

(1)

María Naz

ID # 14577

BS:

Radiology

Final:

Exam

Assig:

Anatomy

Date:

11 / July - 2020

Sir:

Waqar

Question 1:-

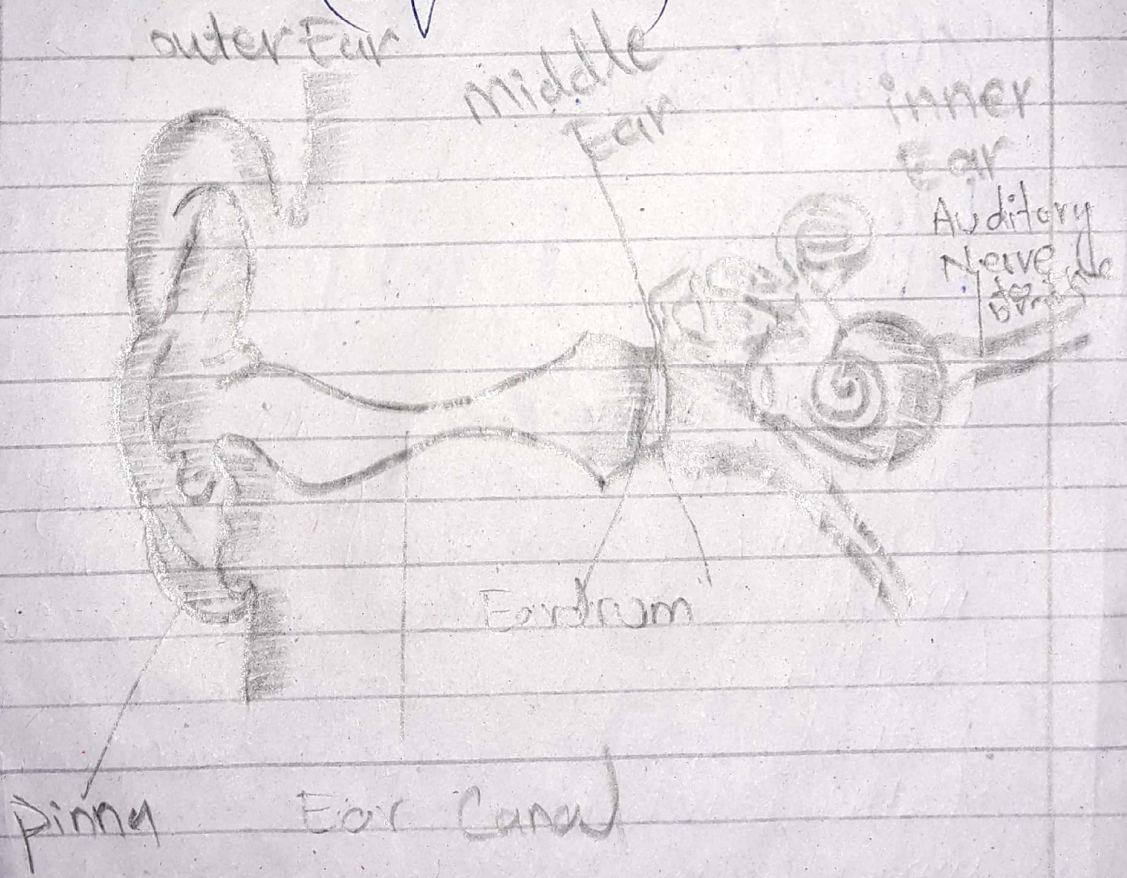
HUMAN EAR:-

- Ear has major three Divisions
- outer ear consisting of pinna, auditory canal and ear drum.
 - middle ear consists of Ear ossicles (malleus, incus, stapes) oval window, Round window and inner opening of the Eustachian tube.
 - inner ear consists of Semicircular Canals, utricle, Saccule and Cochlea, The hearing / Auditory

Sensation External ear Collects the sound waves. The hearing can be done according to the responses given by brain.

Ear:-

Ear organ, of Hearing and equilibrium that detects and analyzes sound by transduction (or the conversion of sound waves into electrochemical impulses) and maintains the sense of balance (equilibrium).



3

① out Ear:-

It comprises of → Pinna:
Effective in collecting sound waves

→ External auditory Meatus:
prevents foreign bodies entering the Ear.

