Examination of the Head and Neck

Topics discussed:

- Review of the basic anatomy
- History
- Throat / Neck examination
    - Videos on
        - How to examine the oral cavity, oropharynx, and neck (throat and neck) (https://youtu.be/_dp8iCTsDUc)
    - Limitations – what can't you see and what can your ENT do?
        - https://youtu.be/tSJFTdh_hLk
- Special investigations

General points (applicable to any ENT examination):

- Use personal protective equipment as required
- Remember that a proper light is indispensable
    - Whether using a head light or otoscope, it should be bright
    - Preferable the ambient light should not be overly bright
- Use two hands (Bimanual)
- Be sure to examine all the nooks and crannies
- Be sensitive regarding the position in which you examine a patient
    - Sitting in front or to the side of a patient
- Be sensitive regarding the examination of a child
    - First try to make a bond

Examination follows the classically taught dictum:

- Inspection
- Palpation
- (Percussion)
- Auscultation

Remember to report using standard medical terminology such as:

- Size, Shape, Surface, Symmetry, Skin
- Consistency
- Cystic, Soft, Firm (Hard / Rubbery)
- Fixed

Basic anatomy

Oral cavity and oropharynx

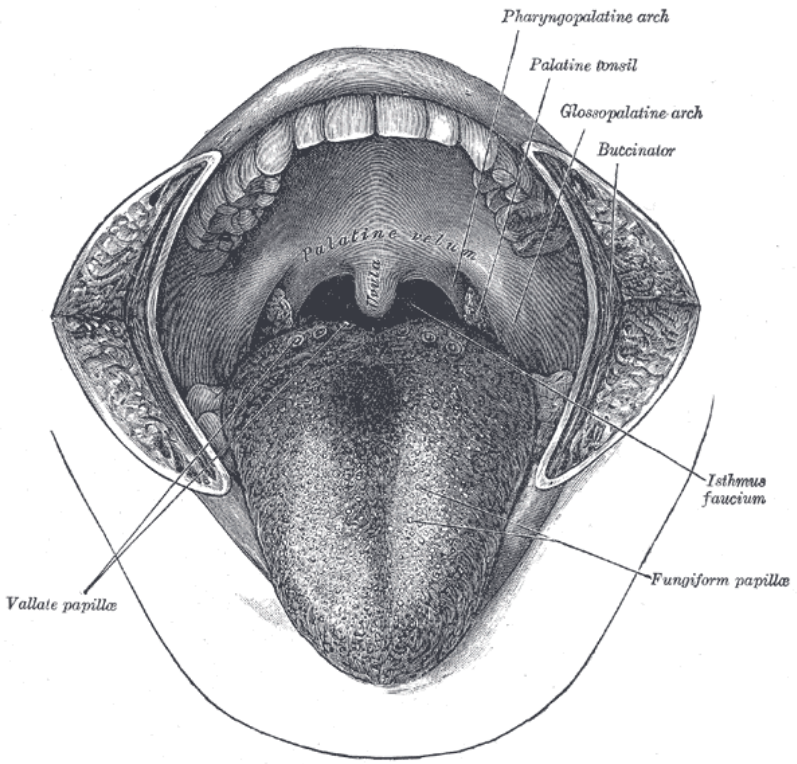
During your career, you will examine thousands of mouths / throats. A thorough history and a meticulous examination of the mouth pharynx, larynx and neck will greatly assist the doctor in making the correct diagnosis. Knowledge of a strategy for the investigation of patient complaints and a functional knowledge of the underlying anatomy is of fundamental importance. It allows the investigator to ask meaningful questions, obtain maximum benefit from clinical examinations and limits the number of invasive and expensive special investigations required. For us it is important that you establish a firm understanding of the different areas. The two areas that you can see is the oral cavity and oropharynx. The oral cavity is divided into seven subsites and the oropharynx

into four. It is not that important that you can recite this off by hand, but it will teach you to systematically "look and feel" in all the areas. The oral cavity and oropharynx are lined by stratified epithelial mucosa.

- Oral cavity – seven areas
    - Lips
    - Buccal mucosa
    - Dento-alveolar ridges (gums)
    - Floor of mouth (FOM)
    - Anterior 2/3 of the tongue
    - Hard palate
    - Retromolar trigone (coffin's corner)
- Oropharynx – four areas
    - Base of tongue – largely blind to your view
    - Palatine tonsils and anterior and posterior tonsillar pillars
    - Soft palate
    - Posterior pharyngeal wall (second and third vertebra lies behind the mucosa)

The mouth is also sometimes described as:

- The vestibule
    - Lies between the lips and cheeks, and the teeth and alveoli.
- The mouth proper
    - The space enclosed by the teeth and alveolus.



Also make a note to identify the parotid and submandibular salivary gland openings. The parotid glands open opposite the upper second molar on the buccal mucosa and the submandibular gland in the floor of the mouth. Make notes on the dental status, excessive dryness, and trismus. Areas that you can't routinely examine includes the nasopharynx, hypopharynx, and larynx. Your ENT specialist can examine these areas in a consulting room using rigid and flexible scopes. Therefore, if a patient has new onset symptoms and signs for more than **3 weeks** in these areas that you can't examine, you need to refer them to an ENT specialist.

Remember, the oropharynx forms part of the pharynx, which is the upper part of the respiratory and digestive passages. It is about 10cm in length in the adult and extends from the base of the skull to the level of the sixth

cervical vertebra, at the lower border of the cricoid cartilage. The pharynx is roughly funnel-shaped and divided, superiorly to inferior, into the nasopharynx, oropharynx, and hypopharynx (also referred to as the laryngopharynx). The nasopharynx opens anteriorly to the nose, the oropharynx to the oral cavity, and the hypopharynx to the larynx.

Subepithelial lymphoid tissue deposits are scattered widely beneath the pharyngeal mucosa. Collectively they form Waldeyer's ring. They have efferent vessels but no afferent vessels and they consists of the palatine tonsils, adenoids, lingual tonsils, tubal tonsils and multiple small discrete lymphoid nodules.

The palatine tonsils lie between the anterior and posterior pillars (palatoglossal and palatopharyngeal arches), on each side of the oropharynx. The free surface is covered by stratified, squamous epithelium. 12-15 crypts open on this surface, and each is lined with squamous epithelium. The intra-tonsillar cleft or crypta magna is the largest. The lymphoid tissue is arranged in follicles. The deep surface is separated from the constrictor muscles of the pharynx by a connective-tissue capsule. This makes complete removal by dissection possible. This is referred to as an extra-capsular tonsillectomy. Other techniques involve intra-capsular tonsillotomy options. A peri-tonsillar (Quincy) abscess also forms in this space.

The adenoid lies between the roof and upper part of the posterior wall of the nasopharynx. It is a single midline structure. The free surface exhibits about five vertical fissures. The deep surface has no capsule, therefore complete enucleation by dissection is therefore not possible. The lingual tonsils are on the base to the tongue, and often continuous with the palatine tonsils.

