

The Islamic University College of Medical Technologies

Department of Radiology Technologies

First Stage

Lecture four : The vertebral column

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The vertebral column



Themes of the lecture

- **Introduction to the vertebral column.**
- **Functions of the vertebral column.**
- **Structure of the vertebrae.**
- **Classification of the vertebrae.**

The purpose of the lecture

(introducing the students to the structure and functions of the vertebral column)

Behavior objectives

- **To know the definition of the vertebral column.**
- **In order the students to learn the functions of the vertebral column.**
- **The students should be able to know the structure of the vertebrae.**
- **The students should know the Classification of the vertebrae.**

References of the lecture:-

https://books.google.iq/books?id=aK52DwAAQBAJ&printsec=frontcover&dq=general+anatomy+book+pdf&hl=ar&sa=X&redir_esc=y#v=onepage&q&f=false

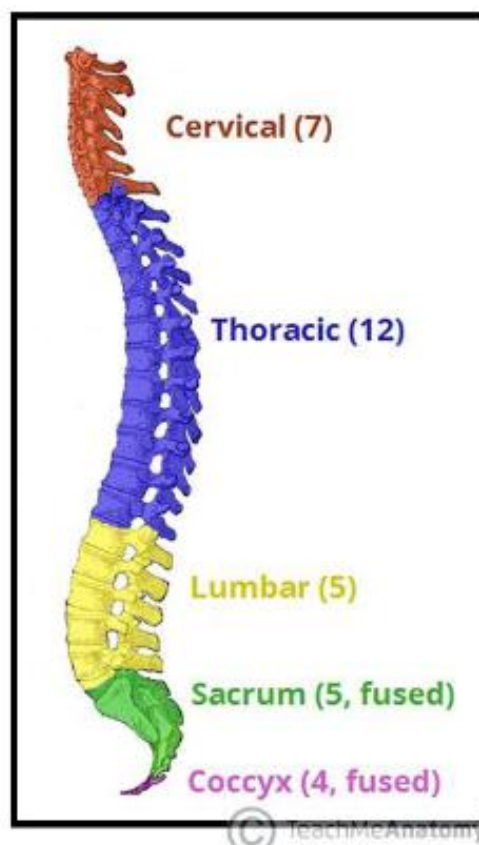
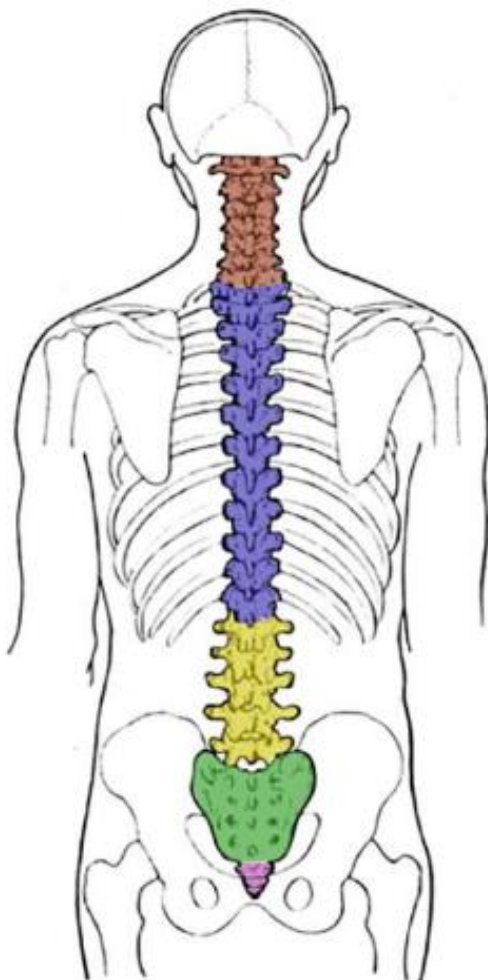
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The vertebral column

- is a series of approximately 33 bones called vertebrae, which are separated by intervertebral discs.
- The column can be divided into five different regions, with each region characterized by a different **vertebral structure**.

