

PHARYNX

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The objectives

- **To know the basic pharynx anatomy and physiology.**
- **To recognize assessment and management of common pharyngeal diseases, include ability to obtain patients' history, perform comprehensive physical and mental status assessment, interprets findings**
- **To know how to handle common pharyngeal emergencies.**
- **To be aware of common pharyngeal operations.**

◎ **Pharynx I**

- ◎ - anatomy of the pharynx and deep neck spaces (retro and parapharyngeal)
- ◎ - physiology (function of pharynx in brief)
- ◎ - acute and chronic pharyngitis (non-specific and specifec)
e.g scarlet fever,
- ◎ infectious monoliasis, fungal, Vincent angina, diphtheria
- ◎ - Zenker diverticulation (in brief)

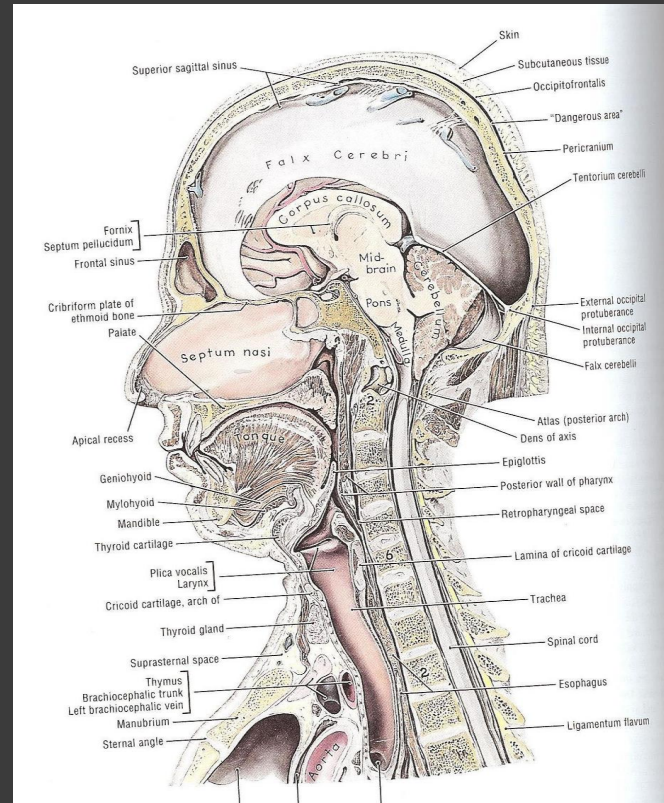
◎ **Pharynx II**

- ◎ - adenoid and tonsil diseases.
- ◎ - complication of pharyngeal diseases (Quinsy, para and retropharyngeal,
Ludwig's angina) + Radiological illustrations)
- ◎ adenotonsillectomy (indications, complication and management)

Pharynx

It extends from the base of the skull to the level of the 6th cervical vertebra at the lower border of the cricoid cartilage.

Funnel shaped, 10 cm length



Parts of the pharynx:

1-Nasopharynx:

Open ant to the nose ,

Above: the base of skull

below: soft palate

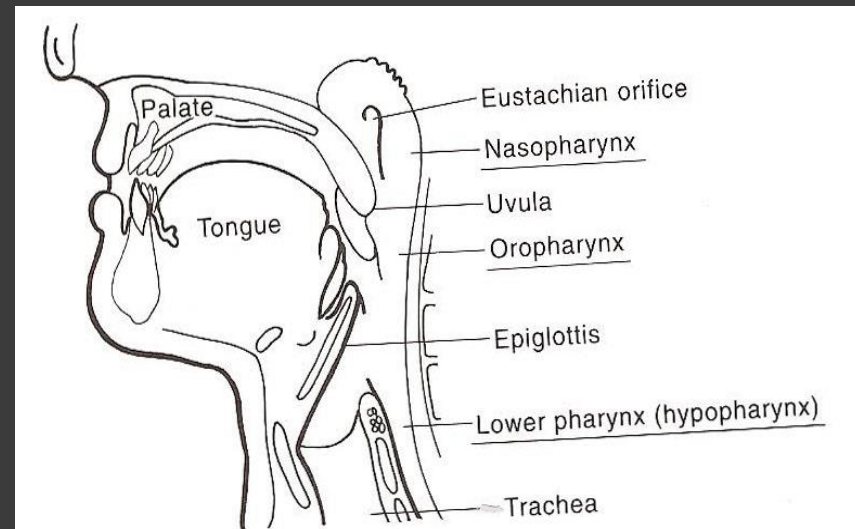
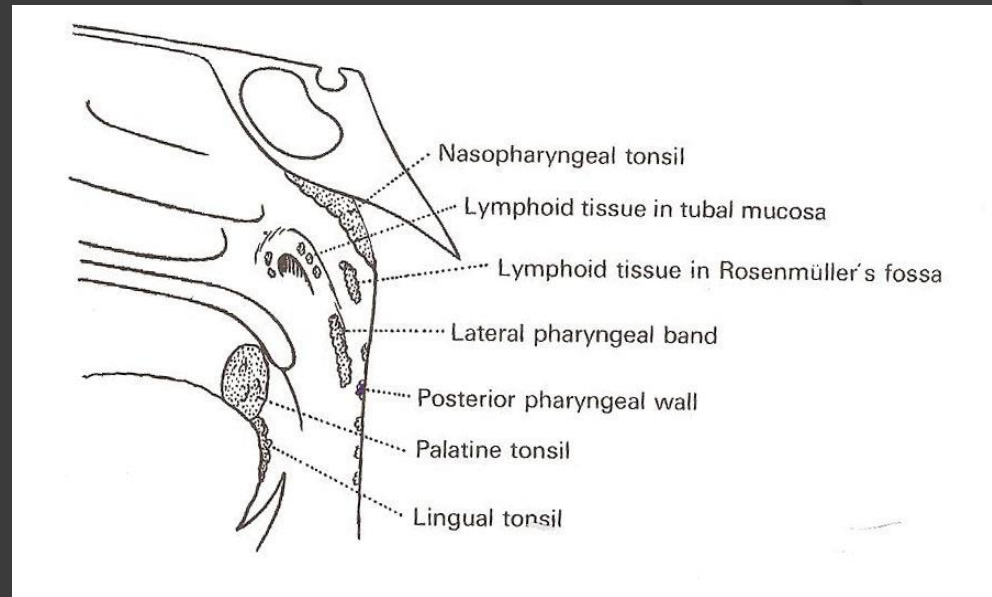
Laterally : opening of the eustachain tube

torus tuberosus

Pharyngeal recess (fossa of rosenmuller)