→ Tympanic Membrane:
Sound waves produces pressure

② Middle Ear:-

parts of middle ear are as follows

→ Auditory ossicles:
Transmit and amplify vibration from tympanic membrane to oval window.

→ Eustachian tube:
Equalizes air pressure on both sides of the tympanic membrane.

③ Inner Ear:-

parts of inner ear are follows

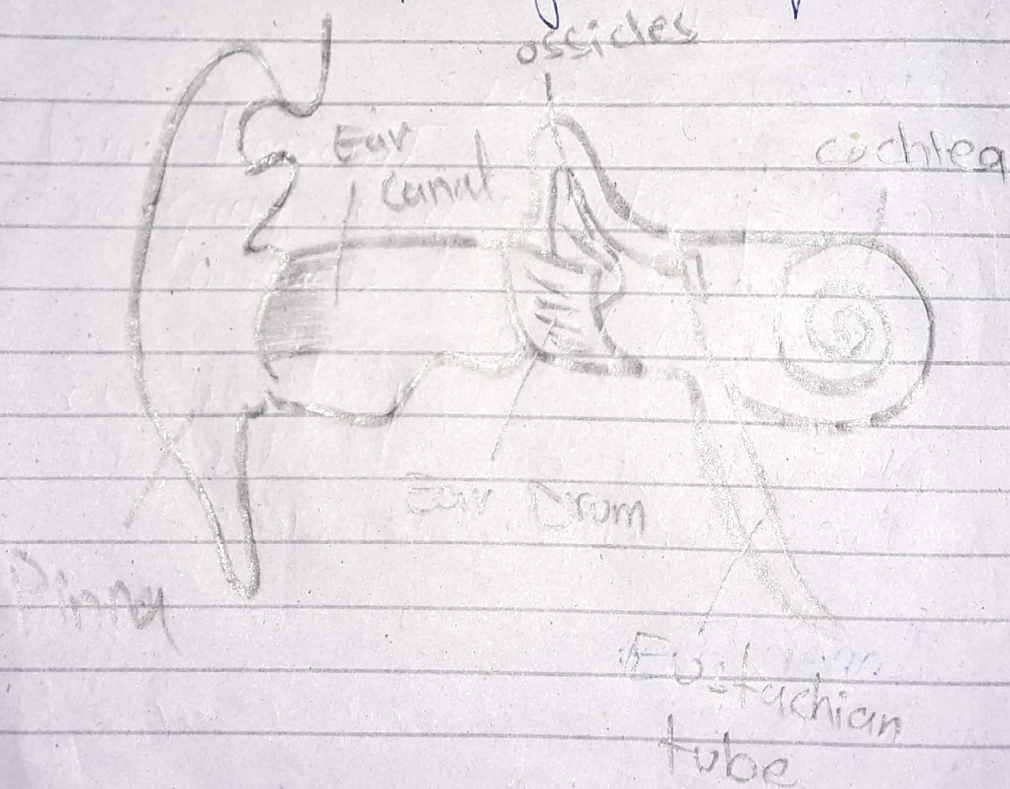
→ Cochlea:-
Contains a series of

(4)

fluids, channels and membranes that transmit vibration to the spiral organs, the organ of hearing, hair cell in the spiral organ produce receptor potentials, which elicit nerve impulses in the cochlear branch of the vestibulocochlear (VIII) Nerve.

→ Semicircular Ducts:

Contain cristae,
Site of hair cell for Dynamic equilibrium, utricle and Saccule;
Contains macula, site of hair cells for dynamic equilibrium



Question 2:-

what do you know about Submandibular and Sublingual gland?

① Sub-Mandibular Gland:-

The Sub-mandibular glands are bilateral Salivary glands located in the Face. Their mixed Serous and mucous secretion are important for the lubrication of food During mastication to enable effective swallowing and aid digestion. In this article, the location vasculature and innervation of the Submandibular glands will be Dissuss and the Relevant clinical Correlat will be investigated.

Anatomical Position:-

Submandibular gland is located with in the anterior part of the Submandibular triangle. The boundaries of this triangle are:

Superior:-
inferior body of the mandible

Anteriorly:-
Anterior belly of the

(6)

Digastric muscle

Posteriorly:-

posterior belly of the Digastric.
~~part of the submandibular triangle.~~
The boundaries of this triangle are:

Superiorly:-

~~inferior body of the mandible.~~

Anteriorly:-

~~Anterior belly of the Submental artery:-~~

Blood supply is via the Submental artery which arise from the Facial artery, a branch of the external carotid artery.

