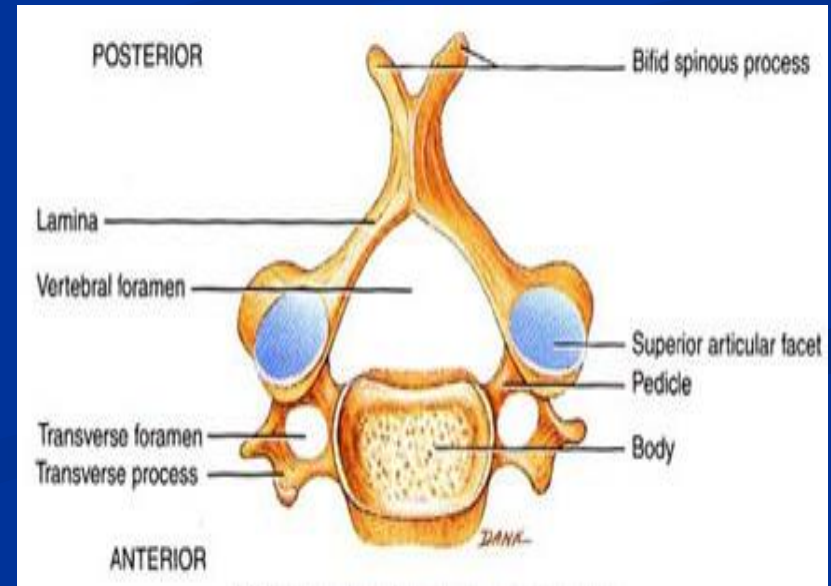
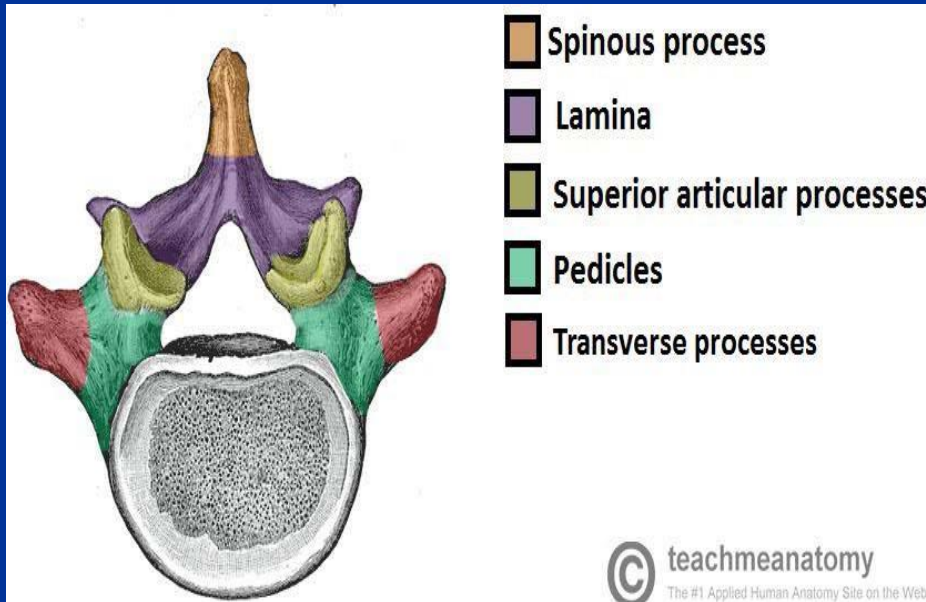


