

# Diseases of the Ear, Nose and Throat



8th Lecture:

## Evaluation and Management of the Patient with a Neck Mass Done by: Shatha Al Harbi

The slides were provided by dr. aldhahri

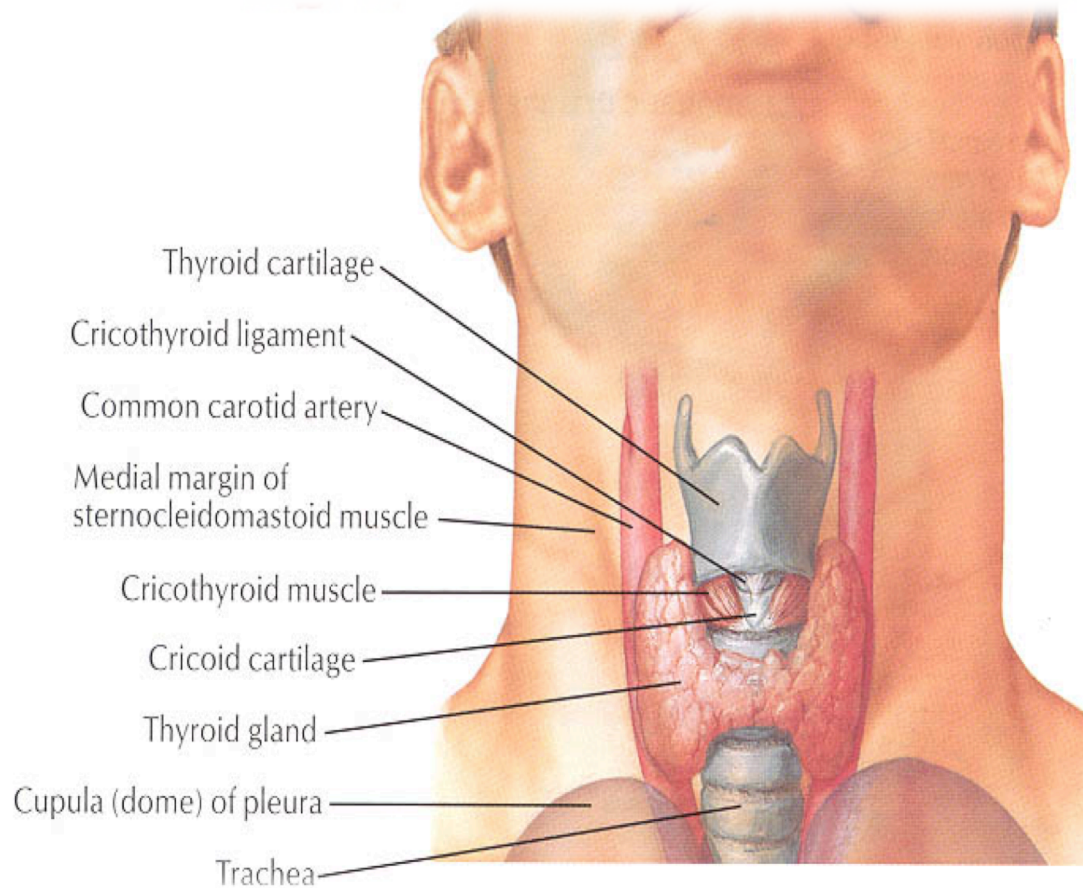
Important Notes in red

Copied slides in black

Your notes in green/ blue

## Anatomy of the neck:

### 1. Anatomical landmarks:



\*the clavicle, sternal notch and sternocleidomastoid can be assessed in all patients.