Submental veins:-

Venous Drainage is through the Submental veins which drain into the Facial vein and then the internal jugular vein.

Functions:-

The Submandibular gland and the other Salivary gland are essential for Digestion and for maintaining a healthy mouth.

(7)

Saliva Contains enzymes that begin to break down Food before it passes to your Stomach, and it moistens Food so that it slips easily down the esophagus.

(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 in Nature. These secretions are important in lubricating Food, keeping the oral mucosa moist and initial digestion.

In this article, we shall look at the anatomy of the Sublingual glands - their location, blood supply and innervation.

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

(2)

mandible and medially by genioglossus muscle of the tongue. The glands form a shallow groove on the medial surface of the mandible known as the Sublingual Fossa.

The Submandibular duct and lingual Nerve pass alongside the medial aspect of the Sublingual glands.

Both Sublingual glands unite anteriorly and form a single mass through a horseshoe configuration around the lingual Frenulum. The Superior aspect of mucous membrane called the Sublingual fold. Each Sublingual fold extends from a posterolateral position and traverses anteriorly to the join the Sublingual papilla at the midline, either side of the lingual frenulum.

Secretions Drain into the oral cavity by minor Sublingual ducts of which there are 8-20 excretory ducts per gland, each opening out onto the Sublingual folds. Through anatomical variance, a major Sublingual duct can be present in some people. This large accessory duct arises

(a)

from the inferior aspect of the Sublingual gland and then adheres to the passing Submandibular duct on its medial side. Drainage then follows the Submandibular duct out through the Sublingual Papillae.

Blood Supply:-

Blood Supply is via the Sublingual and Submental arteries, which 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 the lingual and Facial veins respectively, both the draining into the internal Jugular veins.

Function:-

Function is digestive system
The Sublingual glands lie directly under the mucous membrane

(10)

Covering the Floor of the mouth
beneath the tongue, a slight
fold called the ^{is}
Sublingual Papilla, from which
the ducts of the Submandibular
Salivary glands open.

Question 3:-

write about the importance of Radiology in medical Field?

Importance of Radiology:-

Radiology, also called Diagnostic imaging, is a series of different tests that take pictures or images of various part of the body. Many of these tests are unique in that they allow doctors to see inside the body. A number of different imaging exam can be used to provide this view, including x-ray, MRI, ultrasound, CT Scan, mammography, Nuclear medicine, fiberoscopy, bone mineral densitometry and PET Scan.

Radiology's Role is Central to Disease management, with a wide choice of tools and techniques available for the detection, staging and treatment. Diagnostic imaging provides detailed information about structural or Disease Related changes. Early Diagnosis Saves lives without

Diagnosis there can be no treatment,
there can be no cure.

→ Radiology plays a huge Role in disease management by giving physicians more options, tools, and technique for detection and treatment. Diagnostic imaging allows for detailed information about structural or Disease-Related changes with the ability to diagnose during the early stages, patients may be saved.

Radiology:-

Radiology Represents a branch of medicine that deal with Radiant energy in the Diagnosis and treatment of Diseases by using imaging technologies. This field can be divided into broad areas

- ① Diagnostic Radiology
- ② Interventional Radiology

Diagnostic Radiology:-

Diagnostic Radiology use medical images such as x-ray, ultrasound, CT Scan and MRI Scan to Diagnose Disease anywhere in the body.

- Neuroradiology
- Paediatric Radiology
- Breast imaging
- Cardiovascular Radiology
- Chest Radiology
- Gastrointestinal Radiology
- Genitourinary Radiology
- Musculoskeletal Radiology
- Emergency Radiology
- Nuclear Radiology

• Interventional Radiology:-

A subspecialty of Radiology that focuses on the diagnosis and treatment of patient utilizing minimally invasive interventional techniques (non-surgical procedures)

These include

- Imaging and treatment of blood vessels (angiography)
- Biopsy procedure
- Cardiac catheterization
- Stents
- Fluid abscess Drainage

Radiology important in Medical Field:-

- X-ray Radiography
- Fluoroscopy
- CT-Scan Computer tomography
- MRI - magnetic Resonance imaging
- PET - Positron emission tomography
- SPECT - Single photon emission Computed tomography
- UltraSound

The value of Radiology in Healthcare:-

- Role of Radiologist:- Responsible for interpreting Diagnostic images, providing indispensable information to treating physicians

- Prevention and Screening:- The value of Screening leads to early detection, staging and treatment.

