Head and Neck Exam

POM – January 22, 2020

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Observation and Palpation

Note right sided neck/jaw area swelling and Right v Left asymmetry

- Inspection face & neck:
  - Does anything appear out of ordinary in Head & Neck?
  - Bumps/lumps, asymmetry, swelling, discoloration, bruising/trauma?
  - anything hidden by hair?
- Inspection & palpation of scalp, hair

Lymph Nodes of Head & Neck - Physiology

- Major lymph node groups located symmetrically either side of head & neck.
- Each group drains specific region

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Lymph Node Enlargement – Major Causes

Enlarged commonly with: **infection** or **malignancy;** less common **autoimmune** (e.g. lupus, sarcoid, other)

Infection: Acute, tender, warm

- Primary **region drained involved** (e.g neck nodes w/strep throat)
- D**iffuse** enlargement w/**generalized infection** (e.g. TB, HIV, Mono)

Autoimmune or Metabolic Diseases:

- Typically other symptoms that suggest disorder: adenopathy in areas most affected by primary illness
- Lupus: systemic inflammatory illness affecting joints, skin, kidneys, lung, heart
- Drug reactions: often accompanied by skin eruption

Drug Eruption

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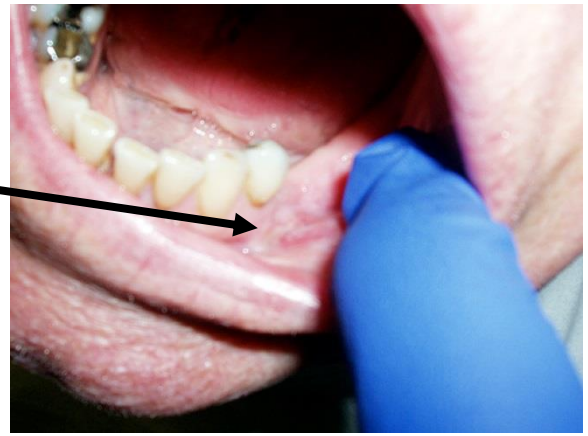
Lymph Node Enlargement (cont)

Malignancy:

- **Slowly progressive**, firm, multiple nodes, stuck together & to underlying structures.
- **Primary** site malignancy could be **nodes** (e.g. lymphoma) **or adjacent** region (e.g. intra-oral squamous cell ca)

Primary SCC of Mouth



Metastasis To Regional Lymph Nodes

Isolated Adenopathy: Primary SCC presumed To be in head/neck area

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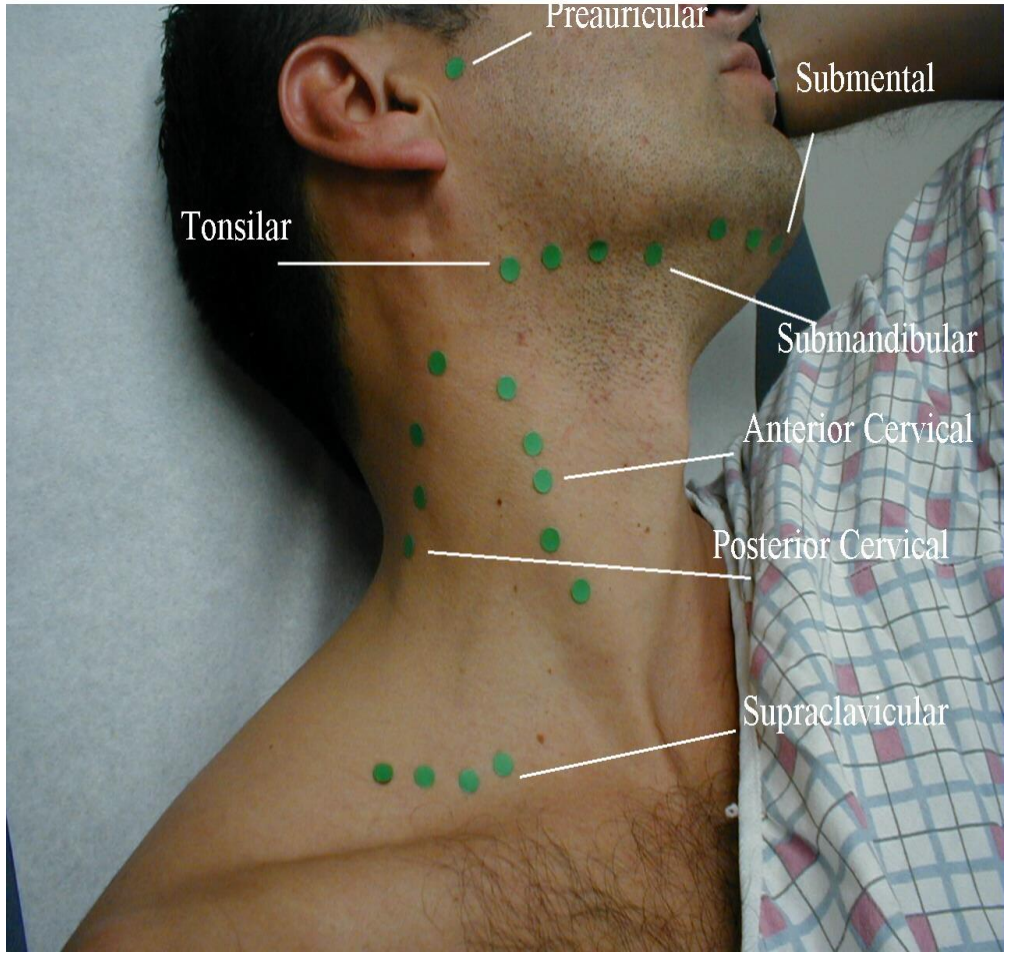
Lymph Node Anatomy & Drainage



Anterior Cervical → Throat, tonsils, post pharynx, thyroid

Posterior Cervical → Back of skull

Tonsillar → Tonsils, posterior pharynx

Sub-Mandibular → Floor of mouth

Sub-Mental → Teeth

Supra-Clavicular → Thorax

Pre-Auricular → Ear

Lymph Node Exam

- Gently walk fingers along general regions – comparing Right to Left

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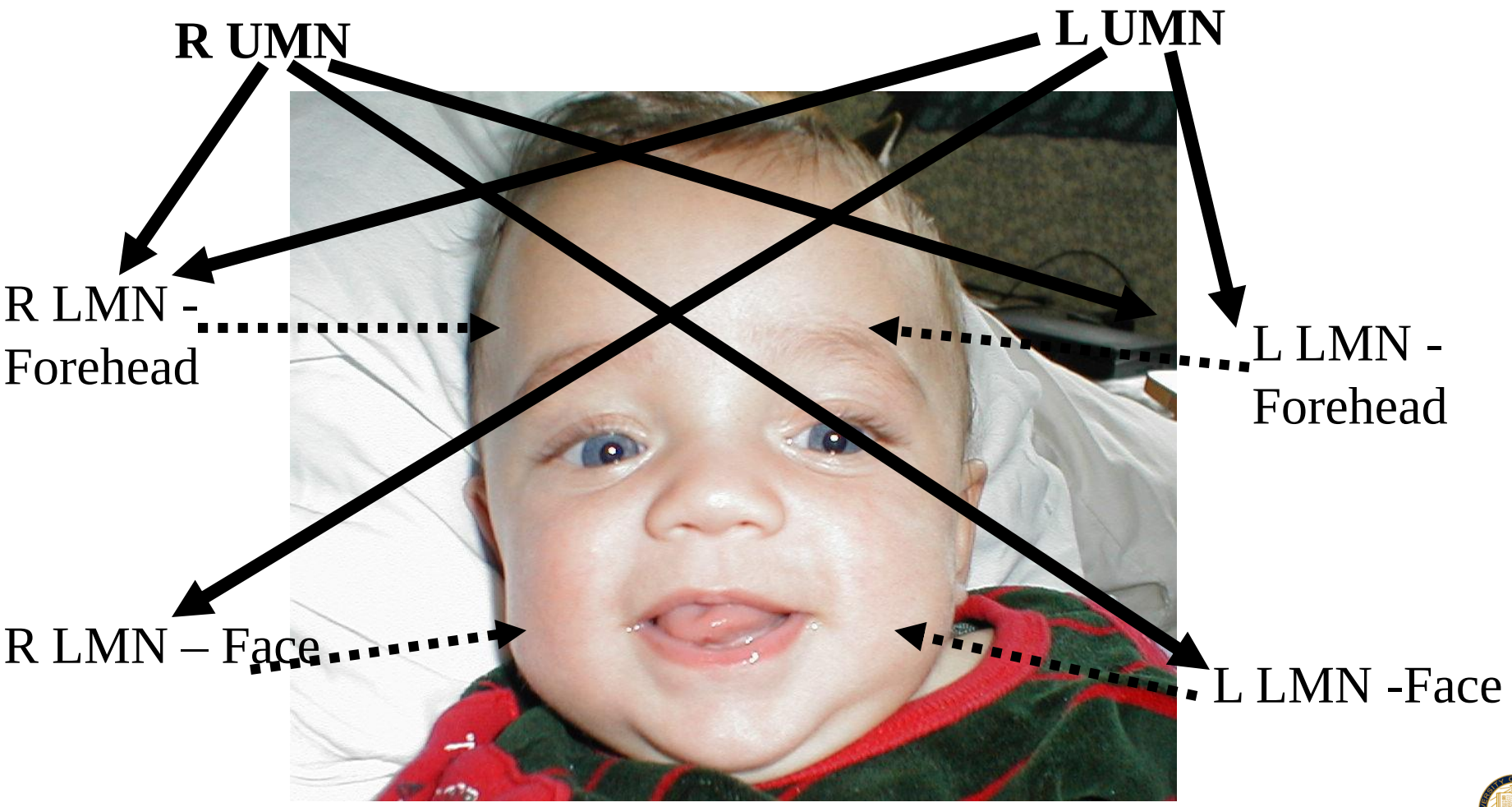
Function CN 7 – Facial Nerve Facial Symmetry & Expression -Precise Pattern of Innervation



***Note:** Selected Cranial Nerve (CN) testing embedded in H&N exam

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CN 7 – Exam

- Observe facial symmetry
- Wrinkle Forehead
- Keep eyes closed against resistance
- Smile, puff out cheeks

Cute.. and symmetric!

