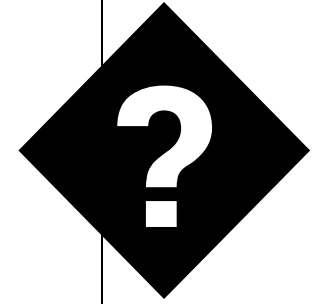


Pharynx



- **Anatomy**
- **Physiology**
- **Examination**
- **Tumors**
- **Treatment**

Dr: Abdalla Anwar EL-Borsh
Faculty of Medicine
University of Alexandria
Egypt 2026/10/21

Anatomy of The pharynx

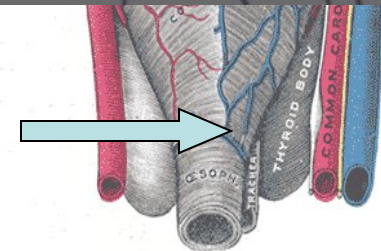
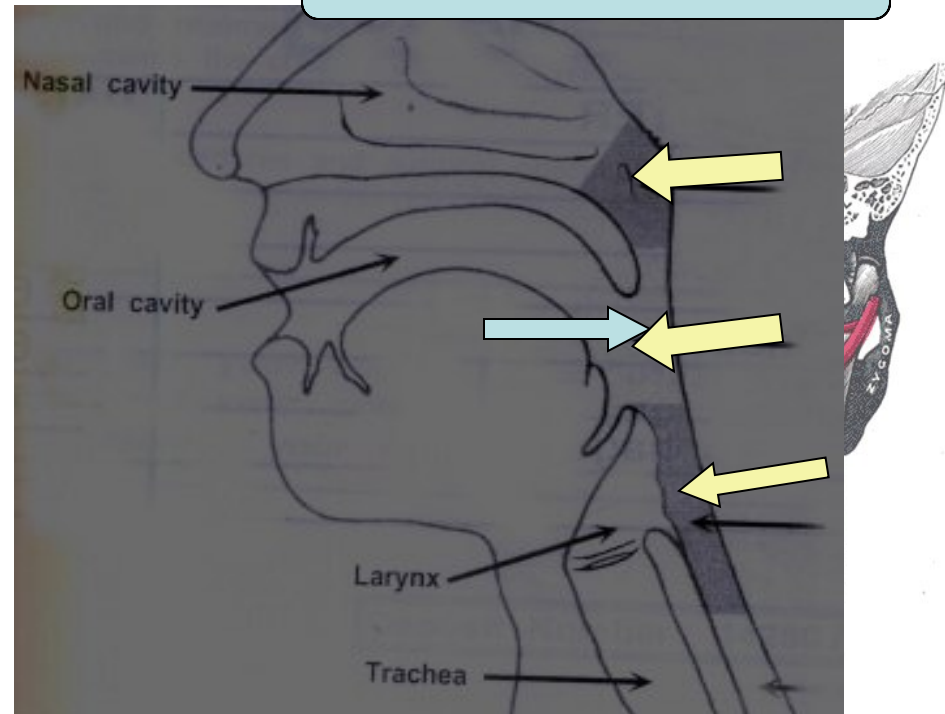
Site

Seen from behind

Midline
From
In

Behind :
The Nose
The Mouth
The larynx

agus
al vertebra

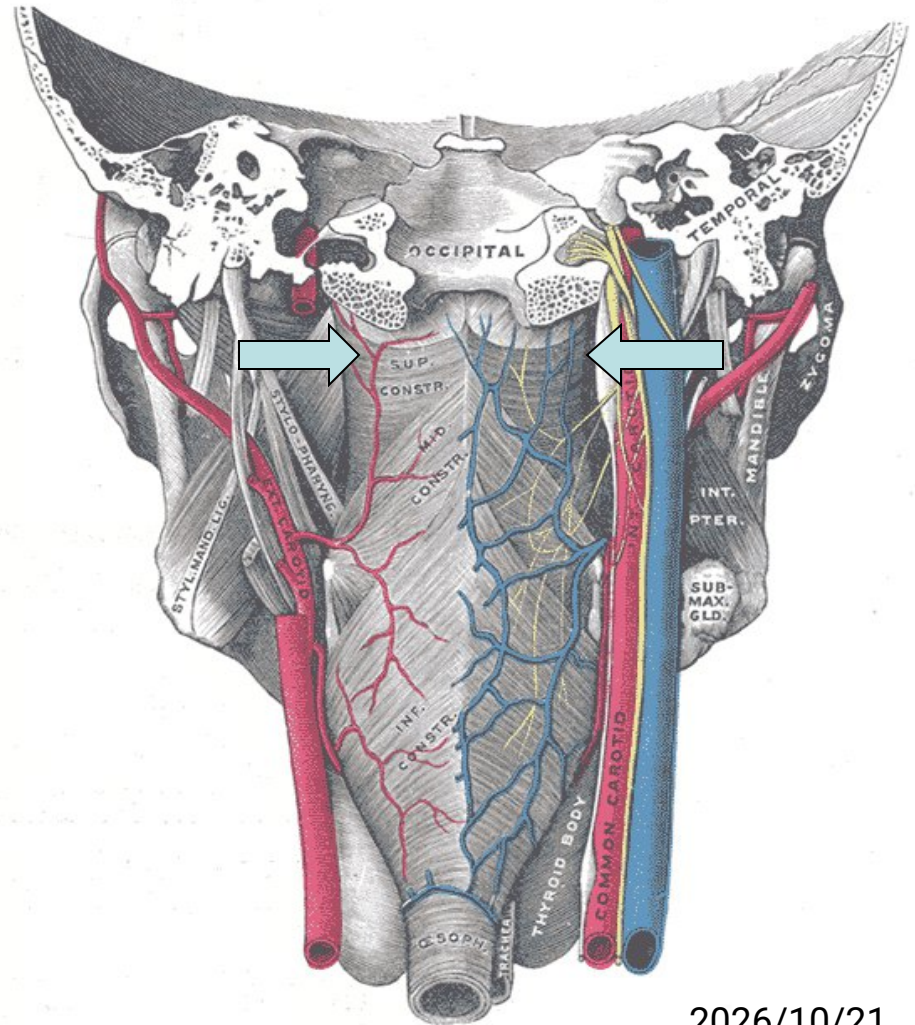


Anatomy of The pharynx

Shape

**Irregular Fibromuscular
tube lined by mucous
membrane**

Length: 15 cm

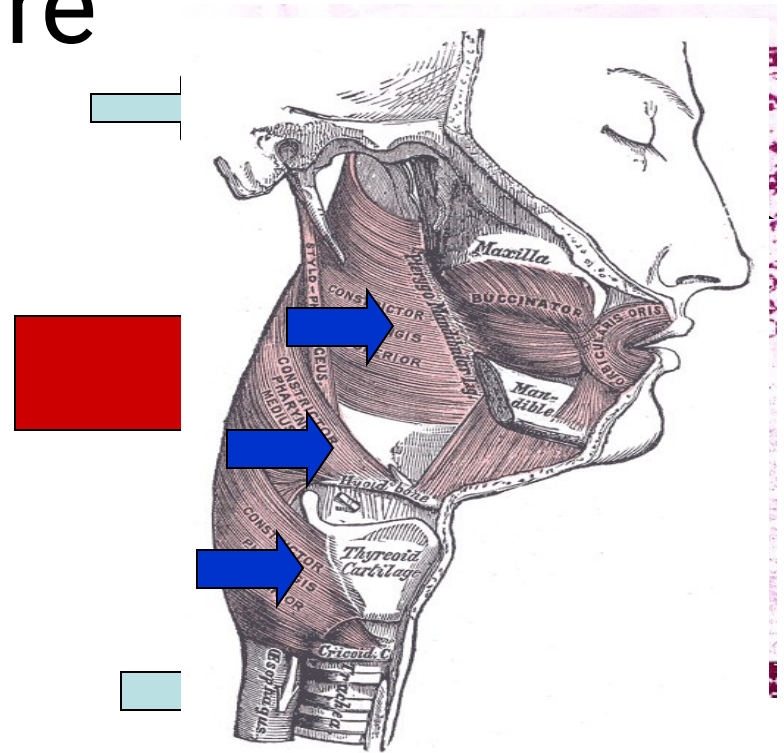


Anatomy of The pharynx

Structure

The wall is formed of 4 layers

- 1-Mucous membrane
- 2- pharyngeal aponeurosis
- 3-muscle layer
- 4-Bucco-pharyngeal fascia

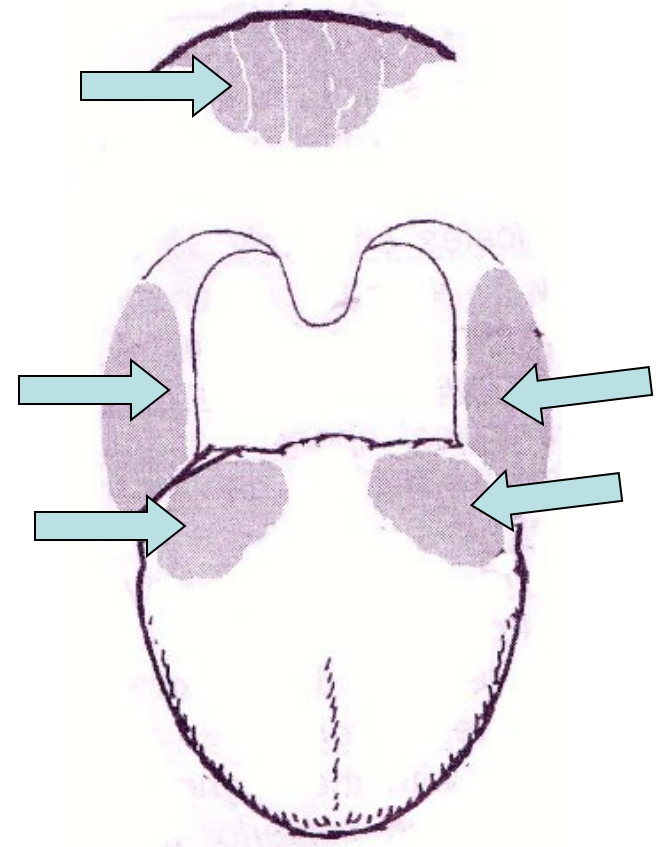


Formed of 2 muscles superior middle and inferior
A thin coat of connective tissue

What is Waldeyer's ring?

The lymphoid tissue in the pharyngeal aponeurosis aggregates in some areas forming tonsils:

- 1- one **nasopharyngeal** tonsil
- 2- two **palatine** tonsils
- 3- two **lingual** tonsils