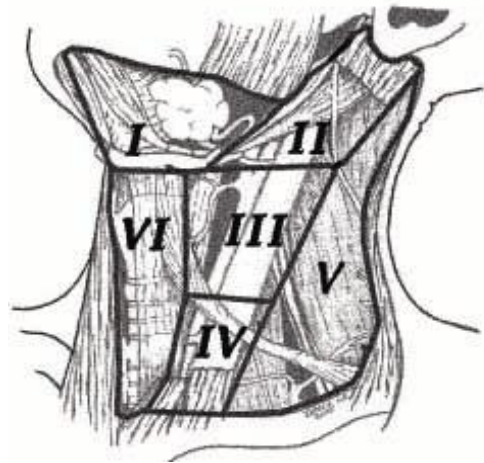
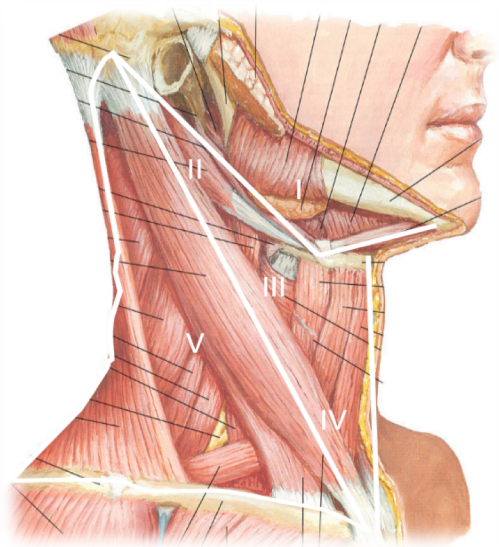
\*While thyroid cartilage, cricoid cartilage and trachea may be difficult to assess in some.

### 2. Triangles of the neck (lymphatic drainage levels):

|         |  |
|---------|--|
| Level 1 | Submental and submandibular region.    |
| Level 2 | Upper jugular & digastric lymph nodes. |
| Level 3 | Mid-jugular lymph nodes.               |
| Level 4 | Low jugular lymph nodes.               |
| Level 5 | Behind the sternocleidomastoid.        |
| Level 6 | Anterior compartment. (mid-line)       |

\*levels 1-4 are anterior to sternocleidomastoid. (Anterior triangle).

\*level 5 is posterior to sternocleidomastoid. (Posterior triangles).



Lymphatic drainage is from up to down and medial to lateral so metastatic lymphatic pathway is in that direction too. For example, a lesion under the tongue may metastasis to level one (submental area).

### 3. Carotid bulb:

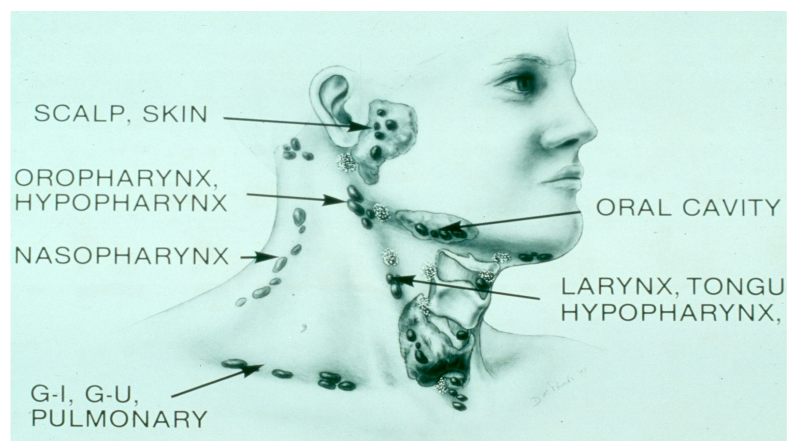
- \*Dilated area located at the bifurcations of the carotid arteries and containing numerous baroreceptors that function in the control of blood pressure by mediating changes in the heart rate.
- \*Located At the level of hyoid bone, helps in detecting neurovascular tumors in patients complaining of neck masses.

