

HBS3HAC – HUMAN ANATOMY C

LESSON NOTES

TOPIC 1: INTRODUCTION TO HEAD & NECK

OBJECTIVES:

LO1 – THE HEAD

The **head** is the superior part of the body that is attached to the trunk by neck. It's the control and communications centre and the "loading dock" for the body. It houses the brain (site of consciousness) and includes special sensory organs (eyes, ears, nose, and mouth), broadcast devices for voice and expression, and portals for the intake of fuel (food), water, oxygen, and the release of carbon dioxide.

LO2 AND LO3 – THE NECK AND ITS BOUNDARIES

The **neck** is the transitional area between the base of the cranium superiorly and the clavicles inferiorly. The neck joins the head to the trunk and limbs, serving as a major conduit for structures passing between them.

The boundaries of the neck are:

- *Superior Boundary:*
 - Inferior margins of mandible and bony features of posterior skull
 - Posterior neck higher than anterior
 - Connection of cervical viscera w. posterior openings of nasal and oral cavities
- *Inferior Boundary:*
 - Top of sternum
 - Clavicle to acromion
 - Acromion to spinous process of C7

LO4 – FASCIAL LAYERS OF NECK

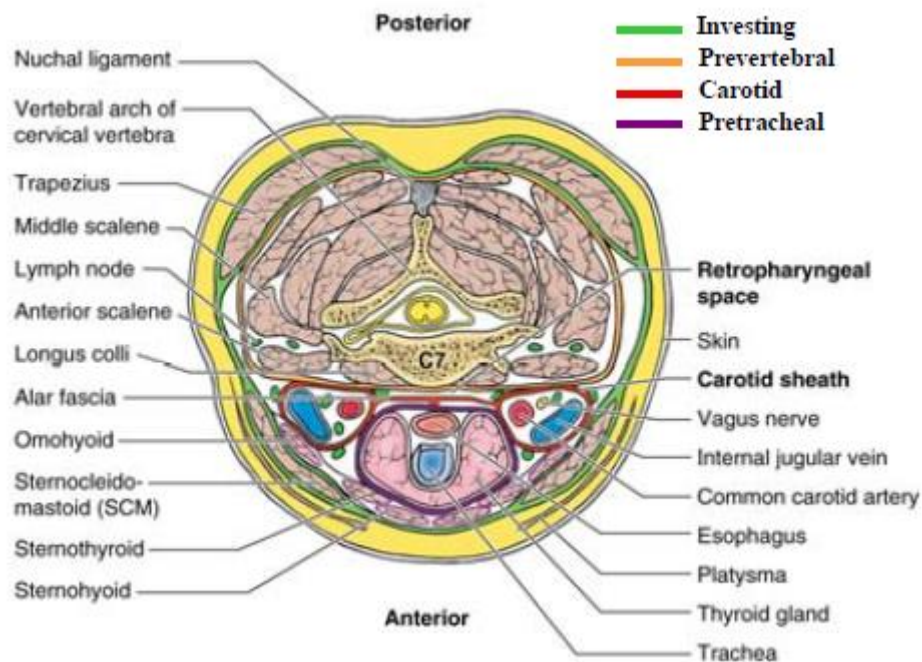
Superficial Cervical Fascia:

- Lies between the dermis and the deep cervical fascia, and contains:
 - Neurovascular supply to the skin
 - Superficial veins
 - Superficial lymph nodes
 - Fat
 - Platysma muscle
- In obese ind., extra fat is deposited in the superficial fascia, creating the "double chin"

Deep Cervical Fascia:

- Located underneath superficial fascia, and organised into several layers acting like a shirt collar, supporting the structures and vessels of the neck:
 - Investing Layer
 - Most superficial
 - Surrounds all structures in neck
 - Continuous w. ligamentum nuchae

- Pretracheal Sheath
 - Anterior neck
 - Encloses infrahyoid muscles, oesophagus, trachea and thyroid gland
- Prevertebral Layer
 - Surrounds vertebral column and its associated muscles (scalene, prevertebral, and deep muscles of back)
 - Extends laterally as axillary sheath
- Carotid Sheath
 - Paired structure that encloses:
 - Common and internal carotid arteries
 - Internal jugular vein
 - Vagus nerve (CN X)
 - Deep cervical lymph nodes
 - Carotid sinus nerve
 - Sympathetic fibres
 - Runs from the base of the cranium to root of neck