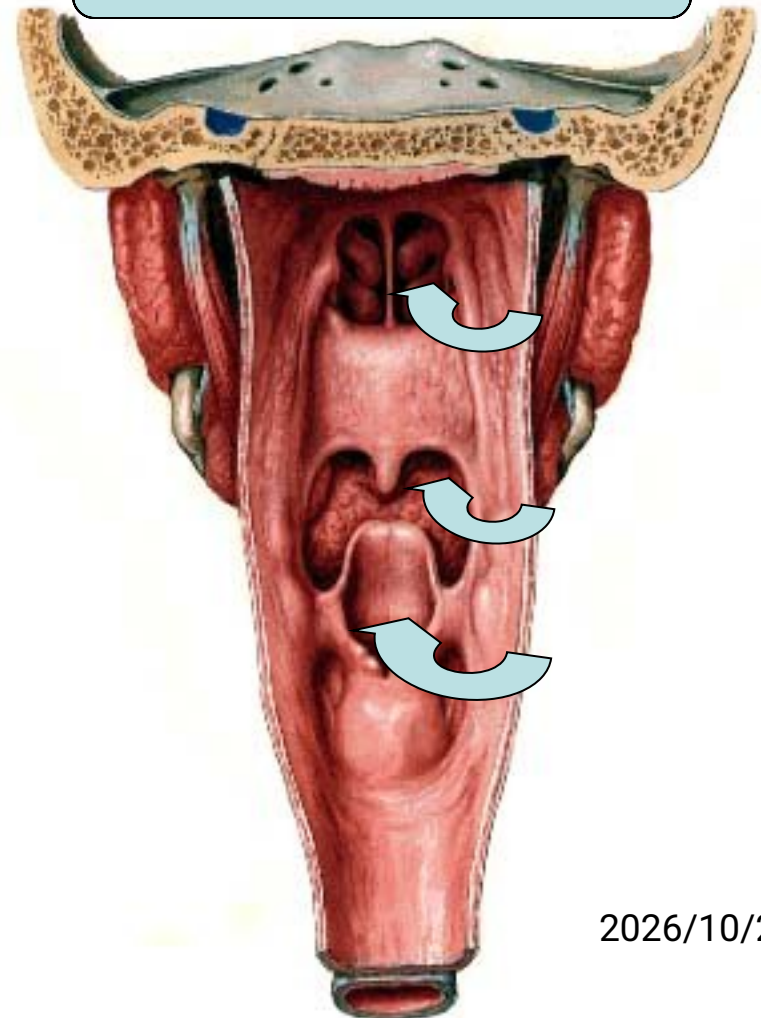


Anatomy of the pharynx

Compartments

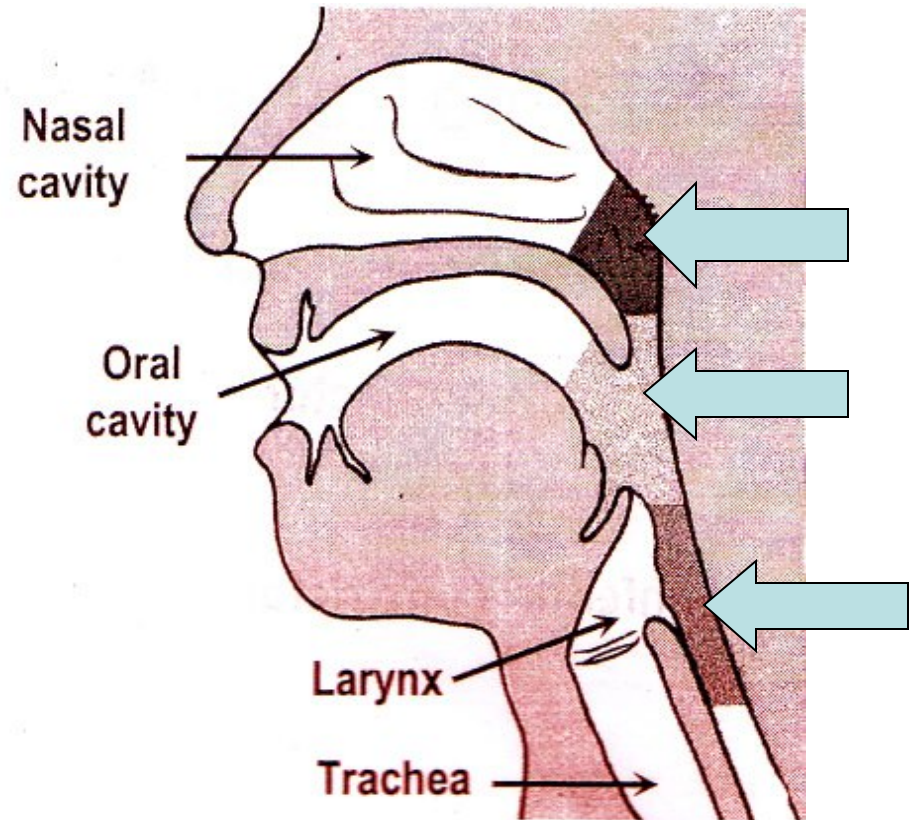
Seen from behind

- **Nasopharynx**
- **Oropharynx**
- **Laryngopharynx**
(Hypopharynx)



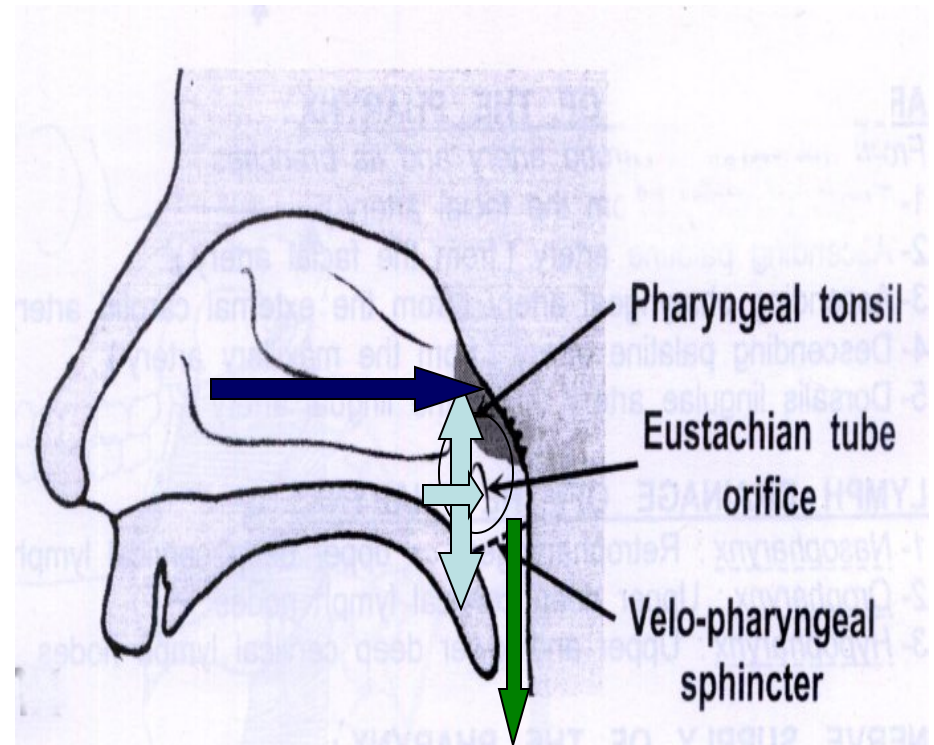
Seen from lateral

- **Nasopharynx**
- **Oropharynx**
- **Laryngopharynx**
(Hypopharynx)



Nasopharynx

- **Behind the nasal cavity**
- Extends from skull
Base superiorly to the soft palate inferiorly
- **Communicates inferiorly with the oropharynx through the velo-pharyngeal sphincter**
- The nasopharyngeal tonsil lies in the roof
- The pharyngeal opening of ET lies in the lateral wall



Oropharynx

Behind the oral cavity (in front of 2nd & 3rd Cervical vertebra)

From the soft palate superiorly to tip of epiglottis inferiorly

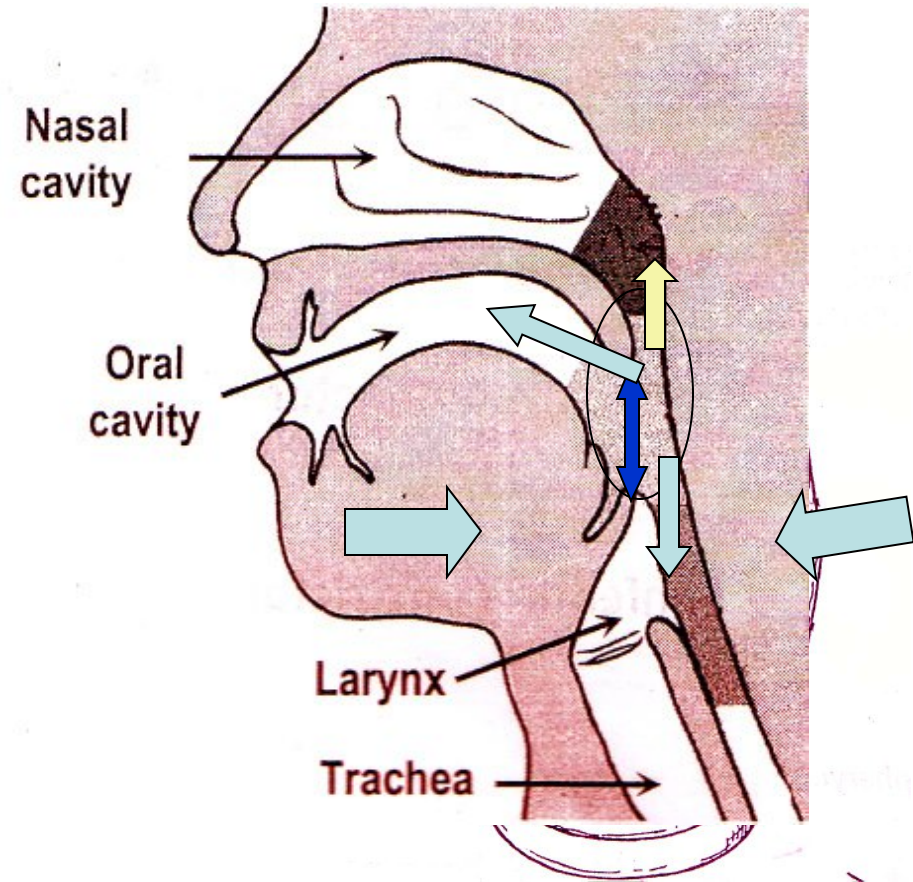
Communicates:

Anteriorly with the oral cavity

Superiorly with the nasopharynx

Inferiorly with the hypopharynx

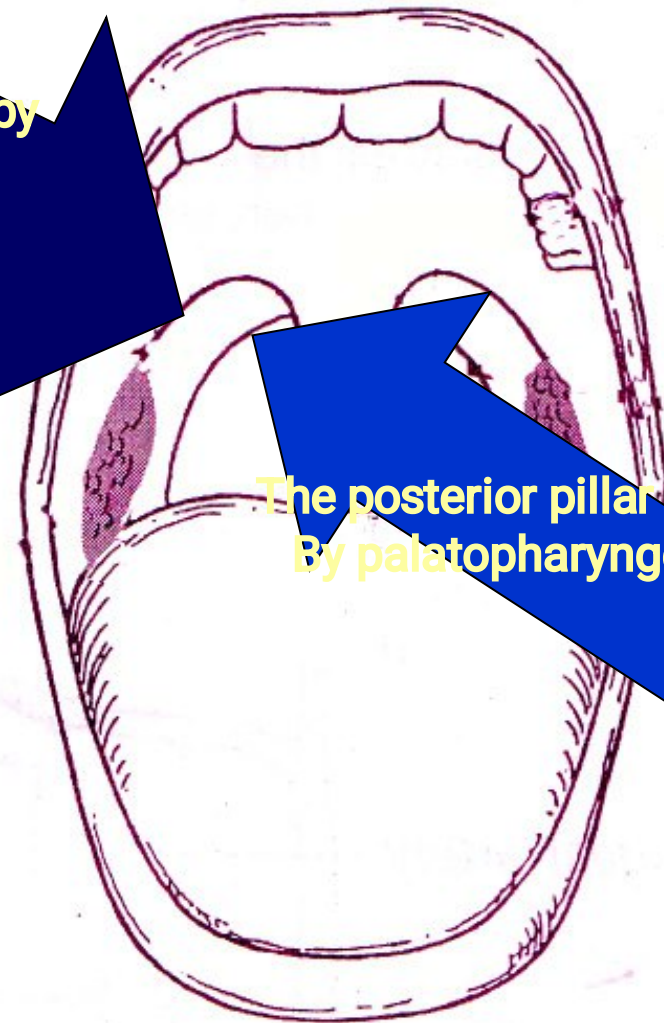
The palatine tonsils lie laterally between the anterior and posterior pillars



**The anterior pillar formed by
palatoglossus muscle**

**The posterior pillar formed
By palatopharyngeus m**

**The tonsils lie between the
Two pillars**



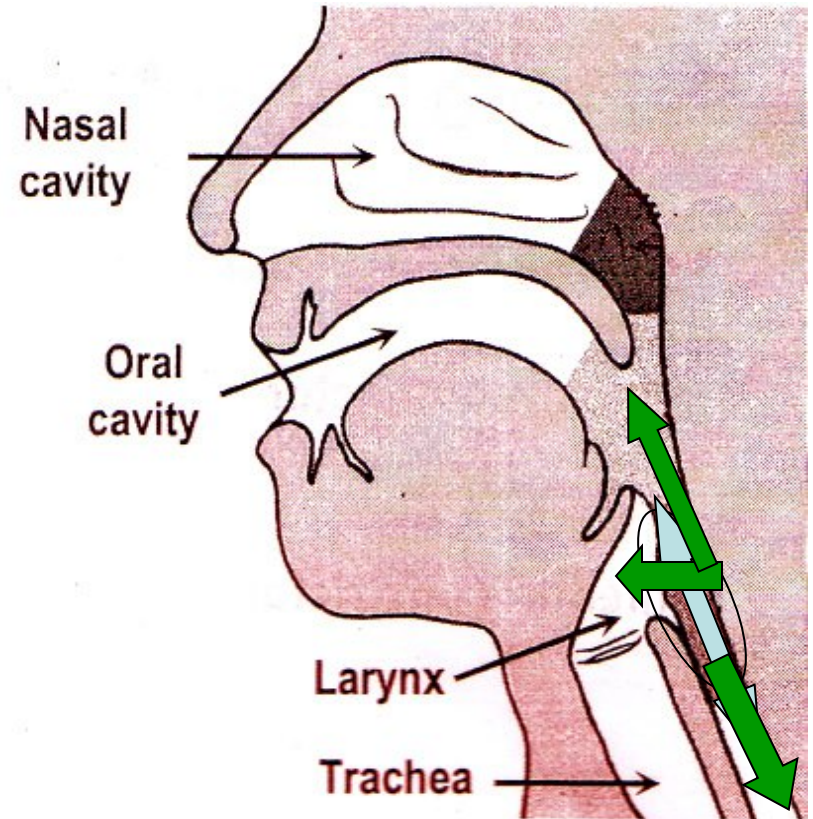
Hypopharynx

Behind the Larynx (in front of 3rd to 6th Cervical vertebra)