CERVICAL SPINE

- *DEPARTMENT OF ANATOMY.*
- *DR.SANAA AL-SHAARAWY.*

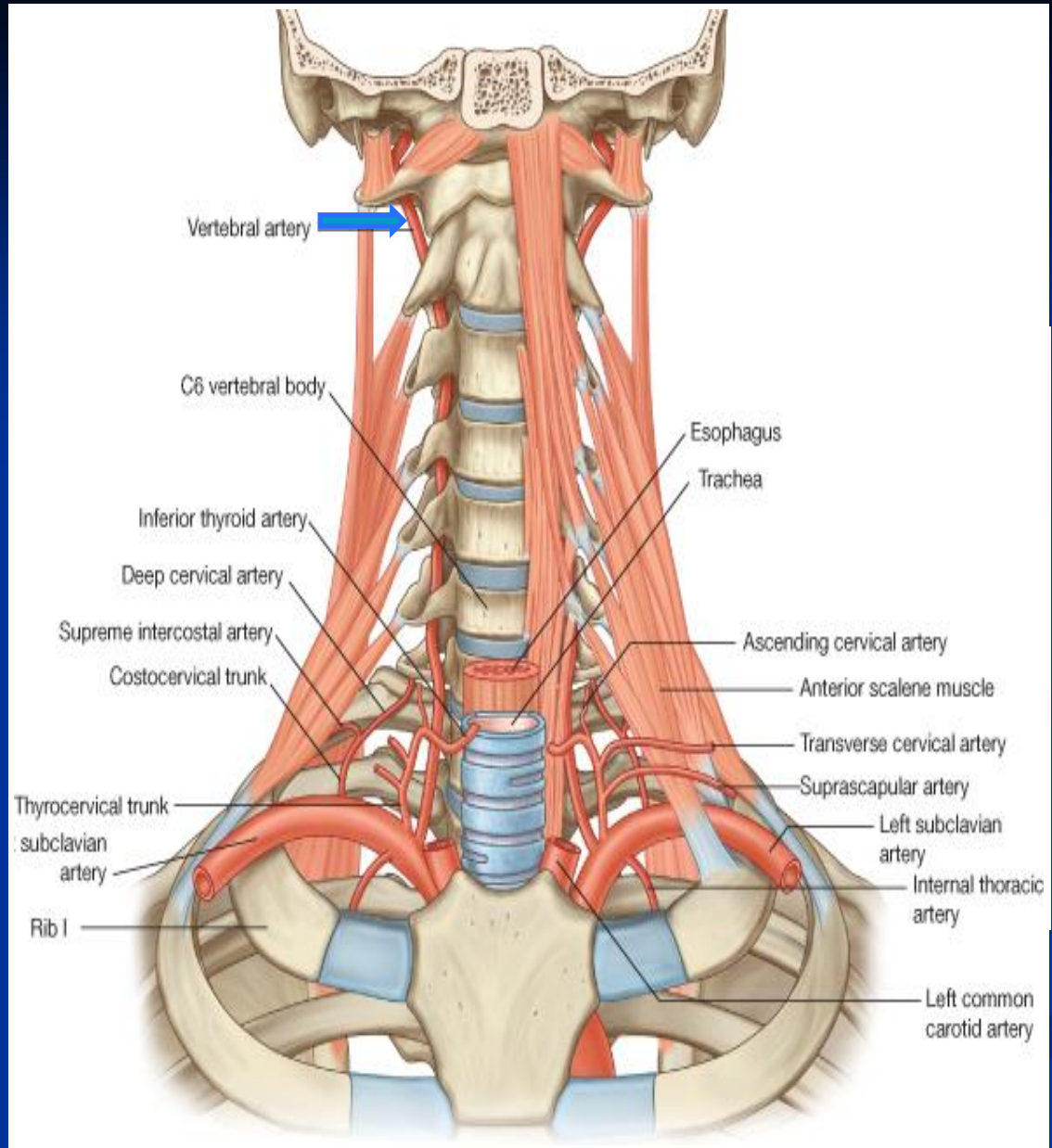


CERVICAL SPINES

- *By the end of this lecture the student should be able to:*
- Describe the 7 cervical vertebrae, (typical & atypical).
- Describe the joints between the cervical vertebrae.
- Describe the movements which occur in the region of the cervical vertebrae.
- List the structures which connect 2 adjacent vertebrae together.