Functions

- 1-Protection – encloses and protects the spinal cord within the spinal canal.
- 2-Support – carries the weight of the body above the pelvis.

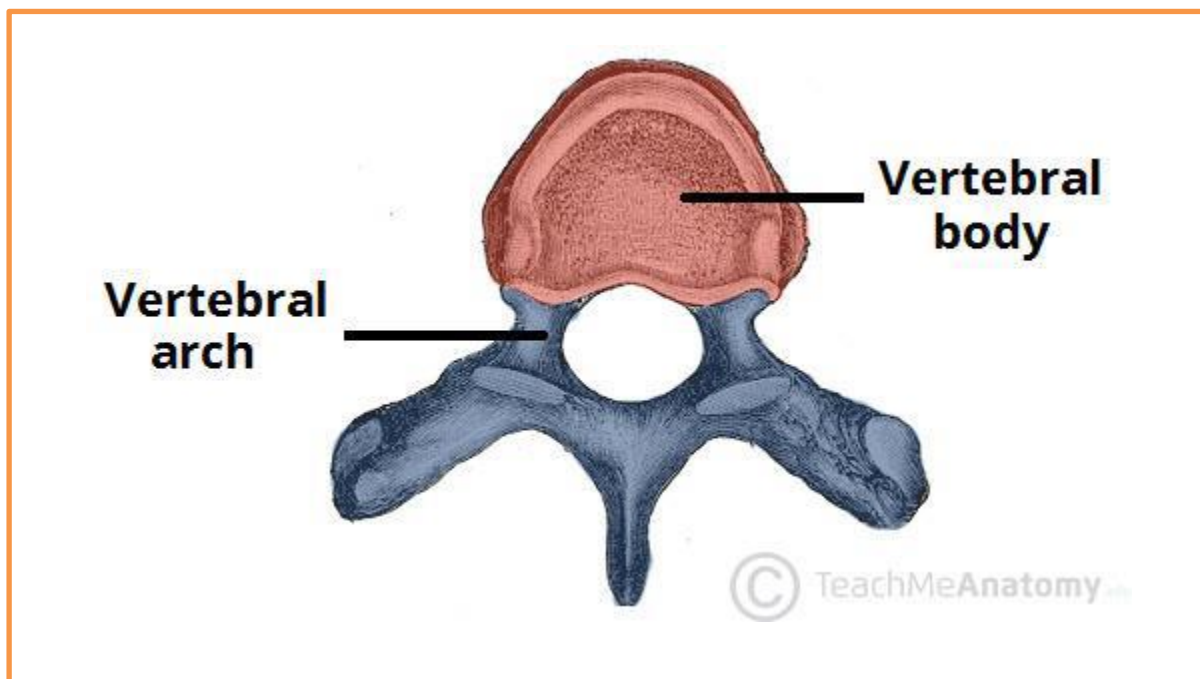


Structure of a Vertebrae

All vertebrae share a basic common structure. They each consist of an anterior vertebral body, and a posterior vertebral arch.

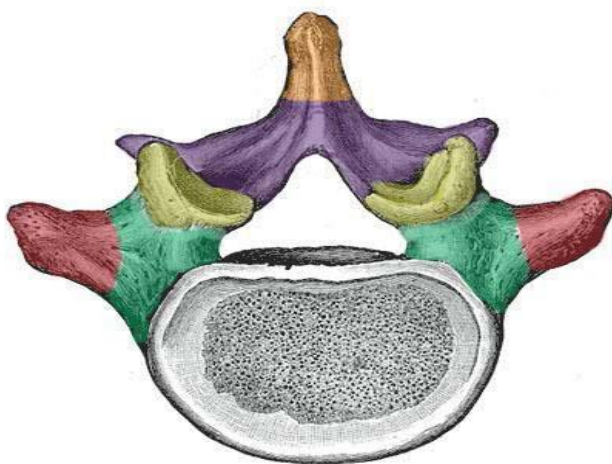
Vertebral Body

- The vertebral body forms the anterior part of each vertebrae.
- It is the weight-bearing component, and vertebrae in the lower portion of the column have larger bodies than those in the upper portion (to better support the increased weight).