From the tip of epiglottis superiorly to the lower border of cricoid cartilage
Inferiorly

Communicates:

- **Anteriorly with the Larynx**
- **Superiorly with the oropharynx**
- **Inferiorly with the esophagus**

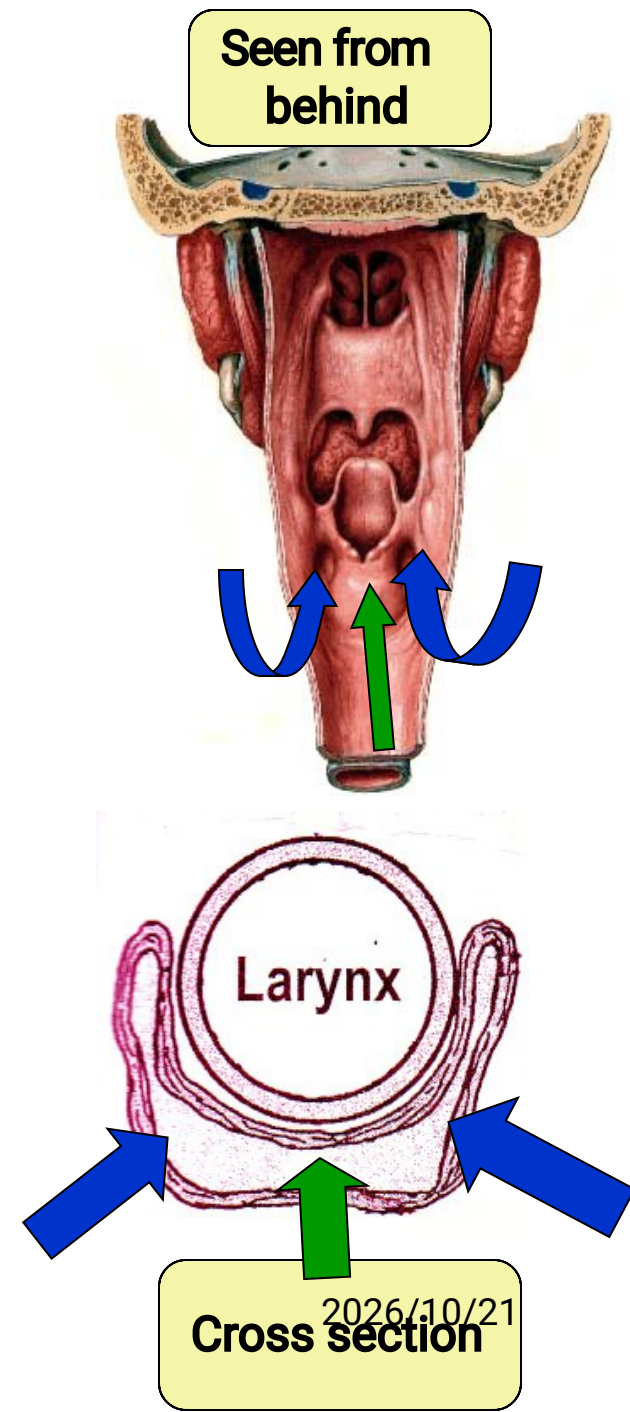


The hypopharynx does not only lie behind the larynx BUT also

Projects laterally on each side of the larynx

So it is formed of :

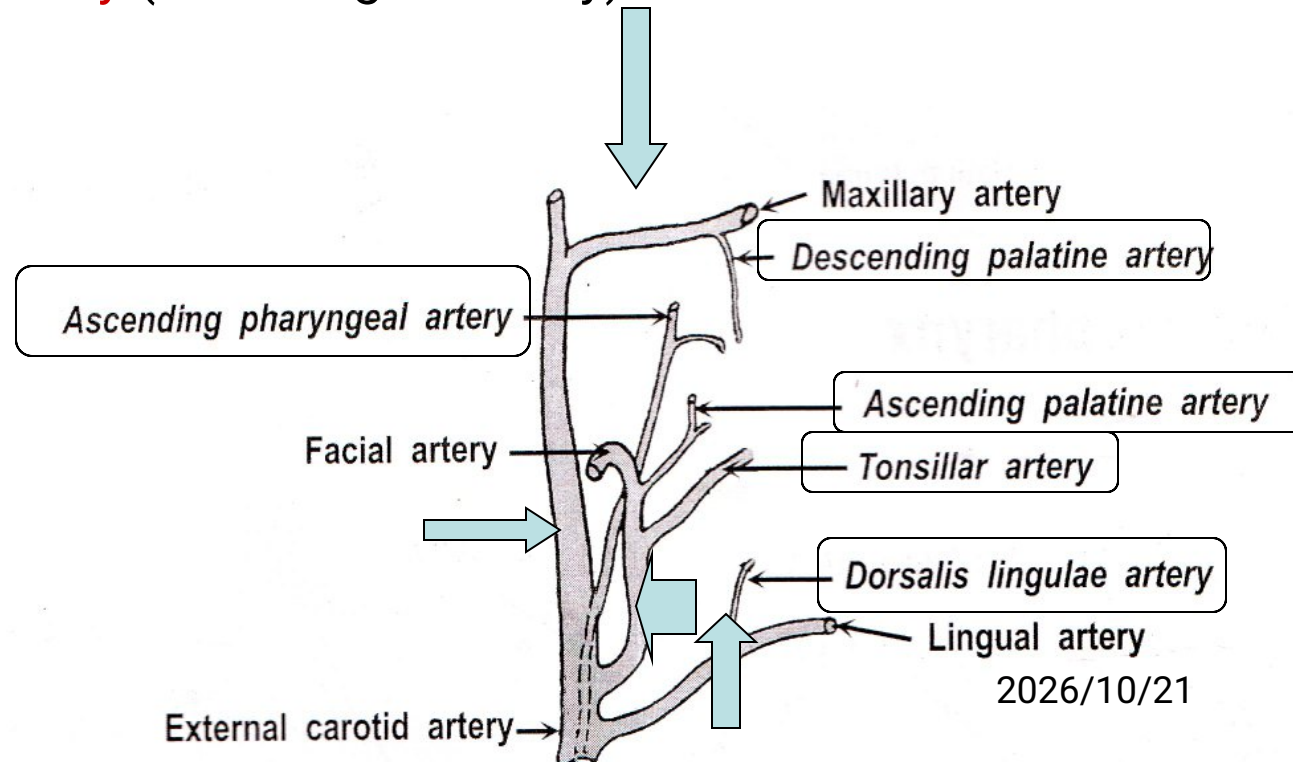
- **Postcricoid region** (behind the larynx)
- **Two pyriform fossa** (on each side of the larynx)



Blood supply

From the External Carotid Artery & its branches

- 1- **Tonsillar artery** (from Facial Artery)
- 2- **Ascending palatine artery** (from Facial Artery)
- 3- **Ascending pharyngeal Artery** (from external carotid)
- 4- **Descending palatine artery** (from Maxillary artery.
- 5- **Dorsalis lingulae artery** (from Lingual artery)



Lymph Drainage

- **Nasopharynx** --- **Retropharyngeal** — **UDCLN**
- **Oropharynx** --- **UDCLN**
- **Hypopharynx** --- **UDCLN**

Nerve Supply

Motor --- X **Except :**

Stylopharyngeus – IX

Tensor palati – V

Sensory –

- Nasopharynx V
- Oropharynx IX
- Laryngopharynx X

Autonomic:

- sympathetic: SCG
- Parasympathetic: through VII

Physiology of the pharynx

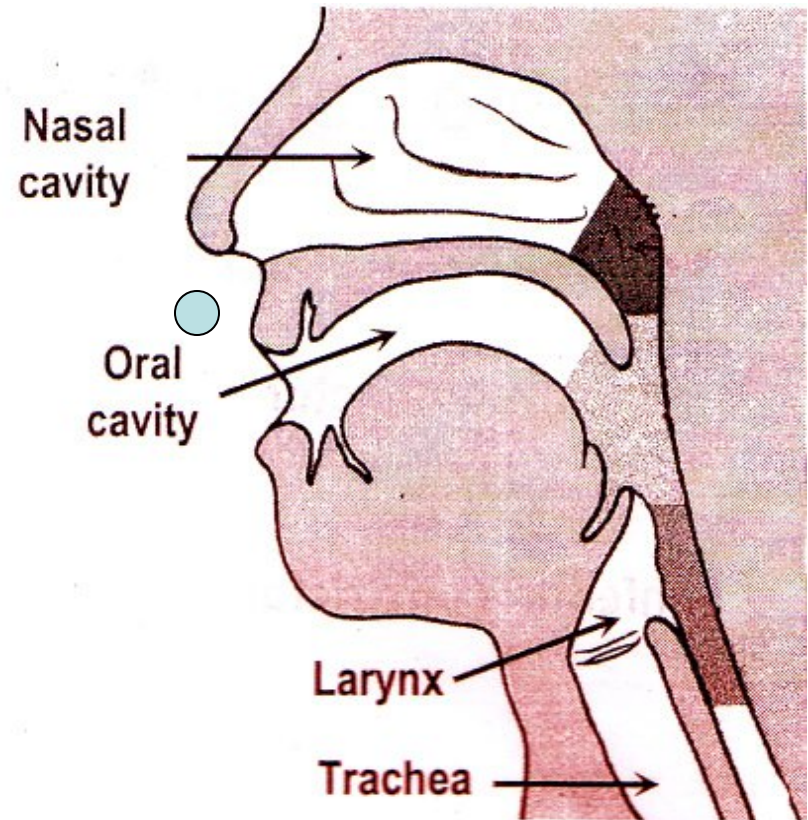
- Respiratory Function

- **A Respiratory Airway**

The pharyngeal muscles have **tonic dilator activity**.

This prevents collapse of the oropharynx by the negative pressure created during inspiration

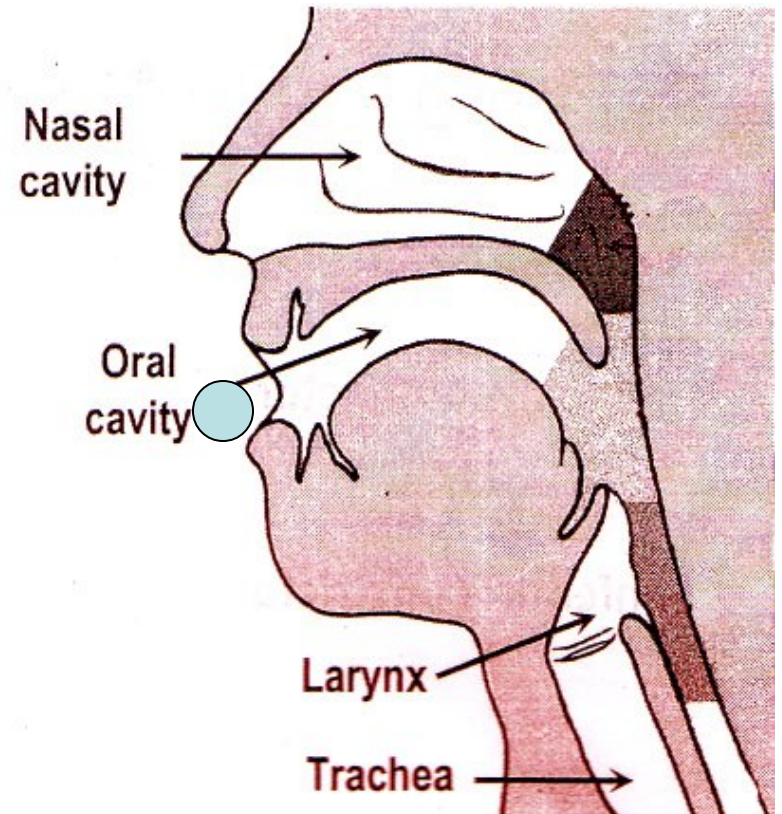
This will keep the lumen of the pharynx open