- Treatment and Therapy:- Treatment monitoring with imaging and

Diagnostic methods

- informing the public:-

The population should be informed about the importance of imaging in Disease Detection.

Question 4:-

Why Stone Formation is more Common in the Submandibular gland than other Salivary gland?

Submandibular Salivary gland:
Calculus Formation:-

- The Submandibular Salivary gland is a Common site of Calculus Formation. This Condition is Rare in other Salivary glands. The presence of a tense Swelling below the body of the mandible, which is greatest before or during a meal and is Reduced in size or absent before or during a meal and is Reduced in size or absent between meals, is Diagnostic of the Condition. Examination of the floor of the mouth with reveal absence of ejection of Saliva from the orifice of the duct of the affected glands. Frequently, the Stone can be palpated in the duct, which lies below the mucous membrane of the floor of the mouth.

Submandibular Gland occurrence:

- Abundant Calcium Concentration
- Alkaline pH
- Anatomic Factors

- ↓
- Wharton's duct — longest
 - Two sharp curves
 - Small punctum

mandibular sialoliths

The higher incidence of sub is likely secondary to the thick or mucoid secretion of the gland as well as the long, convoluted, and superiorly directed path of the duct along the anterior floor of the mouth. Wharton's duct has two noteworthy bends (areas more likely to develop sialolithiasis) — the genu (knee area), which is located at the posterior border of the mylohyoid muscle, and around the punctum, where the duct makes an acute turn before emptying into the oral cavity. The diameter of the duct ranges from 2 to 4 mm and is narrowest at the punctum.

The etiology of sialolithiasis is not clear. A popular theory is that mineralization occurs around a nucleus of organic matter and may be the

The initial etiological factors: Bacteria, Foreign bodies, ductal epithelial cells, and collections of mucus are thought to be probable source of this organic matrix. Their retention in the gland and ductal system is likely due to morphoanatomical abnormalities such as ductal stenosis (obstruction), strictures (constriction), or irregular salivary composition is thought to contribute to mineralization around those structures. High concentration of substance such as calcium combined with low level of crystallization inhibitor in the salivary gland.

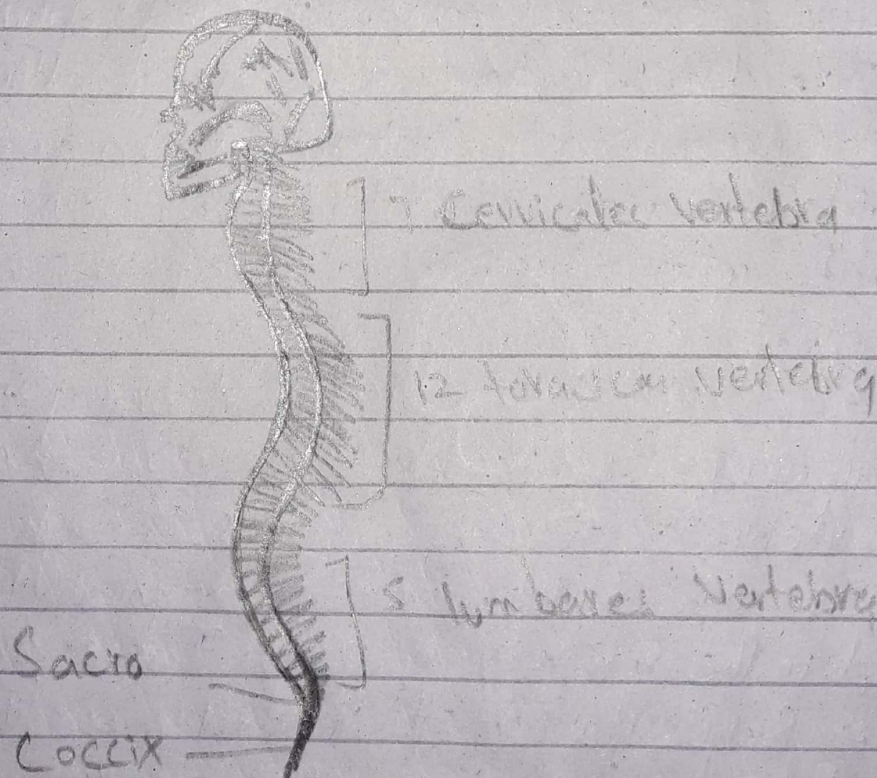
- Stone formation occurs most commonly in the submandibular gland for several reasons. The concentration of calcium in saliva produced by the submandibular gland is twice that of the saliva produced by the parotid gland. The submandibular gland saliva is also relatively alkaline and mucous.
- Sialolithiasis most commonly occur in the submandibular gland, due to the anatomy of this duct being long and its flow of saliva against