Lymphatic drainage is primarily to the deep cervical nodes either directly or indirectly. The retropharyngeal nodes situated between the buccopharyngeal and prevertebral fasciae are said to atrophy in childhood. Efferent vessels pass to the upper deep cervical nodes. The tonsil node also known as the jugulodigastric node is part of the upper deep cervical group and is situated around the internal jugular vein, where it is crossed by the posterior belly of the digastric muscle. The adenoids drain into the upper deep cervical nodes, either directly or indirectly through the retropharyngeal nodes. It is common for a malignancy in the post-nasal space to drain to the upper deep cervical nodes, specifically at the apex of the posterior triangle where it may be the presenting feature. The tonsil also sends efferent vessels to the upper deep cervical group. Most of them end in the jugulodigastric node. The epiglottis drains to the infrahyoid lymph nodes, and the remainder of the pharynx drains to the deep cervical nodes, either directly or indirectly through the retropharyngeal and paratracheal nodes.

Nasopharynx

The nasopharynx opens anteriorly into the nasal fossae. It is bound above by the base of the skull, below by the soft palate. The first cervical vertebra is separated from its posterior wall by the prevertebral fascia and the underlying longus capitis and cervicis muscles. The lower opening of the Eustachian Tube is situated in the lateral wall of the nasopharynx, about 1-1/2 cm behind the posterior end of the inferior turbinate. The pharyngeal recess (fossa of Rosenmuller) lies behind and above the tubal elevation. The adenoid is situated submucosally at the junction of the roof and posterior wall of the nasopharynx. The nasopharyngeal isthmus leads from the nasopharynx into the oropharynx. It is closed during swallowing by raising of the soft palate and contraction of the palatopharyngeal sphincter.

Hypopharynx

The hypopharynx opens anteriorly into the larynx through the sloping laryngeal inlet. It is bounded above by the upper border of the epiglottis, below by the lower border of the cricoid cartilage. The third, fourth, fifth and sixth cervical vertebrae lie behind it. The pyriform fossae are small recesses lying on each side of the laryngeal inlet. Each is bound by the aryepiglottic fold medially, and the thyroid cartilage and thyrohyoid membrane laterally. The internal division of the superior laryngeal nerve runs beneath the mucous membrane of its floor. The

valleculae are paired shallow recesses lying between the base of the tongue anteriorly and the anterior surface of the epiglottis posteriorly.

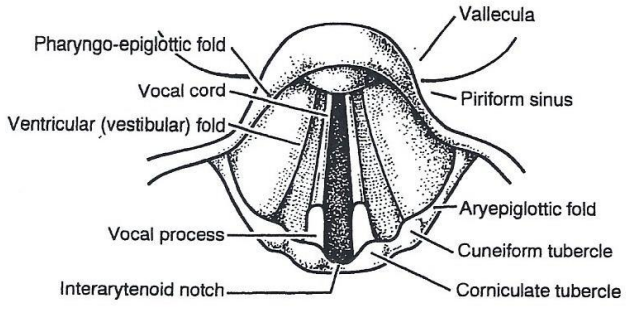
Larynx

The larynx is situated in the midline of the neck and located at the junction of the digestive and respiratory passages. It lies in front of the hypopharynx from the level of the third to the sixth cervical vertebrae. The laryngeal cartilages form the main framework of the larynx (see below). The larynx's cartilaginous framework is completed by muscles, fibrous membranes and ligaments. The boundaries are:

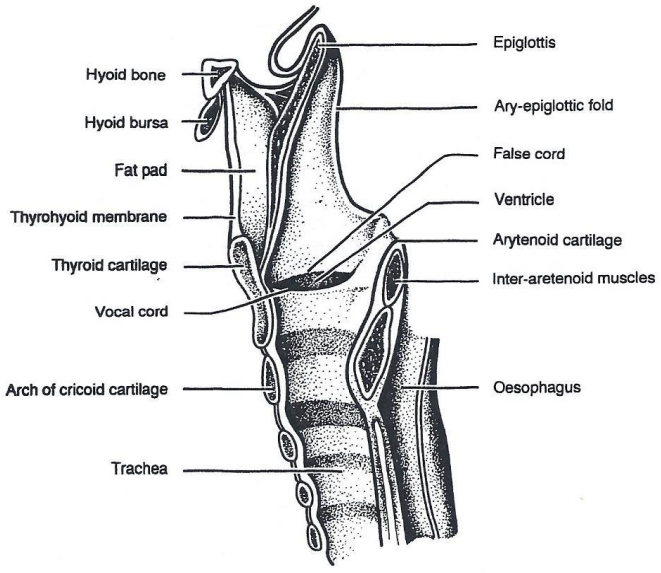
- Above - the laryngeal inlet made up of the free edge of the epiglottis, aryepiglottic folds, arytenoids and inter-arytenoid band.
- Below - the inferior border of the cricoid cartilage. The free edge of the true vocal cord on each side encloses an area called the rima glottidis, with the supraglottis above and the subglottis below.

The larynx has two important joints:

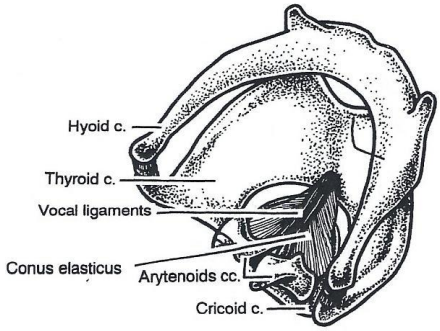
- The cricothyroid joint
    - Lies between the inferior cornu of the thyroid cartilage and the facet on the cricoid cartilage at the junction of arch with lamina.
    - It is a synovial joint with a capsular ligament.
    - Two movements occur
        - Rotation through the transverse axis.
        - Gliding movement.
- Crico-arytenoid joint
    - Lies between the base of the arytenoid cartilage and facet of the upper border of the lamina of the cricoid cartilage.
    - It is also a synovial joint with a capsular ligament.
    - Two movements occur
        - Rotation of arytenoid, on a vertical axis. The vocal process moves medially or laterally.
        - Gliding the arytenoid move forward or away from each other.



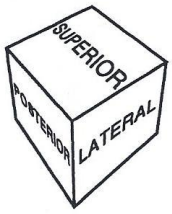
Schema of the laryngeal aditus, from above.