Swallowing

It acts as a swallowing
Pathway

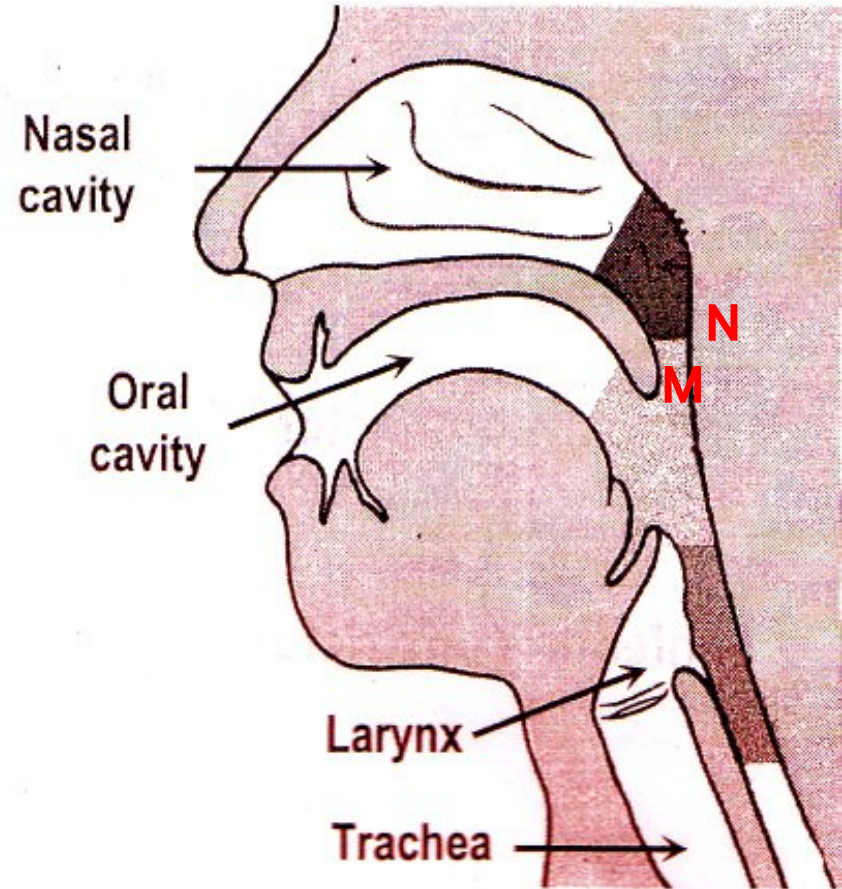
The pharynx is
responsible for the 2nd
stage of swallowing



Speech function

The pharynx helps in speech
Resonance

During speech the soft
Palate moves upwards
during production of all
speech sounds except M, N

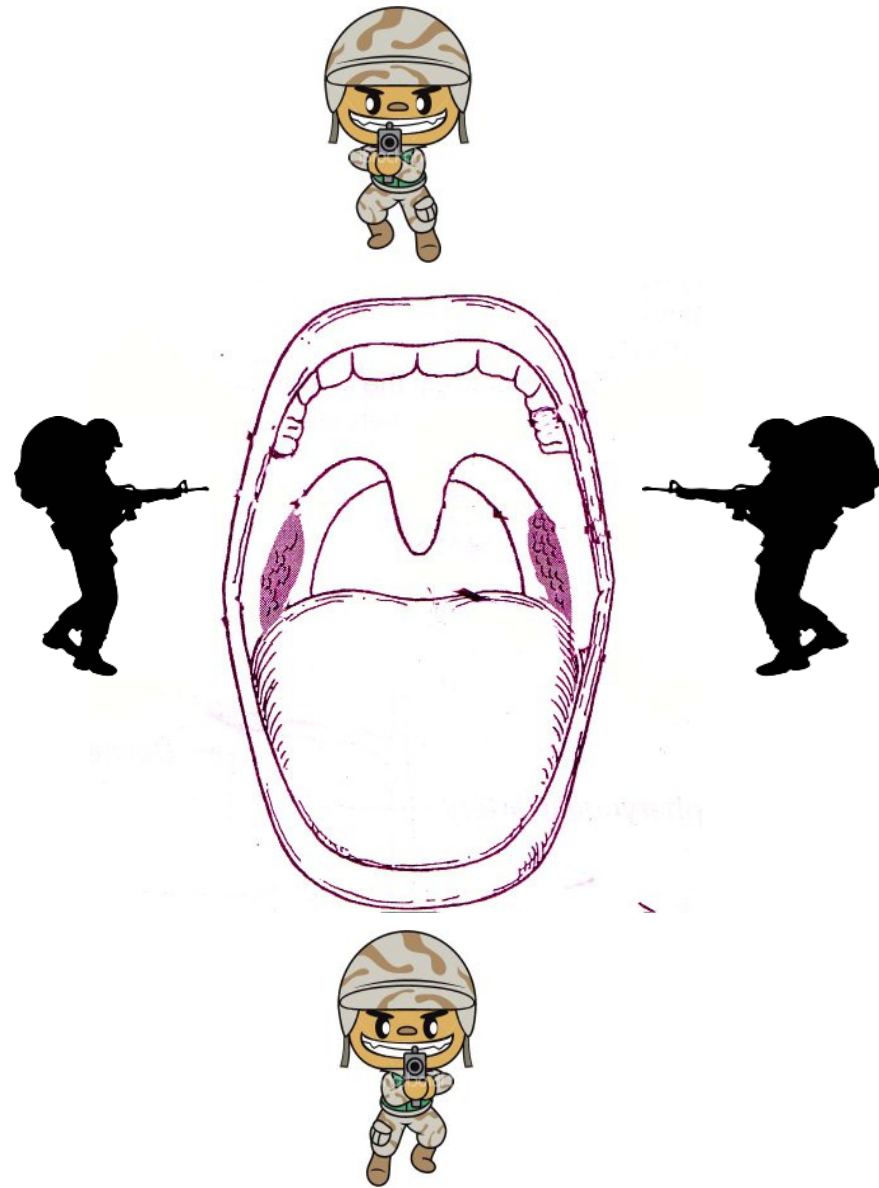


Protective Function

The subepithelial lymphoid tissue in Waldeyer's ring act as a defense line

The surface epithelial cells take samples from the foreign particles transport them to the lymphocytes

The lymphocytes reinforce the immunity of the aero-digestive tract



Clinical Examination

- Palpation of the submental lymph node area with firm pressure and rotating the finger behind the chin.

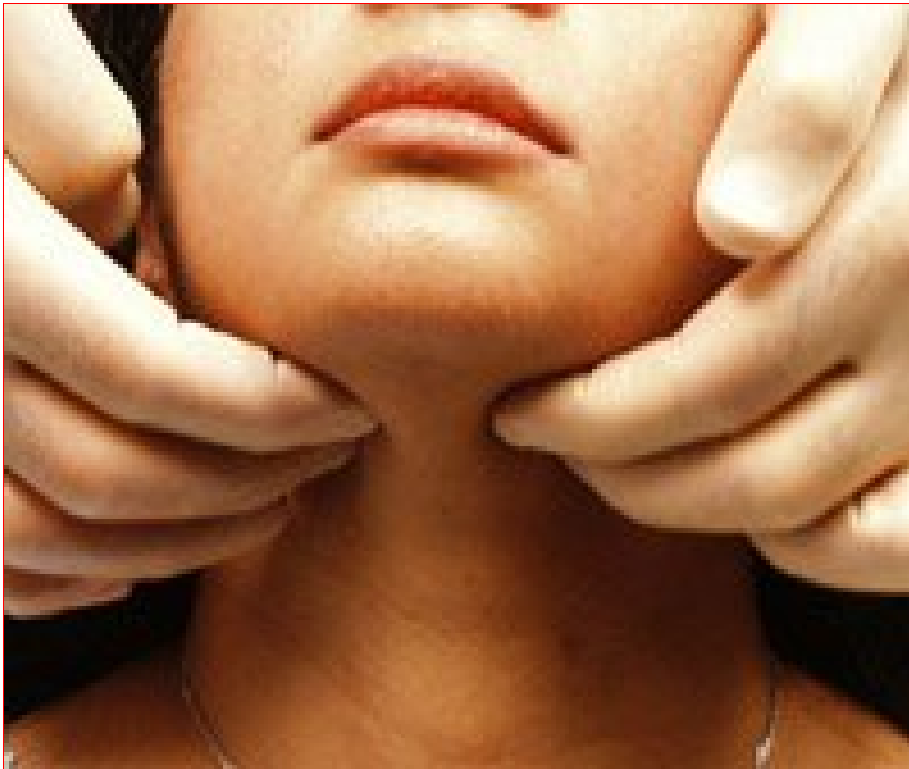


- Positive submental lymphadenopathy below the chin. It is enlarged from draining the severe acne skin lesions.



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- **Bimanual palpation** of the submandibular gland areas for the gland and for lymph node swellings in the gland.
- **How to differentiate between a lymph node and submandibular salivary gland swelling ?**



- Bilateral submandibular gland swellings due to reactive lymph nodes in a 24-year-old female with primary herpetic gingivostomatitis



- **Palpation of the temporomandibular joints at the tragus of the ear as the patient opens and closes the mandible .**



- **Bilateral palpation** and gentle squeezing of the sternocleidomastoid muscle to locate the cervical chain of nodes just medial and deeper to the muscle.



- **Palpation of the supra-clavicular area behind the clavicular bone .**



- **Retraction of the upper lip with the teeth closed, revealing vestibule, gingivae with muco-gingival line, and teeth .**



- Retraction of the cheek to view the buccal mucosa which includes the papilla of Stensen's duct opposite the upper second molar



Examination of the Nasopharynx

Posterior Rhinoscopy

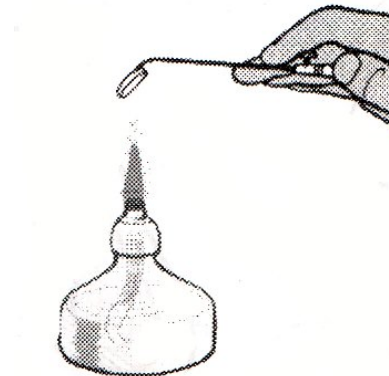
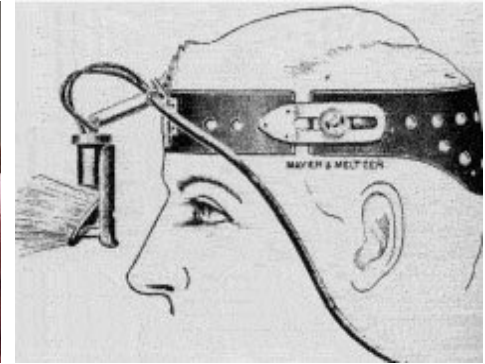
Requirements:

Head light or Reflected light

Post-nasal mirror

Tongue depressor

Flame



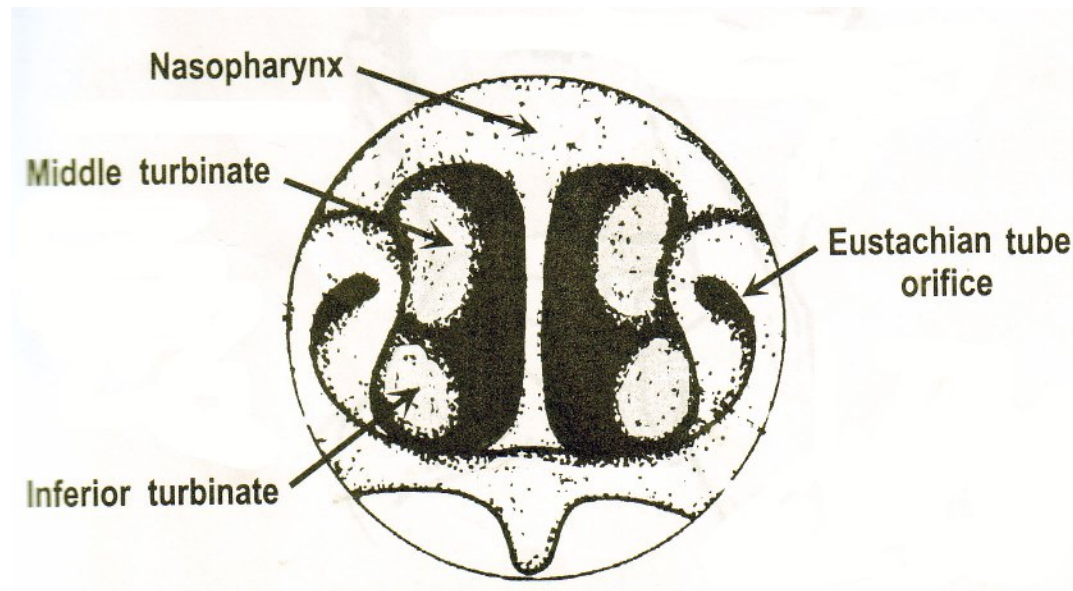
- **Method**

- The mirror is warmed to prevent fogging of the mirror by the patient respiratory water vapor



● Visible structures

- The choanae
- Posterior part of the nasal cavity
- Nasopharynx & ET orifices



Examination of the Oro-pharynx

- **Requirements:**

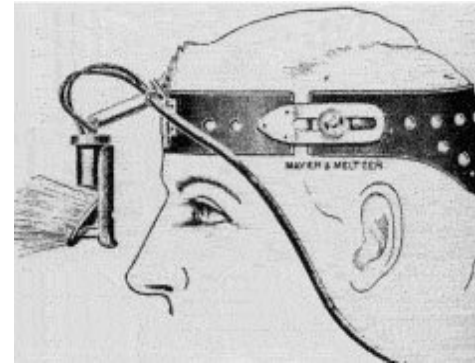
1- Head light or Reflected light

2- Tongue depressor

The tongue depressor is either

-Wooden خشبي

-Metalic which may be straight or right angled معدني



The patient opens his
mouth and breath
Quietly.