### General considerations:

| AGE   | LOCATION   |
|---|--|
| Pediatrics (0 – 15 years): mostly benign<br>Young adults (16 – 40 years): similar to pediatric<br>Old adults (>40 years): high risk of malignancy | Congenital masses: consistent in location.<br>Metastatic masses: location maybe variable, follow the track of spread to primary tumor. |

In elderly it almost always a malignancy,

Metastasis Location according to Various Primary Lesions



**Important points:**

- Commonest congenital neck masses: 1. Thyroglossal duct cyst. (Located at mid-line below hyoid bone)
- 2. Branchial cleft cyst. (At level II, lateral part of the neck).
- Nasopharyngeal carcinoma metastasis to level II most commonly.
- Most common route of metastasis of head and neck tumors is lymphatic spread.
- When a patient is found to have enlarged lymph nodes at level II, you should examine the tonsils.

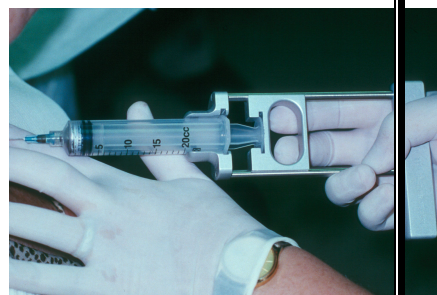
**Diagnostic Steps:**

| History   | Physical examination   |
|---|--|
| <p>1. Developmental time course:</p> <ul style="list-style-type: none"> <li>• Very quickly: infectious (e.g. over 3 days).</li> <li>• Quickly: malignant (e.g. over a month).</li> <li>• Very slowly: benign (e.g. over 2 years).</li> </ul> <p>2. Associated symptoms:</p> <ul style="list-style-type: none"> <li>• Otalgia: referred pain from larynx, nasopharynx, base of tongue by 9<sup>th</sup> cranial nerve.</li> <li>• Dysphagia.</li> <li>• Hoarseness of voice: a change in the voice, alarming with history of cancer, smoking or otalgia.</li> <li>• Diplopia: tumor invading cavernous sinus.</li> <li>• Facial numbness: tumor invading trigeminal nerve ganglion. Distinguish from Bell's palsy where the symptoms are sudden.</li> </ul> <p>3. Personal habits (tobacco, alcohol, chewing shamah).</p> <p>4. Previous irradiation (thyroid cancer).</p> | <p>Under good illumination assess:</p> <ol style="list-style-type: none"> <li>1. Oral cavity: buccal &amp; sulcus areas, under tongue, palate, tonsils, area between buccal and maxilla).</li> <li>2. Neck lymphatic levels &amp; other head lymph nodes.</li> <li>3. Nose: using fiber-optic, examine the nasopharynx and larynx.</li> <li>4. Ear.</li> </ol> |

**Investigations:**

**1. Fine needle aspiration biopsy (FNAB):** most important tool in evaluating neck masses & gold standard for diagnosis

| Indications   | contraindications  |
|---|--|
| <p>*a neck mass persistent after an empirical antibiotic course.</p> <p>(When you suspect an infectious process in a patient presented with a neck mass, give antibiotics and follow up after two weeks).</p> <p>*small gauge needle.</p> | <p>*if vascular lesions are suspected: e.g. hemangioma, carotid body tumor (it may cause hypotension for patient).</p> |





Open biopsy is indicated when:

1. 4 collections of FNA are inconclusive.
2. Suspicion of lymphoma (history of low-grade fever).
3. Suspicion of tuberculosis.

**2. Computed tomography:** 1<sup>st</sup> radiological imaging to order. Helps in assessing site, size (more than 1.5 cm in considered pathological), extent, primary lesion and staging.

\* Avoid contrast in thyroid lesions

**3. MRI:** for soft tissue visualization (detection of deep enlarged lymph nodes) and vascular lesions.

**4. Ultrasonography:** important tool in diagnosing thyroid masses, cystic lesions, pediatric patients (no need for general anesthesia), guided biopsy. (Can detect masses as small as 2mm).