Section of larynx



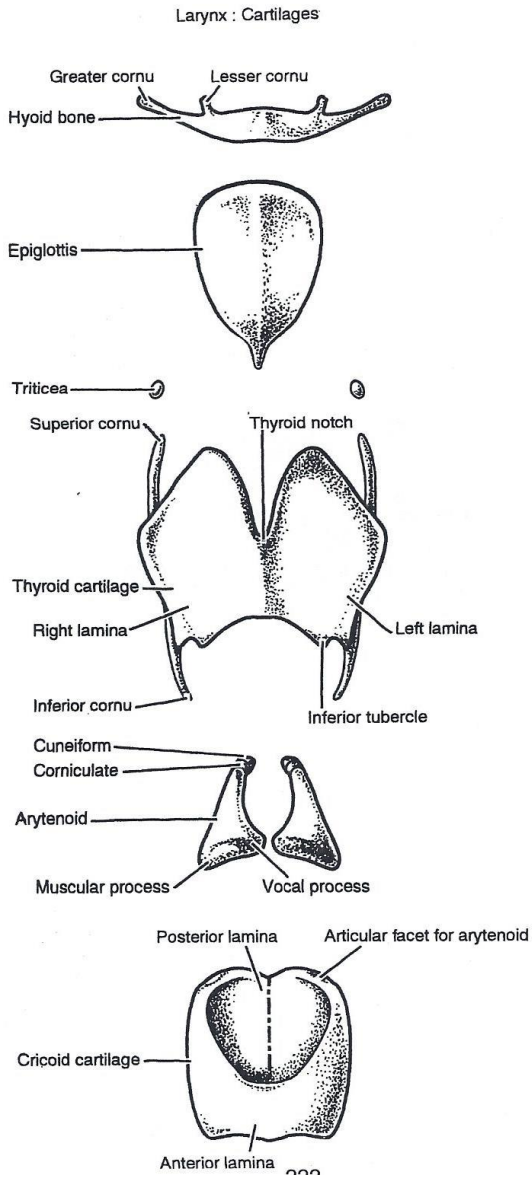
Larynx : Perspective view

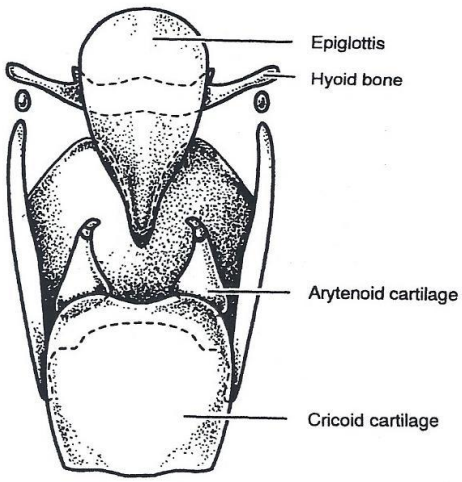


Cartilages

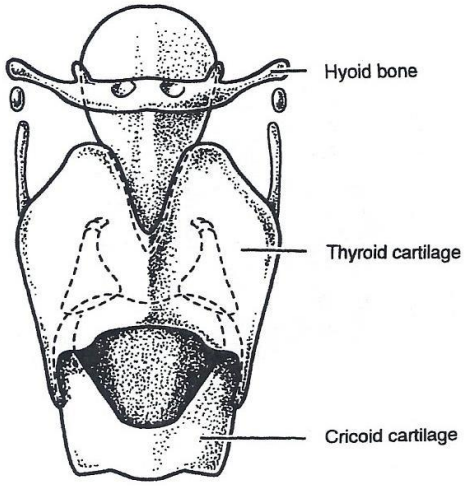
- Unpaired
  - Thyroid
    - Each half consist of the Ala. Medially related to the glottis & pyriform fossa. The point of junction of the upper border of the alae, is indented by the V-shaped thyroid notch. An oblique line, the site of muscular attachments, runs on the side of each lamina. There is a superior and inferior cornu. There is a facet on the inner surface of the inferior cornu for articulation with the cricoid cartilage.
  - Cricoid
    - Thicker and stronger than the thyroid cartilage. Resembles a signet ring, narrow in front, broad behind. It provides attachment for the upper fibres of the oesophagus on the posterior surface. There is a facet for articulation with the arytenoid cartilage.
  - Epiglottis
    - Rises up behind the tongue. It is a thin leaf-like sheet of elastic fibrocartilage. The stem is directed downwards. It is attached to the posterior surface of the thyroid alae at their junction. The free border, directed upwards, is broad and rounded from side to side. The anterior surface is free in its upper part but is separated from the hyoid bone and thyrohyoid membrane some fatty tissue in its lower part. This is called the pre-epiglottic space. The tubercle of the epiglottis projects backwards in its lower part.
- Paired
  - Arytenoids
    - They are pyramidal in shape and have four surfaces namely posterior, anterolateral, medial and inferior. The posterior surface is triangular and concave. It extends laterally into a muscular process. The anterolateral surface is convex. It extends forwards into a vocal process. The medial surface is narrow, smooth and flat. The inferior surface or base, is concave. It articulates with the cricoid cartilage. The apex curves backwards to articulate with the corniculate cartilage.
  - Corniculates
    - They articulate with the apices of the arytenoid cartilages and prolong them backwards and medially
  - Cuneiforms

- They are small bars of yellow elastic cartilage. There is one in each aryepiglottic fold, which acts as a passive prop. They do not articulate with any other cartilage.





Larynx : Posterior view

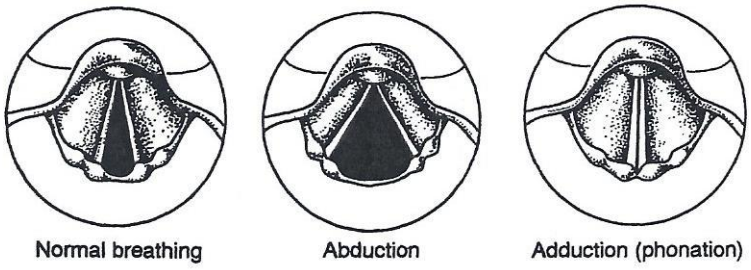


Larynx : Anterior view

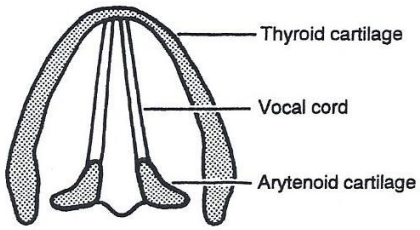
Muscles

- Intrinsic
  - Abductors
    - Posterior cricoarytenoids
  - Adductors
    - Lateral cricoarytenoids
    - lnterarytenoids
    - Thyroarytenoids
  - Tensors
    - Cricothyroid
    - Vocalis
- Extrinsic
  - Stylopharyngeus
  - Palatopharyngeus
  - Sternothyroid
  - Thyrohyoid

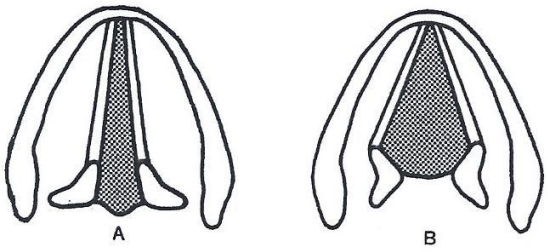
Movement of the vocal cords results from rotation or sliding of the arytenoids on the cricoid cartilages brought about by the intrinsic muscles of the larynx.



