser

### IV] Cysts.

- Unilateral
- Asymmetric spheroid mass on medial aspect of V-C.
- obstructed mucus duct insp.

Rx @not Mx with conservative but may be helpful (Medical & Behavioral)

↳ Surgery → mandatory ?? not sure.

### \* Reactive lesion =

- Hypertrophy contralateral to unilateral v.c. lesion.
- So not seen in nodules.
- treat underlying cause

→ Seen in Cyst (L20) (L20)

### V] Granulomas: (intubation)

- Unilateral
- Hypertrophic inflammatory reaction
- in arytenoid region
- cured by trauma (intubation)
- exophytic with narrow base directed outward. ← (L20)
- Large, pedunculation
- Vocal Fatigue

4-6 months

Rx:- 1- Antibiotic coverage.

2. Vocal therapy including antireflux.

3. Surgical → if.

conservative failed, concern of neoplastic lesion, airway compromise



## VI Polyoid Corditis (Reinke's EDema)

- extensive swelling of SLP.
- on sup. surface of musculo-membranous V-fold
- Bilateral asymmetric volume. → Superficial blood vessels.
- ⊗ Cause → Smoking, vocal hyperphnx.

Rx:- 1- Smoking cessation

2- Antireflux

3- Preop. vocal therapy

4- Surgery → Cold instrument, microspot CO<sub>2</sub> laser.  
↳ lateral cordotomy

## VII Papillomatosis

- most common benign tumor in larynx.
- HPV 6 & 11

Rx → CO<sub>2</sub> laser modality of choice

## VIII Leukoplakia. me

- white patch on the vocal cord.
- caused by irritation → reflux or smoking
- Pre malignant
- Dx & Rx → Phonosurgery
- Ddx → tumor, Papillomatosis  
↳ glottic



## (IX) Intrachordal Scarring

- in Reinke space
- inflammation, trauma, Herge
- VF → stiff & white or opaque
- hoarseness, vocal fatigue, breathiness, loss of projection

Rx :- 1- microflap.  
2- Medialization. Thyroplasty.  
3- Replacement soft tissue

Invx for hoarsness:-

- 1- Indirect mirror exam.
- 2- Fiberoptic laryngoscope
- 3- Neck CT, MRI
- 4- triple endoscopy.
- 5- biopsy — the definitive Dx

- ⊕ 1st line Rx should be Antireflux always
- ⊕ Vocal rest with Corticosteroids
- ⊕ Antibiotics

Conclusion:-

- Medical:
- 1- antireflux
  - 2- Vocal rest
  - 3- steroids
  - 4- A.B

surgical (for mucosal lesions)

• Surges of deep lesion → stiffness & fibrosis