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Name

Gulzar Azam

ID

14661

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Viva

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Sir Waqas Ihsan

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Q2

Q1 Write a note on the Structure of Human Ear?

Ans Human Ear:→

The ear is the organ of hearing and in mammals balance. Usually the ear is described as having three parts the outer ear, middle ear and inner ear.

Structure of Ear:→

The human ear consists of three parts the outer, middle, and inner ear. The ear canal of the outer ear is separated from the air-filled tympanic cavity of the middle ear by the eardrum. The middle ear contains three small bones - the ossicles - involved in the transmission of sound, and is connected

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to the throat at the nasopharynx, via the pharyngeal opening of the Eustachian tube.

The inner ear consists of Semicircular Canals, Utriculus, Sacculus and Cochlea-

(1) Outer Ear:→

It is the external portion of the ear and includes the fleshy visible pinna, the ear canal and the outer layer of eardrum.

The pinna consists of a single piece of the elastic cartilage with a complicated relief on its inner surface-

The outer curving of the pinna called helix and the inner curved rim is called antihelix; and opens into the ear canal.

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The Pinna is effective in the collecting of sound waves.

The external auditory meatus prevents foreign bodies entering the ear.

Tympanic membrane; sound waves produce pressure.

- ② Middle Ear → It lies b/w the outer and inner ear. It consist air-filled cavity called Tympanic cavity and the three ossicles and their attaching ligaments; the auditory tube and the round and oval window. The ossicles are the small bones that function together to receive, amplify and transmit the sound from the eardrum to the inner ear. The ossicles are the malleus, incus and stapes. The stapes is the smallest bone in the body.

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The malleus receives vibration from sound pressure on the eardrum, it transmits the vibration to incus which in turn transmits it to small bone stapes.

The middle ear also connects to the upper throat through/at the nasopharynx via the pharyngeal opening of the Eustachian tube.

(3) Inner Ear: → The inner ear sits within the temporal bone in a complex cavity called the bony labyrinth. The vestibule is the central and contains two small fluid-filled recesses, the utricle and saccule. These connect the Semicircular Canal and the Cochlea.

• Cochlea contains a series of fluids channels and membranes that transmit vibration to

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transmits the vibration to the spiral organ, the spiral organ of hearing, hair cell in the spiral organ, procedure receptor potential which elicit nerve impulses in the Cochlear branch of the vestibulocochlear nerve.

↳ Semicircular ducts: it contains Cristae, site of hair cell for the dynamic equilibrium. The utricle and Saccule, contains macula and site of hair cells for the dynamic equilibrium.

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Q2: What do you know about the Sub-mandibular and Sub-lingual glands?

Ans
Submandibular Gland:→
The Submandibular gland is the bilateral Salivary gland which is located in the face. The mixed Serous and mucous Secretions are important for the lubrication of food during mastication to enable effective Swallowing and aid digestion.

Anatomical position:→

The Submandibular gland is located within the anterior part of the Submandibular triangle. The boundaries of triangle is below.

↳ Superiorly:→ Inferior border of the mandible.

↳ Anteriorly:→ Anterior belly of the digastric muscle.

↳ posteriorly:→ posterior belly of

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digastric wall.

↳ Secretions from the Submandibular gland travel into oral cavity via the Submandibular duct, which is 5cm in length. The duct ascends on its course to open as 1-3 orifices on small Sublingual papilla at the base of the lingual frenulum bilaterally.

vasculature → Blood supply is via the Submental arteries which arise from the facial artery; a branch of external Carotid artery.

↳ venous drainage is through the Submental veins which drain into the facial vein and then internal jugular vein.

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(2) Sublingual gland:→

The sublingual gland are the smallest of the three paired salivary gland and the most deeply situated.

Both glands contribute to only 3-5% of overall salivary volume, producing mixed secretions which are predominately mucous in nature. These secretions are important in lubricating food, keeping the oral mucous moist and initial digestion.

Anatomical position:→

The sublingual gland are almond shaped and lie on the floor of the oral cavity. They are situated underneath the tongue, bordered laterally by the mandible and medially by the genioglossus muscle of

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the tongue - The gland
form a shallow
groove on the medial
surface of the mandible
known as the sublingual
fossa.

vasculature: → Bloody supply is
via the sublingual
and submental arteries which
are arise from the
lingual and facial arteries
respectively; both of the
external carotid artery.

↳ venous drainage is through
the sublingual and submental
veins which drain into
into the lingual and
facial vein respectively;
both then draining
into the internal jugular
vein.

Q3: Why Stone formation is more common in the submandibular gland than other salivary gland?

Ans: The Stone formation occurs most commonly in the submandibular gland for several reasons-

- ↳ The concentration of Calcium in saliva produced by the submandibular gland is twice than that of saliva produced by parotid gland.
- ↳ The submandibular gland saliva is also relatively alkaline and mucous.
- ↳ The mandibular duct is long, meaning that saliva secretions must travel further before being discharged into the mouth. The duct possesses two bends, the first at the posterior border of the

of the mylohyoid muscle,
and the second near
the duct orifice.

