

HEAD & NECK

COURSE CONTENT

COMPETENCIES

The first year medical student should be able to understand and describe the gross anatomy of muscles, fascia, vessels, nerves, bones, joints and viscera of the head and neck; correlate the anatomical basis of various clinical manifestations and describe the radiological anatomy of head and neck.

REGIONS AND ORGANS

FASCIAE OF THE NECK

Names, location, structures enclosed, attachments, contents

Level 2: Spaces and spread of infections, axillary sheath

Level 3: Surgical incisions

TRIANGLES

Posterior, anterior, carotid, digastric, suboccipital, vertebral, scalene:- Location, roof, floor, boundaries, contents (subdivisions)

Level 2: Relations of contents, damage to accessory nerve

Level 3: Applied anatomy: external jugular vein - air embolism, LN biopsy, JVP, pulse

GLANDS

Thyroid, parathyroid, parotid, submandibular, sublingual, pituitary (except capsule and anomalies)

Morphology, capsule, relations, nerve supply, blood supply

Level 2: Microanatomy, development, anomalies

Level 3: Applied anatomy: Thyroid compared with prostate, sialogram, approach to gland, bidigital palpation of submandibular gland, Frey's syndrome

FACE

Muscles, nerve supply - sensory and motor, blood supply, Danger area

Level 2: Applied anatomy

SCALP

Layers, muscles, nerve supply - sensory and motor, blood supply

Level 2: Applied anatomy

PALATE

Formation of soft palate layers, muscles, nerve supply, blood supply, lymphatic drainage, functions

Level 2: Development

Level 3: Anomalies, applied anatomy

TONGUE

Morphology, papillae, muscles, nerve supply, blood supply, lymphatic drainage

Level 2: Microanatomy, Applied anatomy

Level 3: Development, correlation with nerve supply

LARYNX

Cartilage, interior, muscles, membrane, movements, nerve supply, relations, lymphatics

Level 2: Applied anatomy

Level 3: Joints

PHARYNX

Interior, muscles, nerve supply, blood supply; relations; pharyngotympanic tube; palatine tonsil; oropharyngeal isthmus

Level 2: Applied anatomy

ORBIT

Bony orbit, contents, lacrimal apparatus

Level 2: Relations of contents

Level 3: Applied anatomy

EYEBALL

Description, movements, axis, muscles, nerve supply, blood supply, microanatomy

Level 2: Squint

Level 3: Development, applied anatomy

STYLOID APPARATUS

Components, description, attachments, relations

Level 3: Development

NASAL CAVITY

Formation, morphology, relations, drainage of paranasal sinuses, nerve supply, blood supply

Level 2: Detailed relations, epistaxis, microanatomy

Level 3: Development, applied anatomy

PARANASAL SINUSES

Location, morphology, drainage, relations, nerve supply, blood supply

Level 2: Detailed relations, applied anatomy

Level 3: Development

EAR**EXTERNAL EAR**

Bony and cartilaginous part

Level 2: Microanatomy and functions

MIDDLE EAR

Boundaries, contents with detailed description, blood supply, nerve supply

Level 2: Applied anatomy

INTERNAL EAR

Functional anatomy, microanatomy

MENINGES

Folds, blood supply, nerve supply, venous sinuses

Level 2: Details, attachments

Level 3: Applied anatomy

OSTEOLOGY

Norma basalis, verticalis, frontalis, lateralis, occipitalis and interior of cranial cavity: Identification, anatomical position, parts, foramina in the skull, structures passing through them

Foetal skull; Differences between adult and foetal skull; Mandible – movements, attachments, nerves and glands in contact, age changes

Joints; types in cervical vertebrae: Typical, C1, C2, and C7

Level 2: Fontanelles, function and applied aspects, dental formula description, attachments, relations, costal element in cervical vertebrae

Level 3: Applied anatomy, fractures of the skull, age of dentition, cervical rib, disc herniation