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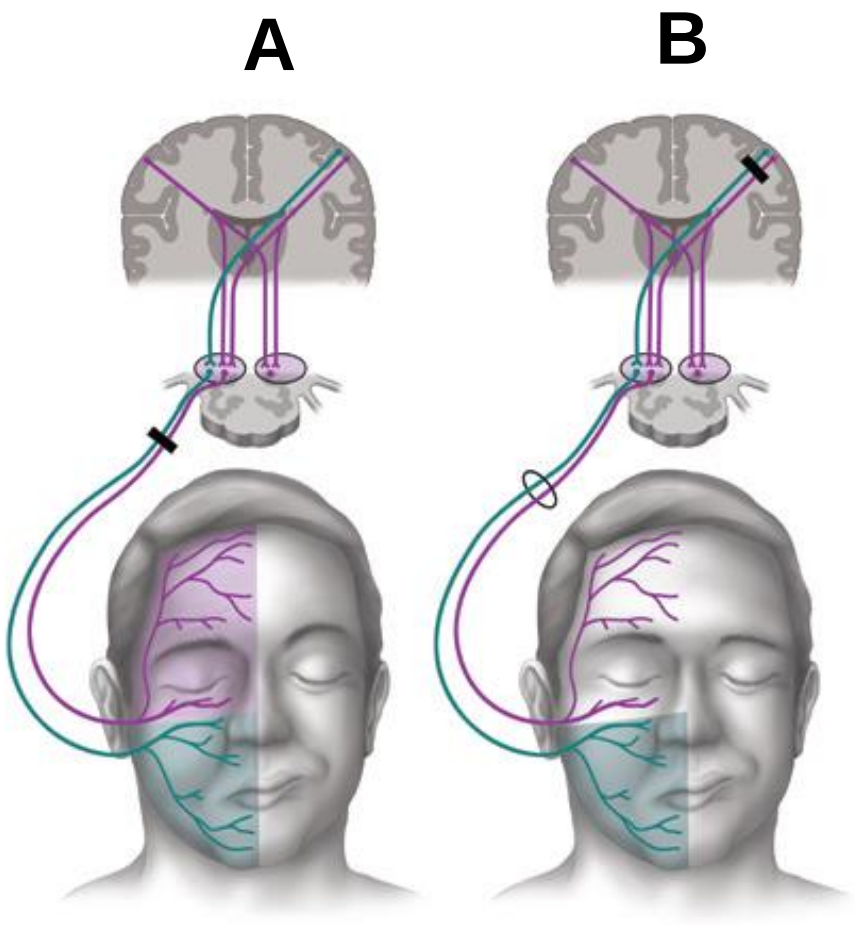
Comparison of a patient with *(A)* a facial nerve (Bell's Type - LMN) lesion and *(B)* a supra-nuclear (UMN) lesion w/forehead sparing

Tiemstra J et al. Bell's Palsy: Diagnosis and Management, Amer J Fam Practice, 2007;76(7):997-1002.
http://www.aafp.org/afp/2007/1001/p997.pdf

Upper Motor Neuron (UMN)

Lower Motor Neuron (LMN)



Note forehead and lower face are affected on the right, which is same side of the LMN lesion

Note forehead sparing on right side, opposite the UMN lesion

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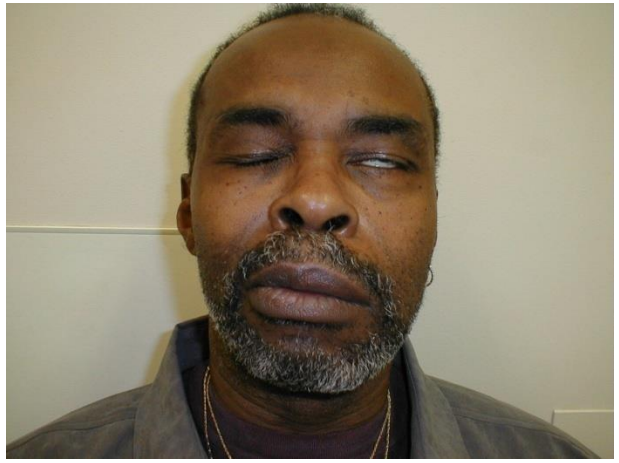
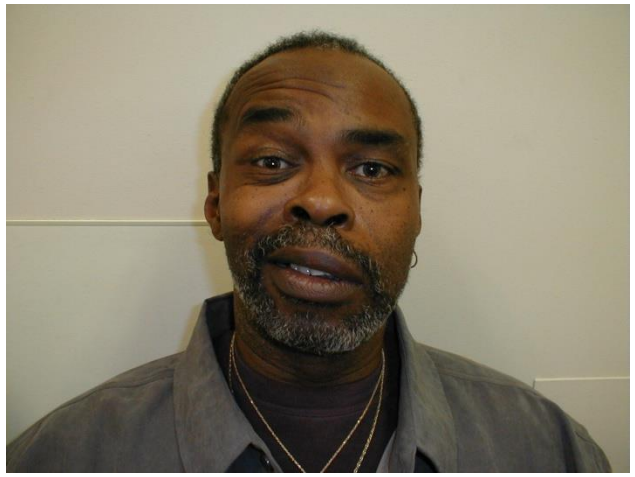
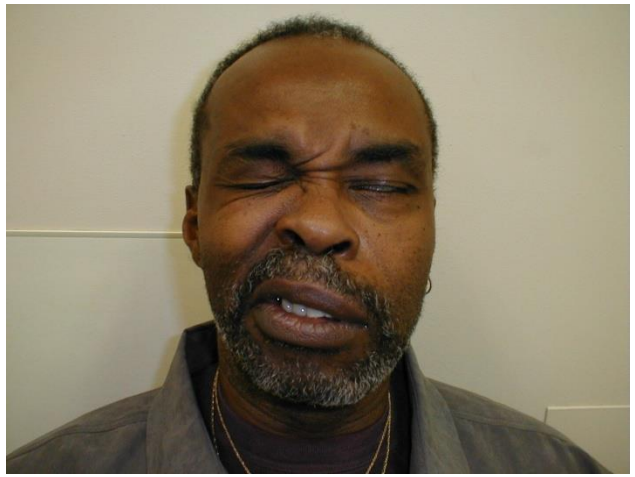
Pathology: Peripheral CN 7 (Bell's) Palsy

Patient can't close left eye, wrinkle left forehead or raise left corner mouth → Left CN 7 Peripheral (i.e. LMN) Dysfunction







<u>Central (i.e. UMN) CN 7 dysfunction (e.g. stroke) - not shown:</u> Can wrinkle forehead bilaterally; will demonstrate loss of lower facial movement on side opposite stroke.

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Function CN 5 - Trigeminal

- Sensation:
  - 3 regions of face: Ophthalmic, Maxillary & Mandibular
- Motor:
  - Temporalis & Masseter muscles

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Function CN 5 – Trigeminal (cont)

Motor

Temporalis (clench teeth)

Masseter (move jaw side-side)

Sensory

Ophthalmic(V1)

Maxillary (V2)

Mandibular (V3)

Corneal Reflex: Blink when cornea touched - Sensory CN 5, Motor CN 7

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Selected CN 5 Sensory Pathology