The flow of saliva
from submandibular gland
is often against gravity
due to variation in

the location of the
duct orifice. The orifice
itself is smaller than
that of the parotid.

These factors all promote
slowing and stasis of
saliva in submandibular
duct, making the formation
with subsequent calcification
more likely.

↳ Salivary Calculi Sometimes
are associated with
Other salivary diseases e.g. sialoliths
occur in two third of cases
of chronic sialadenitis although
Sialadenitis is often a consequence
of sialolithiasis. Gout may also
cause salivary stones although in
this case they are composed of uric
acid crystal rather than normal
composition of salivary stones.

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Q4:→ What do you know about the vertebrae of the human skeleton. Explain in details?

Ans
Human vertebrae:→ vertebrae are the 33 individual bones that interlock with each other to form the spinal column. The vertebrae are numbered and divided into regions; Cervical, thoracic, lumbar, Sacrum, and Coccyx. Only the top 24 bones are moveable; the vertebrae of Sacrum and Coccyx are fused. The vertebrae in each region have unique features that help them perform their main functions.

① Cervical (neck):→ The main function of the cervical spine is to support the weight

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of the head (about 10 pounds).

The seven cervical vertebrae are numbered C₁ to

C₇. The neck has the greatest range of motion because of

two specialized vertebrae that connect to the skull.

The first vertebra (C₁) is the ring shaped atlas that connects directly

to the skull. This joint allows for the nodding or "yes" motion of the

head. The second vertebra (C₂)

is the peg shaped axis, which has projection called odontoid, that the atlas

pivots around. This joint allows for the side to side or "no" motion of the

head.

② Thoracic (mid back) → The main function of the thoracic spine is to hold the rib cage and protect the heart and lungs. The twelve thoracic vertebrae

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are numbered T₁ to T₁₂.
The range of motion in the thoracic spine is limited.

③ Lumbur (Low back) :-

The main function of the lumbar spine is to bear the weight of the body. The five lumbar vertebrae are numbered from L₁ to L₅. These vertebrae are much larger in size to absorb the stress of lifting and carrying heavy objects.

④ Sacrum :- The main function of the Sacrum is to connect the spine to the hip bones. There are five sacral vertebrae which are fused together. Together with iliac bones they form a ring called the pelvic girdle.

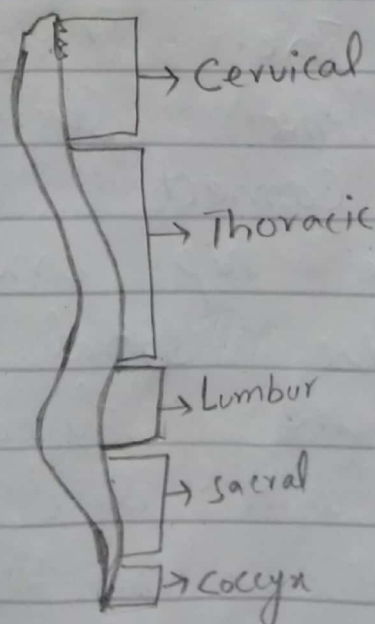
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(4) Coccyx Regions →

The four fused bones of the coccyx or tailbone provide the attachment for ligaments and muscles of the pelvic floor.

Vertebra has three functional parts →

- ↳ A drum shaped body designed to bear weight and withstand compression.
- ↳ An arch shaped bone that protects the spinal cord.
- ↳ Star shaped processes designed as outriggers for muscle attachment.



Q5: Write about the importance of radiology in medical field?

Ans There are various importance of radiology in medical field, that's why radiology in the medical field is also called as diagnostic imaging. In medical field it is a series of different test that takes pictures or image of various parts of the body. Many of these test are unique in that they allows doctor to see inside the body. Radiology role in medical field is central to disease management with a wide choice of tools and techniques available for the detection, staging and treatment.

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Doctors today cannot manage patient without diagnostic imaging. In medical field many diseases can be find through the radiography and will determines the diagnosis and the course of your treatment.

Role of radiologist in Medical fields
Responsible for interpreting diagnostic images providing indispensable information to treating physicians.

prevention and screening in Medical fields
The value of early screening leads to early detection, Staging and treatment.

Treatment and therapy in medical fields:
Treatment monitoring with imaging and diagnostic methods.

The population should be informed about the importance of imaging in disease detection.

In Ontario, every hour of every day, an average of eight people will be diagnosed with some type of cancer and three will die from cancer.

Doctors today cannot manage patient without diagnosing imaging.

In medical field no treatment is possible without doing diagnostic (Rad) imaging.

An the medical field the early diagnostic imaging saves the lives, and able the physician for the performing best treatment of the concern disease.