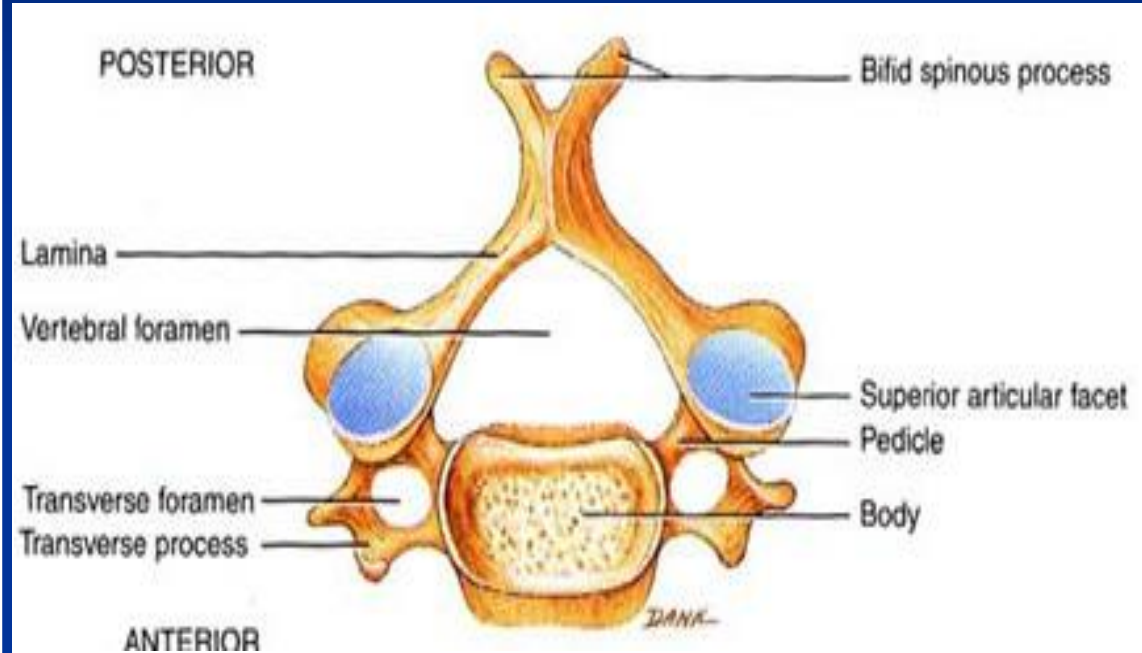
CERVICAL VERTEBRAE

- They are 7 in number.
- All characterized by presence of **foramen transversarium** in the transverse process.
- They are classified into:
 - 1- **Typical**: 3rd, 4th, 5th & 6th.
 - 2- **Atypical**: 1st, 2nd and 7th.



- The body is small and longer horizontally than antero-posterior
- Its spinous processes is short bifid.
- The transverse processes has the foramen transversarium through which allows passage of the vertebral arteries & veins.

TYPICAL CERVICAL VERTEBRAE C3, C4, C5 & C6



The vertebral foramen is large and triangular.

TYPICAL CERVICAL VERTABRAE

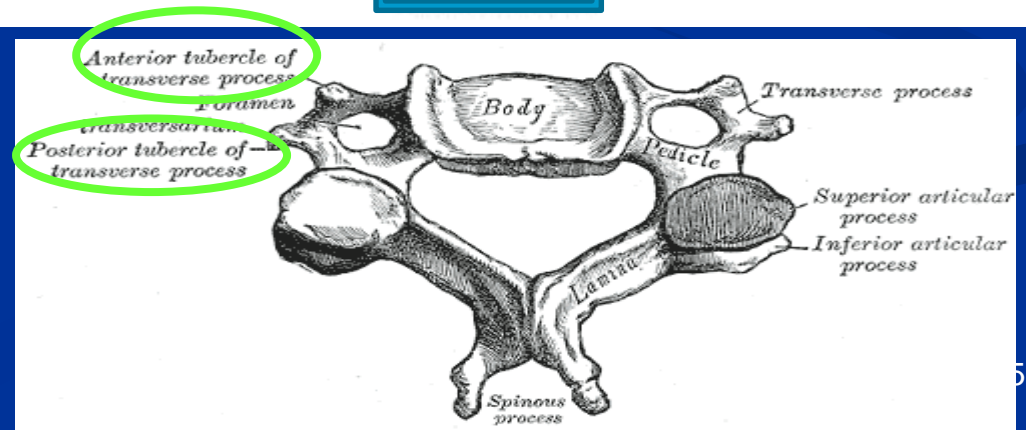
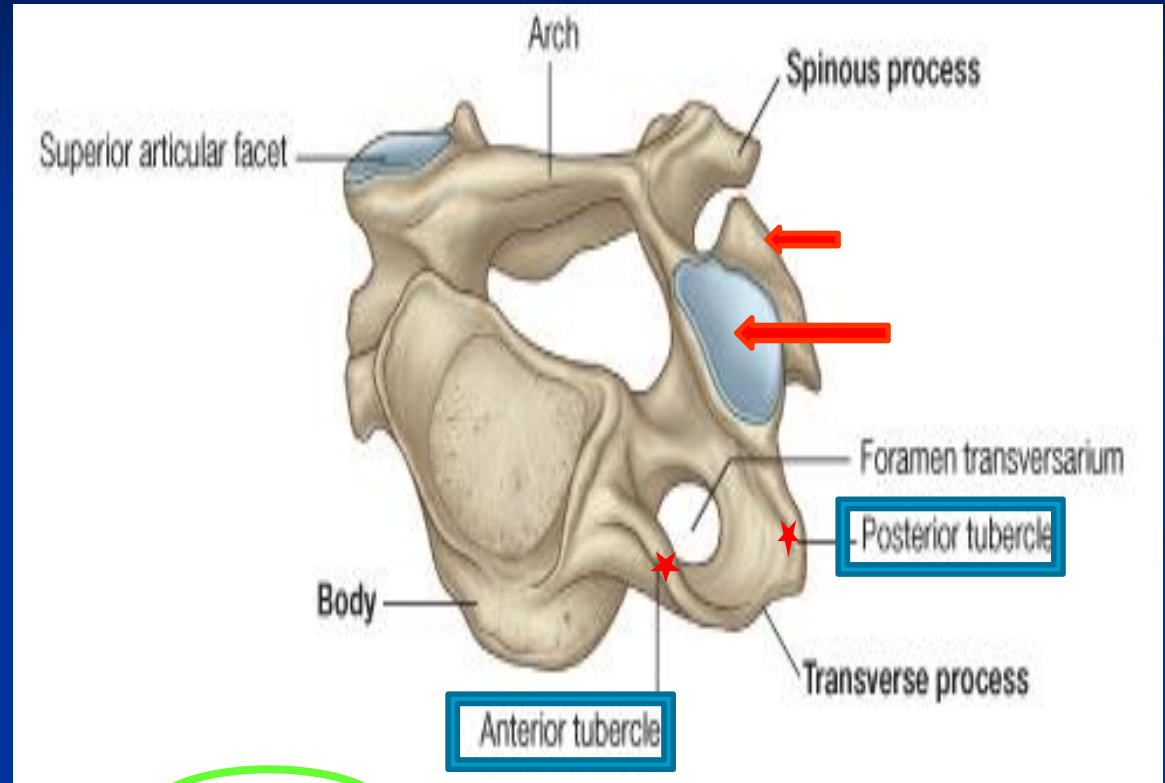
• The superior articular processes:

Which have small facets that face **upward** and **backward**.

• The inferior articular processes:

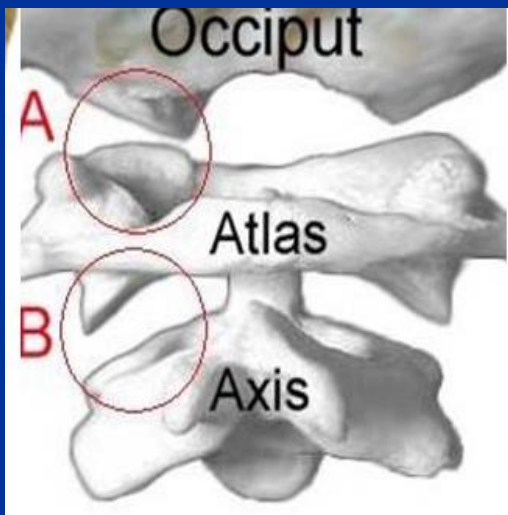
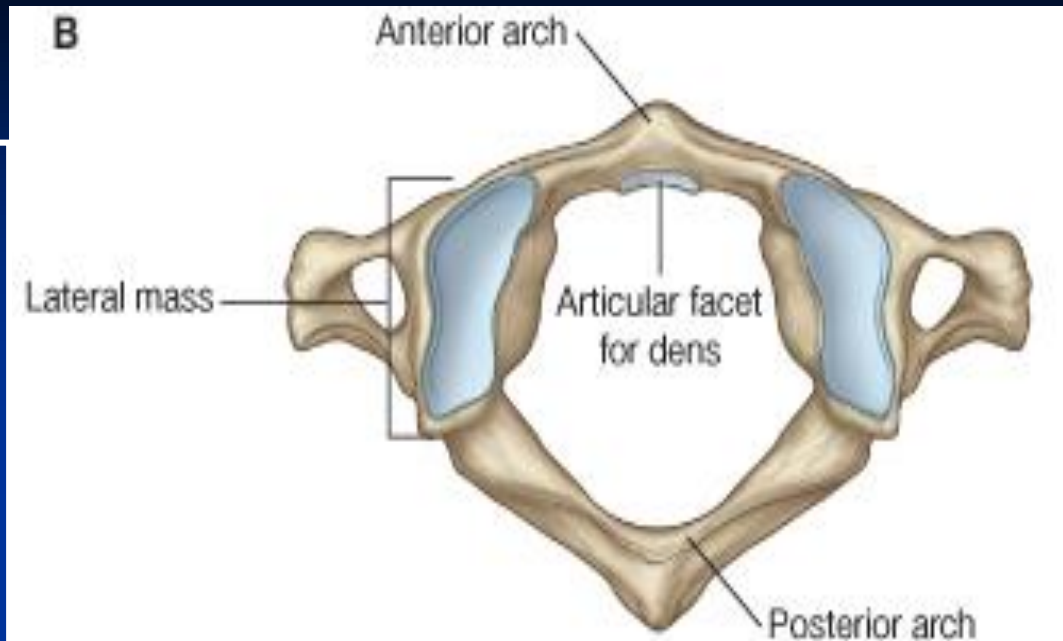
Which have facets that, face **downward** and **forward**.

• The transverse process has **2 tubercles** one in front and one behind the transverse foramen.