V1 (ophthalmic branch) Zoster

V2 (maxillary branch) Zoster

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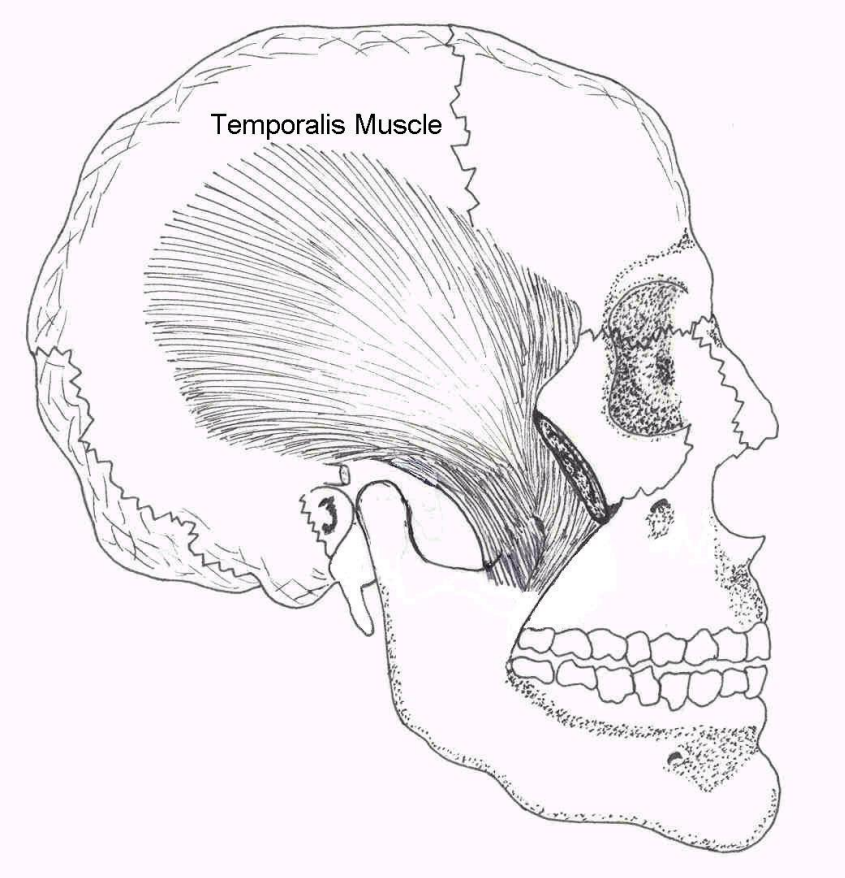
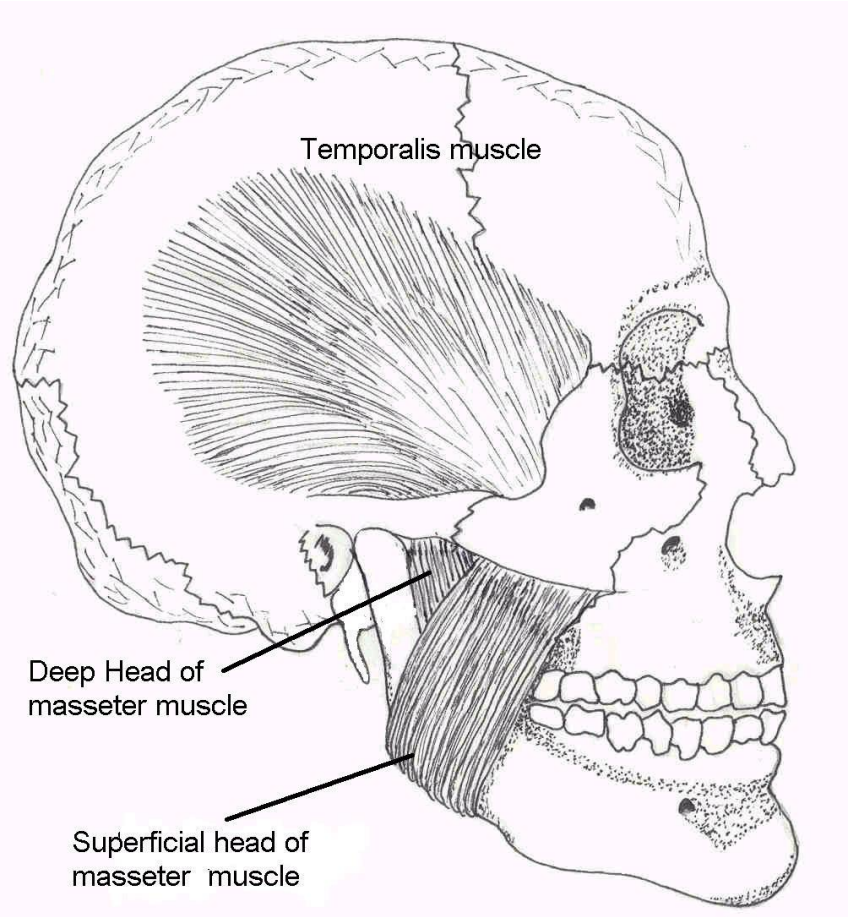
Temporalis & Masseter Muscles





Courtesy Oregon Health Sciences University:
http://home.teleport.com/~bobh/

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Testing CN 5 - Trigeminal

- Sensory:
  - Ask patient to close eyes
  - Touch each of 3 areas (ophthalmic, maxillary, & mandibular) lightly, noting whether patient detects stimulus.
- Motor:
  - Palpate temporalis & mandibular areas as patient clenches & grinds teeth
- Corneal Reflex:
  - Tease out bit of cotton from q-tip: Sensory CN 5, Motor CN 7
  - Blink when touch cornea with cotton wisp

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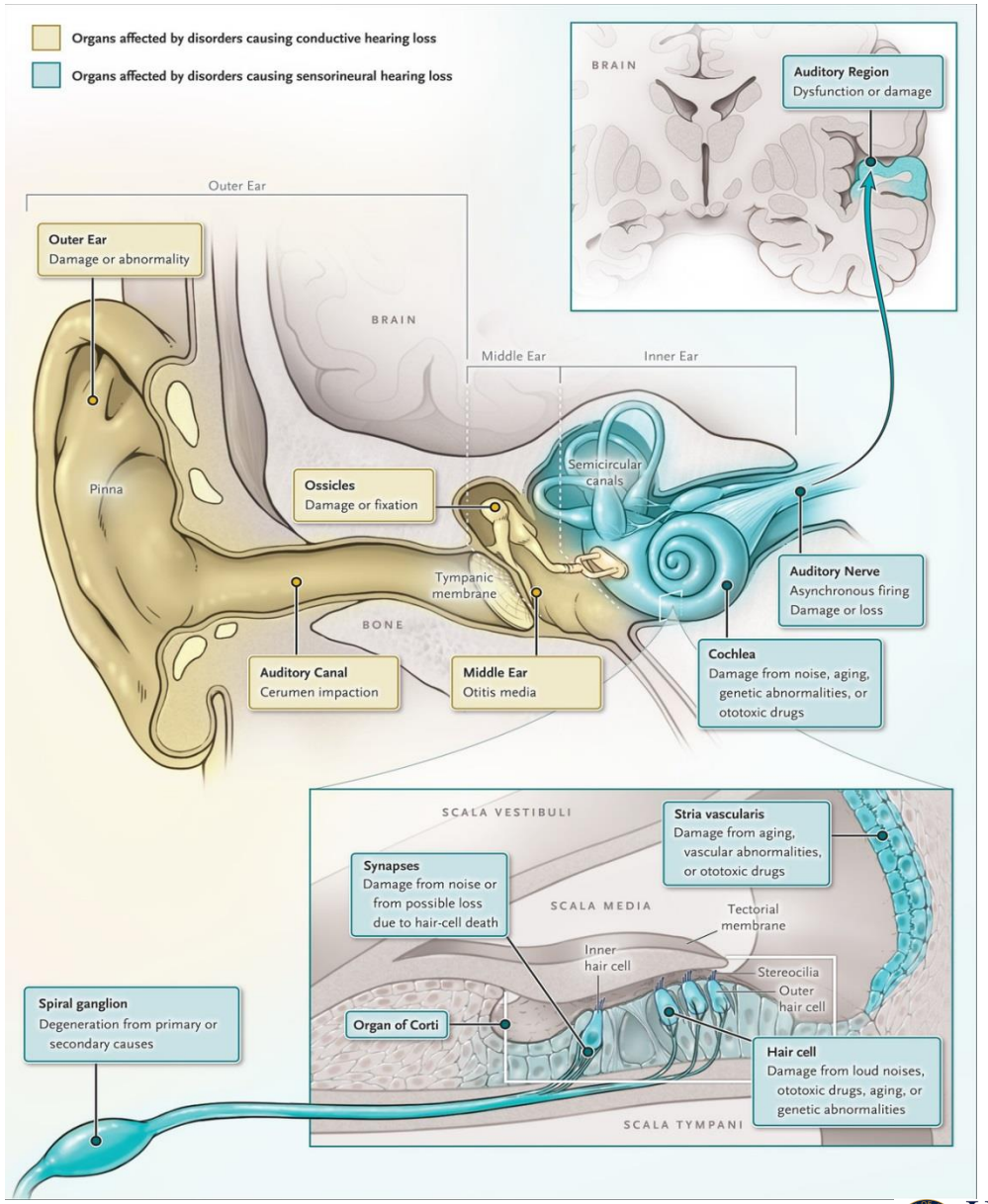
The Ear – Functional Anatomy and Testing (CN 8 – Acoustic)

- Crude hearing tests: rub fingers next to either ear; whisper & ask patient to repeat words
- **If** hearing loss, determine: **<u>Conductive</u>** (external canal up to but not including cochlea & auditory branch CN 8) v **<u>Sensorineural</u>** (cochlea & auditory branch CN 8)



Cunningham L, et al. NEJM 2017;377:2465-2473.

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CN 8 - Defining Cause of Hearing Loss - Weber Test

- 512 Hz tuning fork: (<u>not</u> 128Hz): well w/in range normal hearing & used for testing
  - Get turning fork vibrate→ strike ends against heel of hand

    or

    Squeeze tips between thumb & 1st finger
- Place vibrating fork mid line skull
- Sound should be heard equally on Right & Left → bone conducts to both sides.