Question 5:-

What do you know about the vertebra's of the human skeleton?
Explain in detail?

VERTEBRA'S:-

A vertebra is one of 33 bony segments that form the spinal column of humans. There are 7 cervical, 12 thoracic, 5 lumbar, 5 sacral (fused into one sacrum bone) and 4 coccygeal (fused into one coccyx bone).

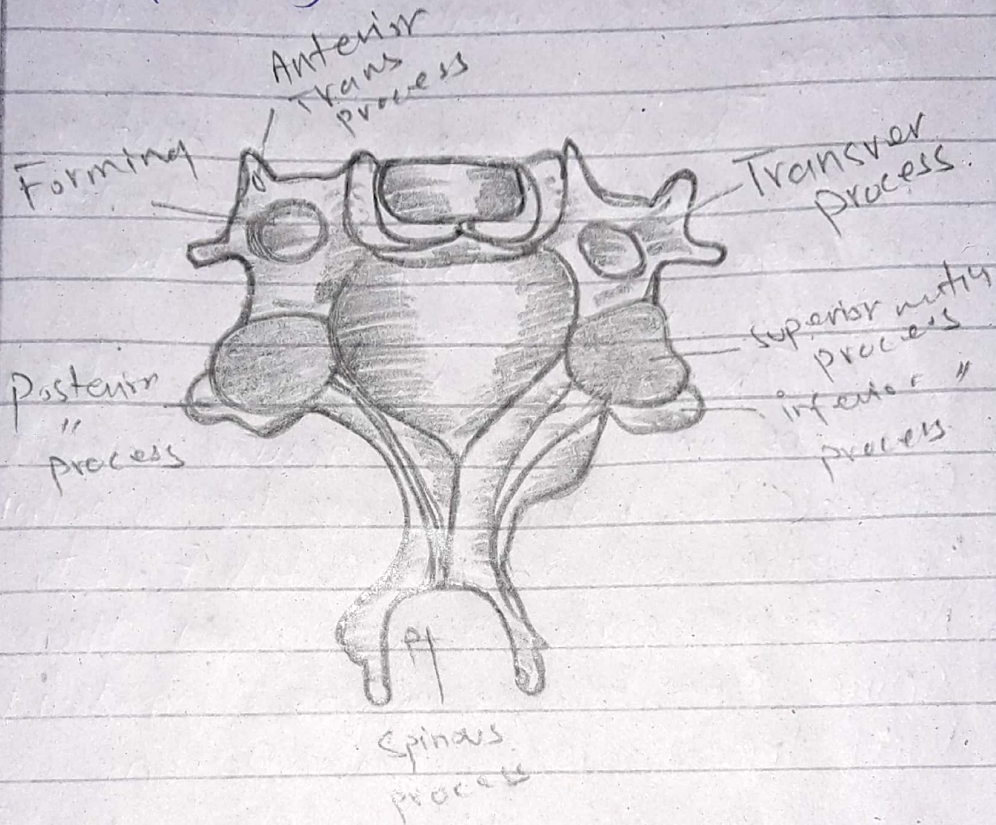


① Cervical Vertebrae:-

There are Seven Cervical Vertebra (but eight Cervical Spinal Nerves), Designated C₁ through C₇. These bones are, in general, small and delicate. Their spinous process are short (with the exception of C₂ and C₇, which have palpable spinous processes). C₁ is also called the atlas, and C₂ is also called the axis. The structure of these vertebra is the Reason why the Neck and head have a large Range of motion. The atlanto-occipital joint allows the skull to move up and down, while the atlanto-axial joint allows the upper Neck to twist left and right. The axis is also situ upon the first intervertebral disc of the spinal column.