ATLAS- C1

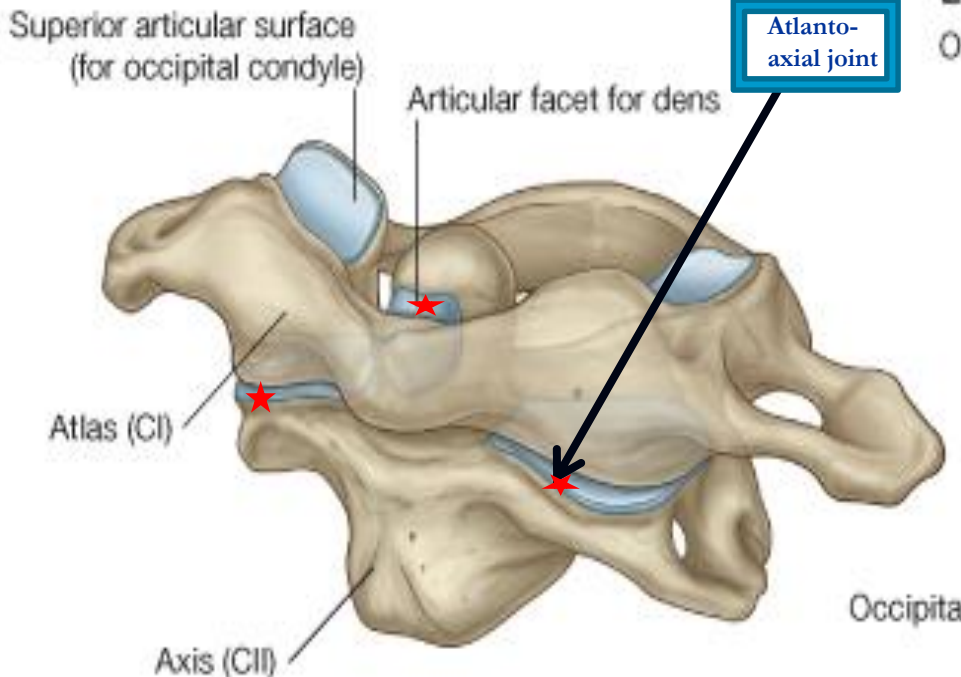
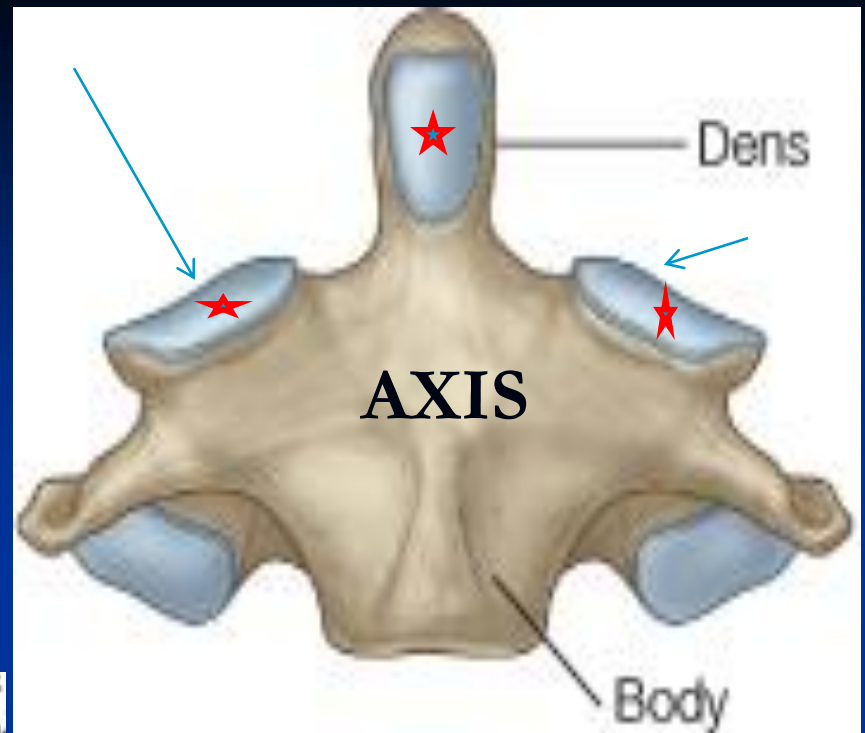
- It has **No** body, **No** spine.
- It has **2 lateral masses** connected together by **small anterior arch** & **long posterior arch**.
- Each lateral mass has **articular surface** on its upper and lower aspects.