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CN 8 - Weber Test (cont)

- If **conductive** hearing loss (e.g. obstructing wax in canal on left)→ louder on left as less competing noise.
- If **sensorineural** on left →louder on right
- Finger in ear mimics conductive loss

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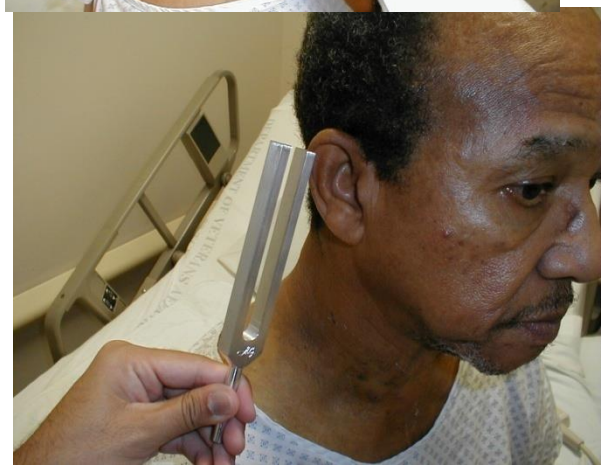
CN 8 - Defining Cause of Hearing Loss - Rinne Test

- Place vibrating 512 hz tuning fork on mastoid bone (behind ear).
- Patient states when can't hear sound.
- Place tines of fork next to ear→ should hear it again – as air conducts better then bone.
- If BC better then AC, suggests **conductive** hearing loss.
- If **sensorineural** loss, then AC still > BC



Note: Weber & Rinne difficult to perform in loud rooms due to competing noise – repeat @ home in quiet room!

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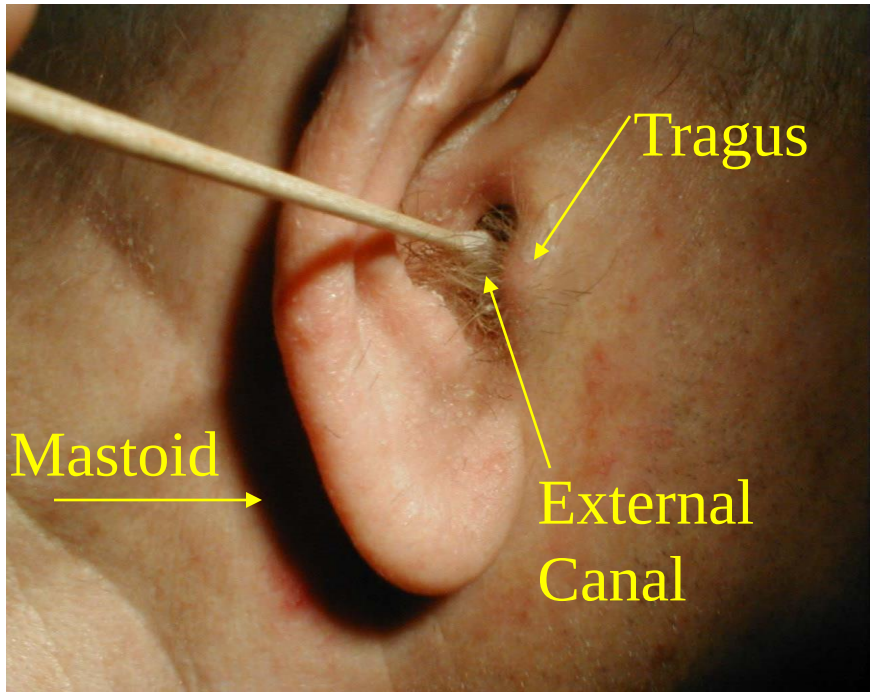
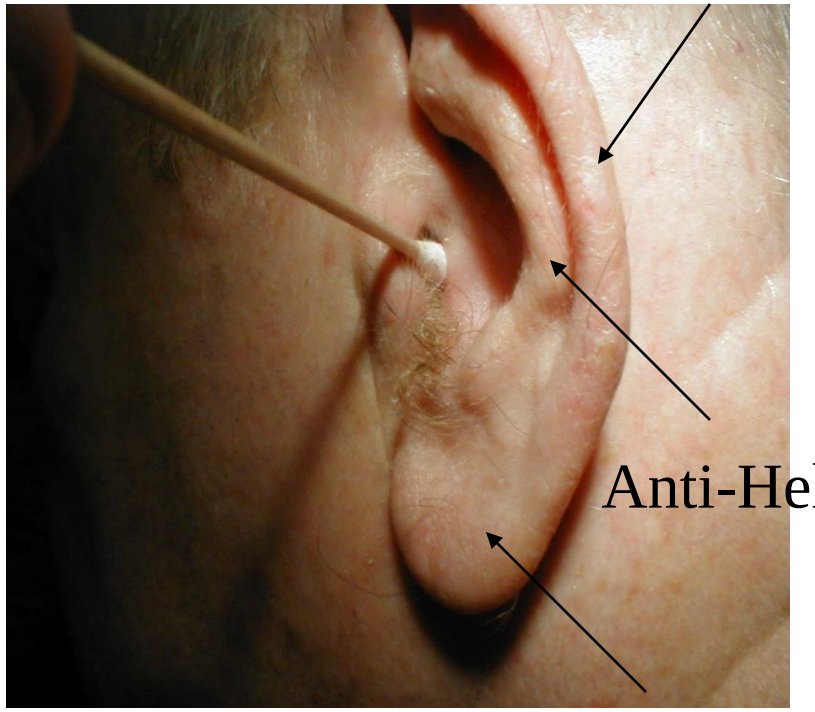
Examining the External Structures of The Ear - Observation





Note: Picture on **Left** →normal external ear; picture on **Right** →swollen external canal, narrowed by inflammation

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Internal Ear Anatomy

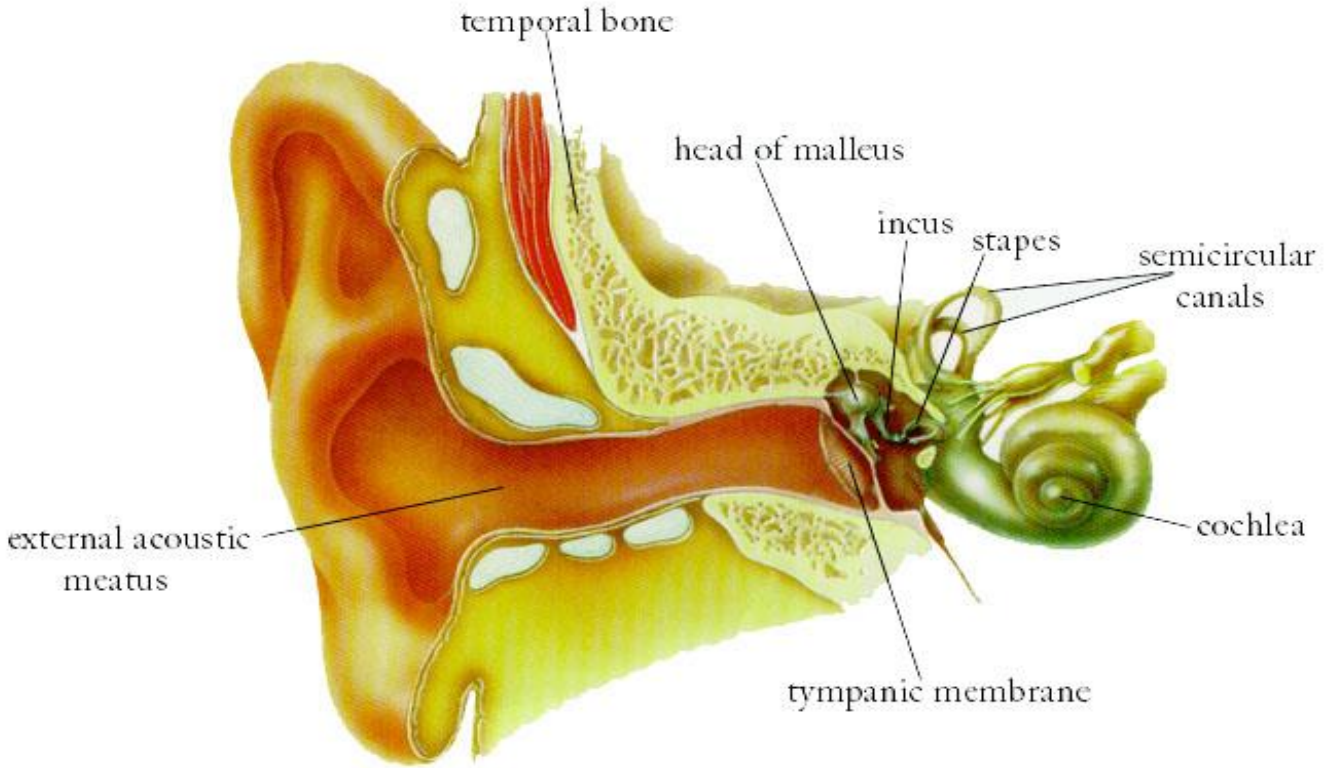

Image Courtesy: Online Otoscopy Tutorial
http://www.uwcm.ac.uk:9080/otoscopy/index.htm

