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PAPER = ANATOMY
Submitted TO = SIR WAQAS
Date = 26/6/2020

Q1 Write about the structure of Eye. Also name the foramen found in the base of skull?

Human Eye Structure is

▶ The human eye is an organ which reacts to light and pressure. As a sense organ, the mammalian eye allows vision. A normal eye is

Parts of Eye is

- ▶ The front part of the eye includes.
- ▶ Iris: the colored part.
- ▶ Cornea: a clear dome over the iris.
- ▶ Pupil: the black circular opening in the iris that lets light in.
- ▶ Sclera: the white of your eye.

Iris is

- (Colored part)
- Colored part of eye.
- Controls light entering.

Function:

- Controls the amount of light entering the eye.

Cornea:

(clear lens in front of eye).

- Transparent covering of the front of the eye.
- Allows for the passage of light into the eye and functions as fixed lens.

Function:

- Allows for the passage of light into the eye and it also focuses the light.

Pupil:

(black hole)

- black hole in iris.
- where light enters.

Function:

- Pupil size is controlled by iris muscles.

Pupil Expansion:

- When the eye needs more light to enter the pupils get larger allowing more light to enter the eye.

Pupil Contraction:

- When the eye needs less light to enter, the pupils get smaller, allowing less light to enter the eye.

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SCLERA:^o

- A tough ~~white~~ white skin that covers all of the eyeball except the cornea.

Function:^o

- Supports eyeball and provides attachment for muscles.

Retina:^o

- Internal membrane.
- contains light-receptive cells (rods & cones).
- converts light to electrical signals.

Function:^o

- converts light waves to electrical signals.

Optic Nerve:^o

Transmits electrical impulses from retina to the brain.

- Creates blind spot. Brain takes inverted image and flips it so we can see.

Function:^o

- Transmits electrical signals from retina to the brain.

Layers of the Eyeball:^o

Vascular Layer:^o

The vascular layer of the eye lies beneath the fibrous layer. It consists of choroid, ciliary body and Iris.

Choroid is

- A brown vascular sheet lying between the sclera and the retina.
- one of the route of blood supply to the retina.

Ciliary body is

- Connects the choroid with the iris.
- Has three parts including:
 - The ciliary muscles is ring shaped muscle that controls the shape of the lens.
- The ciliary process is the attachment site for the zonules and produces the aqueous in the pars plicata.
- The ciliary ring is attached to the choroid and is composed of the pars plana. The pars plana has no known function in the post-fetal eye thus this is a safe area through which surgical instruments may be inserted.

Iris is

- The colored part of the eye - unique to every individual like a fingerprint.
 - color is dependent on the amount of pigment.
- The diagram the iris has tiny muscles that control the light levels in the eye.
- Has 2 layers.
- Pupil is located in the center of the iris.
- Pupil = hole it is not an eye structure.

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Q2

Inner Layer:

The inner layer of the eye consists of retina. It itself is composed of two cellular layers.

Neural Layer:

Consists of photoreceptors, the light detecting cells of the retina. It is located posteriorly and laterally in the eye.

Pigmented Layer:

Lies beneath the neural layer and is attached to the choroid layer. It acts to support the neural layer and continues around the whole inner surface of the eye.

Anteriorly, the pigmented layer continues but the neural layer does not - this part is known as the non visual retina. Posteriorly and laterally, both layers of the retina are present. This is the optic part of the retina.

Other structures:

Anterior Chamber:

The space in the eye that is behind the cornea and in front of the iris.

The anterior chamber is filled with a watery fluid known as the aqueous humor, or aqueous. Produced by a structure alongside the lens called the ciliary body, the aqueous passes first into the posterior then flows forward through

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The pupil into the anterior chamber of the eye.

EXTRA Ocular Muscles:

• LEVATOR PALPEBRAE SUPERIORIS:

Origin:

Inferior surface of lesser wing of sphenoid.

Insertion:

▶ Upper lamina - Anterior surface of superior tarsus & skin of upper eyelid.

▶ Middle lamina - Superior margin of superior tarsus.

▶ Lower lamina - Superior conjunctival fornix.

Action: Elevation of upper eye lid.

• RECTUS MUSCLES:

Origin:

Arises from a common tendinous ring known as ANNULUS OF ZINN.

• Medial Rectus:

Origin: Annulus of Zinn.

Insertion: Sclera, 5.3 mm away from limbus.

• Superior Rectus:

Origin: Superior limb of the tendinous ring and optic nerve sheath.

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Insetion: Sclera 7.7mm away from limbus obliquely making an angle of 23° with sagittal axis.