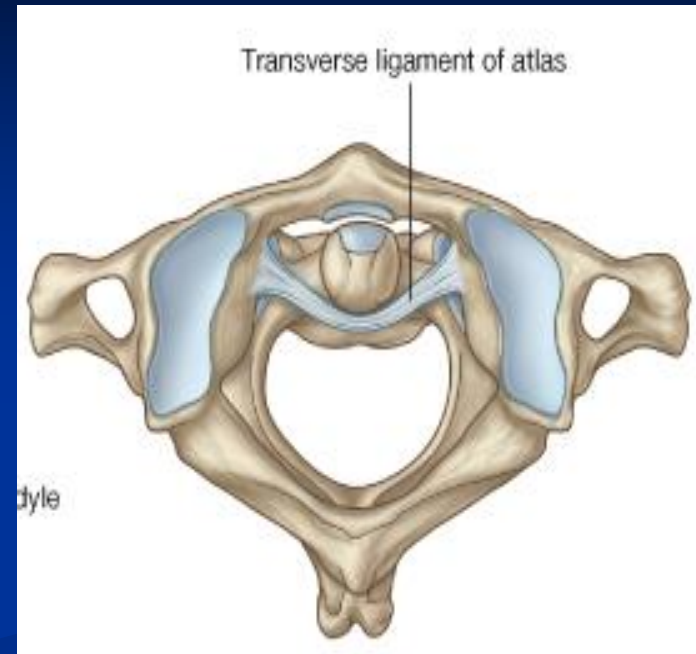
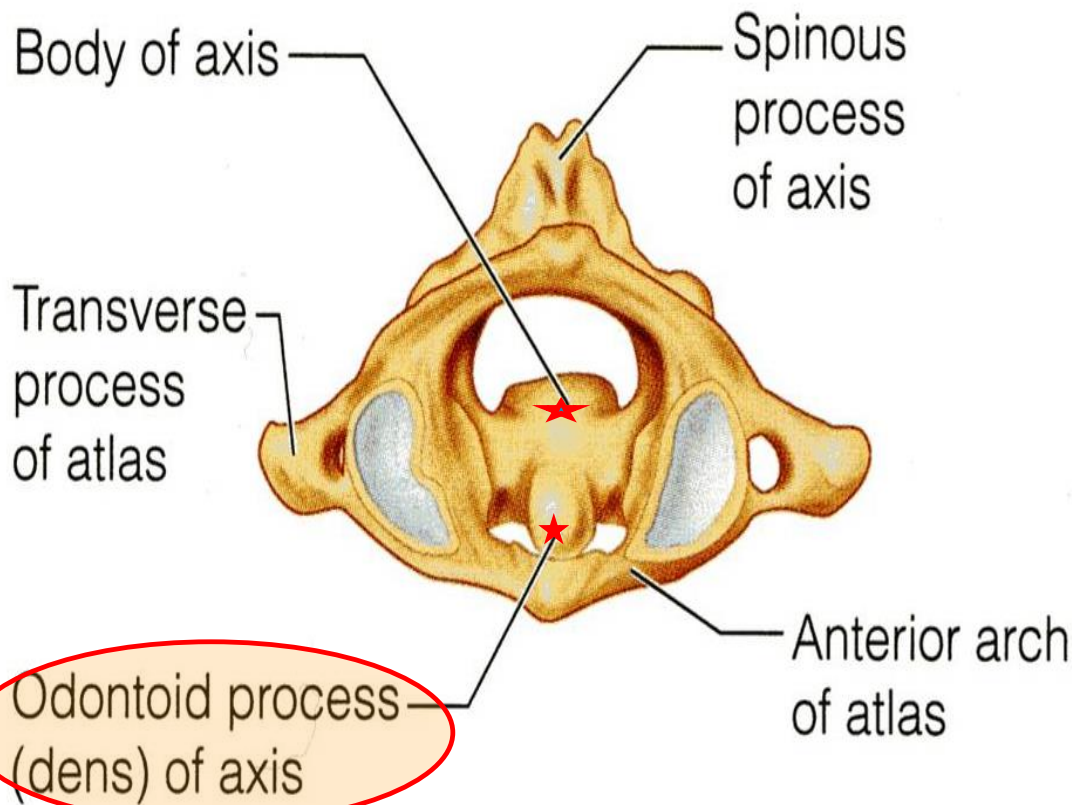
- The superior articular surface :**
- Articulates with the **occipital condyles of the skull**.
 - It forms the **Atlanto-Occipital** joints.
 - This joint allows you to nod **“say Yes” (Flexion of the head)**.

• **The inferior articular surface of the atlas is circular and** articulates with the axis. It forms the 2 lateral **Atlanto-Axial** joints.

• This joint **together with** the joint between the dens of axis and anterior small arch of atlas, they allow you to “**Say No**” **lateral rotation** of the face.