ARTHROLOGY

Temporomandibular joint

Type, articular disc, movements, axes, capsule, ligaments, muscles, nerve supply, relations

Level 2: Dislocation

Level 3: Applied anatomy, role of gravity

MYOLOGY

Attachment, nerve supply, actions of:

Sternomastoid, digastric, mylohyoid, hyoglossus, muscles of facial expression, muscles of mastication, muscles of larynx, muscles of pharynx, muscles of tongue, muscles of palate, extra-ocular muscles

Level 2: Relations, development

Level 3: Applied anatomy, details with relations, correlation with muscles of facial expression, facial nerve palsy

ANGIOLOGY

ARTERIES

Origin, parts, course, relations, branches of:

Subclavian, internal carotid, external carotid, vertebral, lingual, facial, maxillary

Level 2: Branches, distributions, details with relations

Level 3: Applied anatomy, subclavian steal syndrome, subclavian-axillary anastomosis

VEINS

Venous drainage of face, external and internal jugular

VENOUS SINUSES

Names, locations, drainage, classification

Level 2: Relations, communications

Level 3: Applied anatomy

CAVERNOUS SINUS

Formation, relation, nerve supply, blood supply, tributaries, communications

Level 3: Applied anatomy

EMISSARY VEINS

Names, locations, drainage, classification

Level 2 Relations, communications

Level 3 Applied anatomy

LYMPHATIC DRAINAGE

Names of groups of lymph nodes

Level 2 Exact area of drainage

Level 3 Applied anatomy

NEUROLOGY

NERVES

Oculomotor, trochlear, trigeminal, abducens, glossopharyngeal, vagus, accessory, hypoglossal

Nucleus, course, relations, branches, distribution

Level 2: Communications, functional components

Level 3: Effects of lesion, development, reflex pathways

Facial nerve: Nucleus, course, relations, branches, distribution, effects of lesion

Level 2: Communications, functional components

Level 3: Development, secretomotor pathways, special sensory pathways

PLEXUS: Cervical, Brachial

Root value, formation, branches, distribution

Level 2: Branches, applied anatomy

PARASYMPATHETIC GANGLIA

Location, roots, branches, distribution

Level 2: Lesions

Level 3: Applied anatomy

CERVICAL SYMPATHETIC CHAIN

Location, roots, branches, distribution

Level 2: Lesions

Level 3: Applied anatomy

Johann Friedrich Horner
(1831-1886)



He was a Swiss ophthalmologist.

Horner's syndrome – Lesion of cervical sympathetic chain producing:

- Ptosis
- Miosis
- Enophthalmos
- Anhydrosis
- Loss of ciliospinal reflex

ANATOMY PRACTICALS

SURFACE LIVING ANATOMY

SURFACE LANDMARKS: Nasion, glabella, inion, mastoid process, pterion, bregma, Reid's base line, suprameatal triangle, zygomatic arch, angle of mandible, head of mandible, parts of external ear, parts of eye, parts of nose, symphysis menti, hyoid bone, thyroid cartilage, cricoid cartilage, tracheal rings, suprasternal notch, transverse process of atlas, spine of C7

JOINTS (DEMONSTRATION OF MOVEMENTS): Temporomandibular joint, Atlanto-occipital joint, cervical joints

MUSCLES (DEMONSTRATION OF ACTION): extraocular muscles, muscles of mastication, muscles of facial expression including bucco-labial muscles, sternocleidomastoid, neck flexors and extensors

VESSELS (PALPATION OF): Superficial temporal artery, facial artery, common carotid artery, external carotid artery

OTHERS: Trachea, thyroid gland, cervical lymph nodes, (horizontal and vertical), midline structures in the neck, supraclavicular fossae, vertebral levels of hyoid, thyroid and cricoid cartilages