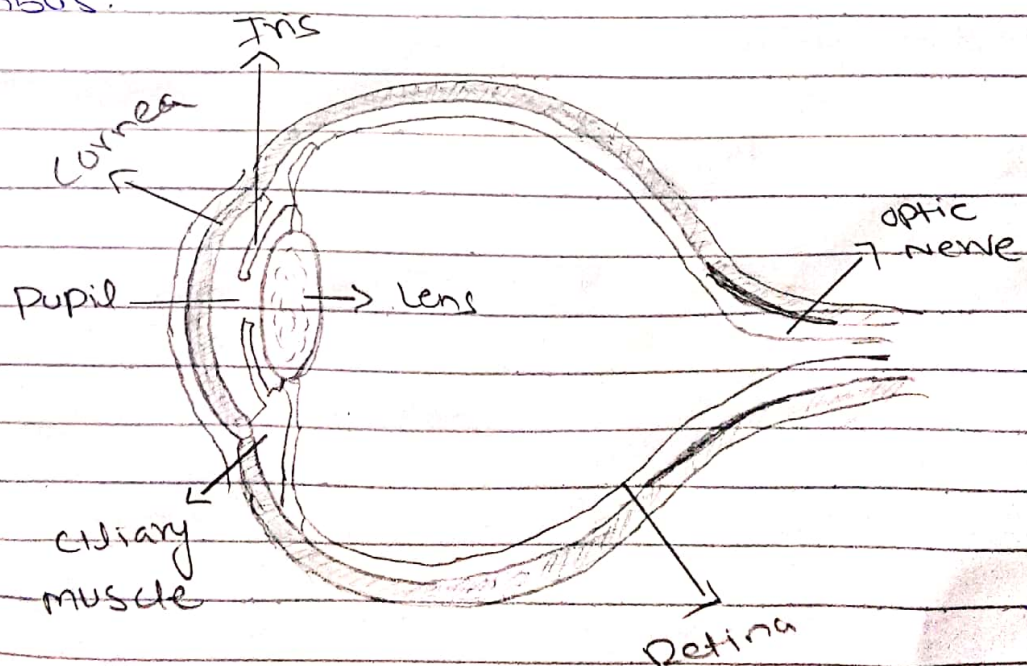
- Inferior Rectus
origin: Annulus of Zinn.

Insetion: Sclera, 6.8mm away from limbus.

- Lateral Rectus
origin

Upper and lower limb of Annulus of Zinn, AND a process of the greater wing of the sphenoid bone.

Insetion: Sclera, 6.9mm away from limbus.



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FORAMINA OF THE BASE OF SKULL:

- Cribriform plate.
- Optic canal
- Superior orbital fissure.
- Foramen rotundum.
- Foramen ovale.
- Internal acoustic meatus
- Jugular foramen.
- Hypoglossal canal.
- Foramen spinosum.
- Foramen magnum.

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Q2 Write the Names of the muscles of the medial fascial compartment of thigh with their origin and insertion?

MUSCLES OF THE MEDIAL FASCIAL COMPARTMENT OF THE THIGH:

- 1 Gracilis.
- 2 Adductor longus.
- 3 Adductor brevis.
- 4 Pubic part of Adductor magnus.

• Gracilis:

Origin:

Inferior pubic ramus and ischial ramus (pubic arch close to its margin).

Insertion:

Upper part of the medial surface of the shaft of the tibia.

• Adductor longus:

Origin:

Body of the pubic bone just below and medial to the pubic tubercle.

Insertion:

Linea aspera of the femur lateral to the origin of vastus medialis.

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• Adductor Brevis is

Origin is

Inferior ramus of the pubic bone.

Insertion is

Linea aspera of the femur.

• Adductor Magnus is

Origin is

Pubic part: from inferior pubic ramus.

Ischial part: from ischial ramus and lateral part of the lower area of ischial tuberosity.

Insertion is

Pubic part: posterior division of the ~~obturator~~

Pubic part: linea aspera and medial supracondylar line.

Ischial part: Adductor tubercle of the femur.

Q3 ~~Write~~ What is the effect of injury of external laryngeal nerve and also write about how to test the integrity of facial nerve?

EXTERNAL LARYNGEAL NERVE:

The external laryngeal nerve is a mixed nerve. It descends with the superior thyroid artery to supply the cricothyroid muscle, the inferior constrictor muscle and the neighboring laryngeal mucosa.

⇒ Injury to the superior laryngeal nerve can occur as a complication of a thyroidectomy. It will result in paralysis of the cricothyroid muscle and anesthesia of the region above the level of the vocal folds. It tends to be, however, the external laryngeal branch that is affected.

TEST THE INTEGRITY OF FACIAL NERVE:

The facial nerve supplies motor branches to the muscles of facial expression.

- This nerve is therefore tested by asking the patient to crease up their forehead. (raise their eyebrows)
- Close their eyes and keep them closed against resistance.