Apply the tongue depressor to the
Middle third of the tongue to
depress it

NB

If you apply the tongue depressor
to the anterior third, the tongue will
bulge upwards

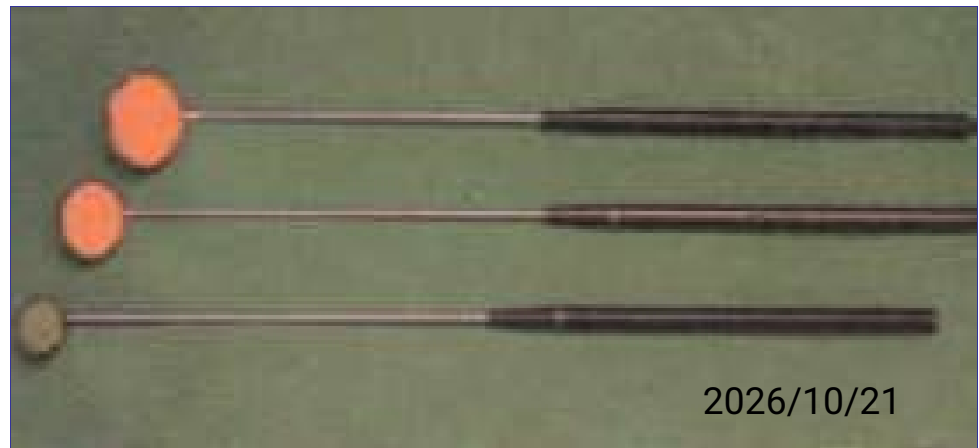
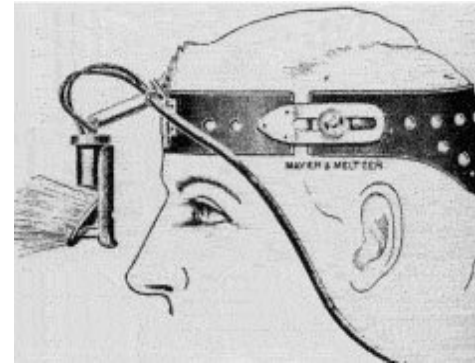
If you apply it to the posterior
third, you will induce gag reflex



Examination of the Oro-pharynx

Requirements:

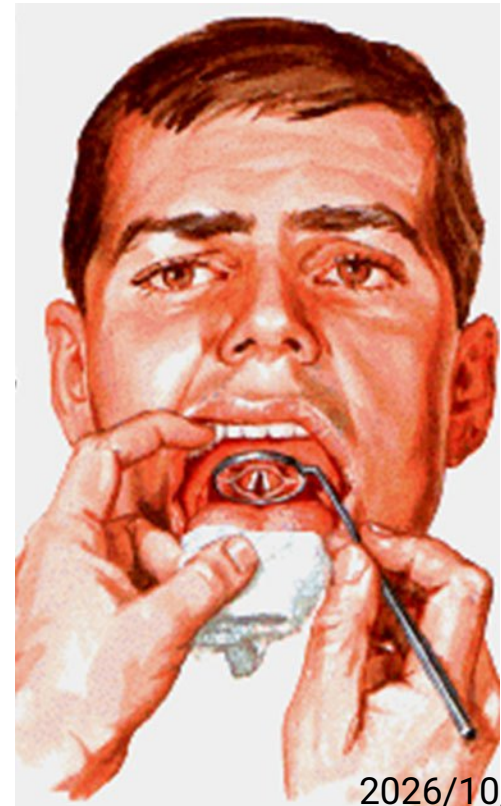
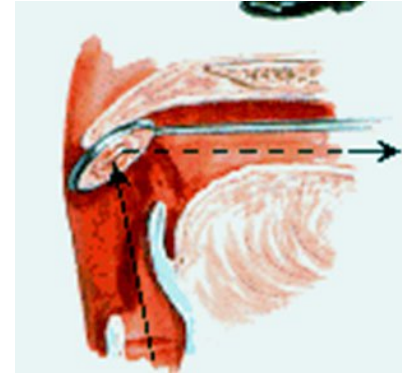
- 1- Head light or Reflected light
- 2- Laryngeal mirror
- 3- flame



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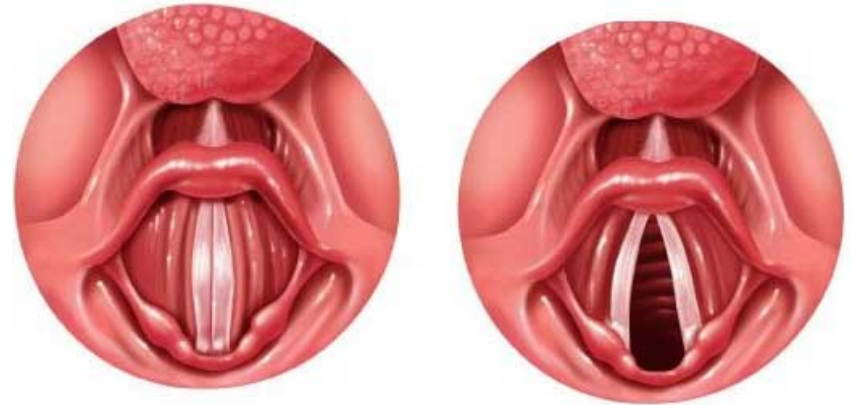
Method

- Warm the Laryngeal mirror Why?
- Ask the patient to protrude his tongue
- By your left hand, Hold the patient tongue by a piece of gauze and pull it forwards
- Hold the mirror by your right hand and place it against the base of the uvula

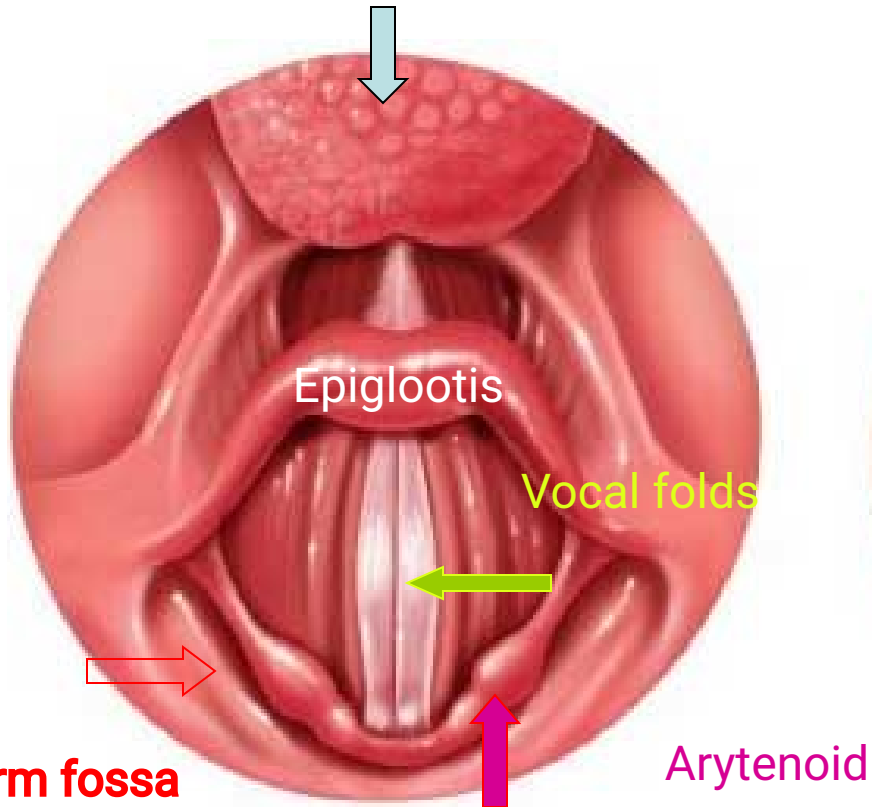


● Visible Structures

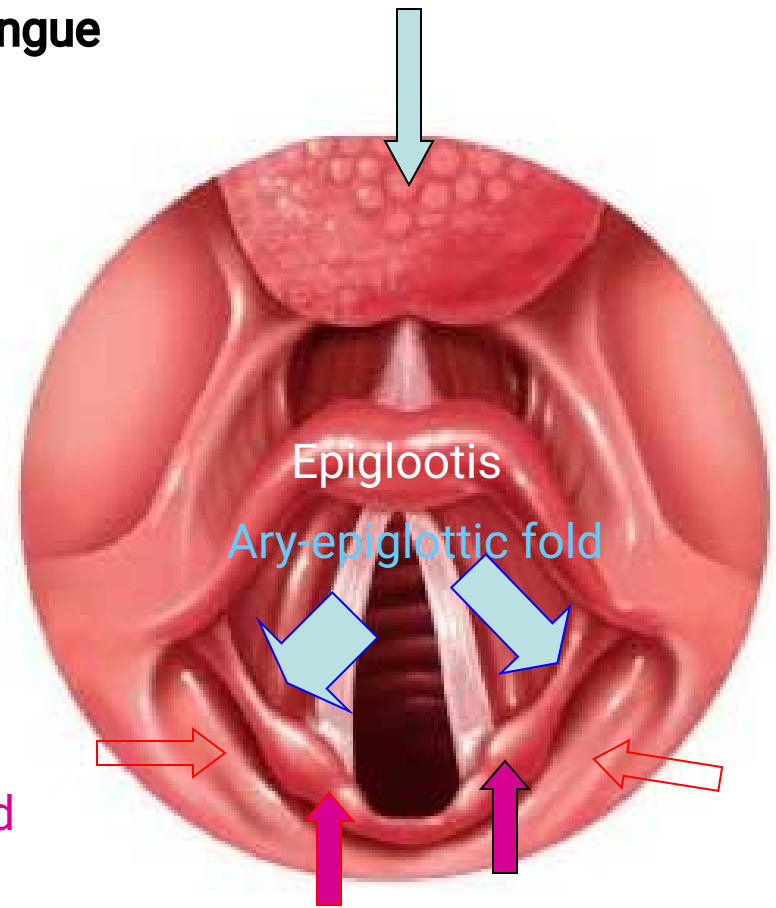
- The Larynx
- The Hypopharynx
- The Base of the Tongue



Base of the tongue



During phonation



During quiet inspiration

Endoscopic Examination

Requirments

- Flexible endoscope or
- Rigid endoscope
- Surface anaesthesia



Rigid endoscopic examination of Larynx and Hypopharynx



- **Advantages:**

- 1- an out-patient procedure
- 2- brilliant illumination
- 3- useful in uncooperative patient
eg in patients with
uncontrollable gag reflex

Flexible Endoscopic Examination



Allows Examination of :

- Nasal Cavity
- Nasopharynx
- Hypopharynx
- Larynx

TUMORS ? ?