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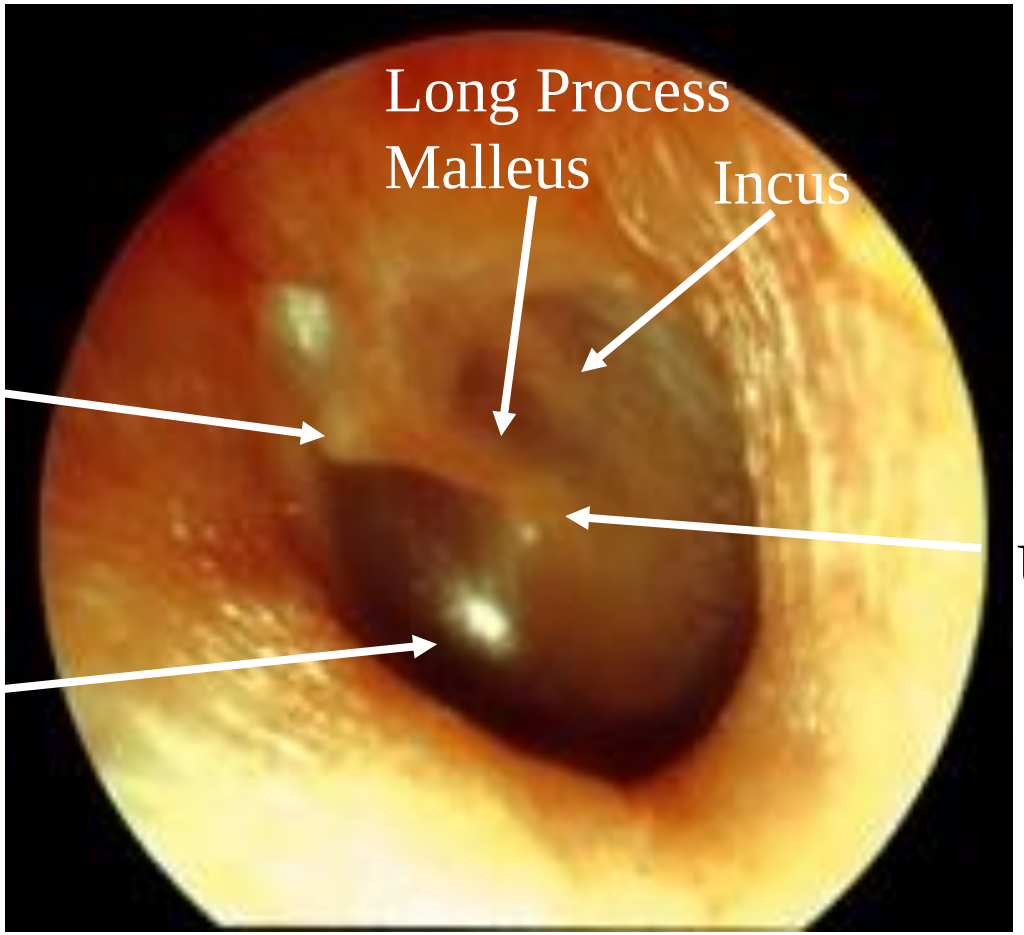
Normal Tympanic Membrane

NOSE

Short Process
Malleus



<u>Left Ear</u> –
Malleus points down and back

Umbo

Cone of Light

Images courtesy American Academy of Pediatrics
http://www.aap.org/otitismedia/www/

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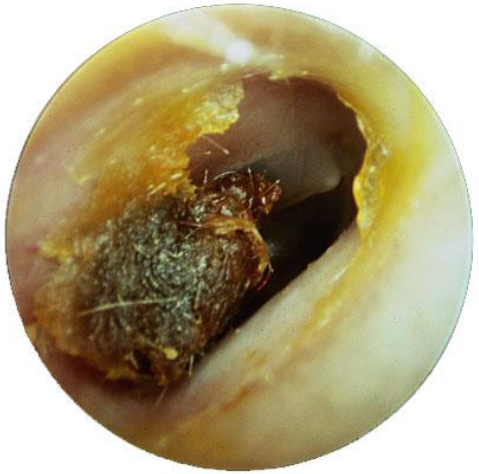
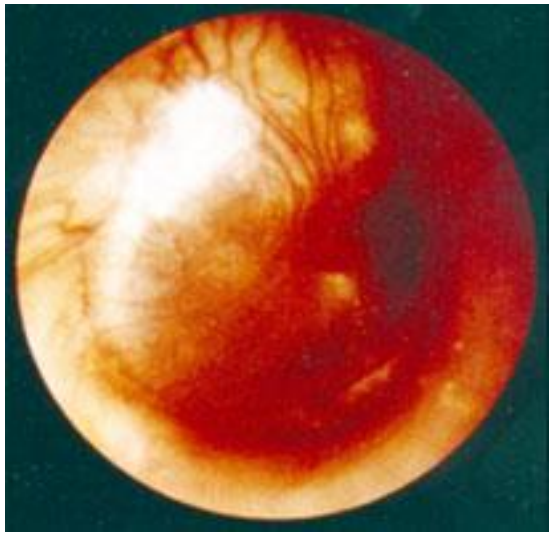
Selected Tympanic Membrane Pathology

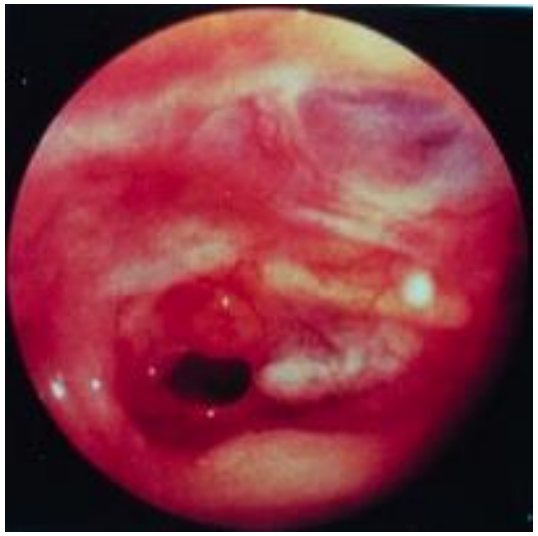
Normal



Wax



Acute Otitis Media



Otitis Media With Perforation

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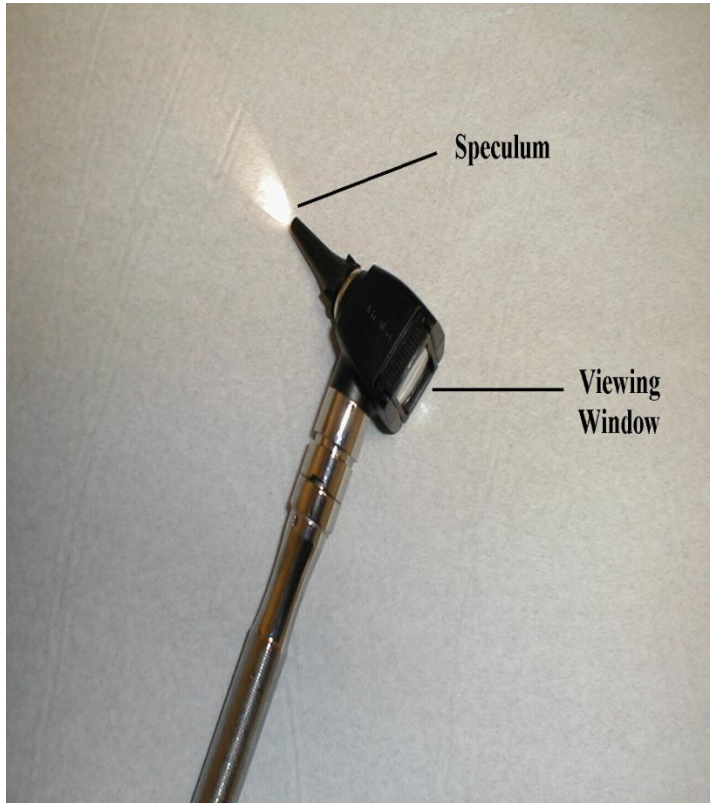
Using Your Otoscope

- Make sure battery's charged!
- Gently twist Otoscopic Head (clockwise) onto handle
- Twist on disposable, medium sized speculum
- Hold in right hand→ right ear, left hand→ left ear



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Otoscope W/Magnified Viewing Head

- Advantage→ magnified view, larger field
- Speculum twists on; viewing same as for conventional head
- Rotate wheel w/finger while viewing tympanic membrane to enhance focus (default setting is green line)

Welchallyn.com

Otosocopy Basics

- Make sure patient seated comfortably & ask them not to move
- Place tip speculum in external canal under direct vision
- Gently pull back on top of ear
- Advance scope slowly as look thru window – extend pinky to brace hand
- Avoid fast, excessive movement – Stop if painful!

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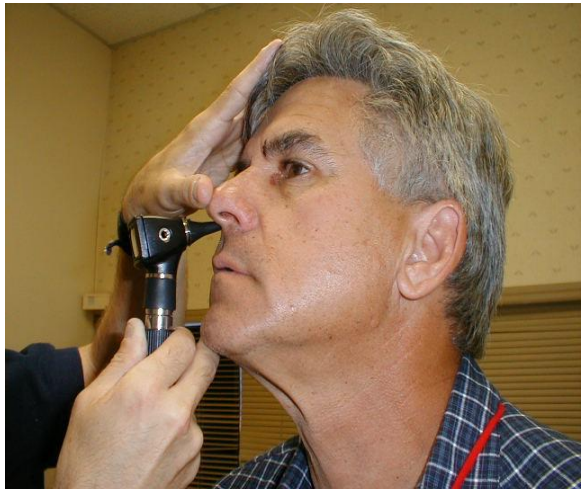
Look Dad - Otoscopy Sure is Easy!