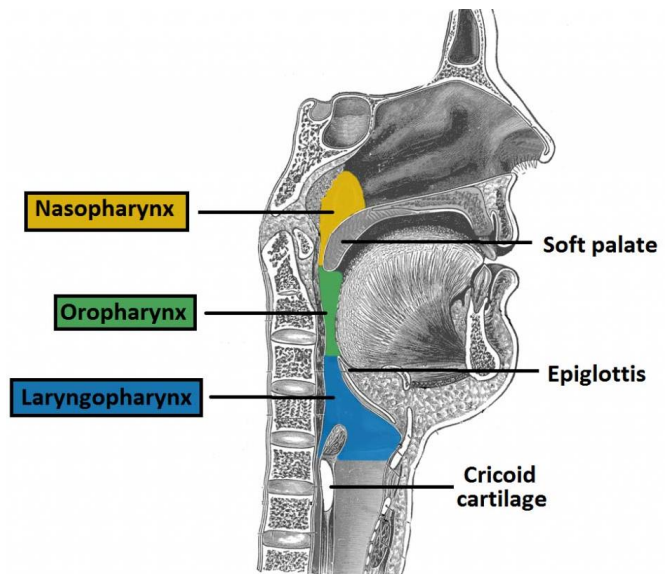


LO5 – THE PHARYNX

The **pharynx** is a muscular tube that connects the nasal cavities to the larynx and oesophagus. It's common to both the GI and respiratory tracts. It begins at the base of the skull and ends inferiorly to the cricoid cartilage (C6). It is comprised of **THREE** parts:

Nasopharynx:

- Found between the base of the skull and the soft palate
- Continuation of nasal cavity
- Performs a respiratory function by conditioning inspired air and propagating it to the larynx
- Lined w. respiratory epithelium; ciliated pseudostratified columnar epithelium w. goblet cells
- Posterior-superior section contains the adenoid tonsils



Oropharynx:

- Middle part of pharynx, located between soft palate and superior border of epiglottis
- Contains:
 - o Posterior 1/3 of tongue
 - o Lingual tonsils
 - o Palatine tonsils
 - o Superior constrictor muscle
- Involved in the voluntary and involuntary phases of swallowing

Laryngopharynx:

- Most distal part of pharynx, located between superior border of epiglottis and inferior border of cricoid cartilage (C6), at which point it becomes continuous w. oesophagus
- Found posterior to larynx and communicates w. it via laryngeal inlet, lateral to piriform fossae
- Contains the middle and inferior pharyngeal constrictors

LO6 – MENINGUES OF CNS

The **meninges** are the membranous coverings of the brain and spinal cord and serve **TWO** functions:

- They provide a supportive framework for the cerebral and cranial vasculature
- They act w. cerebrospinal fluid to protect the CNS from mechanical damage

Dura Mater:

- Outermost layer, lying directly underneath bones of skull and vertebral column
- Thick, tough and inextensible
- W/in cranial cavity, the dura contains 2 connective tissue sheets
 - o *Endosteal Layer* = lines inner surface of bones of cranium
 - o *Meningeal Layer* = lines endosteal layer inside cranial cavity. Only layer present in vertebral column
- Dural venous sinuses located between the above 2 layers, responsible for venous vasculature of cranium, draining into internal jugular veins
- Receives its own vasculature; primarily from the middle meningeal artery and vein
- Innervated by trigeminal nerve (V1, V2 and V3)

Arachnoid Mater:

- Middle layer of meninges, lying directly underneath dura mater
- Consists of layers of connective tissue, is avascular and doesn't receive any innervation
- Sub-arachnoid space located underneath arachnoid mater containing cerebrospinal fluid to cushion brain.
- Small projections of arachnoid mater into dura (arachnoid granulations) allow CSF to re-enter circulation via dural venous sinuses

Pia Mater:

- Located underneath sub-arachnoid space, V. thin, and stuck to surface of brain and spinal cord
- Only covering to follow contours of brain (gyri and fissures)
- Highly vascularised, w. blood vessels perforating through the membrane to supply underlying neural tissue

LO7 – THE CRANIAL NERVES