**5. Radionuclear imaging:** for salivary tumors, thyroid masses, bone scan.

\* Not indicated in thyroid masses unless there is a suspension of thyrotoxicosis.

\*PET scan is indicated for functional assessment of unknown primary tumors. There will high up take of glucose in active metabolic areas of malignancy.

#### General rules of nodal mass workup in adults:

1. Any solid asymmetric mass **MUST** be considered a metastatic neoplastic lesion until proven otherwise.
2. Asymptomatic masses: 12% are cancers. (80% of squamous cell carcinoma patients are presented with sole complain of neck mass).
3. Ipsilateral otalgia with normal otoscopy: direct attention to tonsil, tongue base, supraglottis and hypopharynx.
4. Unilateral serous otitis: direct examination of nasopharynx (obstruction of Eustachian tube).
5. Open biopsy is contraindicated in squamous cell carcinoma, because it changes the lymphatic drainage pathway, introducing metastasis in new locations.
6. When the primary lesion is not located after FNA of base of tongue, nasopharynx, larynx and after tonsillectomy:

\*if the histological subtype is established by FNA, start treatment.

\*if the histological subtype is not known after FNA, do open biopsy.

#### Benign tumors of parotid gland:

Most common is benign pleomorphic adenoma (it is the most common in submental, sublingual, minor salivary glands).

\*2<sup>nd</sup> most common is warfin tumor (papillary cyst adenoma).

**Malignancies:** (the larger the gland the lesser the chances of malignancy development)

\*Nasopharynx is the 2<sup>nd</sup> most common cancer location after thyroid in head and neck.

\*incidence of nasopharyngeal carcinoma is linked to Epstein Barr virus & genetic alterations in Saudi population.

Parotid gland

Submandibular glands

Sublingual glands

Minor salivary

|   |  |  |  |
|---|--|--|--|
| 1. Mucoepidermoid tumor.<br>2. Adenocystic carcinoma. | 1. Adenocystic carcinoma.<br>2. Mucoepidermoid tumor.<br>40% chance of malignancy. | 1. Adenocystic carcinoma.<br>2. Mucoepidermoid tumor.<br>60% chance of malignancy. | 1. Adenocystic carcinoma.<br>2. Mucoepidermoid tumor.<br>80% chance of malignancy. |
|---|--|--|--|

### Case 1

A 2 years old child presented to your clinic with fever, decreased oral intake, runny nose and crying for the past 5 days. On examination, the child is irritable; there is a large left neck mass, red and tender.

Infection (lymphadenitis) developed an abscess. Treatment: drainage and antibiotics.

### Case 2

65 years old man injured his neck while shaving, 4 days later he developed neck swelling and low-grade fever.

Cellulitis, treat by antibiotics.

### Case 3

28 years old woman has a neck mass for the past 8 months; midline mass of both sides of the neck, started snoring, choking, no weight loss, no pain, and no voice changes.

BaGoiter (thyroid enlargement). In history: symptoms of hypo-/hyperthyroidism, family history of thyroid cancer, radiation exposure.

\*Most important investigations are FNA + ultrasound.

\*follicular thyroid lesions are benign, treated surgically: thyroidectomy.

\*thyroid carcinoma: patient will complain of hoarseness, swelling is more towards one side of the neck and weight loss.



### Case 4

An elderly woman presented with left temporal skin lesion, growing for the past 8 months, no response to creams.

Basal cell carcinoma.

\*examine the eye (frozen eye if orbit is invaded), facial nerve, parotid gland, and other skin lesions.

\*confirm by biopsy from junctional area, containing both normal and neoplastic tissue. (At the center, there will be only necrosis)

\*CT scan to assess extension.

\*Basal cell carcinoma treated by excision/ Squamous cell carcinoma by excision and radiotherapy.

**Case 5**

40 years old male presented with right tongue lesion for the past 5 months; slowly growing, causing difficulty in eating, he is a smoker.