NEJM - Diagnosing Otitis Media: http://www.nejm.org/doi/full/10.1056/NEJMvcm0904397#figure=preview.jpg

The Nose

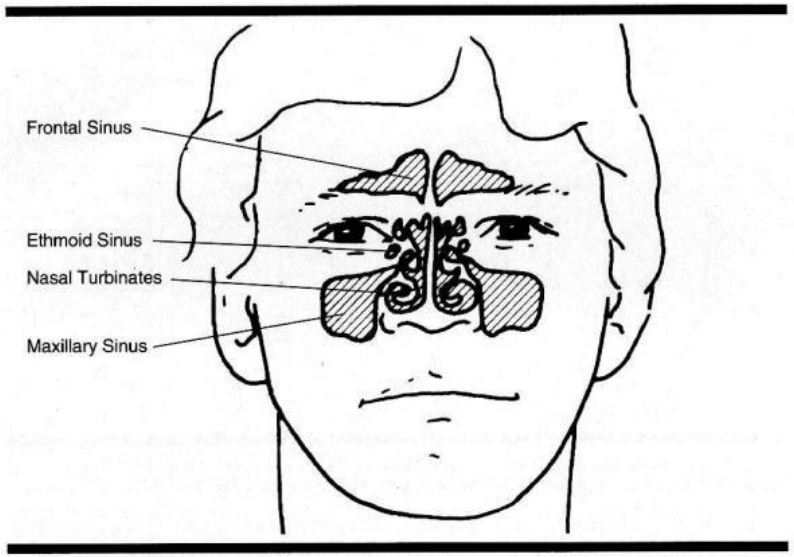
- **Observe external** structure for symmetry
- Check **air movement** thru ea nostril separately.
- **Smell** (CN 1 – Olfactory) not usually assessed (unless sx)
  - use coffee grounds or other w/distinctive odor
    (e.g. mint, wintergreen, etc)
  - detect odor when presented @ 10cm.
- **Look** into **each nostril** using **otoscope** w/speculum – note color, septum (medial), turbinates (lateral)



Sinuses

- Normally Air filled (cuts down weight of skull), lined w/upper respiratory epithelium→ keeps antigens/infection from lung
- Maxillary & frontal accessible to exam (others not)
- **Exam only done** if concern re sinus infection/pathology

  (*__Special Test__)



Anatomy

Image: Williams, J. JAMA 270 (10); 1993: 1242-46

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Sinuses (cont)

If concern for acute sinusitis (purulent nasal d/c, facial pain/fullness, nasal congestion, post nasal drip, cough, sometimes fever):

- **Palpate** (or percuss) sinus→ elicits pain if inflamed/infected
- **Transilluminate**→ normally, light passes across sinus → visible thru roof of mouth.. Infection→ swelling & fluid→ prevents transmission
- **Room** must be **dark**
- Place otoscope on infra-orbital rim while look in mouth for light

Note: Not possible to see transmitted light if room brightly lit (e.g. the anatomy lab) – try this @ home in dark room!

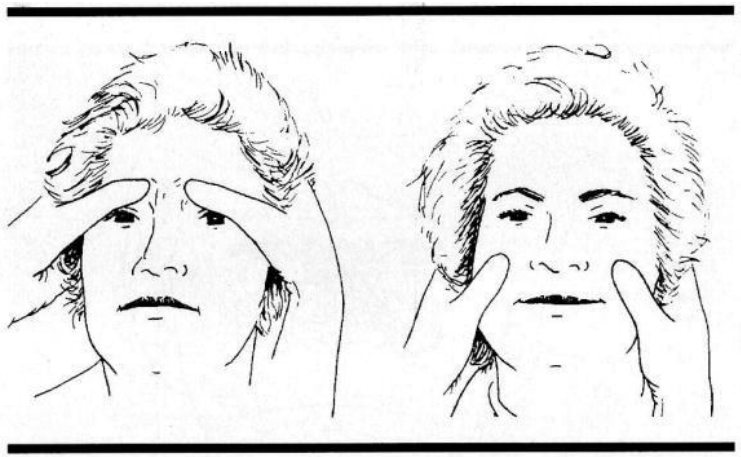

Image: Williams, J. JAMA 270 (10); 1993: 1242-46

Palpation

Transillumination

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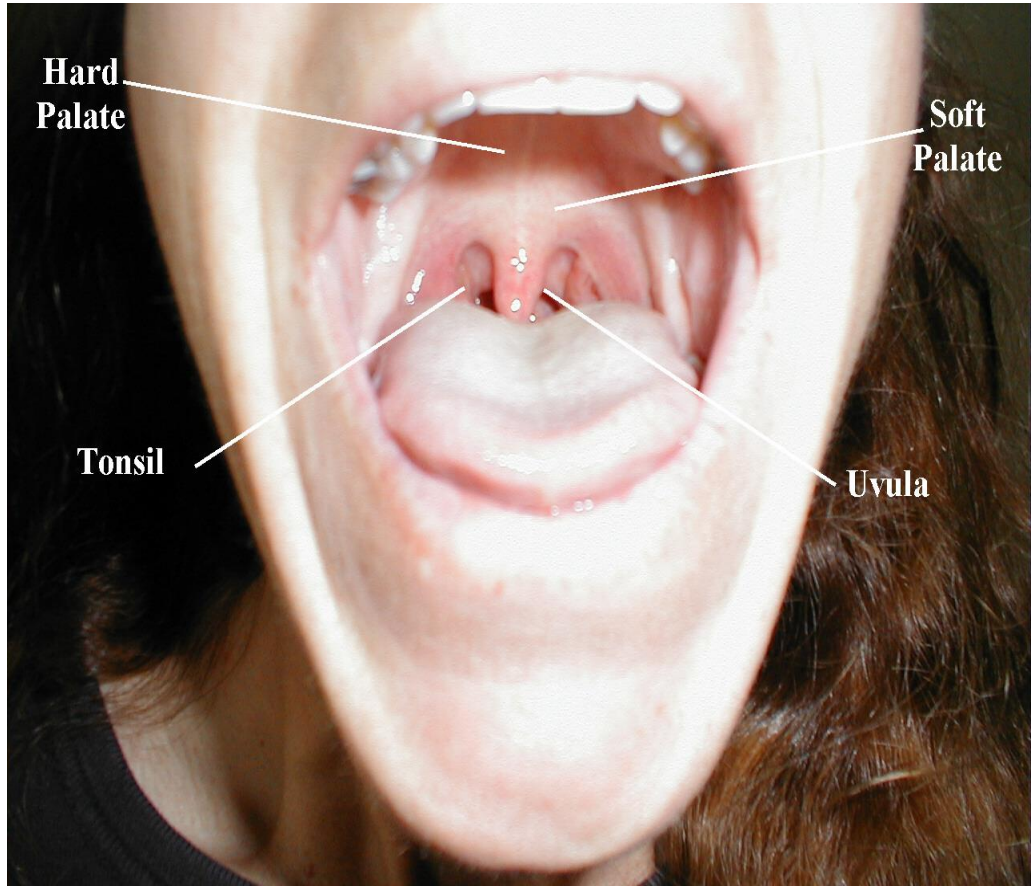
Oropharynx



- **Inspect posterior pharynx** (back of throat), tonsils, mucosa, teeth, gums, tongue
- **Use tongue depressor & light** – otoscope works as flashlight
- Can **grasp tongue** w/a gauze pad & move it side to side for better **visualization**
- **Palpate abnormalities** (gloved hand)

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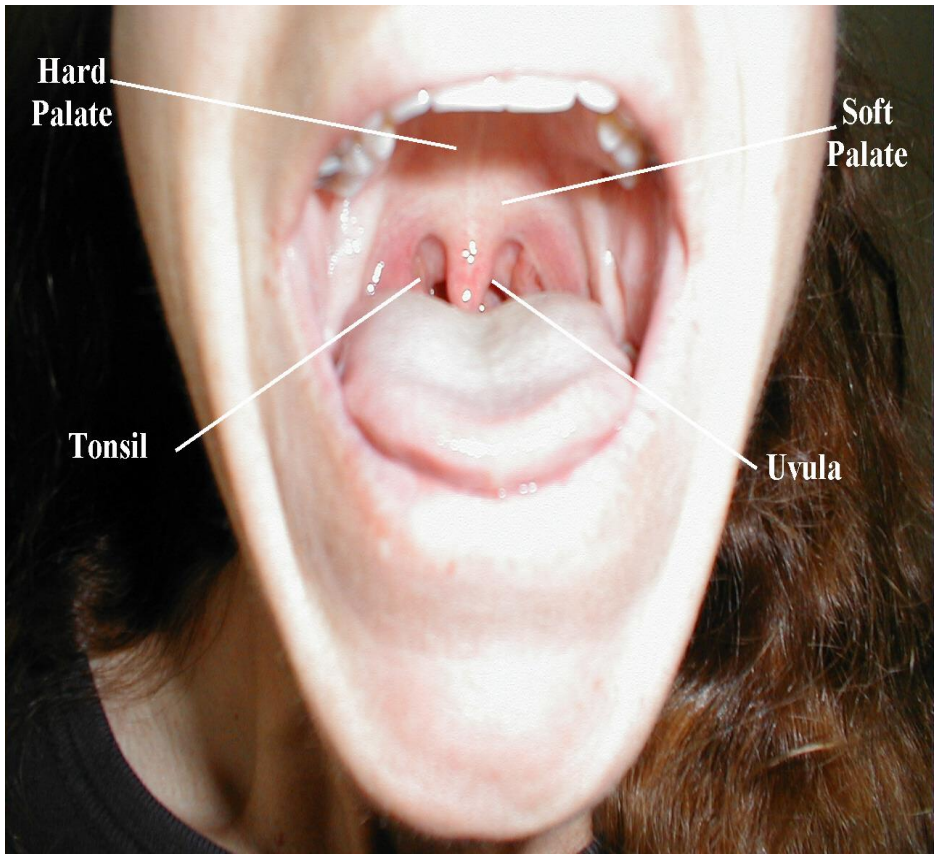
Oropharynx: Anatomy & Function CNs 9 (Glosopharyngeal), 10 (Vagus) & 12 (Hypoglossal)