- **Nasopharynx**

- Benign
- Malignant

- **Oropharynx**

- Benign
- Malignant

- **Hypopharynx**

- Benign
- Malignant

-Rare

Mixed salivary tumor which commonly occurs over the palate
papilloma

-Rare

- Oropharyngeal

- carcinoma

geal

carcinoma



Papillor

Nasopharyngeal angiofibroma

Frequency

Age

Sex

Site of origin

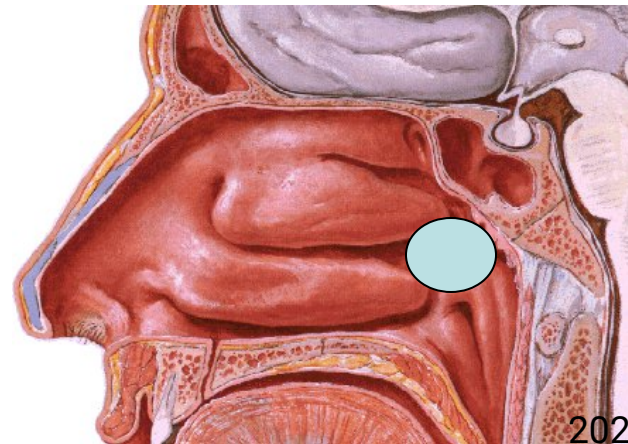
Etiology

- The commonest benign tumor of the nasopharynx
- At puberty
- Only males



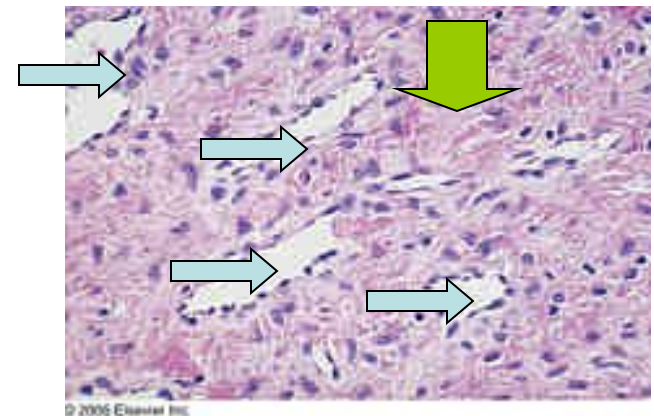
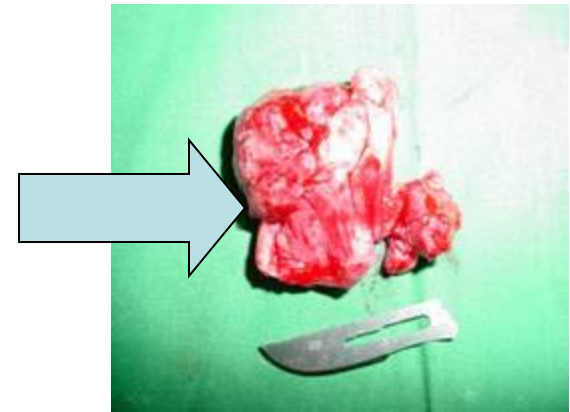
- Most probably paraganglioma from the **paraganglionic** tissue in relation to the terminal part of the **maxillary artery**

- The lateral wall of the nose behind the middle turbinate



Pathology

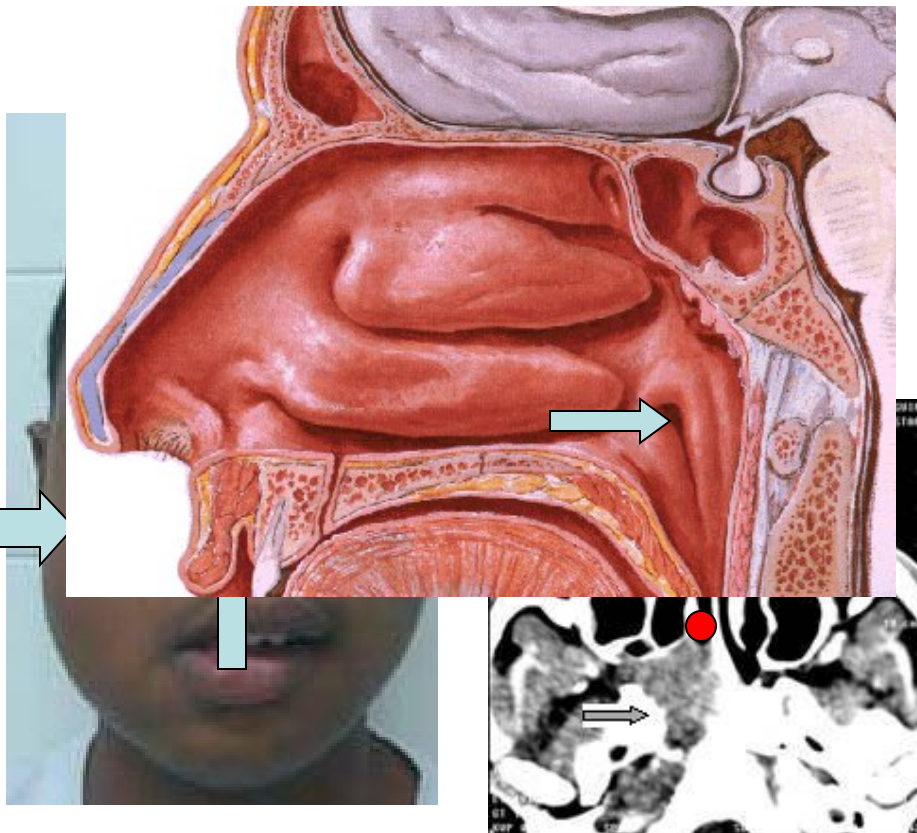
- Highly pinkish lobulated vascular mass,
- consists of large sinusoidal vascular spaces with no muscle coat **so bleeding easily**
- Separated by connective tissue stroma



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Nasopharyngeal angiofibroma

Spread



Forwards;

To the nasal cavity pinkish lobulated mass is seen

Broadening of the external nose proptosis
(Frog face deformity)

Laterally :

from the nose sphenopalatine
foramen pterygopalatine
fossa Pterygomaxillary fissure
mass on the cheek

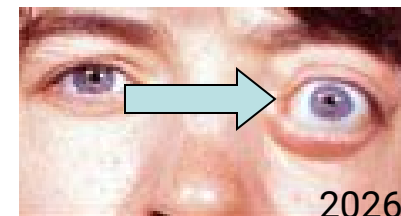
Obstruction of ET Secretory
otitis media

Signs

- Pallor
- Pinkish lobulated mass in the nose which bleeds easily on touch
- Unilateral secretory otitis media

Later:

- Broadening of the external nose & proptosis (**Frog Face**)
- Swelling of the cheek

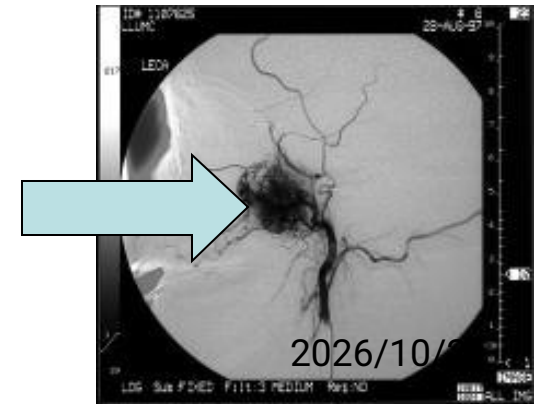
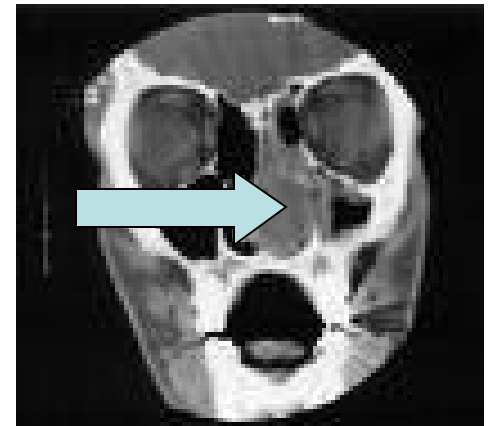
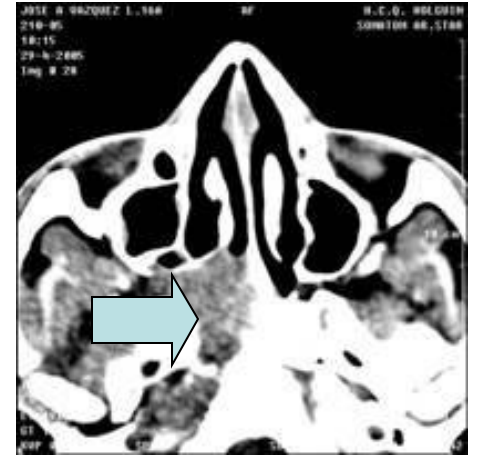


CT SCAN

Carotid angiography

Biopsy ????????

Don't do it
Very Severe bleeding
will occur



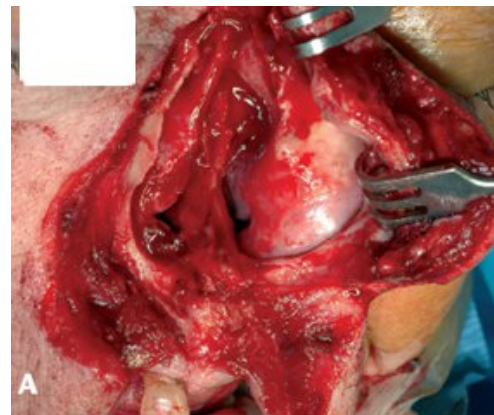
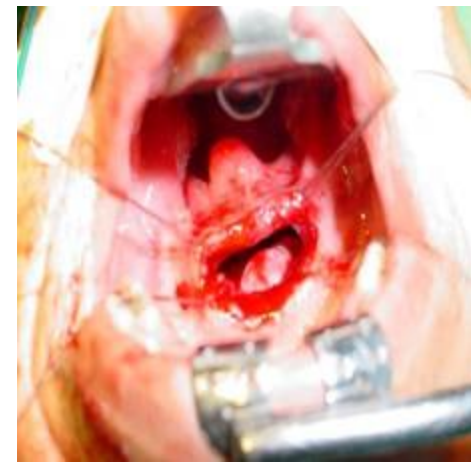
Treatment

Embolization of the feeding vessel? To decrease the intra-operative bleeding

Then

Excision through:

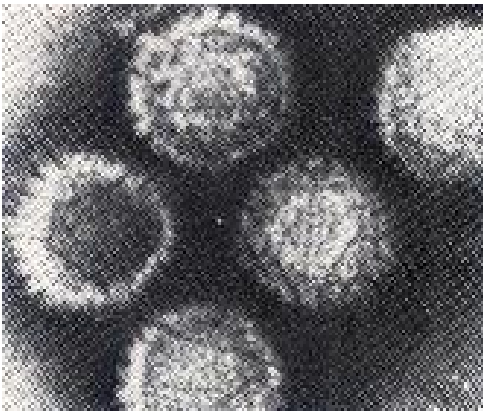
- Transpalatal approach
- Midface degloving approach
- Lateral Rhinotomy approach



Nasopharyngeal Carcinoma

- Frequency
- Age
- Sex
- Etiology

- The commonest Malignant tumor of the nasopharynx
- Commonly **above 50**
- Males > Females
- Epstein Bar Virus



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Spread

Local

- Forewards

- Lateral

- Superiorly

- Inferiorly

Lymphatic

Blood

- Nasal Cavity

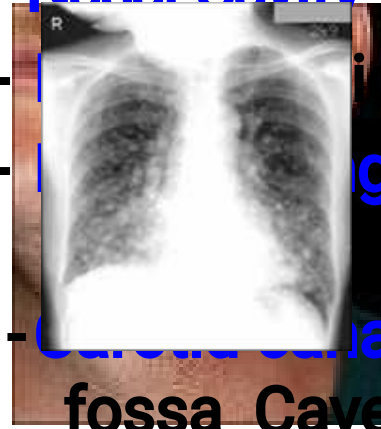
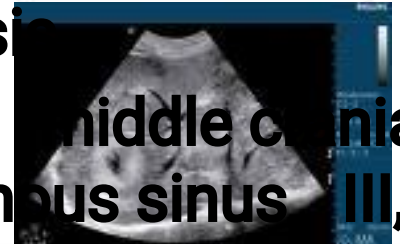
- Preauricular space