Vocal cord positions



Attachments of the vocal cords

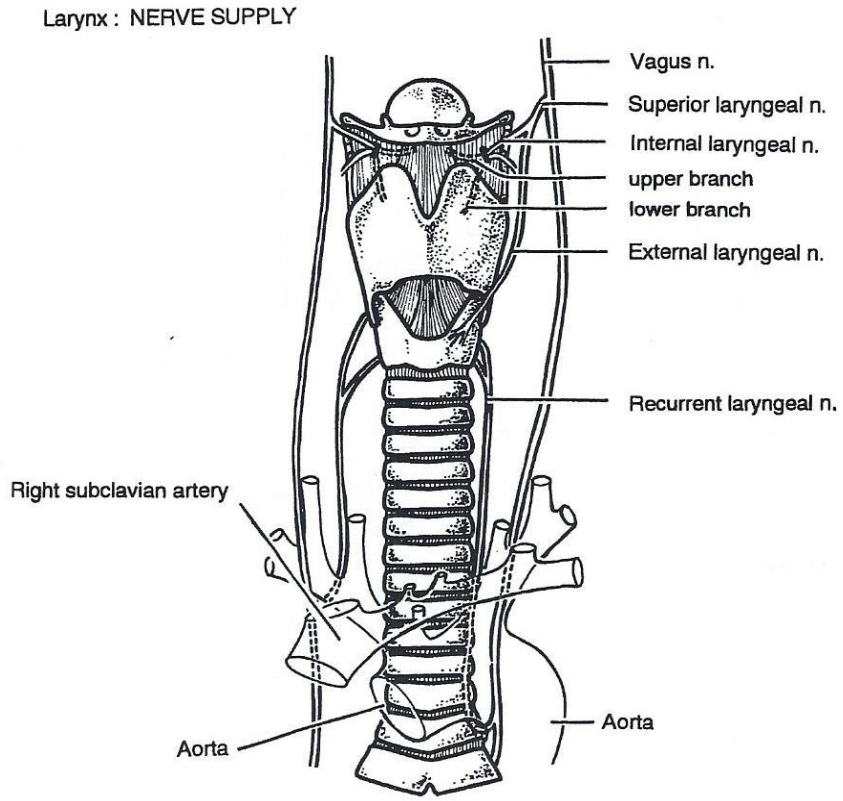


Glottis in (A) quiet respiration
(B) forced inspiration
Note : Abduction and lateral rotation of arytenoid cartilages

Nerve Supply

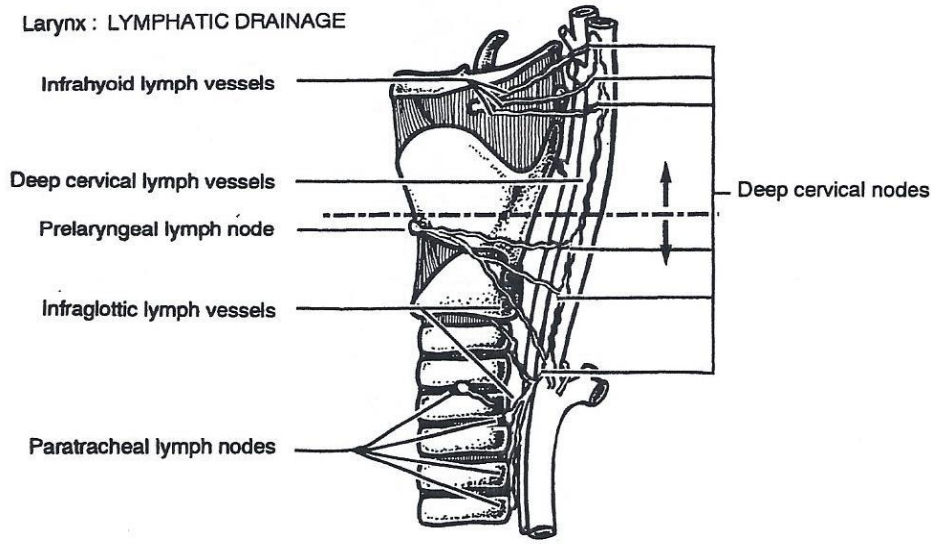
- Motor
  - All the intrinsic muscles of the larynx are supplied by the recurrent laryngeal nerves
  - EXCEPT the cricothyroids which are innervated by the external branches of the superior laryngeal nerves.
- Sensory
  - Supraglottis
    - Internal branches of superior laryngeal nerve
  - Glottis and subglottis
    - Recurrent laryngeal nerves

The superior laryngeal nerve has two laryngeal branches. The internal branch which is entirely sensory and the external branch. The internal branch pierces the thyrohyoid membrane with the superior laryngeal artery and vein. It supplies the cavity of the larynx as far down as the level of the vocal cords. The external branch travels down on the inferior constrictor muscle and supplies the cricothyroid muscle.
Recurrent laryngeal nerve has a much longer course on the left side than on the right. On the left side it turns round the arch of the aorta. On the right side it turns round the subclavian artery. In the neck it lies between the trachea and oesophagus as it approaches the larynx. Its terminal part passes upwards, under cover of the ala of the thyroid cartilage, immediately behind the inferior cricothyroid joint. It then divides into an anterolateral (motor) branch which supplies all the intrinsic muscles of the larynx except the cricothyroid muscle and the posteromedial (sensory) branch supplies the cavity of the larynx below the level of the vocal cords.



Lymphatic drainage

The edges of the vocal cords divide the lymphatic system of the larynx into two parts namely the supraglottic and subglottic. The supraglottis, above the vocal cords, drain into the pre-epiglottic and upper deep cervical nodes. After piercing the thyrohyoid membrane, the vessels pass to these nodes accompany the superior thyroid artery. The subglottis, that is below the vocal cords, drain to the pre-laryngeal and pre-tracheal nodes after piercing the cricothyroid ligament. The vessels also drain to the lower deep cervical nodes after emerging from below the cricoid cartilage. The glottic region where the vocal cords lie there are practically no lymphatic vessels, this is why malignant tumours limited them do not spread readily.



Laryngeal ligaments and membranes

The intrinsic ligaments include the conus elasticus or cricovocal membrane, as well as the quadrangular membrane. The conus elasticus is attached in front to the deep surface of the angle of the thyroid cartilage. The

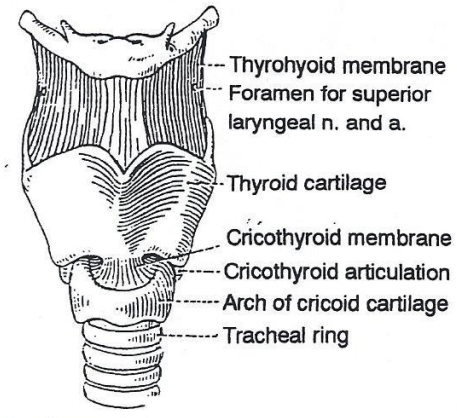
second attachment is behind to the vocal process of the arytenoid cartilage. The vocal ligament is the free upper edge of the conus between these points of attachment. The quadrangular membrane runs from the lateral edges of the epiglottis to the arytenoid cartilages. Its free inferior edge forms the false cords.

The extrinsic ligaments or membranes of the larynx include the thyrohyoid membrane and cricothyroid membrane. The thyrohyoid membrane is attached to the thyroid cartilage below and the hyoid bone above. The membrane is pierced on each side by a superior laryngeal vessel and the internal branch of the superior laryngeal nerve. The triticeal cartilage is a small cartilage often found in each ligament. These are sometimes visible on x-ray and may be confused with a foreign body.