Adenoid

Nasopharyngeal isthmus



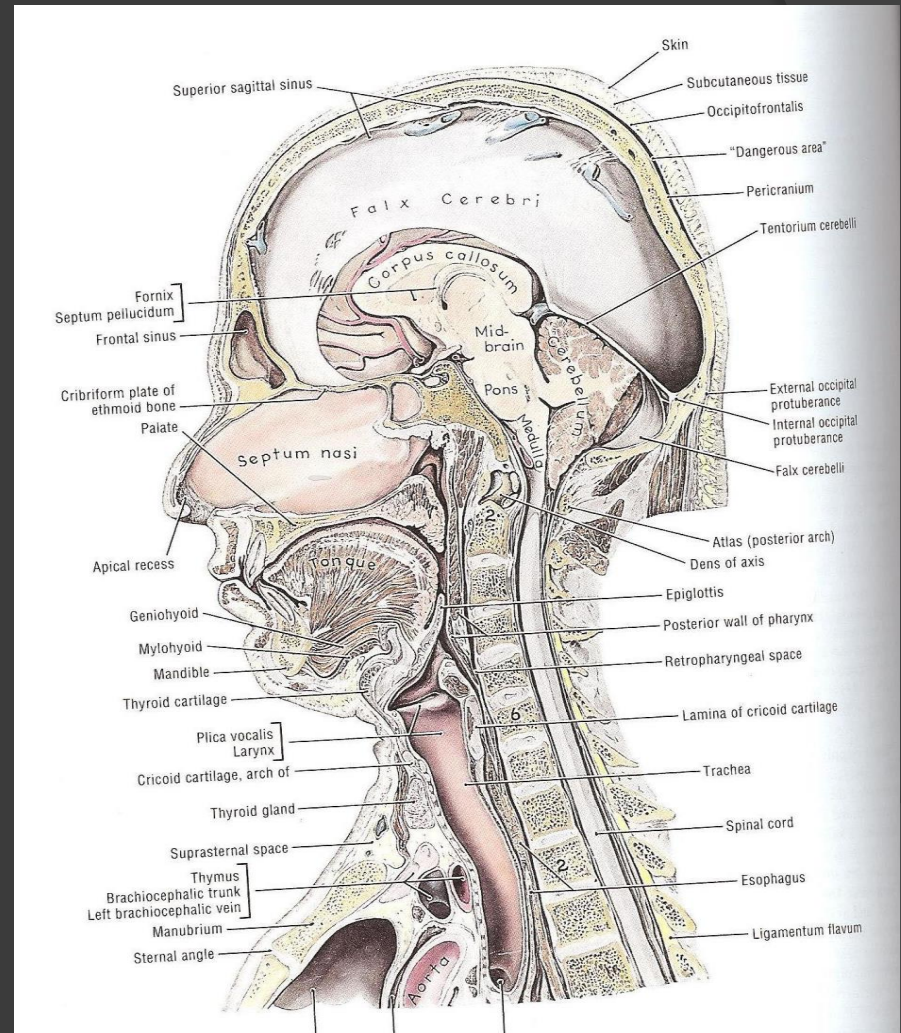
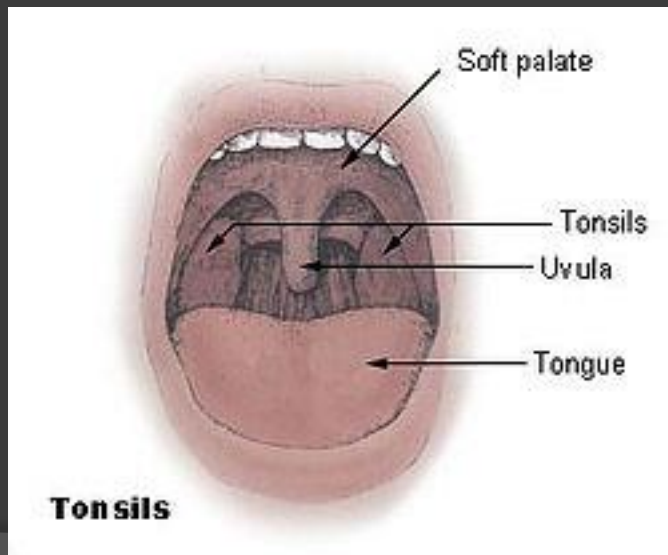
Oropharynx

Open ant to mouth.

Above: soft palate.

below : the upper border of epiglottis.

Palatine tonsils between the ant pillars and post pillars.



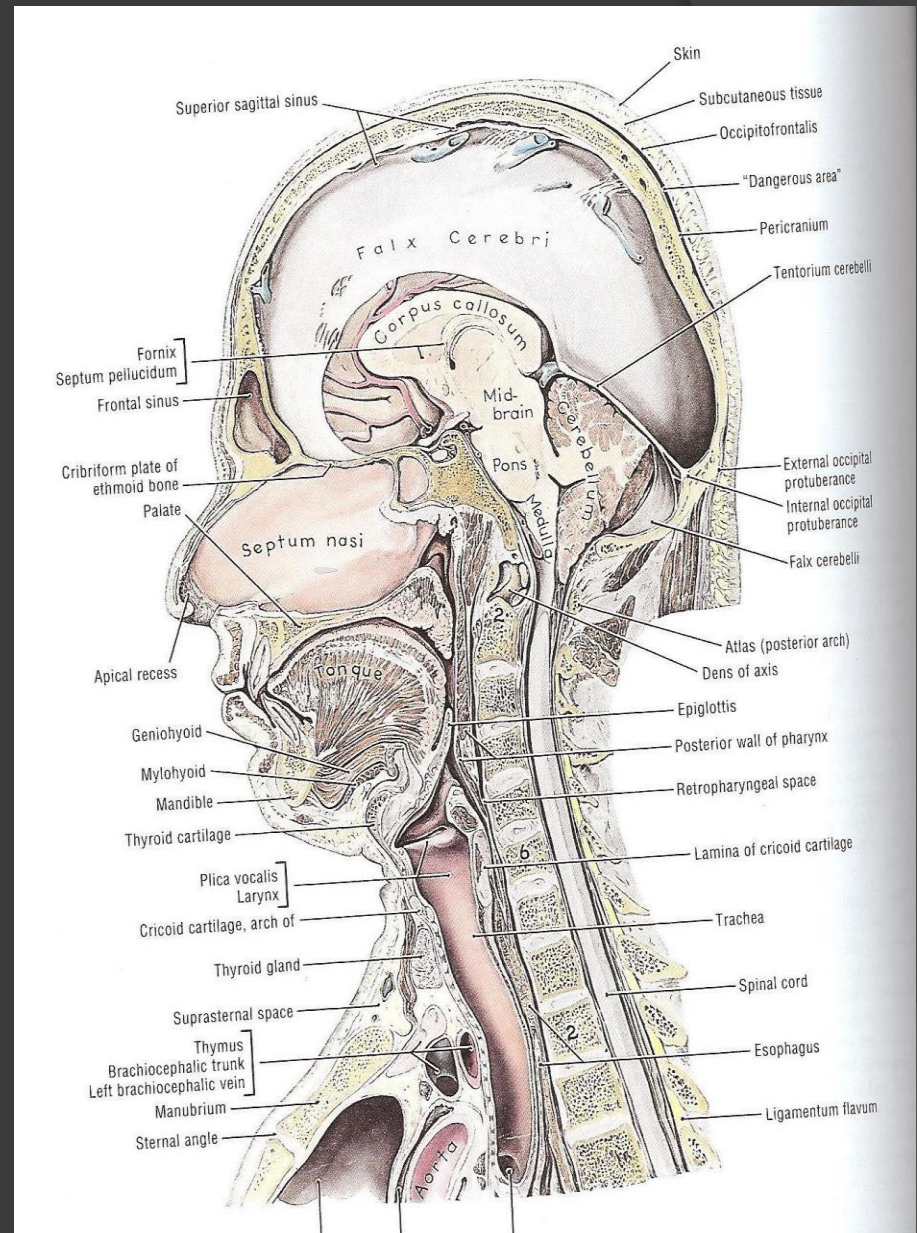
Laryngopharynx (hyoppharynx)

Open ant to the larynx

Above : the upper border
of the epiglottis

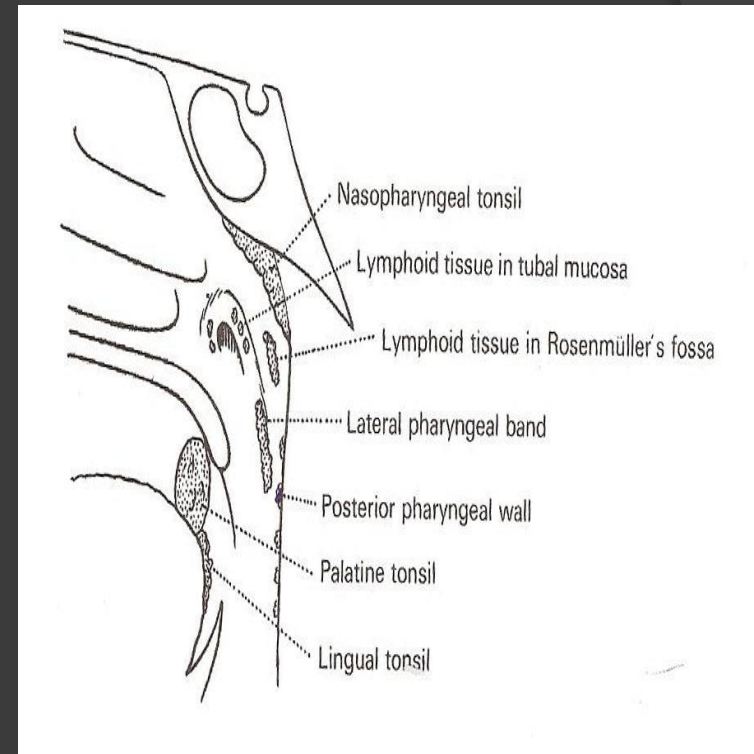
Below : lower border of
cricoid

Pyriform fossa
valleculae



Structure of the pharynx

- **Fibromuscular tube**
- **Four layers:**
- **1-mucous membrane:**
- Ciliated epithelium
- Stratified squamous epithelium
- Transitional epithelium
- Subepithelial lymphoid tissue of the pharynx(waldeyer's ring)