- Sublingual space

- Submandibular space

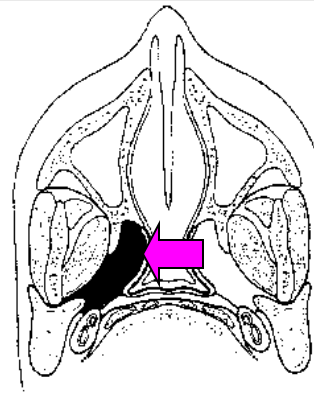
- Carotid sheath

fossa Cavernous sinus III,

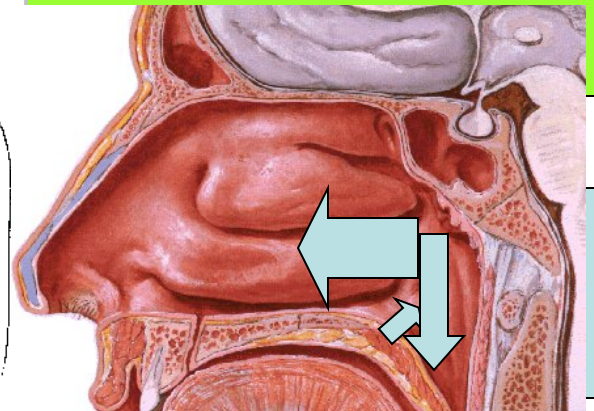


Early & common

To Upper deep cervical Lymph



Parapharyngeal Space



Commonly Male patient above 50

Symptoms

- Unilateral Nasal obstruction
- Unilateral mild epistaxis
- Unilateral hearing loss **Why?** ET obstruction Sec.OM
- Symptoms of pharyngolaryngeal paralysis **Why?**
Due to IX & X cranial nerve paralysis
- Diplopia **Why?** III, IV, VI cranial Nerve paralysis
- Unilateral facial pain **Why?** V cranial nerve invasion



Nasal regurge of fluids

Nasal tone of voice (**Rhinolalia Aperta**)

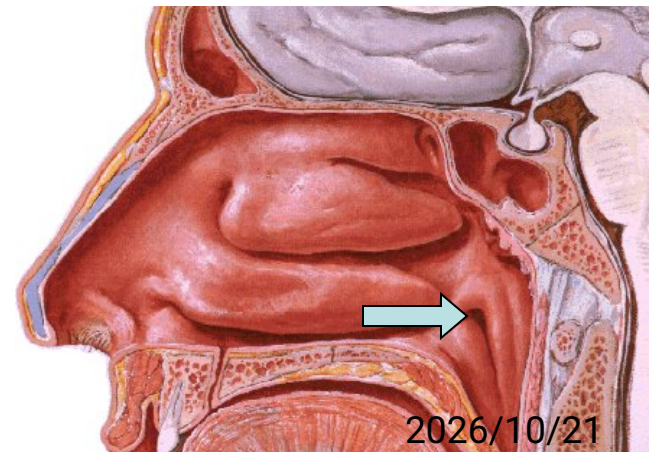
Dysphagia more to fluids

Hoarseness of voice

المياه بترجع من الأنف وخنف وصعوبة في بلع السوائل
وبحة في الصوت



Double vision



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Signs

- **Nasopharyngeal examination** Ulcer or fungating mass
- **Oropharyngeal examination**
 - immobilization of the palate
 - Tongue paralysis :
- **Ear examination** . Unilateral secretory otitis media
- **Orbital examination**
 - Unilateral Proptosis
 - Unilateral Ophthalmoplegia
- **Facial examination** : unilateral anesthesia over the maxilla
- **Cervical Examination** :
UDCLN, may be the earliest manifestation



What is Trotter's Triad?

- Unilateral conductive hearing loss
- Ipsilateral earache & facial pain
- Ipsilateral immobilization of the soft palate



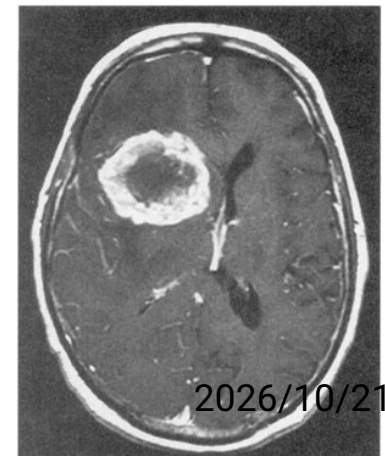
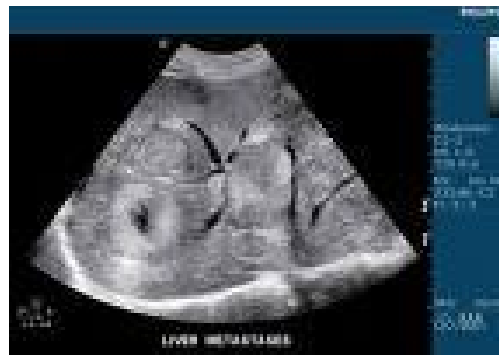
Diagnostic of Nasopharyngeal Carcinoma

1- CT & MRI

2- Biopsy to confirm the diagnosis

3- Metastatic work-up:

- Chest X ray
- Abdominal Ultrasound
- Bone scan
- Brain CT scan



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Treatment

Radiotherapy

Radical neck dissection
in the presence of
palpable cervical lymph
nodes

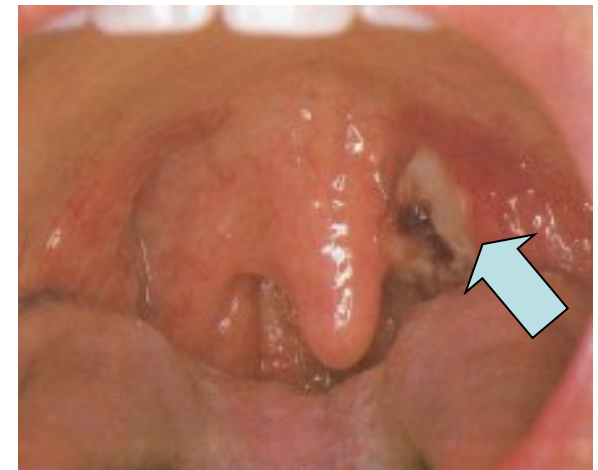


Oropharyngeal carcinoma

- Frequency
- AGE
- Sex
- Site
- Predisposing factor

The commonest oropharyngeal malignant tumor

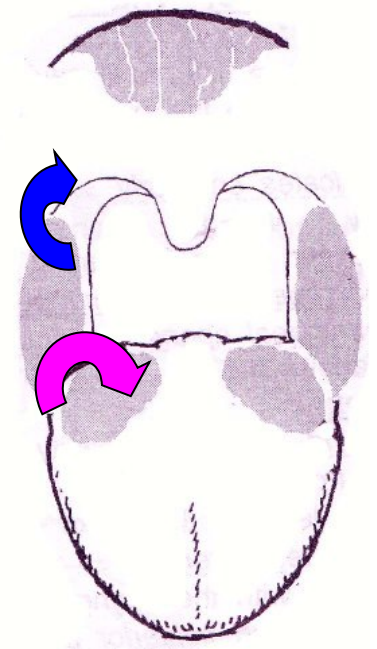
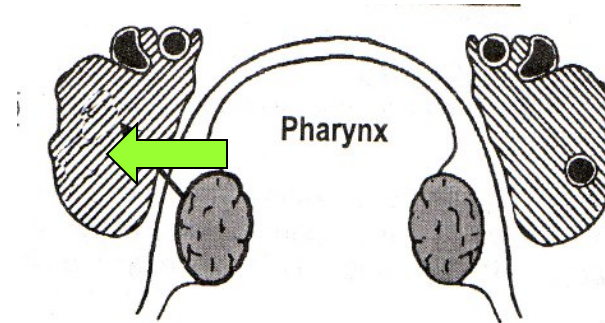
- Commonly elderly
- Commonly males
- Commonly the tonsils
- Excessive smoking & alcohol intake



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Spread

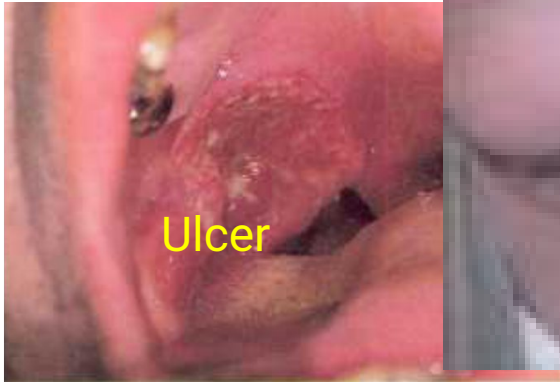
- Direct
- Lymphatic
- Blood



**As described before in
Nasopharyngeal carcinoma**

Signs

- Fungating mass or Ulcer
- Enlarged UDCLN



mass

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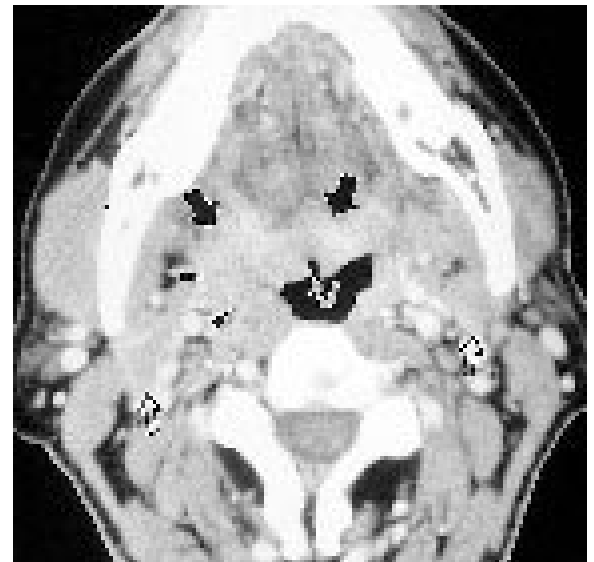
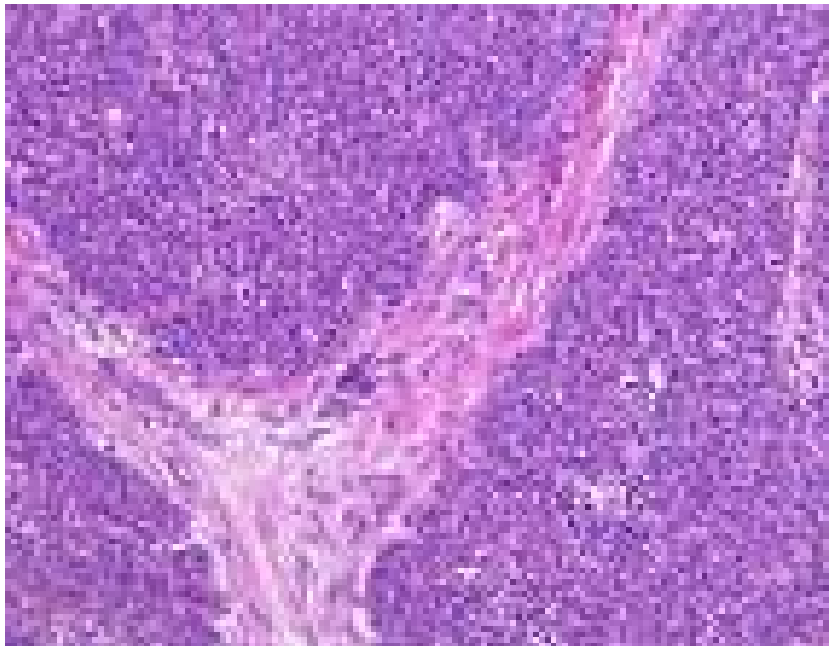
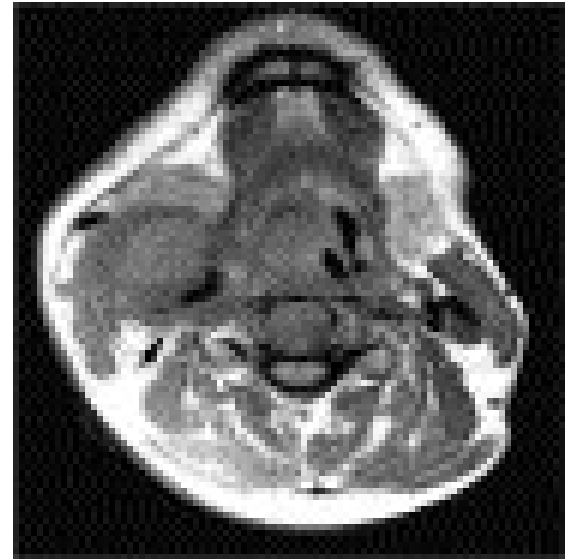
Investigations

1- CT scan & MRI :

to assess tumor extension & LN involvement

2- Biopsy: To confirm the diagnosis

3- Metastatic work-up: as before



Treatment

- Wide Surgical excision postoperative radiotherapy
- RND in the presence of palpable cervical LN