Vertebral Arch

- The vertebral arch forms the **lateral** and **posterior** aspect of each Vertebrae.
- In combination with the vertebral body, the vertebral arch forms an enclosed hole



- Spinous process
- Lamina
- Superior articular processes
- Pedicles
- Transverse processes

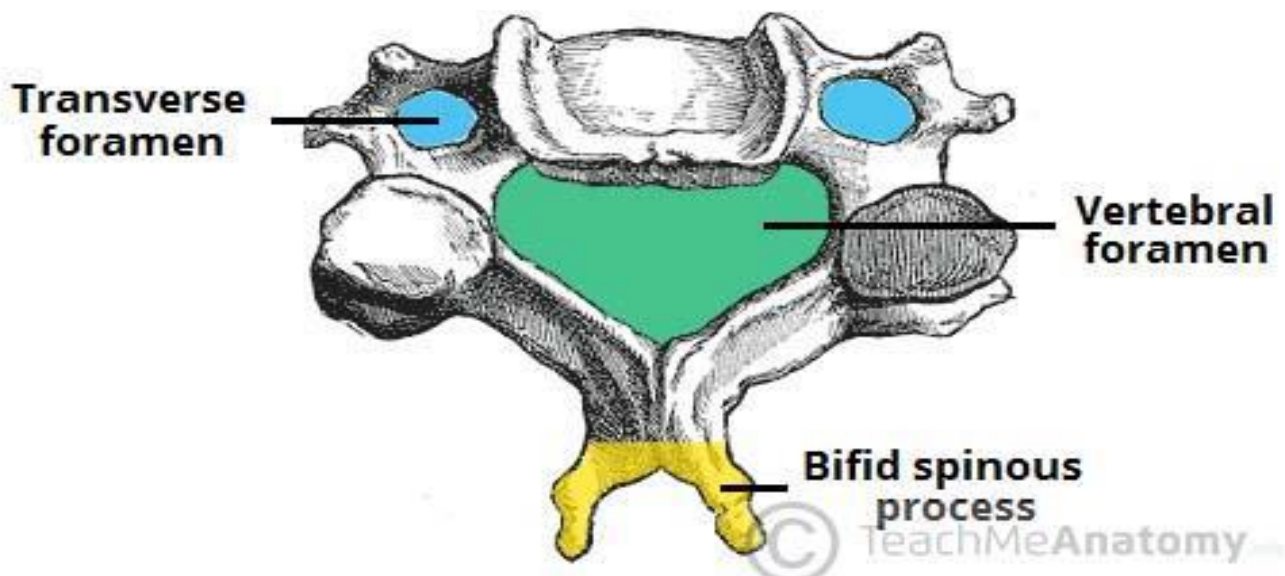
Classifications of Vertebrae

1-Cervical Vertebrae

There are seven cervical vertebrae in the human body. They have three main features:

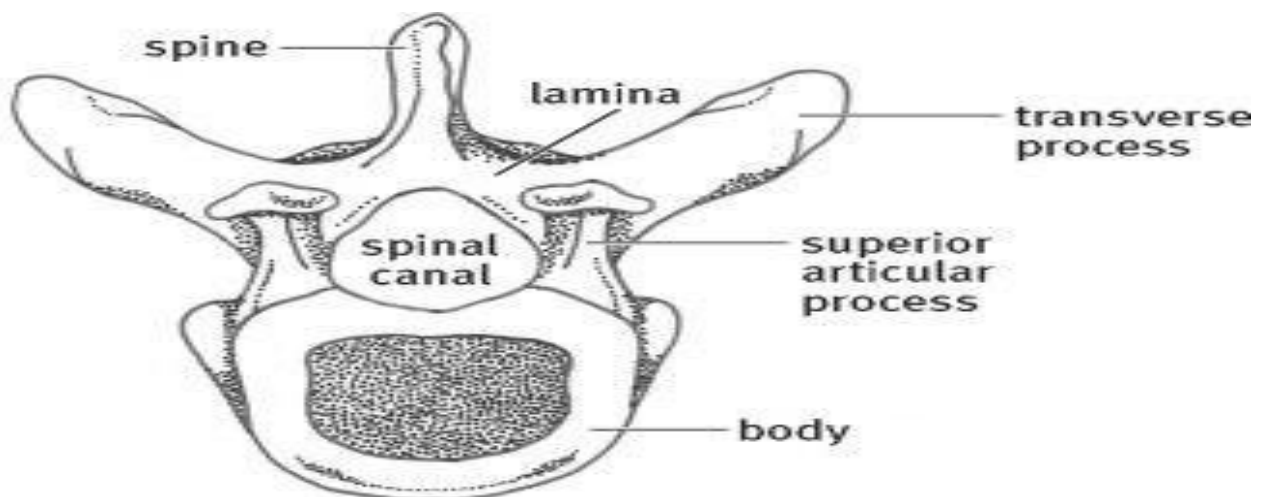
- **spinous process** – the spinous process bifurcates at its distal end. (C1 has no spinous process)
- **Transverse foramina** – an opening in each transverse process, through which the vertebral arteries travel to the brain.
- **Triangular vertebral foramen**

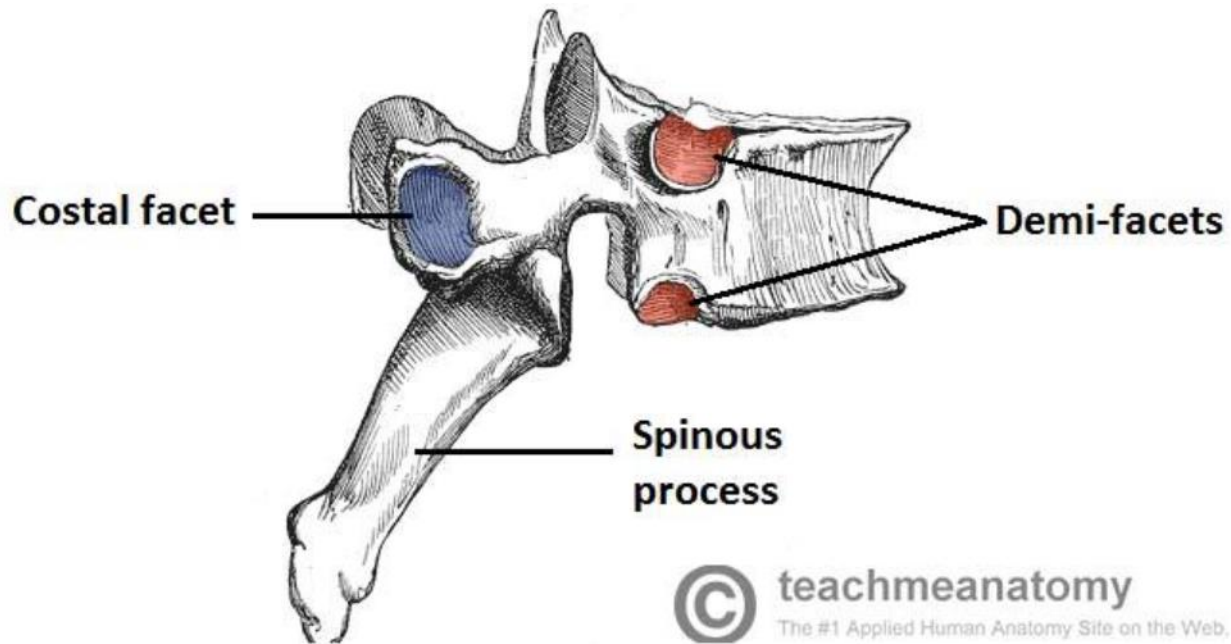
Two cervical vertebrae that are unique. C1 and C2 (called the atlas and axis), are specialized to allow for the movement of the head.