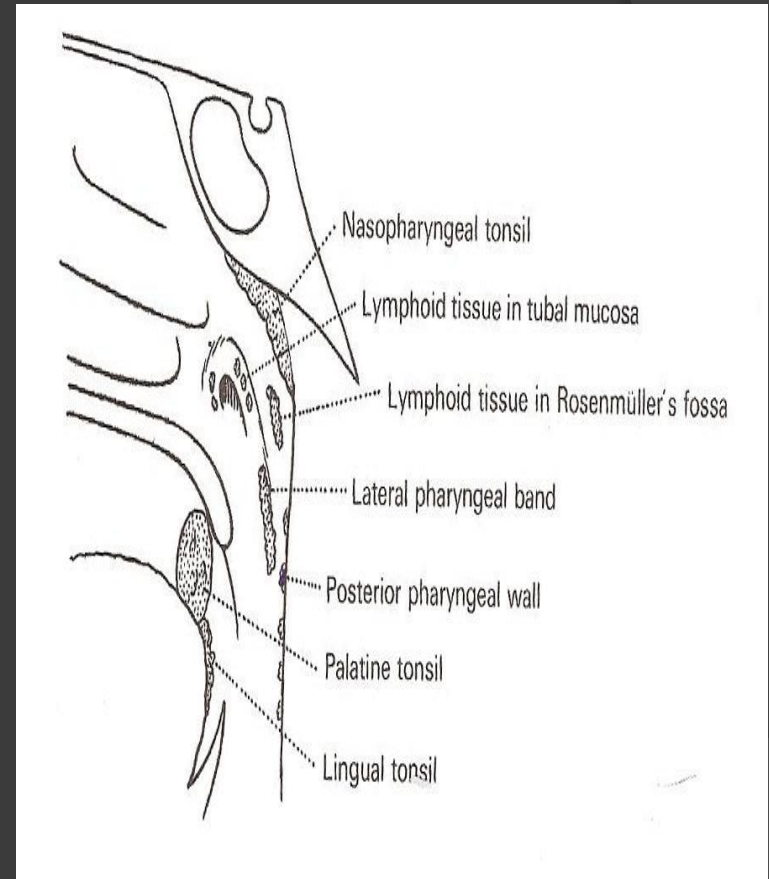
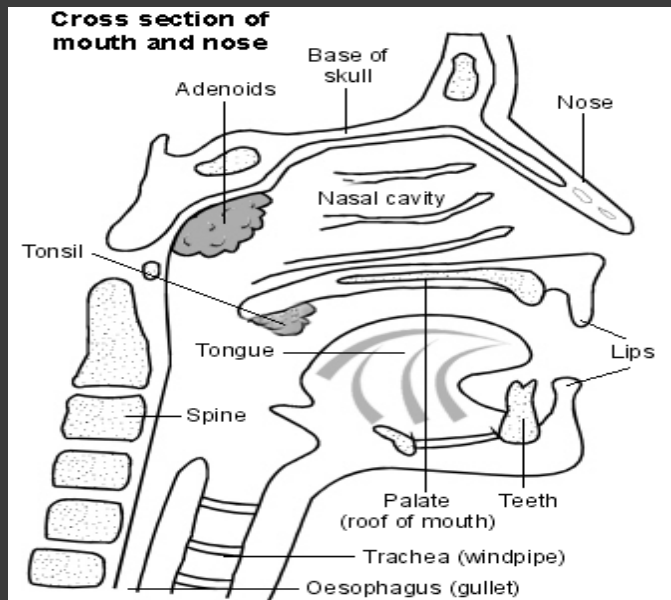
Palatine tonsils

12-----15 crypt

The deep surface is separated from the constrictor muscles of the pharynx by connective tissue 'capsule'

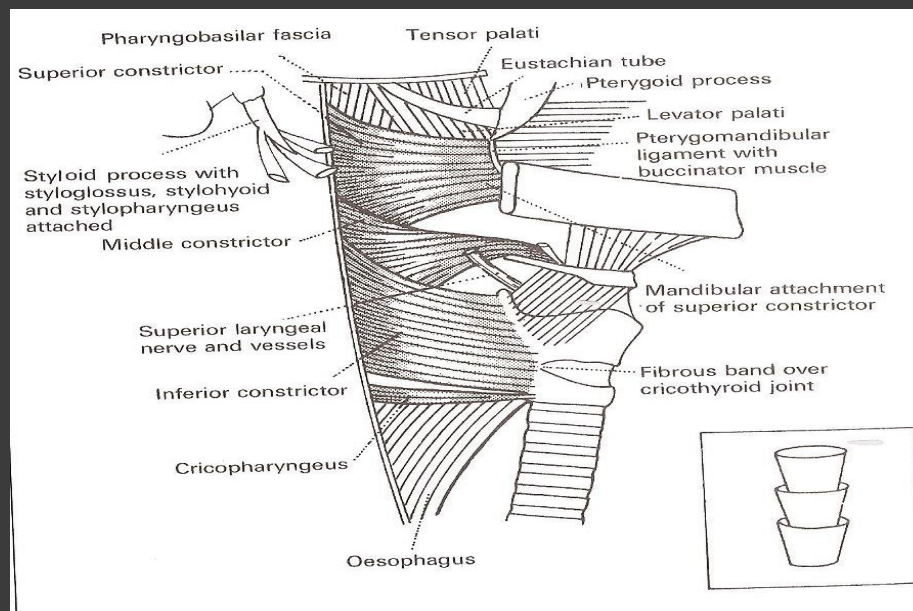


- Adenoid
- Lingual tonsils
- Tubal tonsils
- Lateral pharyngeal bands
- Discrete nodules



Pharyngeal aponeurosis

- Incomplete connective tissue coat in the lateral and posterior walls of the pharynx between the muscular layers
- Pharyngobasilar fascia



Muscular coat

External :

Three constrictor muscles:

Superior constrictor

arise from pterygoid ,
ptergomandibular ligament post end of
mylohyoid fibers

Middle constrictor:

Arise from the hyoid bone and stylohyod
ligament

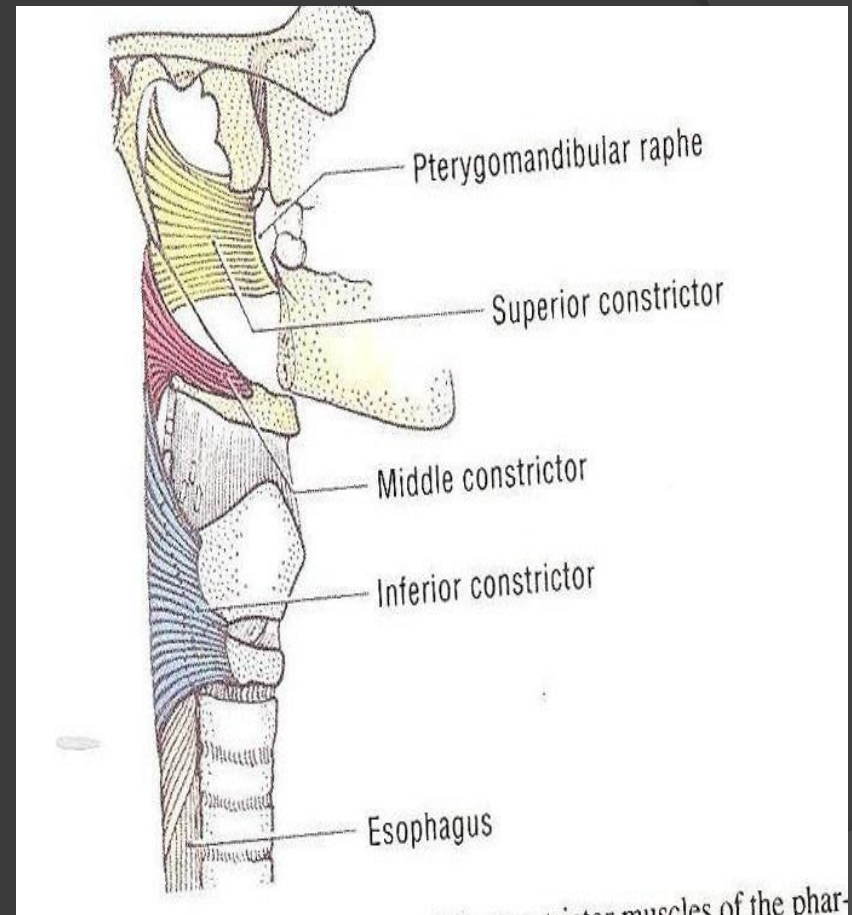
Inferior constrictor:

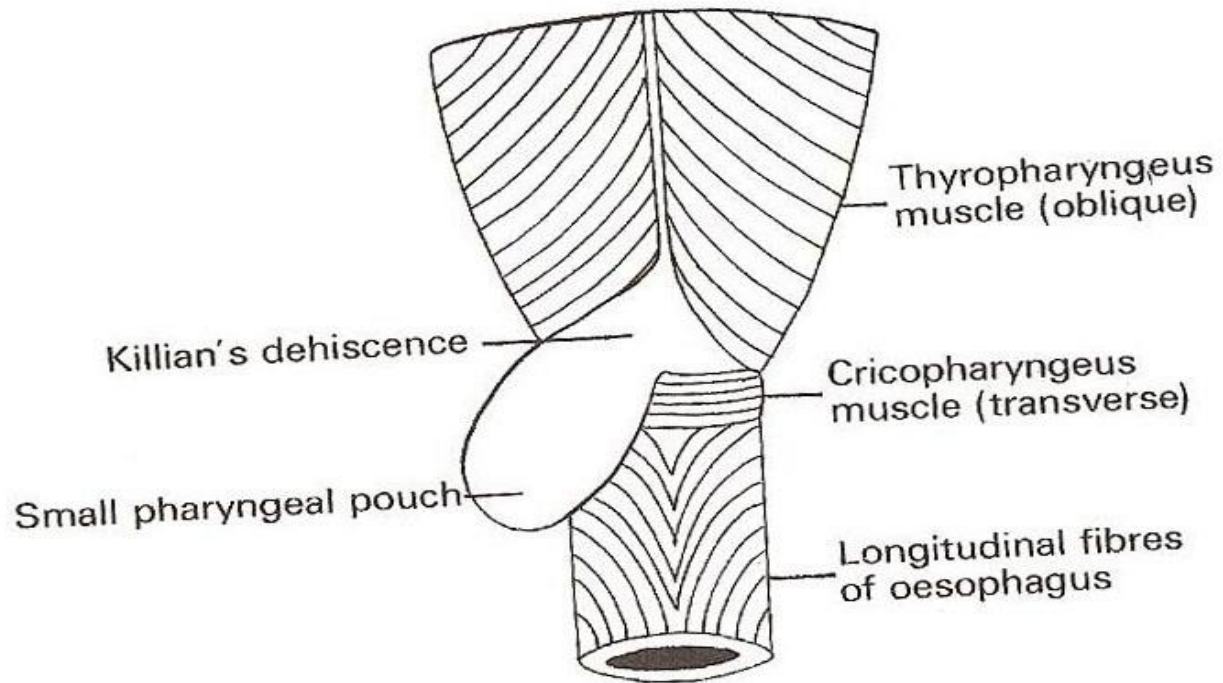
Cricoid Cartilage

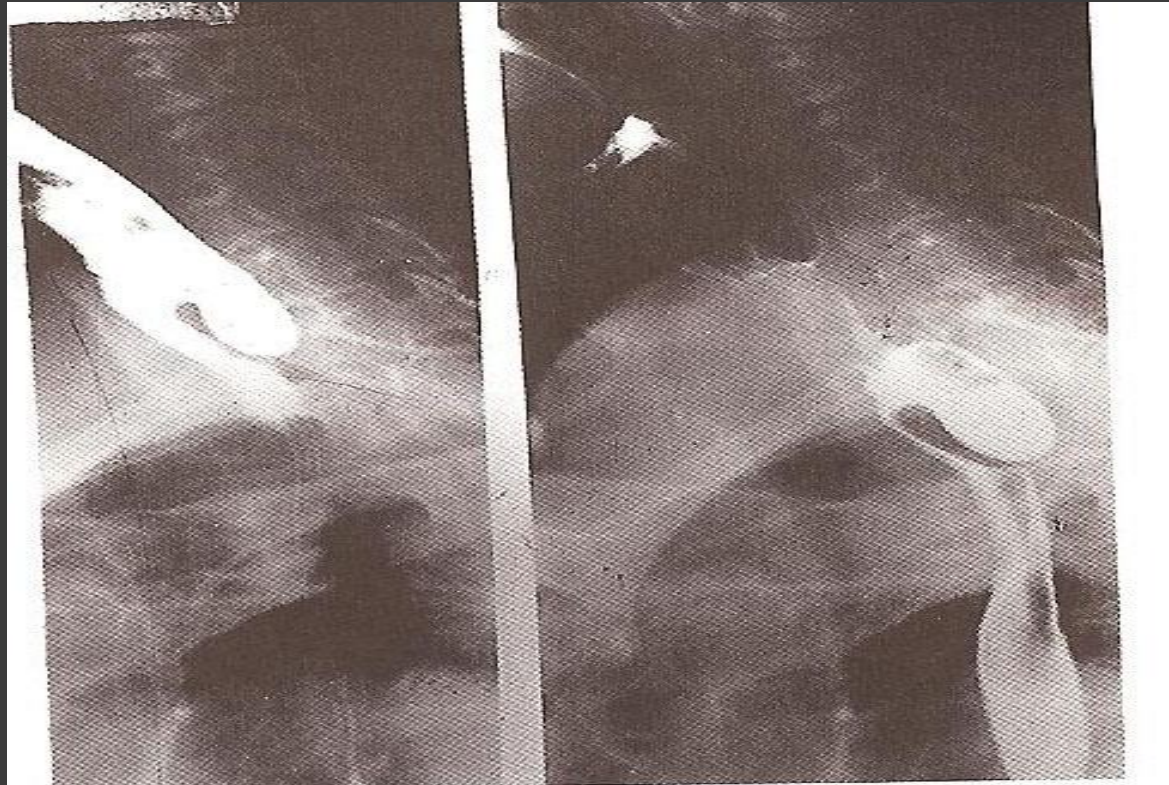
Thyroid Cartilage

Killian's dehiscence

Potential gap between the thyropharyngus
and cricopharyngus



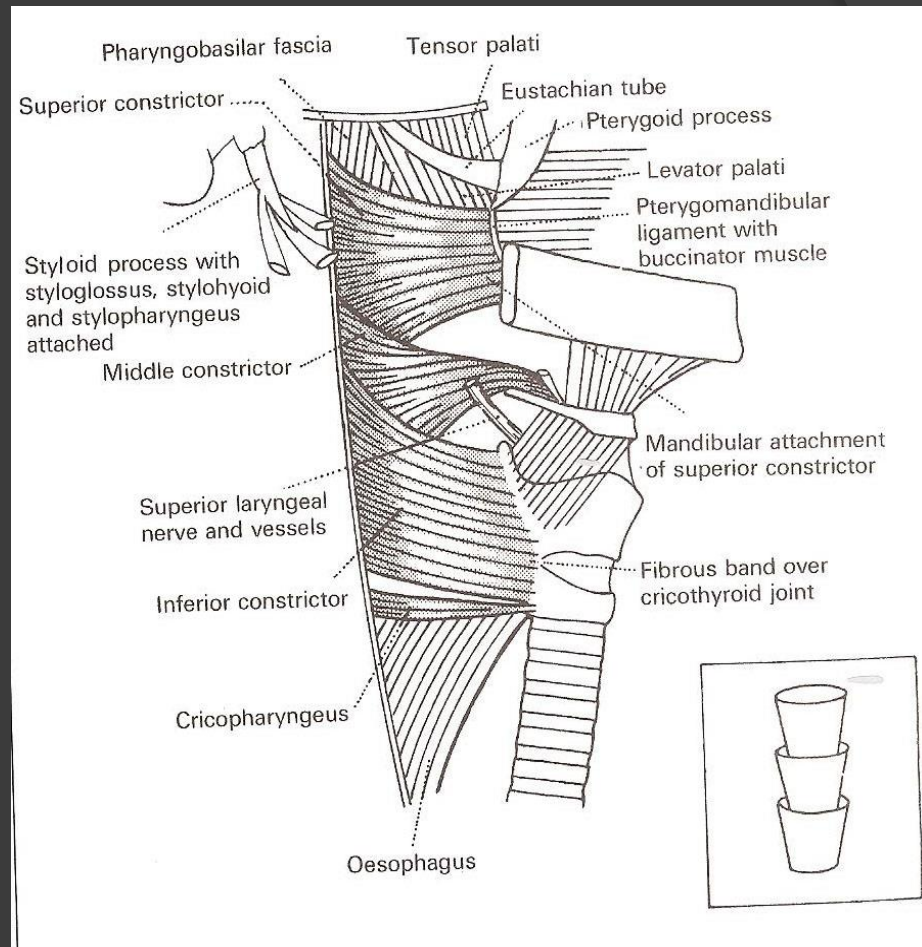
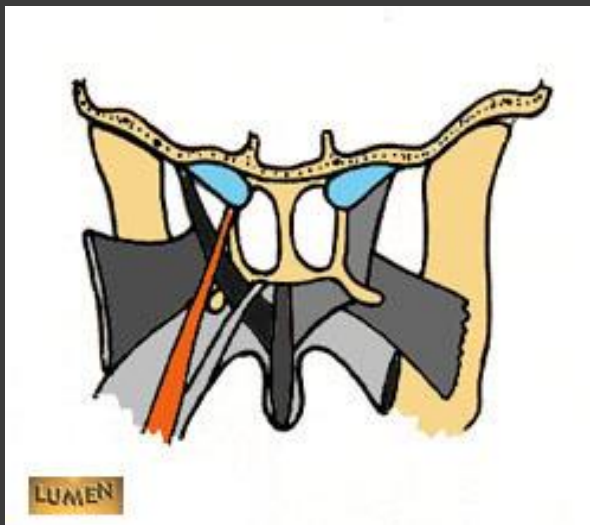