- **Uvula midline** - **CN 9**
- Stick out tongue, say "**Ahh"** – use tongue depressor if can't see
  - palate/uvula rise -**CN 9, 10**
- **Gag Reflex** – provoked w/tongue blade or q tip - **CN 9, 10**
- **Tongue midline** when

  patient sticks it out → **CN 12**
  - check **strength** by directing patient push **tip** into **inside** of **either cheek** while you push from outside

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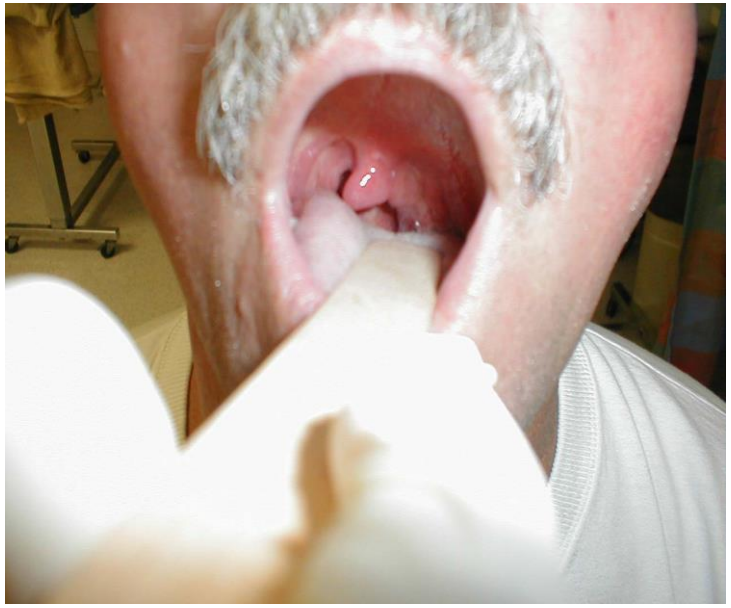
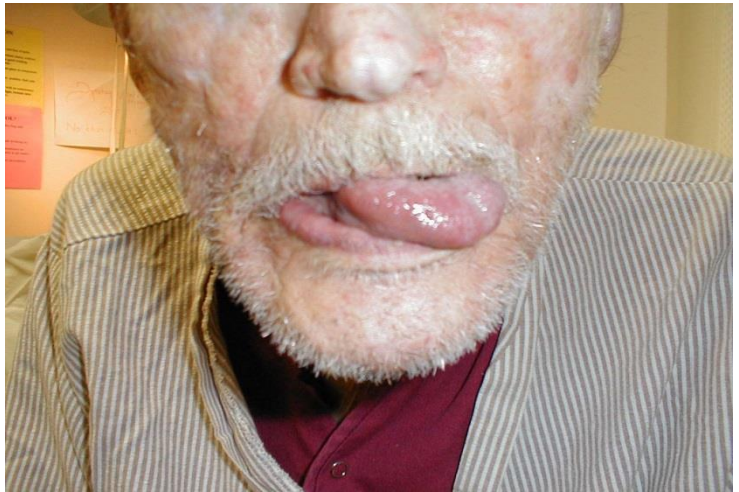
Selected Pathology of Oropharynx

L CN 9 palsy – uvula pulled to R



L peri-tonsilar abscess – uvula pushed to R



L CN 12 palsy – tongue deviates L

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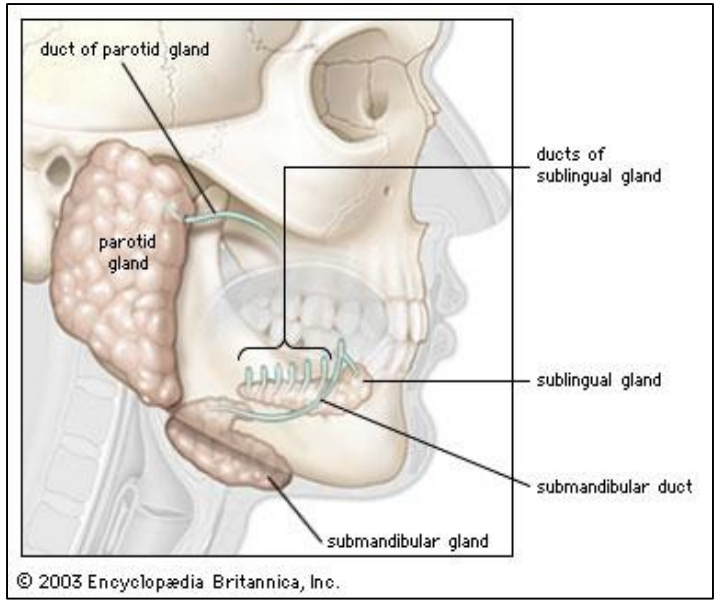
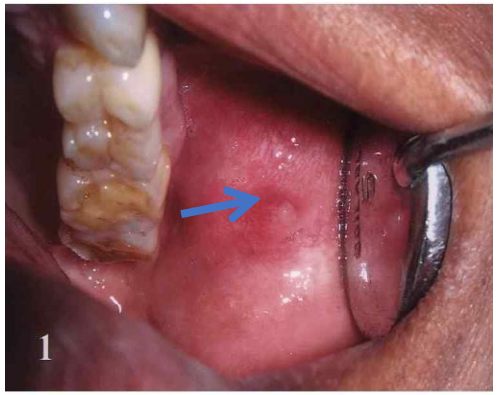
Parotid and other Salivary Glands

- Contribute saliva to food
- Drain into mouth via discrete ducts
  - Parotid→ next to upper molars
  - Submandibular→ floor of mouth
- Glands not easily palpable
- Painful &/or swollen if:

  obstruction, inflammation, infection or cancer



Wharton's Ducts
(sub-mandibular)



Stensens's Duct
(parotid)

Images from LSU School of Medicine:
www.medschool.lsuhsc.edu/.../docs/parotitis.pptx

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What about the Teeth?

- Dental health has big implications:
  - Nutrition (ability to eat)
  - Appearance
    - Self esteem
    - Employability
    - Social acceptance
  - Systemic disease → endocarditis, ? other
  - Local problems:
    - Pain, infection
- Profound lack of access to care → MDs primary Rx

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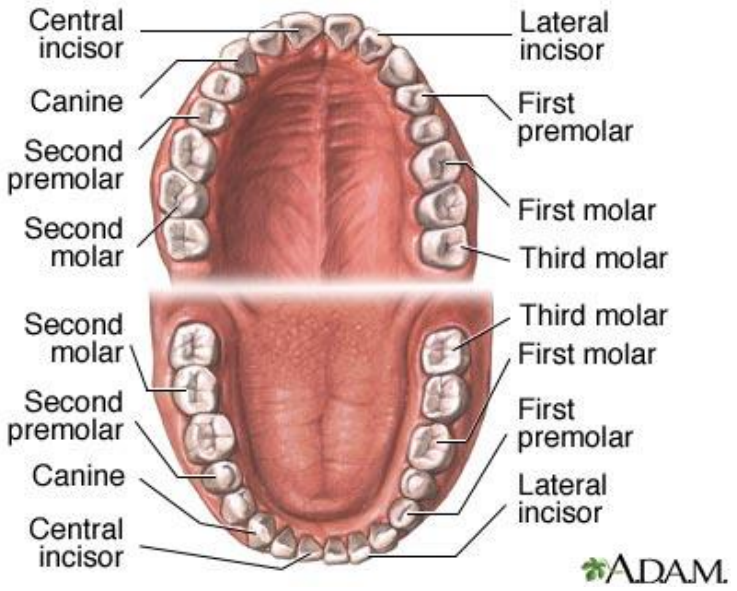
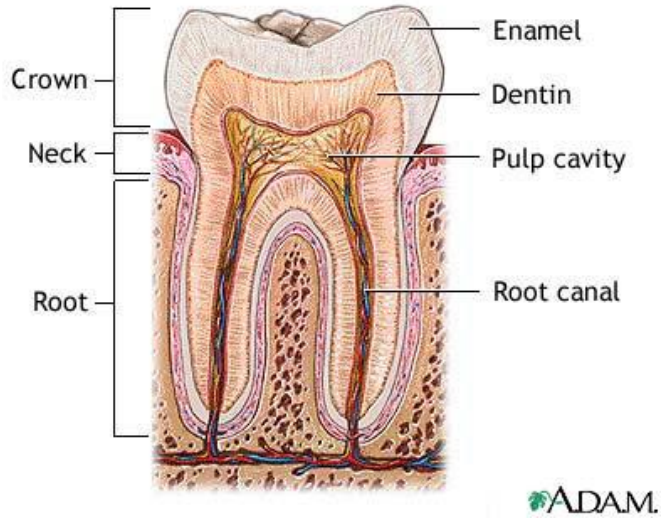
Dental Anatomy & Exam