2-Thoracic Vertebrae

- The twelve thoracic vertebrae are medium-sized, and increase in size from superior to inferior.
- Their specialized function is to articulate with ribs, producing the bony thorax.
- On the **transverse processes** of the thoracic vertebrae, there is a costal facet for articulation with the shaft of a single rib
- The **spinous processes** of thoracic vertebrae are oriented obliquely inferiorly and posteriorly. In contrast to the cervical vertebrae, the vertebral foramen of thoracic vertebrae is **circular**.

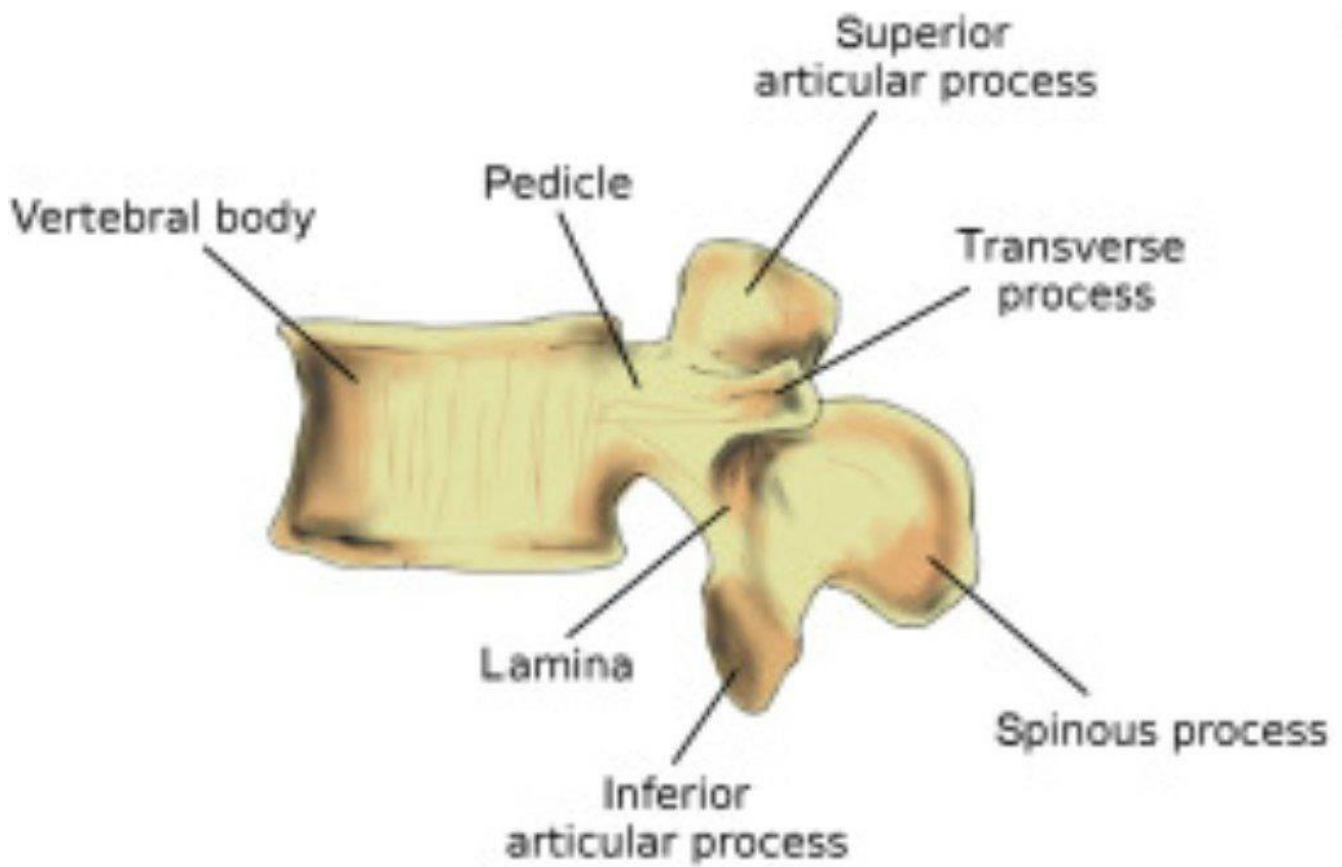
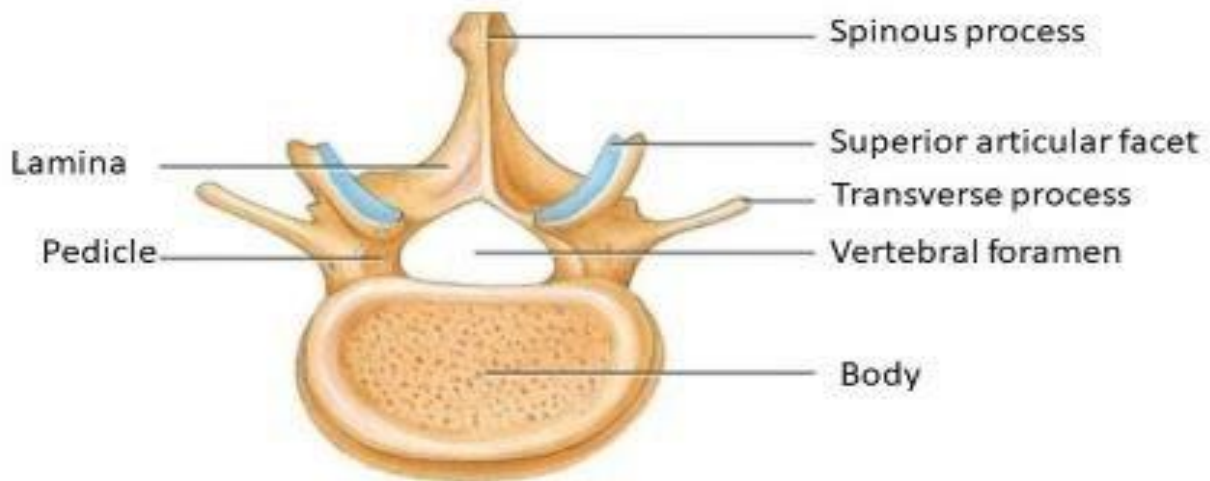




3-Lumbar Vertebrae

- There are five lumbar vertebrae in most humans, which are the **largest** in the vertebral column.
- They are structurally specialized to support the weight of the torso.
- Lumbar vertebrae have very **large** vertebral bodies, which are kidney shaped.
- like the cervical vertebrae, they have a **triangular**-shaped vertebral foramen.
- Their spinous processes are shorter than those of thoracic vertebrae and do not extend inferiorly below the level of the vertebral body.

Lumbar Vertebrae



4-Sacrum and Coccyx

- The sacrum is a collection of five **fused** vertebrae.
- It is described as an inverted triangle, with the apex pointing inferiorly.
- On the lateral walls of the sacrum are facets for articulation with the pelvis at the sacroiliac joints.

The coccyx

- is a small bone which articulates with the apex of the sacrum.
- It is recognized by its lack of **vertebral arches**. Due to the lack of vertebral arches, there is no **vertebral canal**.