Internal:

Three muscles:

- Stylopharyngus - Elevation
- Palatopharyngus - Elevation
- Salpingopharyngus – ET opener



Relation of the pharynx

Posteriorly :

prevertebral fascia

AnteroMedially:

Parapharyngeal space

Parapharyngeal space

Potential space lies outside the pharynx

Triangular in cross section, it extends from the base of the skull above to the superior mediastinum and apex of hyoid bone

Anteromedial wall: buccopharyngeal fascia

Posteromedial wall: cervical vertebrae, prevertebral muscle and fascia

Lateral wall: (up) the mandible, pterygoid muscle, parotid gland
(Lower) sternomastoid muscle

Compartment:

prestyloid:

internal maxillary artery, fat, inferior alveolar, lingual, and auriculotemporal nerves.

Poststyloid:

neurovascular bundle (carotid artery, internal jugular vein, sympathetic chain, CN IX, X and XI)

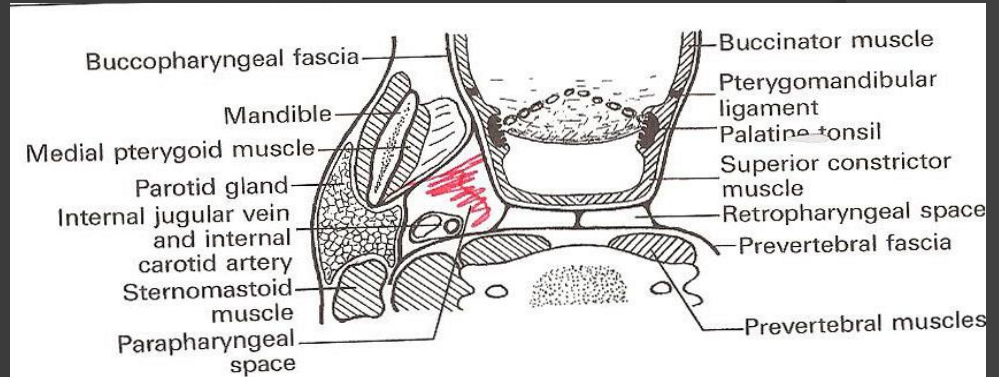
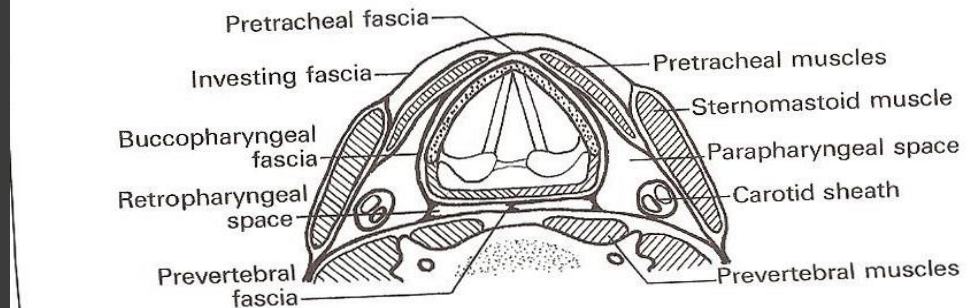


Figure 11.6 Fascial compartments of neck at level of C2



Retropharyngeal space :

It extend from the base of skull to supr mediastinum

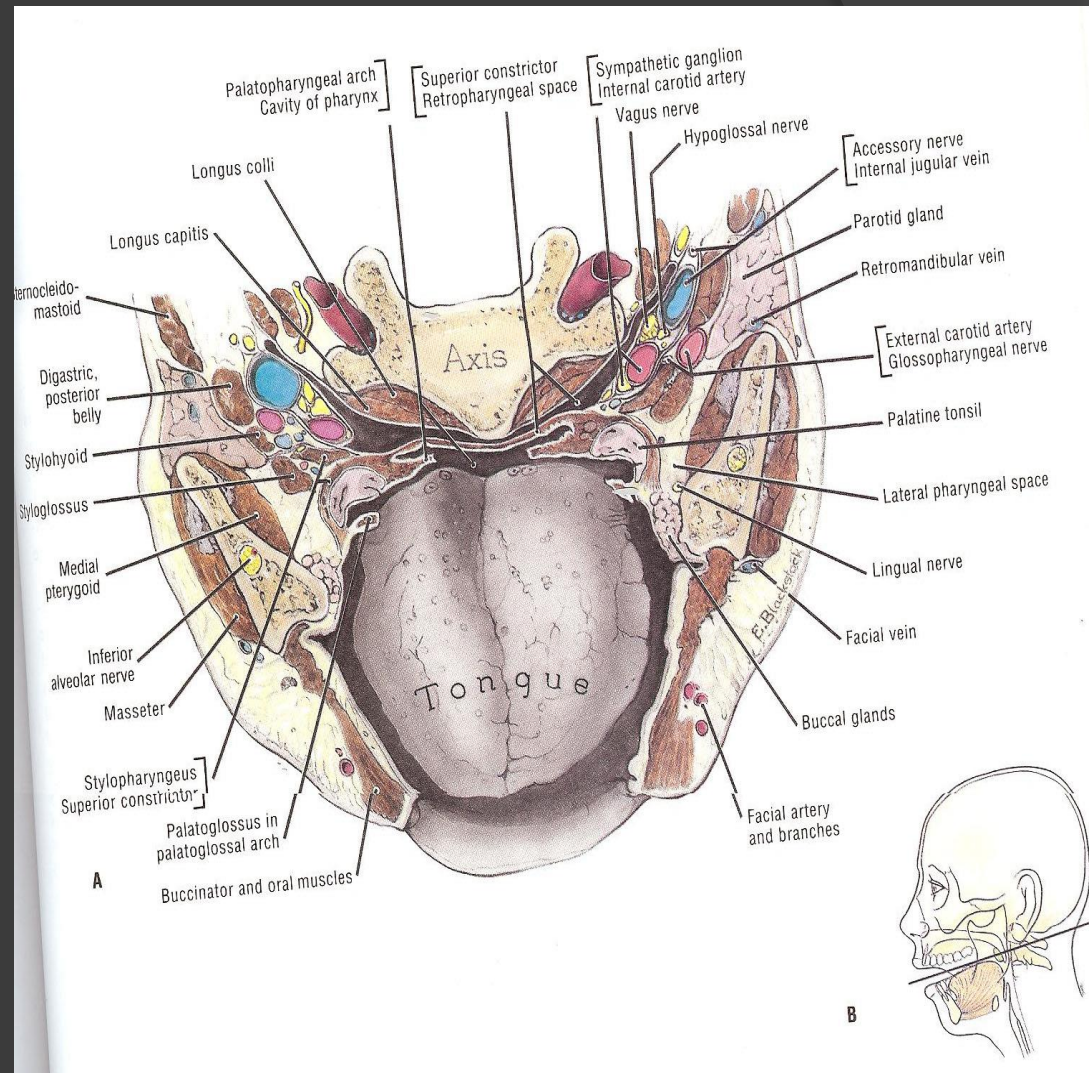
Lies behind the pharynx

Ant: posterior pharyngeal wall and its covering buccopharyngeal fascia

Post: cervical vertebrae and muscles and fascia

Contents :

Retropharyngeal lymph nodes



Physiology

- ⦿ **Deglutition:**
- ⦿ **Three stages**
- ❖ **Oral stage:** voluntary, closure of mouth, cessation of respiration, raising of larynx, sudden elevation of the tongue, press the tongue against the palate, and pushes it backwards towards the oropharynx
- ❖ **Pharyngeal stage:** reflex, contraction of nasopharynx sphincter, larynx rises more, laryngeal inlet closure, epiglottis diverts the food into cricopharyngeal sphincter, contraction of constrictor muscles, relaxed cricopharyngeal sphincter
- ⦿ **Esophageal Stage:** Peristaltic contractions

Physiology

- ❖ **Respiration**
- ❖ **Speech**
- ❖ **Resonating cavity**
- ❖ **Articulation**
- ❖ **Taste:**
taste buds