1. Puff out their cheeks and reveal their teeth.
2. Ask the patient to look up or wrinkle the forehead; inspect for asymmetry.
3. Ask him or her to close the eyes tightly. Look for incomplete closure or incomplete "burying" of the eyelashes on the affected side.
4. Observe the nasolabial folds and mouth while the patient is concentrating on the eyes.
5. As the orbicularis oculi contract tightly, there are milder associated contractions of muscles about the mouth and nose.
6. These milder contractions are better suited to displaying slight weakness than when these muscles are tested directly.
7. Ask the patient to smile, show you teeth, or pull back the corners of the mouth. Look for asymmetry about the mouth.
8. The most subtle signs of mild facial weakness are the blink reflex and incomplete lid closure. Observe the blink reflex during conversation or tap gently on the glabella with your index finger or reflex hammer in an attempt to bring out a mild asymmetry of blink.
9. If you strongly suspect but are having difficulty confirming a mild facial weakness, ask the patient to lie

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9. ~~blat~~ on the examining table with face up. Slide the patient head is below the body.
10. This forces the eyelids to work against gravity.
11. Now ask the patient to close both eyes and inspect for incomplete closure.
12. Tap on the glabella and note asymmetry of blink.

Q4 write about the Sutures of skull also write a note on Trigeminal nerve and its branches?

Sutures of skull:

Cranial Sutures:

The cranial sutures are fibrous joints connecting the bones of the skull.

Anterior aspect of skull:

Fronto nasal Suture:

between the frontal bone and nasal bone.

Frontozygomatic Suture:

between the frontal bone and zygomatic bone.

Zygomaticomaxillary Suture:

between zygoma and the maxilla.

• Intermaxillary suture is between two maxilla.

• Metopic suture is found in children, on the midline of the frontal bone.

Posterior aspect of skull is

• Sagittal suture is between two parietal bones.

• Lambdoid suture is between the parietal bone and occipital bone.

• Lambda is convergence of the sagittal and lambdoid suture.

Superior Aspect of skull is

• Coronal suture is between the frontal bone and the parietal bone.

LATERAL Aspect of skull is

• Squamous suture is between the parietal bone and temporal bone.

• Sphenofrontal suture is between the frontal bone and sphenoid bone.

- Sphenoparietal Suture:
between the sphenoid bone and parietal bone.
- occipitomastoid Suture:
between the occipital bone and mastoid process of the temporal bone.

Inferior Aspect of Skull:

- Median Palatine Suture:
between the horizontal plates of the palatines.
- Transverse Palatine Suture:
between the palatine process of the maxillary bone and the palatine bone.
- Petro-occipital Suture:
between the occipital bone and petrous part of the temporal bone.

TRIGEMINAL NERVE

- ⇒ The 5th and the largest cranial nerve.
- ⇒ Provides motor innervation to muscles of mastication.
- Emancipating from the pons.
- Sensory root
- Contains the central processes of the neurons whose cell bodies are found in

trigeminal ganglion, the sensory ganglion of the trigeminal nerve.

- Motor root :-
- Courses beneath the trigeminal ganglion, proceeds medial to the sensory root.

TRIGEMINAL BRANCHES :-

- OPHTHALMIC NERVE V₁.
- MAXILLARY NERVE V₂.
- MANDIBULAR NERVE V₃.

OPHTHALMIC NERVE :-

- Tentorial branches are supplied to the tentorium.
- Superior orbital fissure.
- ✦ The lacrimal.
- ✦ Frontal.
- ✦ Nasociliary nerves.

✦ Lacrimal Nerve :-

- Lacrimal glands.
- conjunctiva
- lateral eyelid.
- Secretomotor innervation.
- Lacrimal gland.

✦ Frontal Nerve :-

- Supratrochlear.
- Conjunctiva
- medial eyelid
- Fore head.

Supraorbital:n

Frontal sinus

Upper lid.

Forehead.

Scalp

Lambdoidal suture.

★ Nasociliary Nerve:n

Infratrochlear:n

Conjunctiva.

Eyelid

Lacrimal sac

caruncula

side of the nose.

• Ant. post. Ethmoidal:n

Ala

↳ globe of the nose.

Maxillary Nerve V₂:n

Side of the nose.

Cheek.

Eyelids.

mid-face; maxillary sinus.

Nasopharynx.

Tonsil.

Palate

Gingiva

Teeth.

Maxillary NERVE V₂:

- Foramen rotundum:
 - Pterygopalatine fossa.
 - inferior orbital fissure.
- Zygomatic:
 - zygomaticofacial.
 - Cheek.
- Zygomaticotemporal nerve.
 - Skin side of forehead.
- Pterygopalatine nerve.
- Lacrimal glands.
- Orbital.
- Greater Palatine:
 - Pterygopalatine → greater Palatine foramen
 - Lesser Palatine nerve.
- Posterior Superior Nasal:
 - Sphenopalatine foramen.
 - Nasopalatine.
- Pharyngeal:
- Posterior Superior Alveolar:
 - pterygopalatine fossa.
 - Posterior Superior Alveolar foramen.