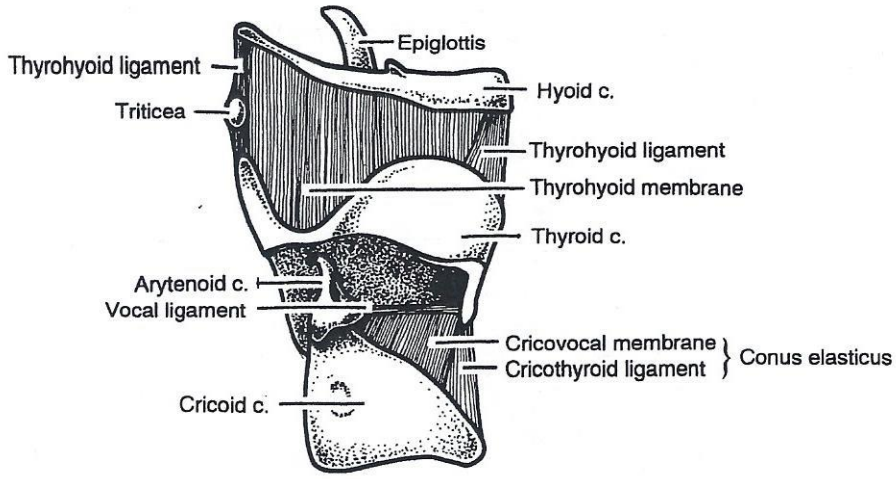
The cavity of the larynx extends from the inlet of the larynx, where it opens into the hypopharynx to the lower border of the cricoid cartilage, where it is continuous with the trachea. It is divided into three parts by two folds of mucous membrane. The false vocal cords, which are formed by the mucous membrane covering the ventricular ligament and the upper part of the external portion of the thyro-arytenoid muscle. The true vocal cords project further into the cavity than into the false cords and lie at a lower level. Parts of them can therefore be seen by inspection from above. The covering epithelium is closely bound down to the underlying vocal ligament and the blood supply is poor, hence the pearly white appearance of the vocal cords.

The mucosal folds divide the cavity into the following parts. The vestibule, ventricle of larynx, and subglottic space. The vestibule lies between the inlet and the edges of the false cords. It is deeper in front than behind. It is bounded by the posterior surface of the epiglottis in front, the interval between the arytenoid cartilage behind, and the inner surface of the aryepiglottic folds and upper surfaces of the false cord on each side. The pre-epiglottic space is a wedge-shaped space lying in front of the epiglottis and bounded anteriorly by the thyrohyoid membrane and hyoid bone. It is bounded above by a deep layer of fascia connecting epiglottis to the hyoid bone. This is called the hyo-epiglottic ligament. The ventricle of the larynx is a recess between the false and true vocal cords. Numerous mucous glands open on to the surface of its lining mucosa. The glottis (rima glottidis) is the interval between the true vocal cords in its anterior three-fifths and the vocal processes of the arytenoid cartilages in its posterior two-fifths (and 1 cm inferiorly). Its average length in the adult male is about 2.5 cm, and in the adult female about 1.6 cm. The subglottic space lies between the true vocal cords (and 1 cm inferiorly) and the lower border of the cricoid cartilage.

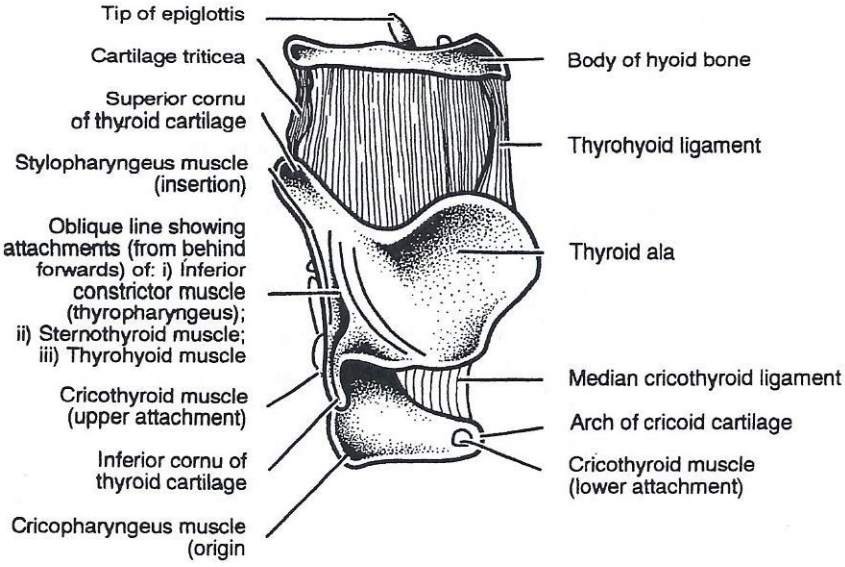
A mucous membrane lines the whole cavity. It is tightly attached to the walls over the true vocal cords, the epiglottis, and the cartilages of Santorini (corniculate cartilages) and Wrisberg (cuneiform cartilages). Elsewhere is it loosely attached and therefore liable to become swollen from effusion. Reinke's layer of connective tissue lies immediately under the epithelium of the glottis and superficial to the elastic layer. There are no glands beneath it and no lymph vessels in it. Stratified squamous epithelium is found over the vocal cords and other parts of the vestibule of the larynx. Ciliated columnar epithelium lines the remainder of the cavity. This transition zone between stratified squamous epithelium and ciliated columnar epithelium is often when laryngeal papillomatosis occurs.



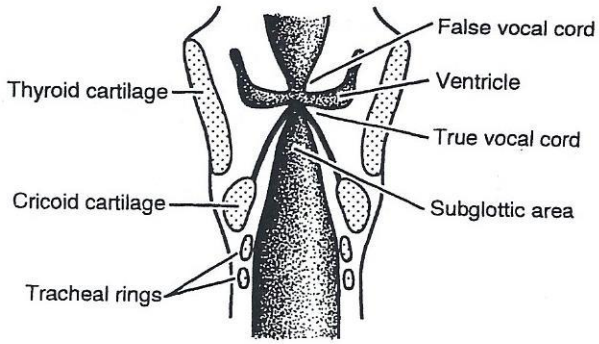
Cartilages of the larynx from the front



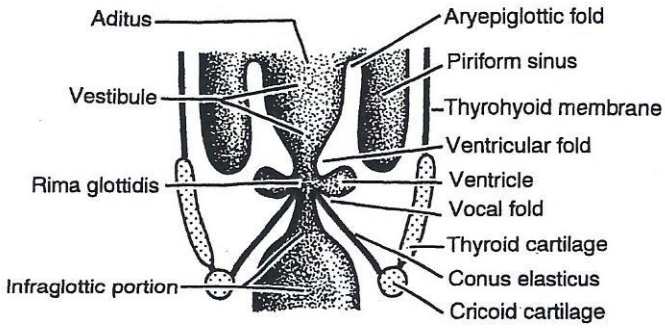
Larynx : Lateral view
Right lower lamina of thyroid removed



Cartilages of larynx and hyoid bone - lateral view



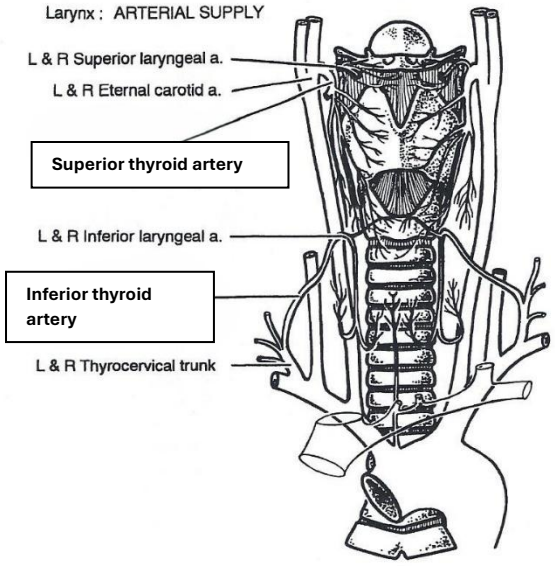
Longitudinal section through larynx.
Oedema of the subglottic area follows laryngeal infection thereby compromising the airway.



Cavity of the larynx and its subdivisions in a frontal section.