Radiation mask used in
treatment of throat cancer

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Pyrriform fossa carcinoma

- AGE
- Sex
- Predisposing factor

- Commonly elderly
- Commonly males
- Excessive smoking & alcohol intake



Spread

Local

To the postcricoid region

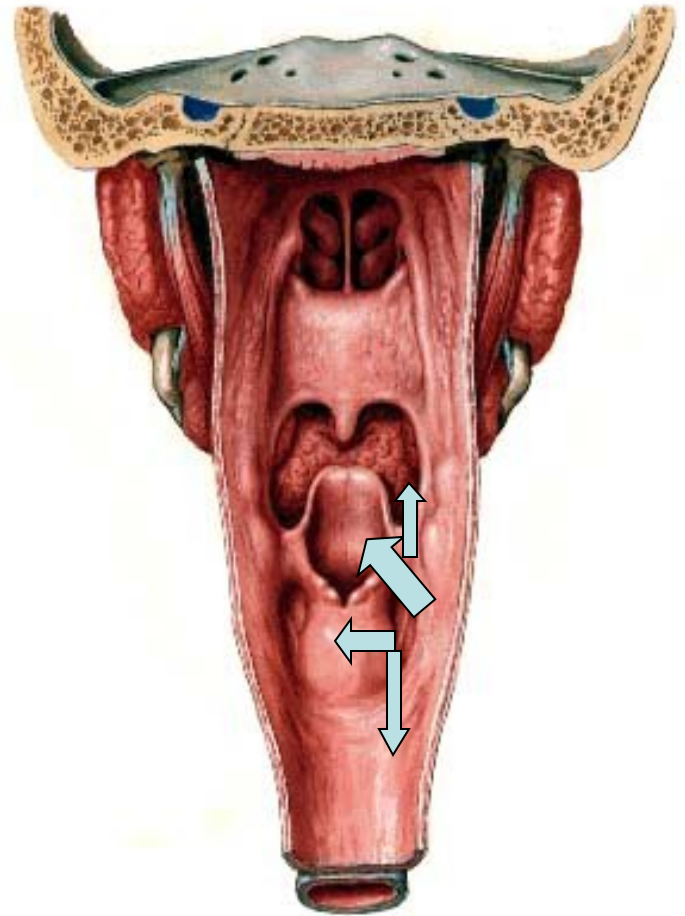
To the larynx

To the base of the tongue

To the esophagus

Lymphatic spread &

Blood spread : As before



Symptoms

Early cases

Later on

- **Asymptomatic** or
- Vague throat discomfort
- May present primarily by enlarged cervical lymph nodes

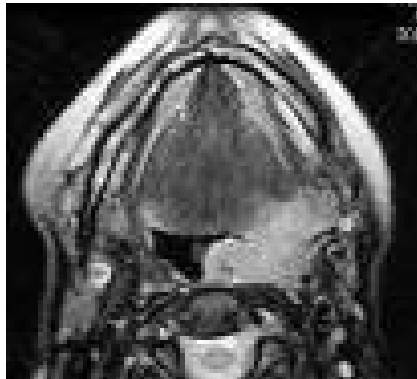
- Gradually progressive **dysphagia** first to solids then to solids & fluids
- **Sore throat** with referred otalgia
- **Hoarseness** of voice

Invasion of the
larynx or
recurrent laryngeal nerve

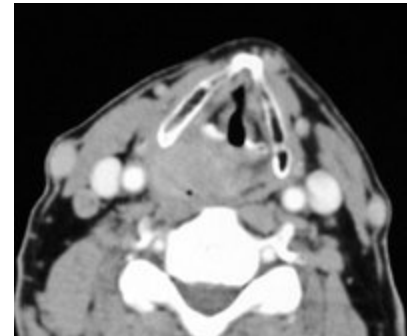
Why?

Investigations

- Barium swallow: FILLING DEFECT
- CT & MRI
- Biopsy:
- Metastatic work up: as before



Magnetic resonance imaging (MRI) scan (axial cut) showing tumour arising from the right tongue base



Axial CT scan of a tumour of the left piriform fossa with ipsilateral cervical lymph node metastases

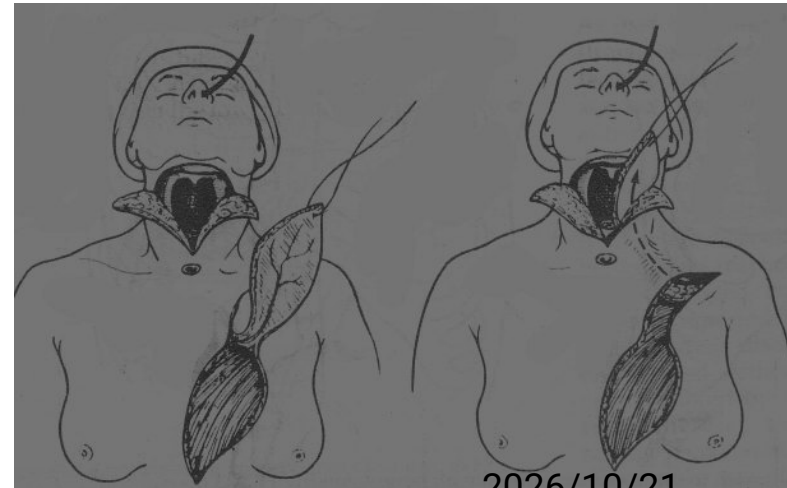
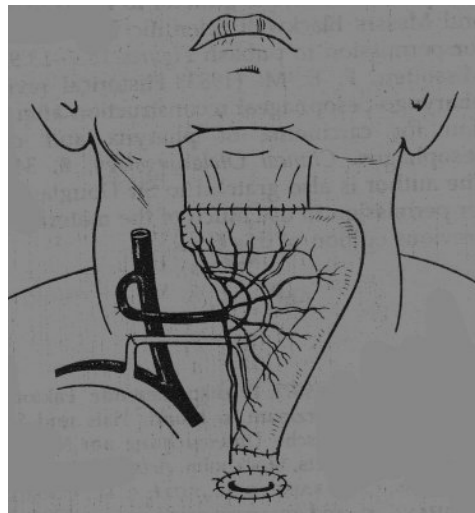
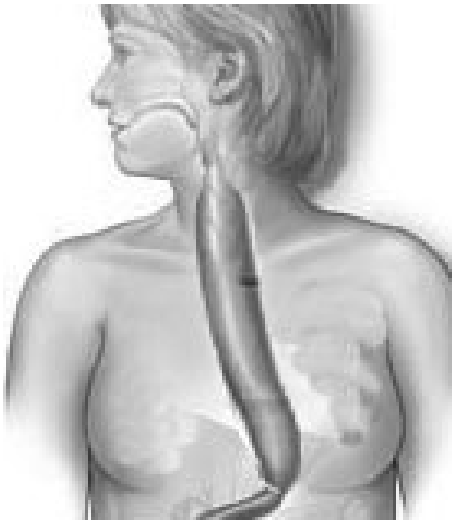
Treatment

- Surgical
- RND

-Pharyngolaryngectomy

-Reconstruction by:

- Stomach pull up
- Colon or ileum interposition
- Myocutaneous flap



2026/10/21

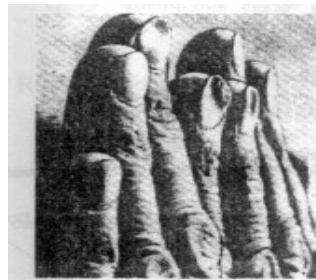
Postcricoid Carcinoma



- AGE
- Sex
- Predisposing factor



- Commonly **middle age**
- Commonly **females**
- Excessive smoking & alcohol intake
- **Plummer Vinson Syndrome**



koilonychia



Glazed tongue



Angular stomatitis

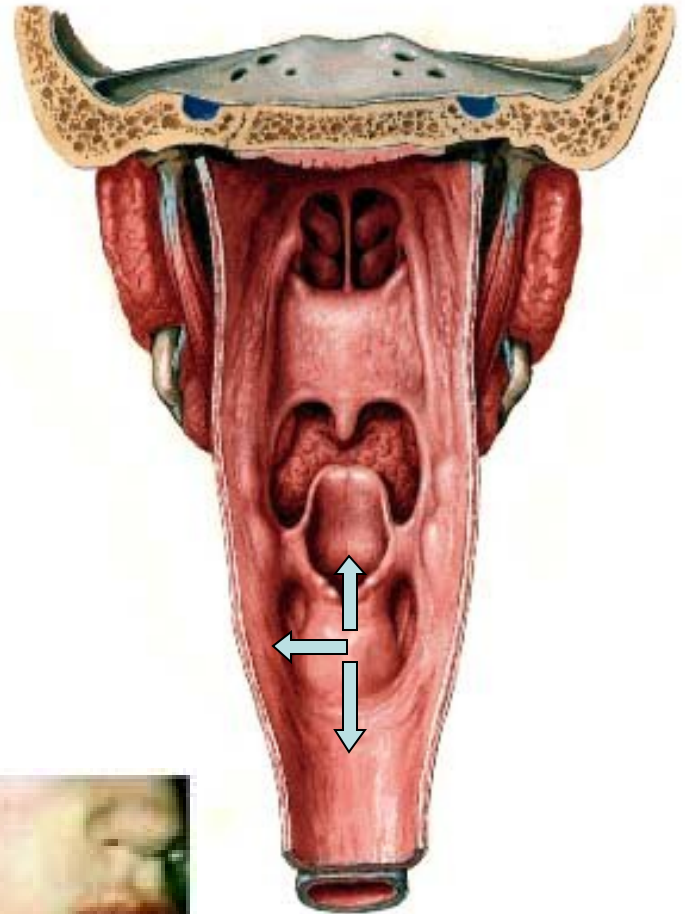
Spread

Direct

- Forwards to the Larynx
- Laterally to the pyriform fossa
- Downwards to the esophagus

Lymphatic: early & common to UDCLN

Blood: late and rare to L, L, B, B



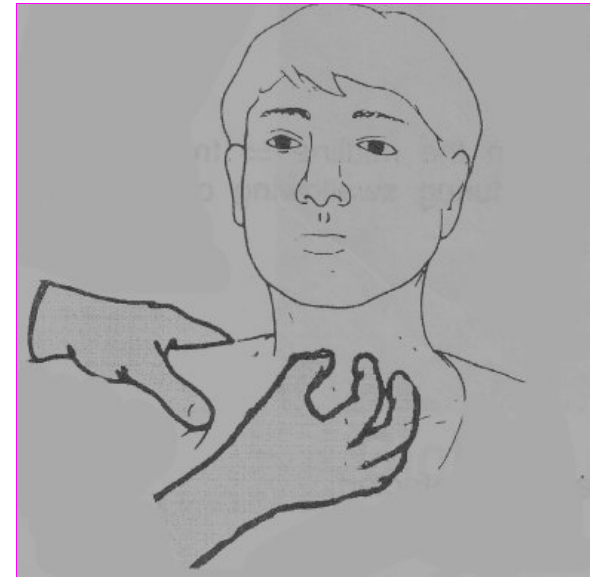
S Signs

- By indirect laryngoscopy or endoscopy the tumor is seen
- Enlarged UDCLN
- Positive Moure's sign

What is Moure's sign?

Hold the larynx between index and thumbfingers of your right hand and move it from side to side over the vertebral column

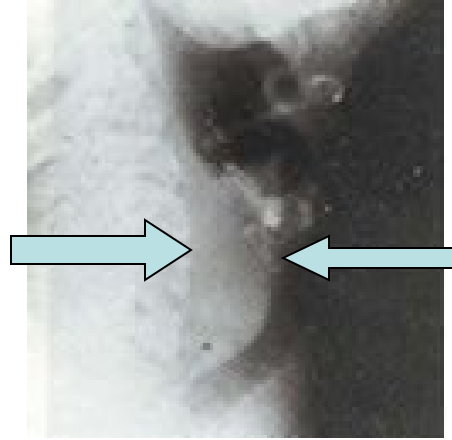
**Normally you feel click
In postcricoid carcinoma there is absence of click**



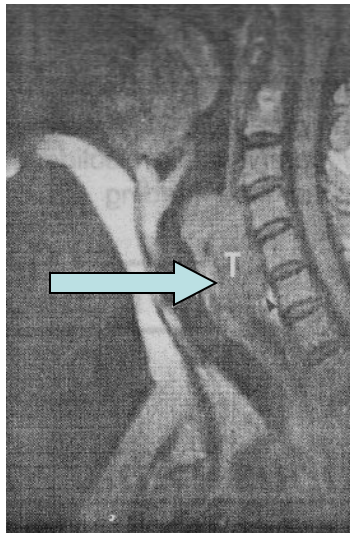
Investigations

- Lateral plain X ray of the neck
 - Barium swallow
 - CT & MRI
 - Biopsy
 - Metastatic work up

As before



Lateral plain X ray
Showing increased thickness
of prevertebral space with the
larynx & trachea pushed anteriorly



MRI showing the mass



Barium swallow showing filling defect