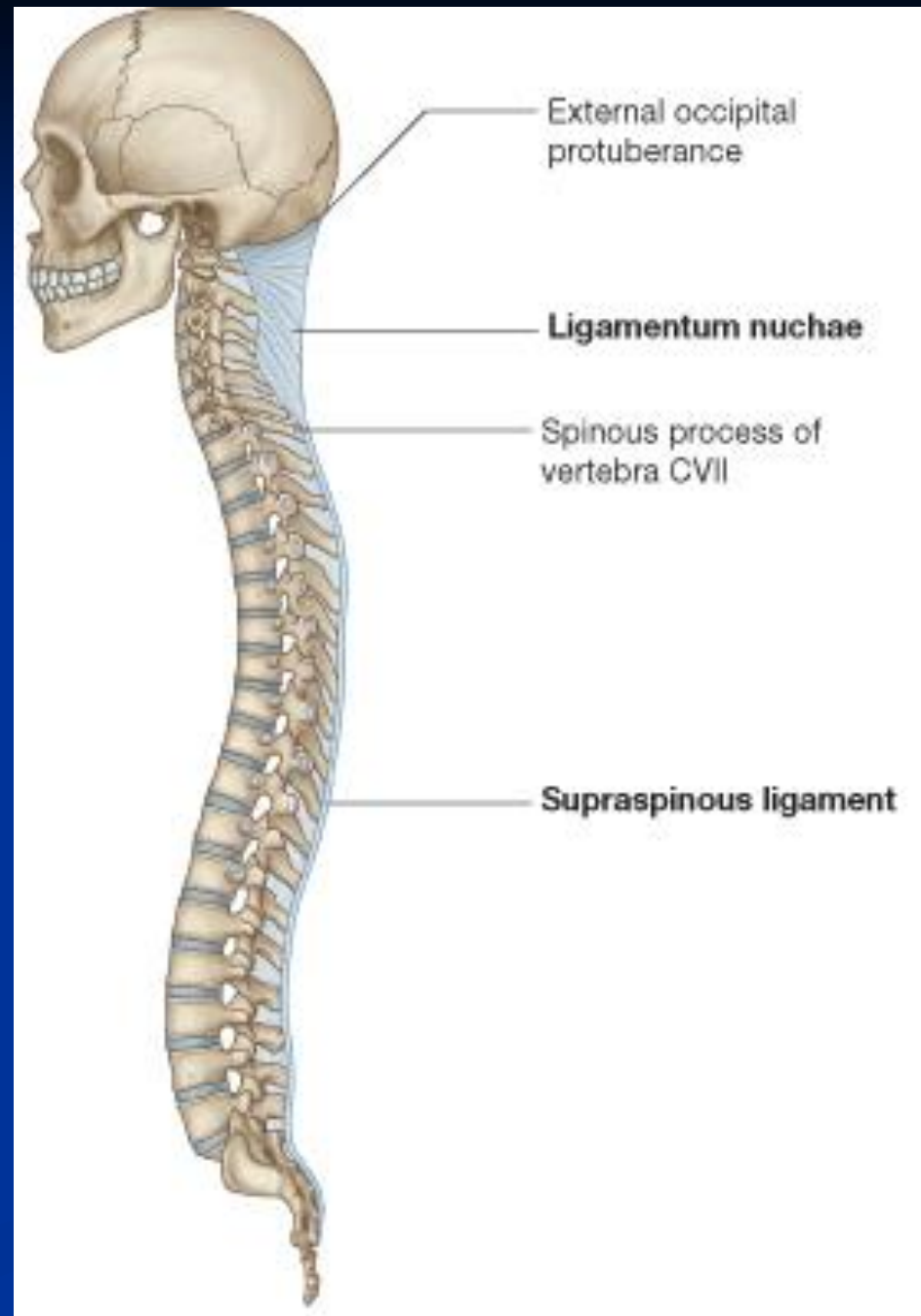
AXIS- C 2



- ❖ It acts as a **pivot** for the rotation of the atlas (and the skull) above.
- ❖ It has a large upright peg-like **odontoid process**, or **dens**, which projects upward from the superior surface of the body.
- ❖ Actually it **represents** the **body of the atlas** that has fused with the axis.