Oral cancer (squamous cell carcinoma most common histological type).

\*take a scrap tissue + CT (neck, chest, and abdomen).

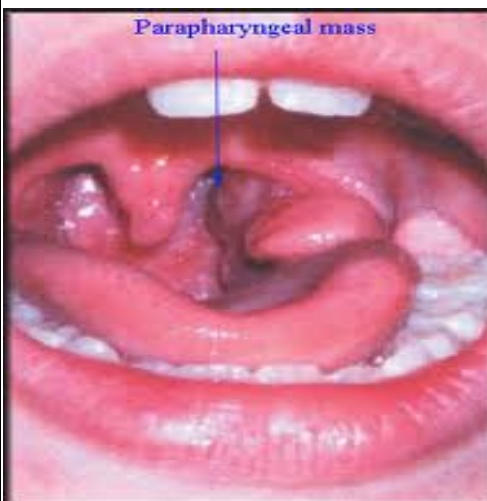
\*T1 tongue is more aggressive than T4 pharynx.

**Case 6**

Previously healthy young man presented with recurrent tonsillitis, constant throat pain, he was on four antibiotic courses with no improvement, his throat pain is worse upon swallowing, he has right ear pain and decreased weight over the past 6 weeks. On examination, he has enlarged right tonsil.

Tonsillar carcinoma, the uvula is in med-line.

If on examination, he had multiple cervical lymph nodes enlargement, low-grade fever, hepatosplenomegaly.  
Lymphoma

**Case 7**

Patient is completely asymptomatic; dentist referred her for a mass behind the right tonsil.

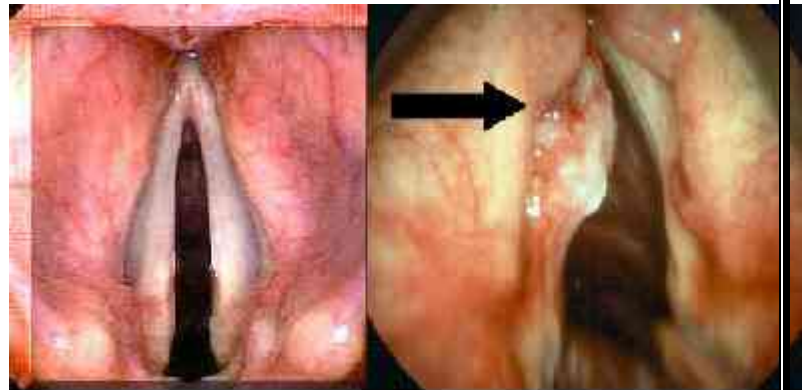
Para-pharyngeal space tumor.

**Case 8**

65 years old man complains of hoarseness for the past 10 months, heavy smoker (2 packs/day for the past 14 years), mild stridor, decreased weight, cannot walk because of stridor. On examination, he has a neck mass 2x2 cm, vocal cord paralysis, mass on right vocal cord.

Squamous cell carcinoma, to confirm it do open direct biopsy.

\*treat by total laryngectomy.



Normal Cords

Cancer (arrow)

**Case 9**

Patient asymptomatic has a left parotid mass for the past 6 months.

Diagnose by FNA, treatment is surgical excision.

**Case 10**

Elderly woman using denture complains of pain and gum bleeding.

Squamous cell carcinoma of buccal mucosa, confirm by biopsy.

**Case 11**

Elderly man with a left neck mass that does not change in size, has been there for at least 14 years, disappears sometimes.

Branchial cleft cyst



**Thyroglossal duct cyst:** disappears with tongue protrusion. Treat by cyst trunk procedure (resect cyst, track, body of hyoid bone).

**Pyogenic granuloma:** repeated irritation of the lip, usually with history of smoking and old age.

**Anaplastic thyroid carcinoma** has the worst prognosis of thyroid tumors.