Cervical vertebrae possess transverse foramina to allow follow the vertebral arteries to pass through on their way to the foramen magnum to end in the circle of willis. These are the smallest, lightest vertebra and the vertebral foramina are triangular in shape. The spinous process are

Short and often bifurcated (the spinous process of C7, however, is not bifurcated, and is substantially longer than that of the other cervical spinous process).



② Thoracic vertebrae:-

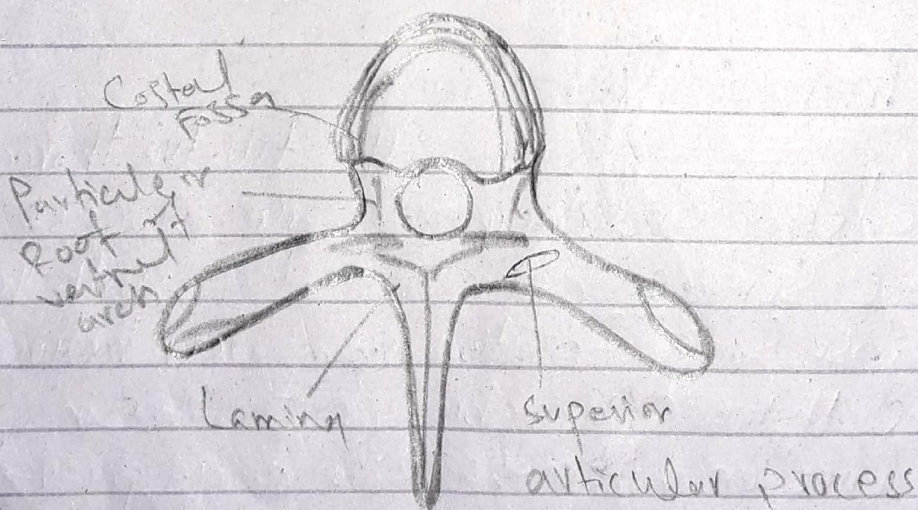
The twelve thoracic vertebrae and their transverse process have surface that articulate with the ribs. Some rotation can occur between the thoracic vertebrae, but their connection with the rib cage prevents much flexion or other movement. They may also be known as costal.

Vertebrae in the human context.

The vertebral bodies are roughly heart-shaped and are about as wide anterior-posteriorly as they are in the transverse dimension. vertebral Foramina are roughly circular in shape.

The top surface of the first thoracic vertebra has a hook-shaped uncinate process, just like the Cervical vertebrae.

The thoracic vertebrae attach to ribs and so have articular facets specific to them, these are the superior transverse and inferior costal facets. As the vertebrae progress down the spine they increase in size to match up with the adjoining lumbar section.



(3)

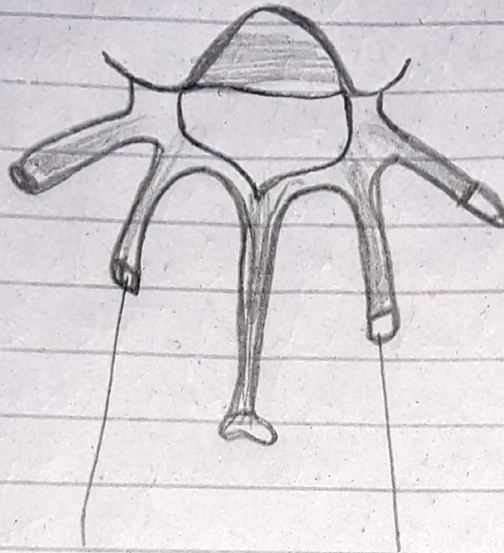
Lumbar Vertebrae:

The five lumbar vertebrae are the largest of the vertebrae, their robust construction being necessary for supporting greater weight than the other vertebrae. They allow significant flexion, extension lateral flexion (Sid-bending). The discs between these vertebra create a natural lumbar lordosis (a spinal curvature that is concave posteriorly). This is due to the difference in thickness between the front and back part of the intervertebral discs.

The lumbar vertebra are located b/w the ribcage and the pelvis and are the largest of the vertebrae. The pedicles are strong, as are the laminae, and the spinous process is thick and broad. The vertebral foramen is large and triangular. The transverse processes have long and narrow and three can be seen on them, these are a lateral costiform process, a mammillary process and an accessory process. The superior or upper tubercle is the mammillary process which connects with the

Superior articular process

Lumbar Vertebrae



2 additional centre for Mammillary process