Blood supply

Blood supply is via laryngeal branches of superior thyroid artery, laryngeal branches of inferior thyroid artery, and cricothyroid branches of superior thyroid artery. Veins accompany the arteries.



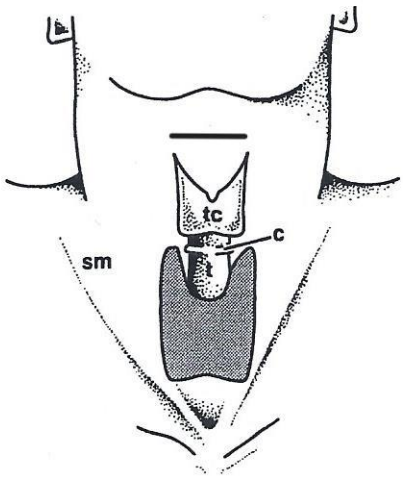
The infantile larynx.

The larynx is both absolutely and relatively smaller. The lumen is therefore disproportionately narrower. The shape of the infant larynx is more funnel shaped. Its narrowest part is at the junction of the subglottic larynx with the trachea. A very slight swelling of the lax mucosa at this point may produce serious obstruction to breathing. The consistency of the laryngeal cartilages are much softer in the infant. They therefore collapse more easily in forced inspiratory efforts or oedematous conditions. The position of the infantile larynx lies high up under the tongue, but with development assumes an increasingly lower position. The plane of its inlet is less oblique, and the axis of air entry is straighter than in the adult.

Neck

As with the oral cavity and oropharynx, basic anatomy is very important in the neck. Firstly, think about the constant landmarks palpable in the anterior midline of the neck. If we move down from the mandible, you encounter the hyoid bone, thyroid cartilage, cricoid cartilage, thyroid gland, and the supra-sternal notch. To the sides are the two prominent sternocleidomastoid (SCM) muscles. The area below the mandible superiorly, SCM

muscle laterally, and the midline is known as the anterior triangle on each side. The area between the SCM anteriorly, trapezius (TPZ) posteriorly, and clavicle inferiorly is known as the posterior triangle on both sides.



Position of the thyroid gland c. cricoid: t. trachea: tc. thyroid cartilage: sm sternomastoid muscle

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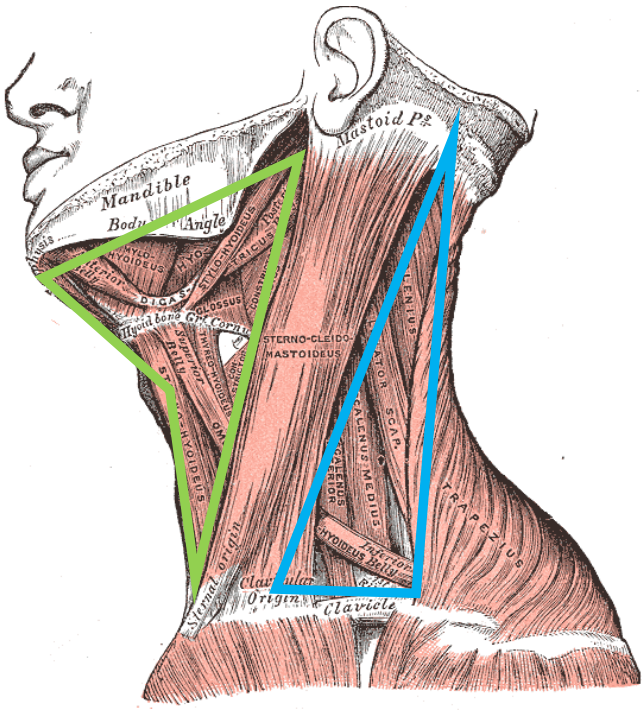
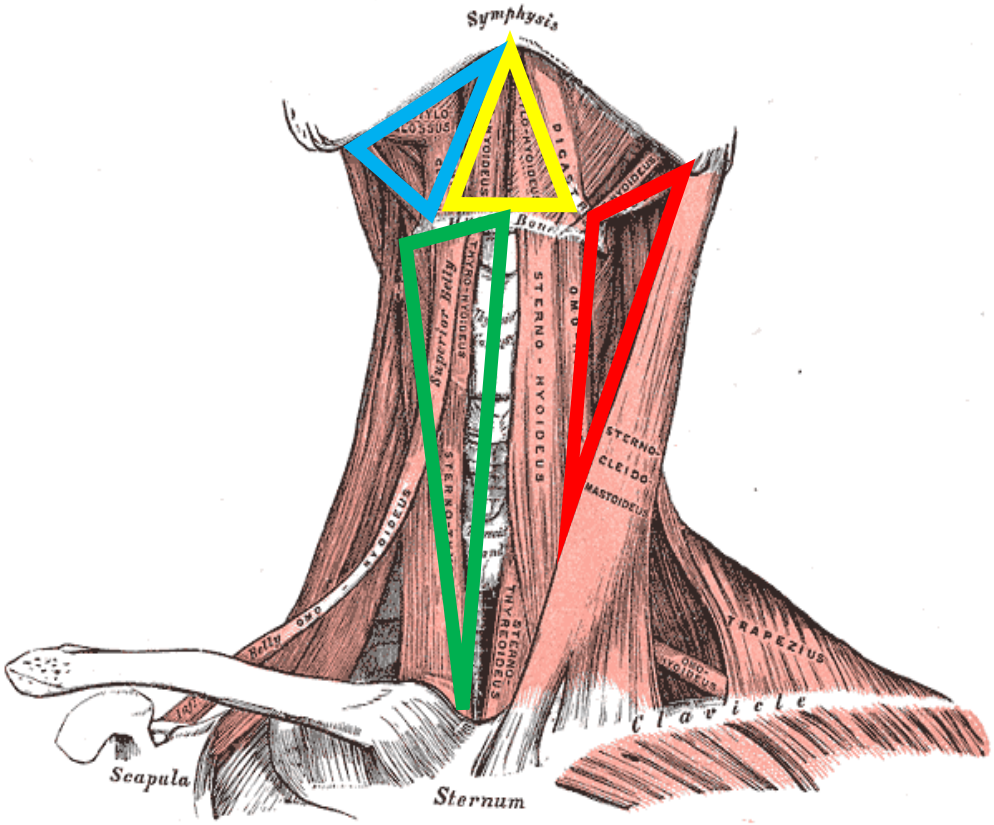


(Green – anterior triangle; Blue – posterior triangle)

The anterior triangle can be divided into:

- Submental triangle

- Submandibular triangle
- Muscular triangle
- Carotid triangle



(Yellow – submental triangle; Blue – submandibular triangle; Red – carotid triangle; Green – muscular triangle)

In head and neck cancer surgery, we use levels which will briefly be discussed here. Also remember that in trauma surgery, they divide the neck into three zones. Neck levels refer to specific lymph nodes in a defined anatomical boundary. Remember, the lymph nodes are in the fat and neck dissections removes the fat with the lymph nodes of that specific level. (See more of this under head and neck cancers)

Neck levels:

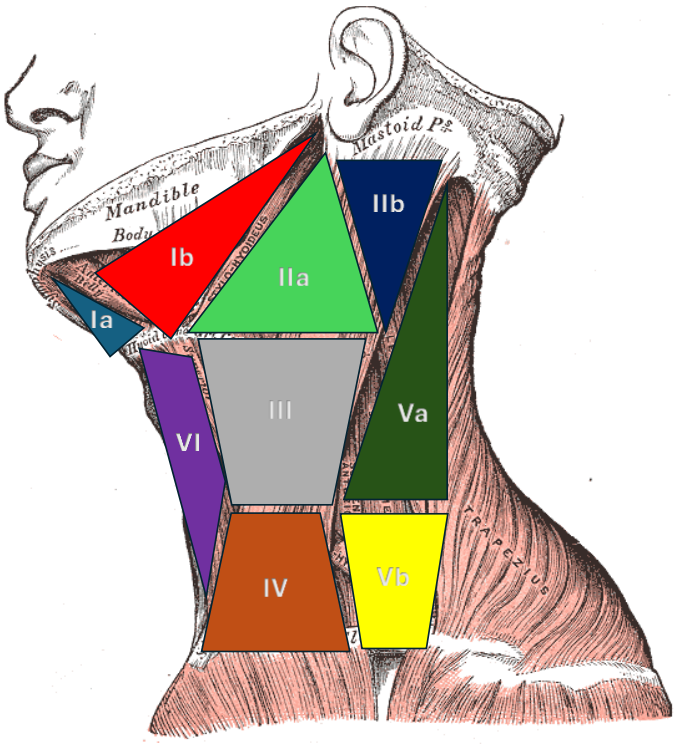
Level	Clinical name	Boundaries	
Ia	Submental	S	Mandible
		I	Hyoid bone
		L	Anterior belly digastric muscle
		L	Contralateral anterior belly of digastric muscle
Ib	Submandibular	S	Mandible
		I	Posterior belly digastric muscle
		A	Anterior belly digastric muscle
		P	Stylohyoid muscle
IIa	Upper jugular	S	Skull base
		I	Horizontal line at level of hyoid bone

		A	Stylohyoid muscle
		P	NXI nerve
IIb	Upper jugular	S	Skull base
		I	Horizontal line at level of hyoid bone
		A	NXI nerve
		P	Posterior border of SCM
III	Middle jugular	S	Horizontal line at level of hyoid bone
		I	Horizontal line at level of cricoid bone
		A	Sternohyoid muscle
		P	Posterior border of SCM
IV	Lower jugular	S	Horizontal line at level of cricoid bone
		I	Clavicle
		A	Sternothyroid
		P	Posterior border of SCM
Va	Posterior triangle	S	Skull base
		I	Horizontal line at level of cricoid bone
		A	Posterior border of SCM
		P	Anterior border of TPZ
Vb	Posterior triangle	S	Horizontal line at level of cricoid bone
		I	Clavicle
		A	Posterior border of SCM
		P	Anterior border of TPZ
VI	Anterior compartment	S	Hyoid bone
		I	Sternal notch
		L	Common carotid artery
		L	Common carotid artery
VII	Superior mediastinum	S	Sternal notch
		I	Innominate artery
		L	Common carotid artery
		L	Common carotid artery

S – superior; I – inferior; A – anterior; P – posterior; L – lateral
(*There is some more detail than what is given above, but at GP level this is more than adequate)

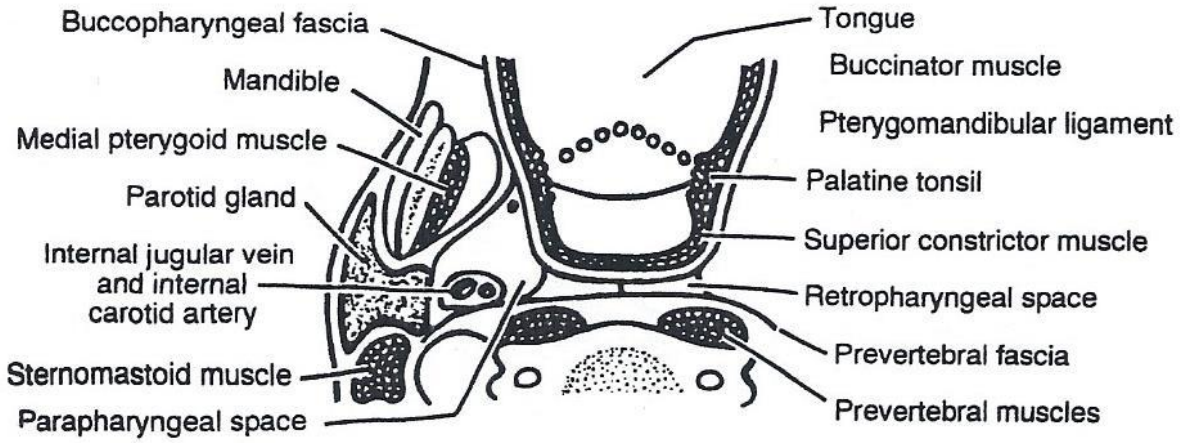
The posterior part of the neck is referred to as the suboccipital area.

The picture below shows the level in relation to the neck.



The neck contents can be studied from an anatomical textbook, but important concepts are:

- The investing fascial layers
- Parapharyngeal space
    - Pre- and post-styloid
    - Carotid compartment
        - Carotid artery
        - Jugular vein
        - Vagal nerve
- Lower cranial nerves
- Cervical plexus
- Brachial plexus



Fascial compartments of neck at level of C.2

Investing layers and potential spaces

Deep cervical fascia

This completely encircles the neck. It lies deep to the platysma muscle. It splits to enclose the trapezius and sternomastoid muscles and the parotid and submandibular glands.

Prevertebral fascia

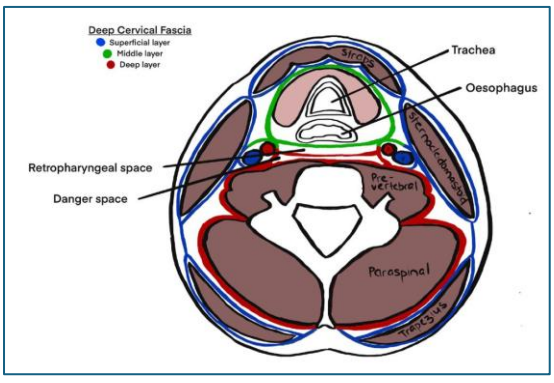
This lies on the prevertebral musculature. The brachial plexus and subclavian artery lie deep to it and acquire a sheath from it which becomes the axillary sheath surrounding the branchial plexus, axillary artery and vein.

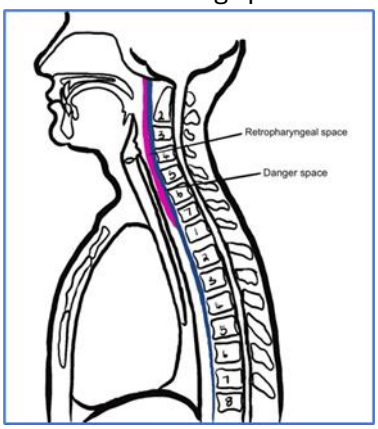
Pretracheal fascia

This extends from the hyoid to the aortic arch and envelopes the thyroid gland. It fuses loosely laterally with the carotid sheath.