Physiology

- ⦿ **Functions of the sub epithelial lymphoid tissue:**
- ⦿ Protective functions :
- ⦿ Formation of lymphocytes
- ⦿ Formation of antibodies
- ⦿ Acquisition of immunity
- ⦿ Localization of infection
- ⦿ **Salivation: From Minor Salivary Glands**

Adenoid

A hypertrophy of the nasopharyngeal tonsil to produce symptoms , most commonly between the age of 3---7 years

Pathological types:

- 1- simple inflammatory
- 2- tuberculosis

Clinical features:

Mouth breathing , snoring , hyopnasality , adenoid face, nasal discharge

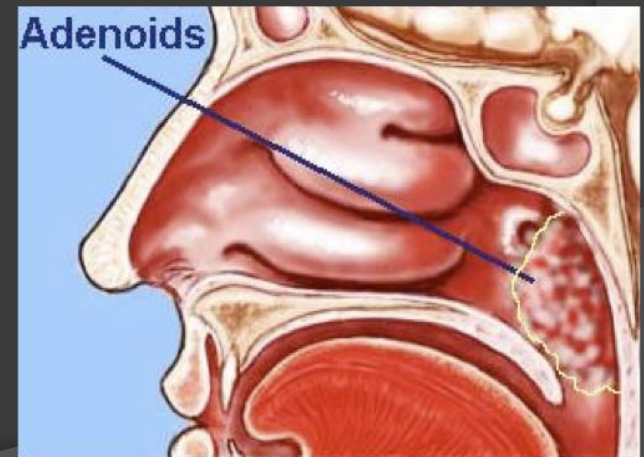
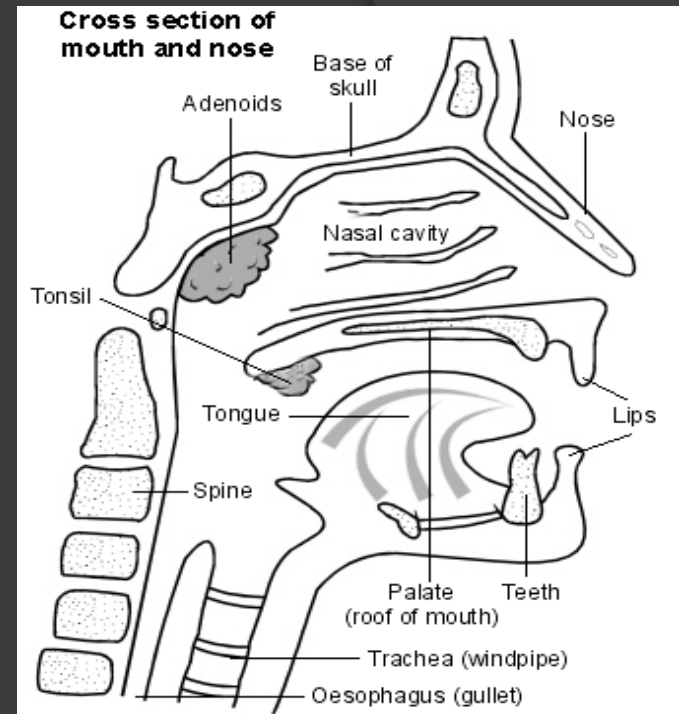
Eustchain tube obstruction

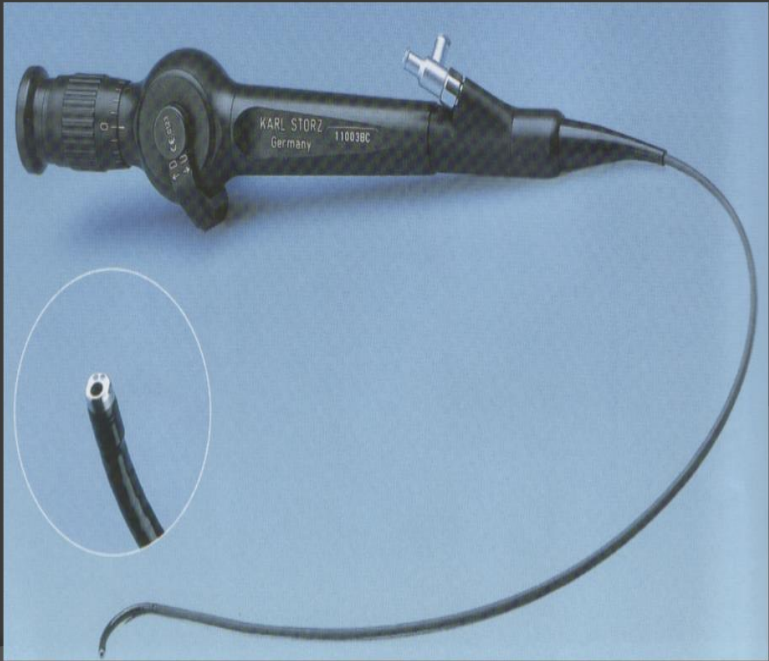
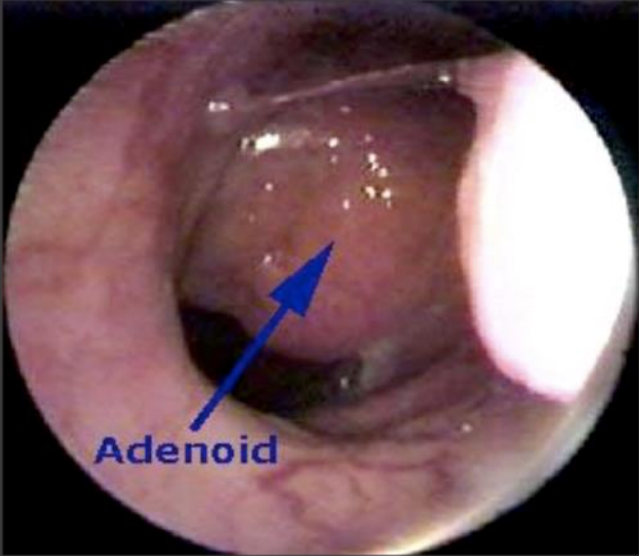
Diagnosis :

- x ray
- flexible fiberoptic

Treatment:

- conservative
- Surgical: adenoidectomy





Sleep apnea and snoring

- Snoring is a sign of partial obstruction of the upper airway during sleep
- Snoring is always present during type of sleep apnea
- **Sleep apnea:**
- Cessation of airflow at the mouth and nostrils lasting 10 seconds for at least 30 apnoeic episodes
- **Types :**
- **central sleep apnea:**
- Failure of respiratory drive from the brain
- **Obstructive sleep apnea (OSA)**
- Due to anatomical narrowing of the upper airway
- **Mixed**

Stage of sleep

- **Slow wave sleep :**

- Brain waves are slow deep restful sleep decrease in vascular tone and respiratory rate and basal metabolic rate



- **Rapid eye movement :**

- Brain quite active active dream



- **Pathophysiology of OSA:**

- During REM or deep sleep ,obstructive occurs resulting in decrease arterial oxygen and increased arterial carbon dioxide pressure

- Nocturnal desaturation arouses patient and causes increase pulmonary artery, systemic arterial pressure

- lead to hypersomnolence

Investigation

- ⦿ **Sleep study:**
- ⦿ EEG, EKG, EOG, pulse oximeter, respiration rate, nasal and oral air flow
- ⦿ **Treatment:**
 - **Nonsurgical :**
 - Behavior modification :
 - CPAP
 - **Surgical :**
 - UPPP

Acute infection of oropharynx

Acute tonsillitis:

Causes: viral followed by bacterial (group AB-hemolytic streptococcus, moraxella, H. influenza, bacteroides)

SSX: fever, sore throat, odynophagia, trismus, halitosis

Phases: erythema, exudative, follicular tonsillitis

Complication:

peritonsillar abscess, parapharyngeal or retropharyngeal abscess, rheumatic fever, glomerulonephritis

Rx:

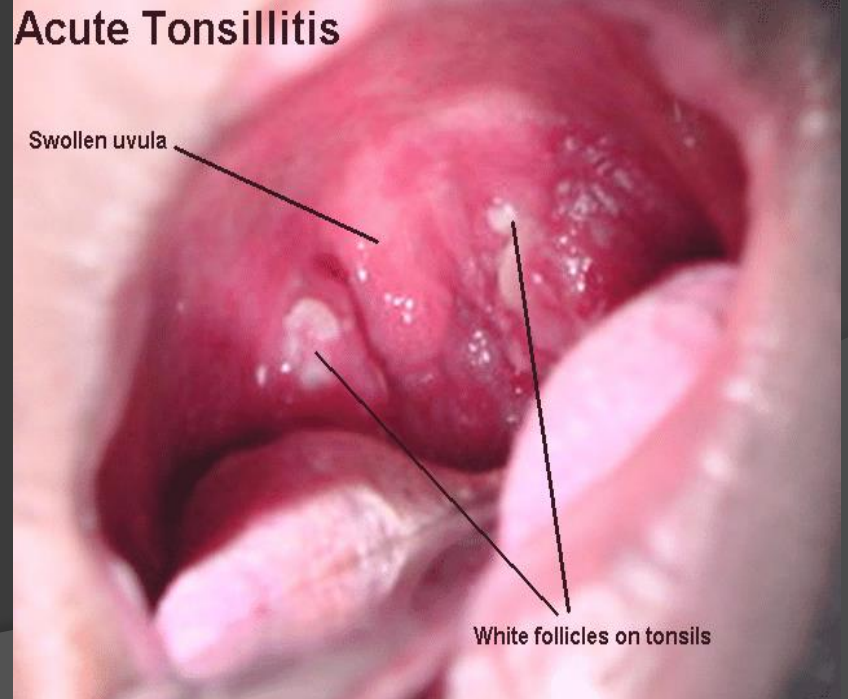
ABX, bed rest, hydration, analgesia



Acute Tonsillitis

Swollen uvula

White follicles on tonsils



Infectious mononucleosis

Pathogen: Epstein barr virus

SSX: fever, lymphadenopath
malaise, exudative tonsillitis,
hepatosplenomegaly

DX: monosopt test ,paul bunnel test
(heterophil antibodies in serum)
80% mononuclear and 10%
atypical lymphocytes on smear

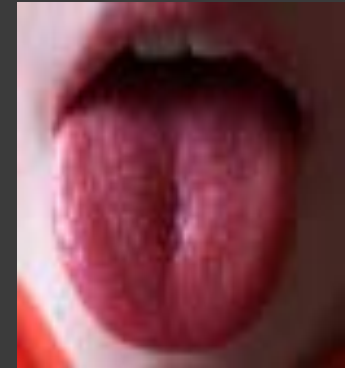
Complication: cranial nerves
involvement ,meningitis
,autoimmune hemolytic anemia ,
splenic rapture

RX: hydration, analgesia oral
hygiene



Scarlet fever

- Endotoxin produced by by type A B-hemolytic streptococcus
- **SSX:**
- red pharynx , strawberry tongue, perioral skin erythema and desquamation, dysphagiaia ,malaise,sever cervical lymphodenopathy
- **DX**
- dick test
- **RX:**
- ABX



Diphtheria

Corynebacterium diphtheria

SSX: sore throat, fever, green plaques friable membrane

DX: culture

Complication : nephritis, airway obstruction, death

RX: ABX, antitoxin

Vincen'ts angina:

Acute ulcerative lesion

Gram negative fusiform bacillus and a spirillum with anaerobic

SSX:

Sudden in onset, pain, fever, cervical adenitis, the base of the deep ulcers bleeds when the membranous slough is removed, the symptoms subside in 4—7 days

RX: metronidazole, antiseptic, mouthwash



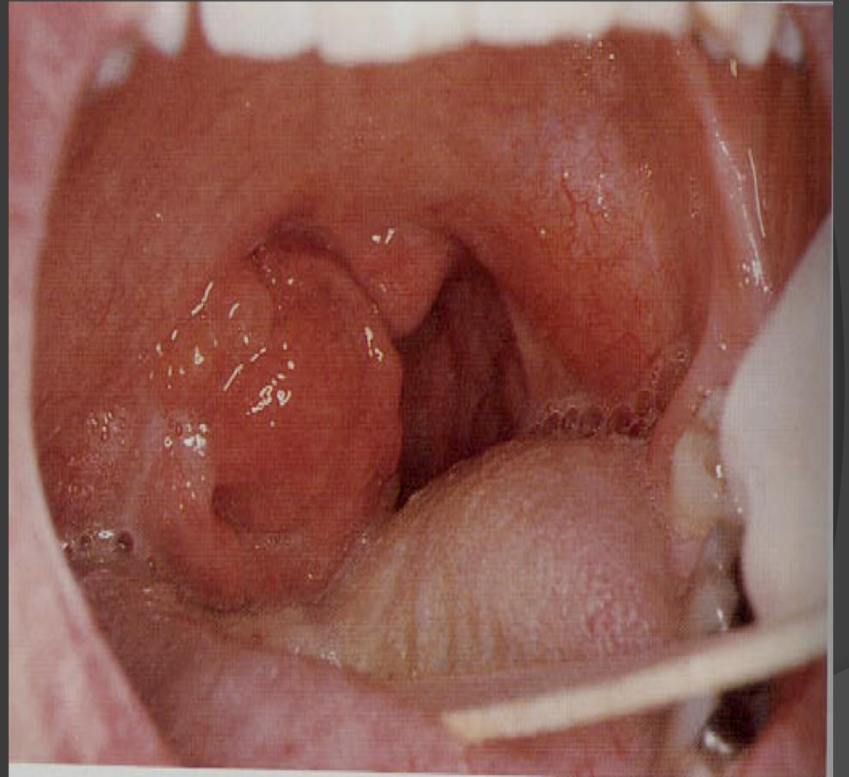
Tonsillectomy

⦿ Indications:

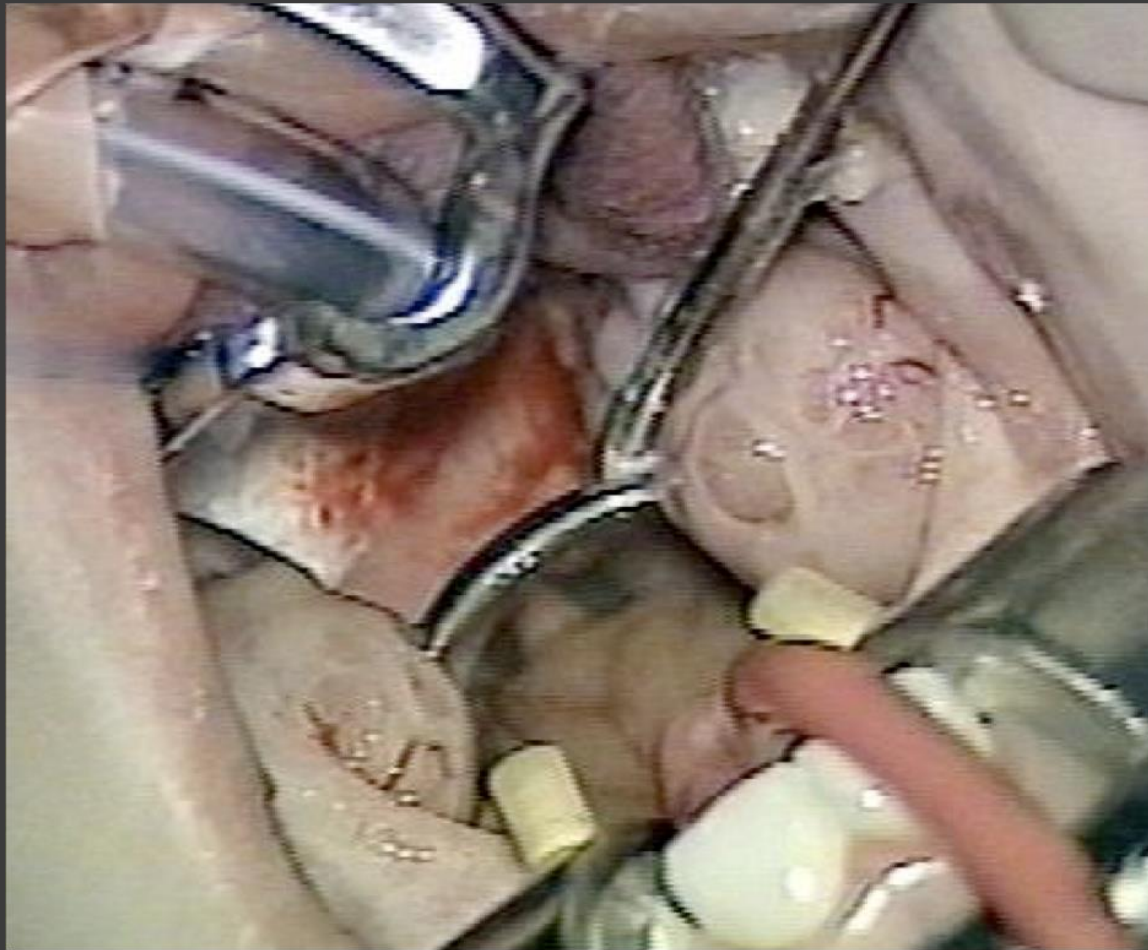
- Recurrent Infections
- OSA
- Suspicion of malignancy
- Febrile seziures
- FTT