- 16 top, 16 bottom
- Examine all
  - Observation teeth, gums
  - Gloved hands, gauze, tongue depressor & lighting if abnormal
- Look for:
  - General appearance
    - ? All present
    - Broken, Caries, etc.?
  - Areas pain, swelling→ ? infection
    - Localize: ? Tooth, gum, extent

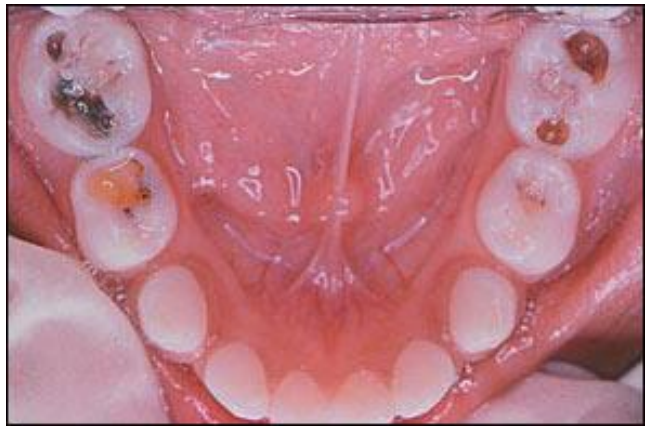


http://www.nytimes.com

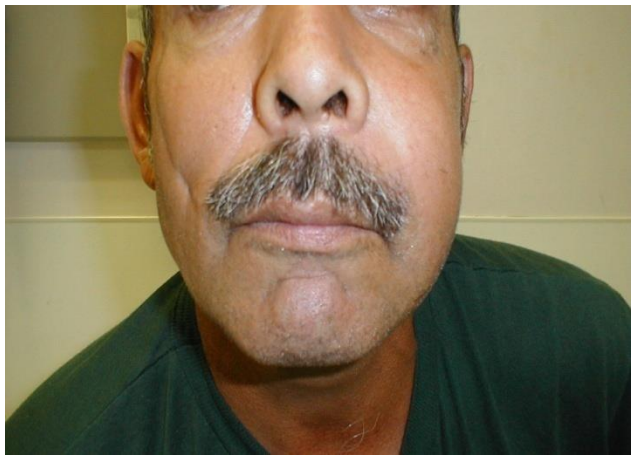


http://www.nlm.nih.gov/medlineplus

Common Dental Pathology



Caries: Breakdown in Enamel
American Family Physician: Common Dental Emergencies
http://www.aafp.org/afp/20030201/511.html



Facial Swelling (left) Secondary to Tooth Abscess

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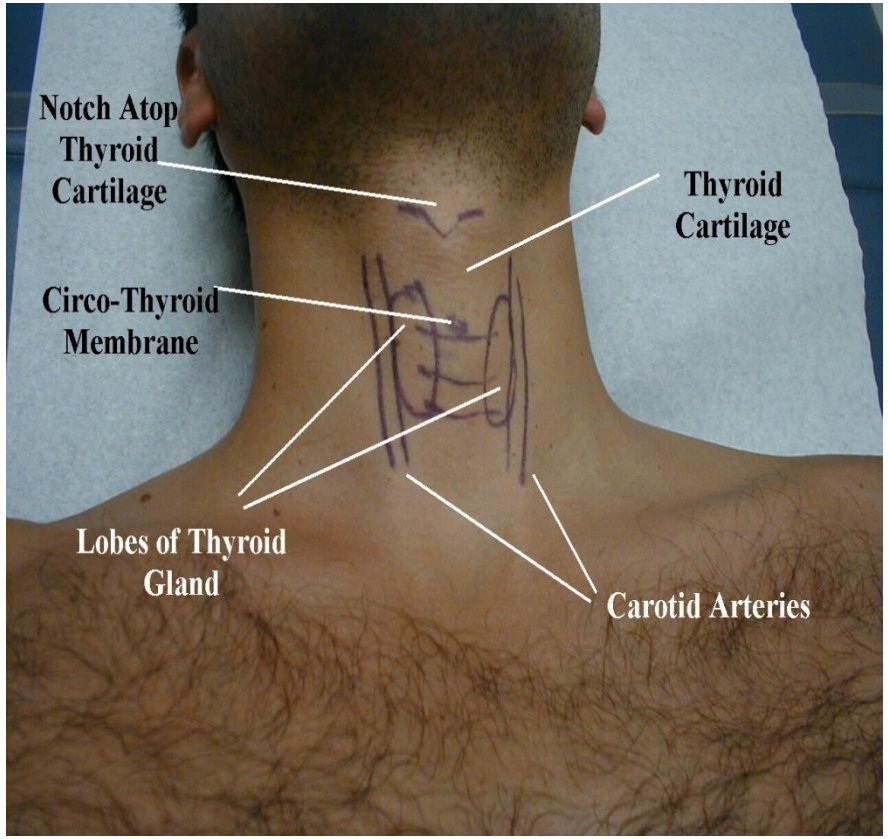
Thyroid Anatomy



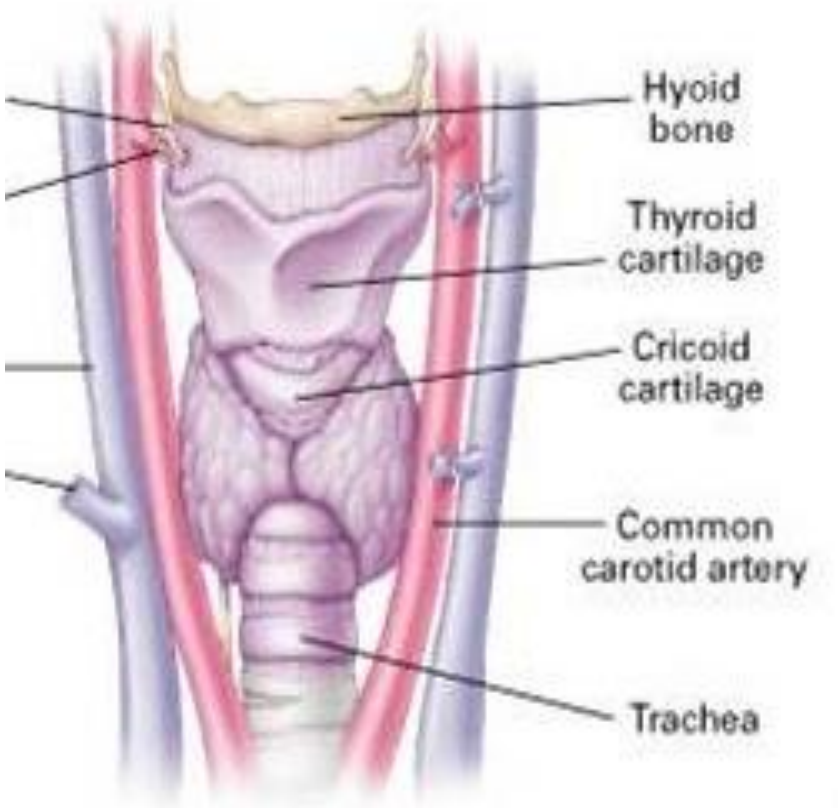


Image: Strome, T. NEJM 344; 2001: 1676-79

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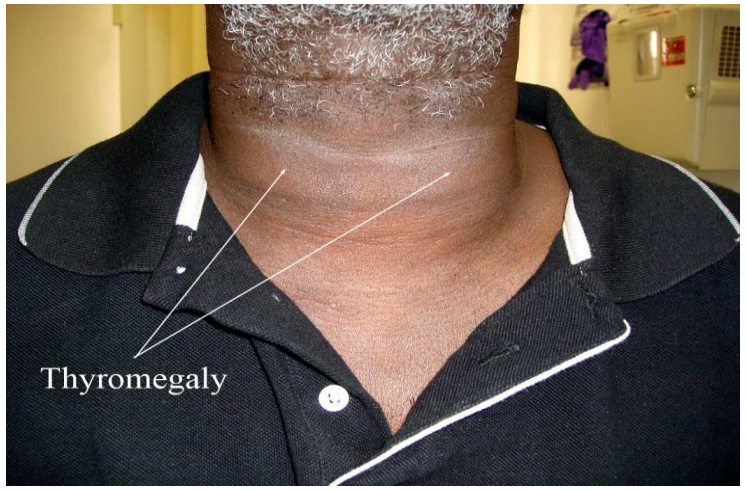
Thyroid Exam



- **Observe** (obvious abnormalities, trachea)
- From front or behind→ **Identify landmarks** (touch and vision)
- **Palpate** as patient **swallows** (drinking water helps)
- ? Focal or **symmetric enlargement**, **nodules**.

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Summary Of Skills

- □ Wash hands
- □ Observation head & scalp; palpation lymph node, parotid and salivary gland regions
- □ Facial symmetry, expression (CN 7)
- □ Facial sensation, muscles mastication (CN 5)
- □ Auditory acuity
  - □ Weber & Rinne Tests (CN 8) (*Special Testing*)
- □ Ear: external and internal (otoscope)
- □ Nose: observation, nares/mucosa (otoscope), smell (CN 1)
- □ Sinuses: palpation, trans-illumination (*Special Testing*)
- □ Oropharynx: Inspection w/light & tongue depressor→ uvula, tonsils, tongue (12); Inspect Teeth, Salivary gland ducts; Tongue movement (CN 12); “Ahh” & Gag reflex (CNs 9, 10)
- □ Thyroid: Observation, palpation
- □ Wash hands

Time Target: < 10 min