RADIOLOGICAL ANATOMY

LIST OF RADIOGRAMS

Region	View	Identify
X-ray skull plain	AP/Lateral	Bony markings, sinuses - sphenoid, maxillary, frontal
Carotid angiogram	AP/Lateral	Major branches
Vertebral arteriogram	AP/Lateral	Major branches
CT Scan Brain		Plain, Contrast
Plain X-ray neck	AP/Lateral	Bony prominences, C1 to C7 vertebrae air in pharynx & trachea, hyoid bone

SECTIONAL ANATOMY

Drawing of cross sections depicting major anatomical structures at the following vertebral levels -C4, C6/C7

Drawing of sagittal section of head & neck

Level 2: Interrelation of the major structures at the mentioned levels and sagittal section

Level 3: Minor details, fascia, smaller vessels and nerves, individual muscles, correlation with coronal sections

CLINICAL, SURGICAL AND FUNCTIONAL ANATOMY (Anatomical basis only)

Scalp: Blood supply, cephalhaematoma, black eye

Level 2: Sebaceous cyst, scalp abscess

Face: Blood and nerve supply, Infections and wounds of the face, Danger area of face

Meninges: Blood and nerve supply, Extradural / Subdural / Subarachnoid haemorrhage

Level 2: Meningitis

Venous sinuses: Cavernous, superior sagittal, transverse sinus

Level 2: Thrombosis of sinuses and the sequelae

Orbit: Muscles, nerves and movements of the eyeball

Parotid gland: Capsule - pain, Incisions over the parotid in relation to the nerve

Level 2: Parotid tumours and involvement of facial nerve, Bell's palsy

Level 3: Frey's syndrome

Thyroid gland: Capsule, Movement with deglutition, blood supply and relations with external/recurrent laryngeal nerve

Level 2: Anatomical basis of dyspnoea, dysphagia, dysphonia

Level 3: Thyroglossal cyst, fistula, ectopic/aberrant thyroid

Sternocleidomastoid muscle: Movements of cervical spine, accessory muscles of respiration

Level 2: Sternomastoid tumour, wry neck

Carotid arteries: Carotid pulse, carotid angiography

Level 2: Ligation of external carotid in head-neck surgery

Internal jugular vein: Course with relations, jugular vein puncture, jugular venous pulse (JVP)

Level 2: Ligation and collaterals, raised JVP

Level 3: Cannulation

External jugular vein: Formation, course and termination

Lymphatics: Areas of drainage of lymph nodes of the neck, supraclavicular lymph nodes

Level 2: Cancer of thoracoabdominal viscera

Nasal cavity: Lateral wall and septum

Level 2: Epistaxis

Paranasal air sinuses (PNS): Frontal and maxillary sinuses, sinusitis

Level 2: Maxillary antral puncture

Palate: Muscles - role in deglutition and speech

Level 2: Palatal defects

Tonsils: Relations - Blood supply - tonsillitis, tonsillectomy

Level 2: Quinsy

Tongue: Muscles, nerve supply, lymphatic drainage

Level 2: Role in deglutition and speech

Level 3: Lymphatic spread of cancer of tongue and anatomical basis of surgery

Larynx: Interior - muscles, movements of vocal cords

Level 2: Laryngitis, singer's nodule

Level 3: Relevance of cancer larynx surgery, laryngectomy, pharyngeal speech

Cranial nerves: II, III, IV, VI, VII, IX, XII; Paralysis, referred pain; common sites of lesion

Cervical sympathetic chain: Horner's syndrome

SKULL AND VERTEBRAL COLUMN

Fontanelles; Common sites of fracture, Prolapsed intervertebral disc, TB spine and associated cold abscess, Metastases from viscera; CSF rhinorrhoea, otorrhoea, ENT bleeding

John Hilton
(1804 - 1878)



He was a British surgeon and anatomist.

Hilton's law - It states that a nerve that innervates a joint also tends to innervate the muscles that move the joint and the skin overlying the joint.

Hilton's white line - The demarcation between middle one-third (pecten) and lower one-third of the interior of anal canal. It is the site of intersphincteric groove.