MANDIBULAR NERVE V₃:

- Foramen ovale.
- Otic Ganglion.
 - ◦ Parotid gland

- Mandibular Trunk:
- Recurrent meningeal.
- medial pterygoid.
- Tensor tympani
- Tensor veli palatini.

◦ Otic Ganglion:

- Anterior Division:
- Deep temporal
- Lateral pterygoid
- Masseteric

◦ Buccal

- from the trigeminal
- from the inferior alveolar nerve.

Posterior Division:

- lingual.
 - > Chordotympani
- Inferior Alveolar
 - mental
 - incisive.
- Mylohyoid Nerve.
 - Ant. Digastric.
- Auriculotemporal.
 - Loop around meningeal.
 - superficial temporal.
 - Articular branches.
 - Anterior articular.
 - Parotid gland.

Q5 write a note spinal cord with reference to its anatomical position and structure also write a short note on pharynx with enumeration to its constrictions?

Spinal cord ANATOMY: 10

In adults, the spinal cord is usually 40cm long and 2cm wide. It performs a vital link between the brain and the body.

- The spinal cord is divided into five different parts.
- Sacral cord.
- Lumbar cord.
- Thoracic cord.
- Cervical cord.
- Coccygeal.

⇒ Several spinal nerves emerge out of each segment of the spinal cord.

Cervical - 8.

Lumbar - 5

Thoracic - 12

Sacral - 5

Coccygeal - 1.

- It performs the primary processing of information as it carries sensory signals from all parts of the body to central nervous system.

- Nerve tissue consists of the grey and white matter spread across uniformly.

STRUCTURE OF SPINAL CORD

- The spinal cord runs through a hollow case from the skull enclosed within the vertebral column. Spinal nerves arise from different regions of the vertebral column and are named accordingly the regions.

- 1 Neck region.
- 2 Chest region.
- 3 pelvic region.
- 4 abdominal region.

- Cross-section of spinal cord displays grey matter shaped like a butterfly surrounded by a white matter.

Grey matter: Consists of the central canal at the centre and is filled with a fluid called CSF.

- It mainly containing neurons and cells of the CNS.

White matter: Consists of a collection of axons permitting communication between different layers of CNS.

Three Layers:

- Dura matter.
- Arachnoid matter.
- Pia matter.

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<u>SPINAL CORD</u> <u>Level</u>	<u>CORRESPONDING</u> <u>VERTEBRAL BODY</u>
Upper cervical	Same as cord level.
Lower cervical	+1
Upper thoracic	+2
Lower thoracic	+2 to 3 levels.
Lumbar	T ₁₀ - T ₁₂
Sacral	T ₁₂ - L ₁ .

Spinal meninges ,

PHARYNX:ID

- Pharynx is a conical fibromuscular tube forming the upper part of air and food passages.
- 12-14 cm long.
- width 3.5 cm at base 1.5 cm pharyngo-oesophageal junction.
- It lies behind the nose, mouth and larynx and is widest at its upper end.
- The upper part of the pharynx transmits only air, the lower part only food.

STRUCTURE ASSOCIATED WITH THE PHARYNX:ID

Superiorly:ID

- The inferior surface of the base of the skull.

Inferiorly:ID

- It is continuous with the esophagus.

Anteriorly:ID

- The wall is incomplete because of the openings into the nose, mouth and larynx.

Posteriorly:ID

- Areolar tissues, involuntary muscles and of the first six cervical vertebrae.

DIVISION OF PHARYNX:ID

- 1) Nasopharynx
- 2) Oropharynx
- 3) Laryngopharynx.

NASOPHARYNX

- The nasal part of the pharynx lies behind the nose above the level of the soft palate.
- on its lateral walls are the two openings of the auditory tubes.

OROPHARYNX

- The oral part of the pharynx lies behind the mouth, extending from below the level of the soft palate to the level of the upper part of the body of the 3rd cervical vertebrae.

LARYNGOPHARYNX

- "The laryngeal part of the pharynx extends from the oropharynx above and continues at the larynx below from the level of the 3rd to the 6th cervical vertebrae".

CONSTRUCTORS OF PHARYNX

- Superior constrictor attached to pharyngeal tubercle, lowest fibres reach up to level of vocal cords.
- Middle constrictor arises from stylohyoid ligament, lesser and greater horns of hyoid, overlap SC end reach upto level of vocal cords.

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- Inferior constrictor has two parts: thyropharyngeus & cricopharyngeus.
 - Thyropharyngeus overlaps Mc.
 - cricopharyngeus continues with other side.
-