The retropharyngeal space (RPS) is a potential space that lies posterior to the pharynx and oesophagus and anterior to the pre-vertebral muscles. Posterior to this is another potential space called the “danger space”. The two spaces are differentiated by their lower limit. The RPS extends from the skull base to the level of C7-T1, whereas the “danger space” extends from the skull base to the diaphragm. The anterior and posterior boundaries of the RPS are the middle and alar layers of the deep cervical fascia respectively, and the lateral limit is the carotid sheath.

Upper respiratory tract infections may spread to the retropharyngeal lymph nodes via capillary lymphatic drainage pathways. Infection begins with the pre-suppurative phase with enlarged reactive lymph nodes. Progression leads to the suppurative phase with liquefactive necrosis and surrounding oedema. Finally, nodal breakdown may result in spread of infection into the surrounding space with retropharyngeal abscess formation.





Lymph nodes

Lymph nodes are discussed in the head and neck section. Here we will be discussing the important concept with regards to the drainage pattern of lymph nodes. Whether the aetiology is infective of neoplastic, by establishing the position of the affected lymph node(s), one is prompted to examine the primary area that drains to those lymph nodes. The site and clinical names have been discussed above, so the drainage patterns are shown in the pictures below.

History

Symptoms relate to the site / organ affected. In general, common symptoms of pathologies in the head and neck area include:

- Asymptomatic lump / mass
- Voice changes (larynx)
- Aspiration (larynx)
- Dysphagia / Odynophagia (hypopharynx or oesophagus)
- Nasal obstructions (nasopharynx)
- Epistaxis (nasopharynx)
- Bleeding (rare)
- Pain
- Referred pain
    - Especially otalgia in adults with hypopharyngeal / laryngeal cancers
- Ulcers in mouth (common)
- Loss of weight

Always think in term of chronology, aetiology (infective, neoplastic, congenital etc.), constant versus episodic. Always enquire about risk factors in head and neck cancers. Smoking and alcohol use is the most important, but please see the head and neck cancer section.

Examination

Perform a thorough examination of the oral cavity and oropharynx (remember the subsites listed under basic anatomy). Use two spatulas and a head light. Be careful to not to elicit a gag reflex when putting the spatula too deep. A useful trick is to first place it gently onto the oral tongue and have the patient breath through their mouth. If this does not relax the base of tongue (BOT), gently pinch the nostrils close. This will force the patient to breath through their mouth and will facilitate the inspection of the oropharynx (use this even in children when examining the tonsils). Look into both floor of mouth ("gutters") and anterior floor of mouth with the openings of the submandibular salivary glands (Wharton's ducts). The sublingual glands also open into the floor of the mouth with multiple small openings. The "gutter" is the space between the under surface of the oral tongue and the dento-alveolar ridges (all the way posteriorly) and a common place for cancers to develop. Lift the cheek laterally and inspect the opening of the parotid ducts (Stenson's duct), buccal mucosa, and the retromolar trigone area. The retromolar trigone is known as coffin's corner because of the late presentation and poor outcomes for patients with cancer there. The easiest way to think of the retromolar trigone is the mucosa posterior to the last maxillary and mandibular molars, over the mandibular ramus (medial and lateral). Remember that advanced cancers here typically present with trismus.

Next, perform a bimanual examination of all the areas, especially the base of tongue area. Also palpate both submandibular areas (with submandibular salivary gland) with one finger inside the floor of mouth and the other

on the outside. As a general rule, with regards to head and neck cancers, any lump you can feel between your fingers is already bigger than 1 cm. Remember that some cancers are mainly submucosally, and if you don't feel with your fingers you are going to miss it.

The neck is inspected from the front, and depending on pathology, a patient is asked to swallow and / or protrude their tongues to elicit signs (see thyroid / thyroglossal duct cyst). A brief palpation can be performed from the front, but classically the neck is examined by standing behind the patient. Examine the neck systematically, ask the patient to gently tilt their neck forward and sometimes it helps to turn the neck ever so slightly to the side being examined. Establish your own preference, either from superior to inferior, midline to lateral, or variations. Also auscultate the neck for possible bruits.

See the video below on how to examine the head and neck area.
https://youtu.be/_dp8iCTsDUc

The limitations of what you can't see include the:

- Nasopharynx
- Larynx
- Hypopharynx and oesophagus

The videos below show how easy it is for ENTs to examine these patients in the rooms.
Flexible endoscopy ending with a view of the larynx– https://youtu.be/tSJFTdh_hLk
Rigid endoscopy showing inferior and middle turbinate and ending with the nasopharynx - https://youtu.be/6ttFlcb4Ybo

The last video shows a patient with cancer in the BOT / gutter of the FOM. It is easy to miss if you fail to examine the "gutter" all the way posteriorly. REMEMBER that you need to specifically examine all the nooks and crannies in the oral cavity and oropharynx!

Retromolar trigone cancer - https://youtube.com/shorts/uK81776G0cw

Special investigations

Various special investigations can be ordered in head and neck pathologies. The more common ones include:

- Radiology
    - CXR
    - CT
    - MRI
    - PET-CT
    - Ultrasound
    - Barium swallow
    - Angiography
- Histology / Cytology
    - Biopsies
    - FNAC and cell blocks
    - Flow cytometry (lymphomas)
- Blood investigations
- Laryngeal investigations
    - Stroboscope
    - High speed video photography
    - Ultrasound

Although not truly a special investigation, in head and neck cancer we need to establish a performance status of the patient. Patients on the lower end of the performance scales are usually not offered curative options for a variety of reasons. Any curative treatment, whether surgery or chemo/radiotherapy, is intensive with substantial physiological demands, carrying substantial side effects and imposing considerable strain on an already compromised system. Some of the more common scales are shown below.

ECOG		**WHO**		**Karnofsky**	
0	Fully active, able to carry on all pre-disease performance without restriction	0	Normal	100	Normal, no complaints, no signs of disease
1	Restricted in physically strenuous activity ambulatory and able to carry out work of a light or sedentary nature, e.g., light housework, office work	1	Symptoms but nearly fully ambulatory	90	Capable of normal activity, few symptoms or signs of disease
				80	Normal activity with some difficulty, some symptoms or signs
2	Ambulatory and capable of all selfcare but unable to carry out any work activities. Up and about more than 50% of waking hours	2	Some bedtime but needs to be in bed< 50% of normal daytime	70	Caring for self, not capable of normal activity or work
				60	Requiring some help, can take care of most personal requirements
3	Capable of only limited selfcare, confined to bed or chair more than 50% of waking hours	3	Needs to be in bed > 50% of normal daytime	50	Requires help often, requires frequent medical care
				40	Disabled, requires special care and help
4	Completely disabled. Cannot carry on any selfcare. Totally confined to bed or chair	4	Unable to get out of bed	30	Severely disabled, hospital admission indicated but no risk of death
				20	Very ill, urgently requiring admission, requires supportive measures or treatment
				10	Moribund, rapidly progressive fatal disease processes
5	Death	(5)	Death	0	Death

Charlson comorbidity index	**+1**	**+1**	**+2**	**+3**	**+4**	**+6**
	50-59	MI	60-69	70-79	>80	AIDS
	CHF	COPD	Localized solid tumour	Moderate - severe liver disease		Metastatic solid tumour
	Peripheral vascular disease	Connective tissue disorder	DM with end organ damage			
	CVA / TIA	Peptic ulcer	Hemiplegia			
	Mild liver disease	Uncomplicated DM	Chronic kidney disease			

	Dementia		Lymphoma			
			Leukaemia		**TOTAL:**	