⦿ Relative:

- PTA
- Vhronic tonsillitis
- Halitosis







complication

- ⦿ Hemorrhage
 - Primary
 - Reactionary
 - Secondary
- ⦿ Respiratory obstruction
- ⦿ Injury to near-by structures
- ⦿ Pulmonary and distant infections

Primary hemorrhage

- ⦿ Bleeding occurring during the surgery
- ⦿ Causes
 - Bleeding tendency
 - Acute infections
 - Bad technique
- ⦿ Management
 - General supportive measures
 - Diathermy, ligature or stitches
 - Packing

Reactionary hemorrhage

- ⦿ Bleeding occurring within the first 24 hours postoperative period
- ⦿ Causes
 - Bleeding tendency
 - Slipped ligature
- ⦿ Diagnosis
 - Rising pulse & dropping blood pressure
 - Rattle breathing
 - Blood trickling from the mouth
 - Frequent swallowing
 - Examination

⦿ Treatment

- General supportive measures
- Take patient back to OR
- Control like reactionary hemorrhage

Secondary hemorrhage

- Occur 5-10 days posoperatively
- Due to infection
- Treated by antibiotics
- May need diathermy or packing



monoliasis

White patches caused by
candidaalbicans fungus

RX: nystatin



Peritonsillar abscess (quinsy):

An abscess between the tonsil capsule and the adjacent lateral pharyngeal wall

SSX: fever, otalgia, odynophagia, uvular deviation, trismus, drooling of saliva

Complication:

Para and retropharyngeal abscess, aspiration pneumonia

Rx:

I&D

aspiration

Iv ABX



Parapharyngeal abscess

Source of the infection: odontogenic
, tonsils, , parotid

SSX:

trismus, fever, muffled voices , intraoral bulge

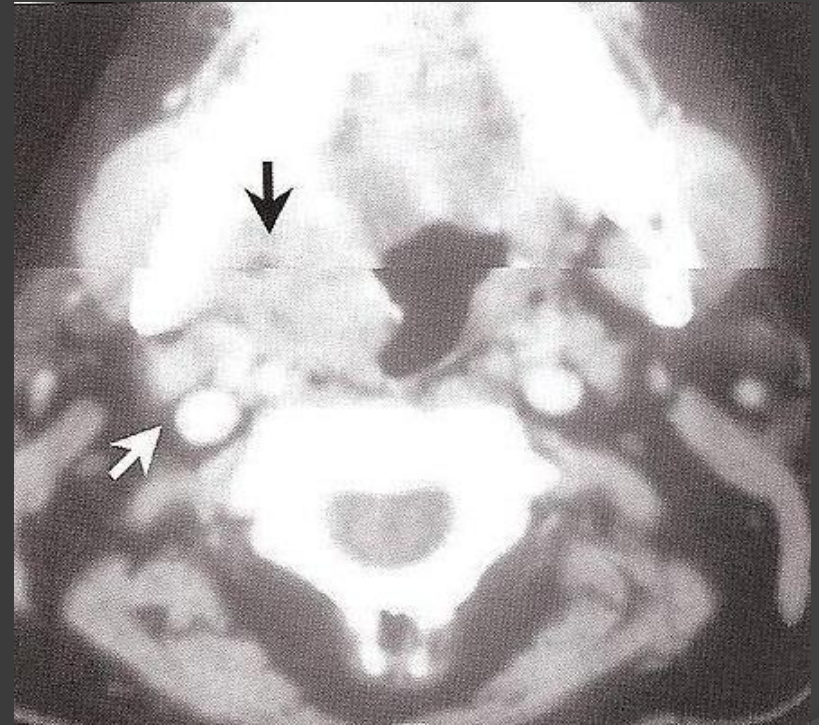
Complication:

aspiration, cranial nerve palsy, airway compromise, septic thrombophlebitis, carotid blowout

, endocarditis

RX:

external drainage, iv ABX , airway management



Retropharyngeal abscess

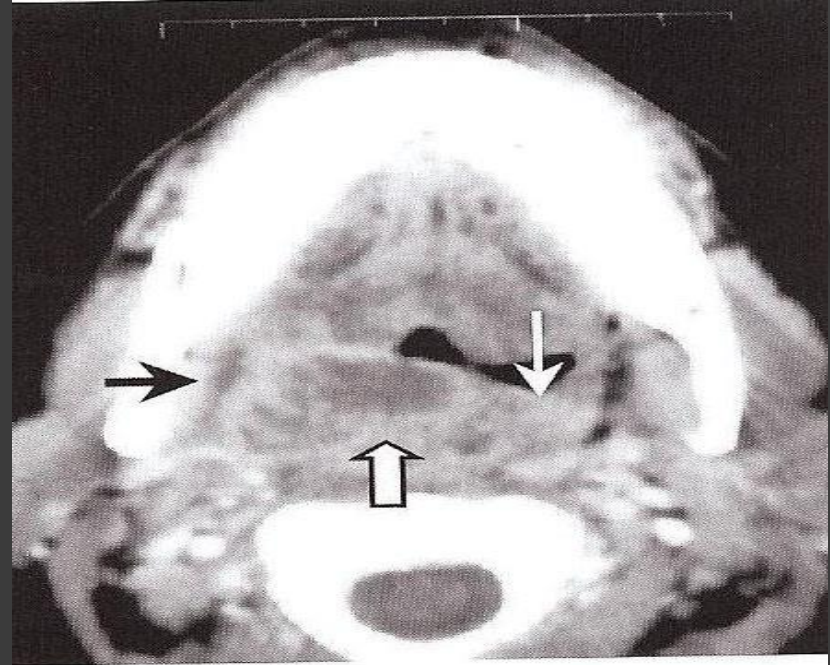
More common in children

SSX: odynophagia ,hot potato voice, drooling ,stiff neck fever ,stridor

Complication

:mediastinitis , respiratory distress, rupture abscess,

RX: drainage , IV ABX



Ludwig's angina

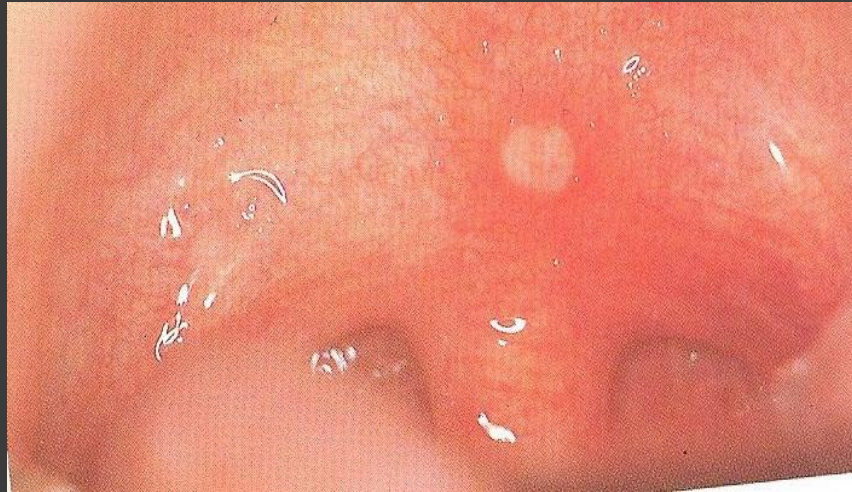
- Bilateral cellulitis of submandibular and sublingual spaces
- **SSX:**
- wooden floor of the mouth , neck swelling and indurations , drooling , respiratory distress ,swollen tongue ,dysphagia trismus ,
- **Complication:**
- airway obstruction, sepsis
- **RX:**
- tracheotomy ,external drainage IV ABX



Chronic pharyngitis

- ⦿ Pathogenesis :
- ⦿ postnasal drip, irritant (dust. Dry heat, smoking, alcohol), reflux esophagitis
chronic mouth breathing ,allergy
granulomatous disease connective tissue disease , malignancy
- ⦿ SSX:
- ⦿ constant mouth clearing , dry throat
pharyngeal crusting, thick granular wall
- ⦿ RX:
- ⦿ address underlying etiology

Aphthous ulcer



zanker's diverticulum

- Herniation of the mucosa at Killian's triangle due to increased intraluminal pressure
- **SSX:**
- dysphagia, regurgitation of undigested food, aspiration
- **DX:** barium swallow
- **RX:**
- Cricopharyngeal myotomy.
- Diverticulectomy



THANK YOU