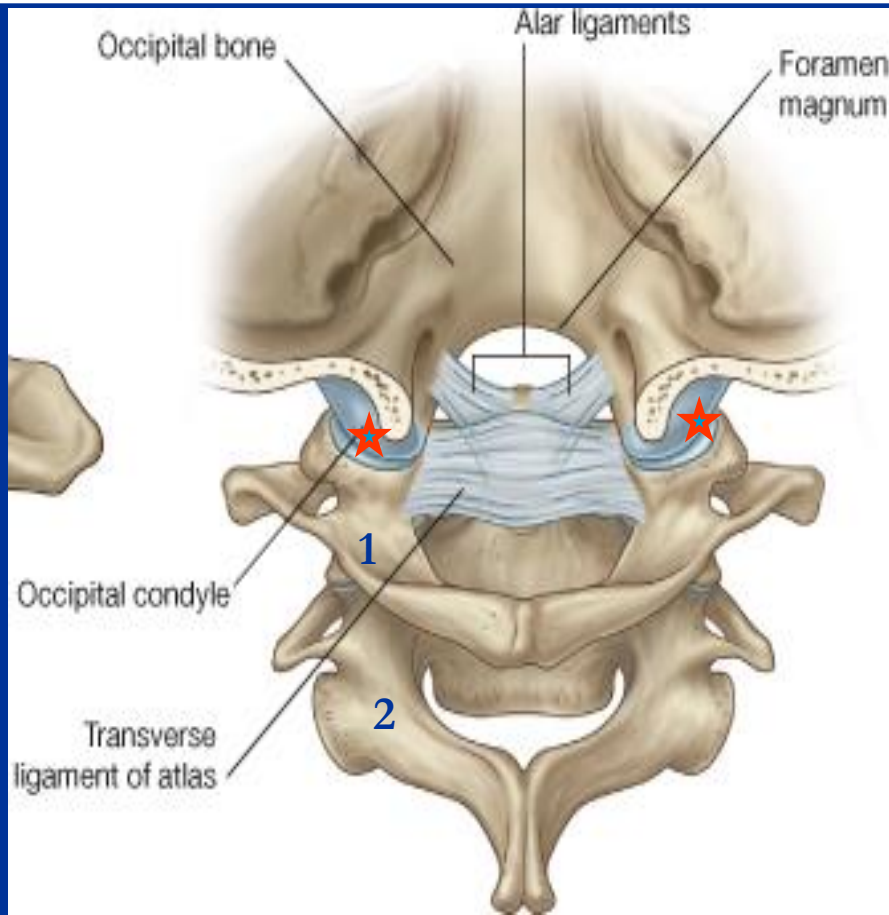
7th CERVICAL VERTEBRA OR Cervica Prominens

- ❖ It has the **longest spinous process** which is **not bifid**.
- ❖ It is the **first spine** to be felt **subcutaneously** in the root of back of neck.
- ❖ The **transverse process** is large while its **foramen transversarium** is small and may be absent, and **does not transmit the vertebral artery**.

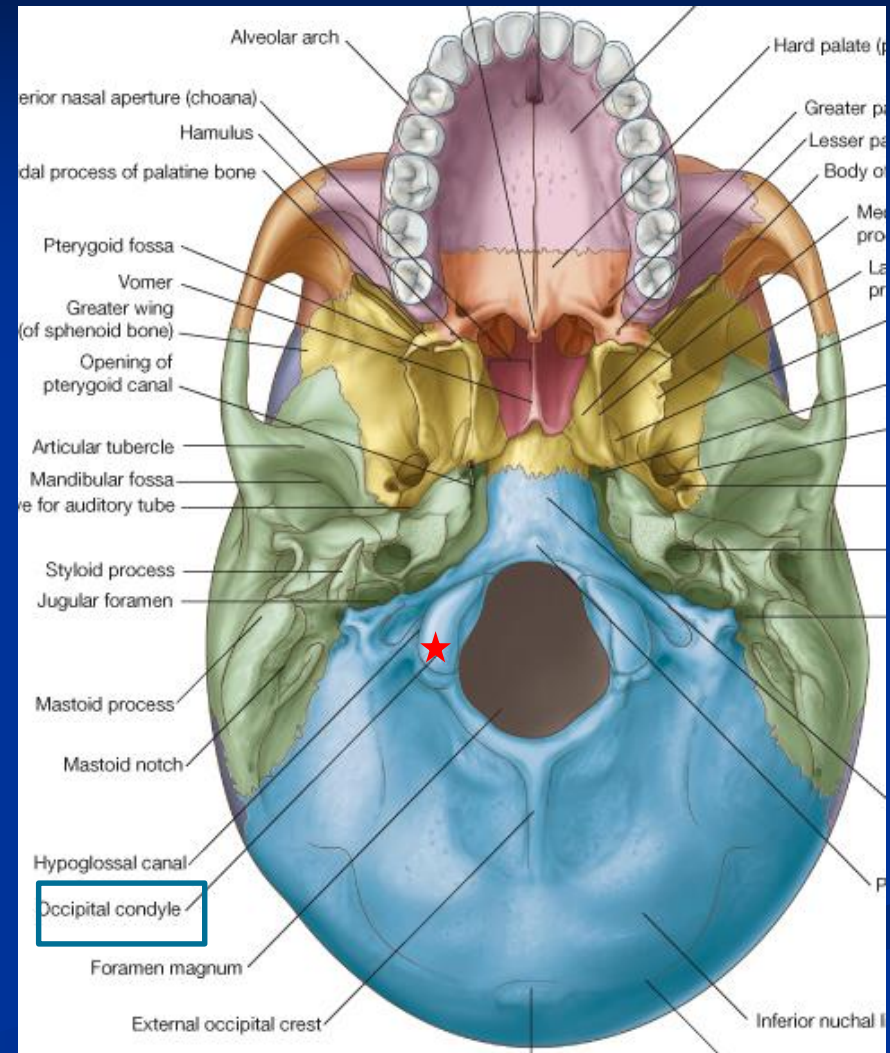


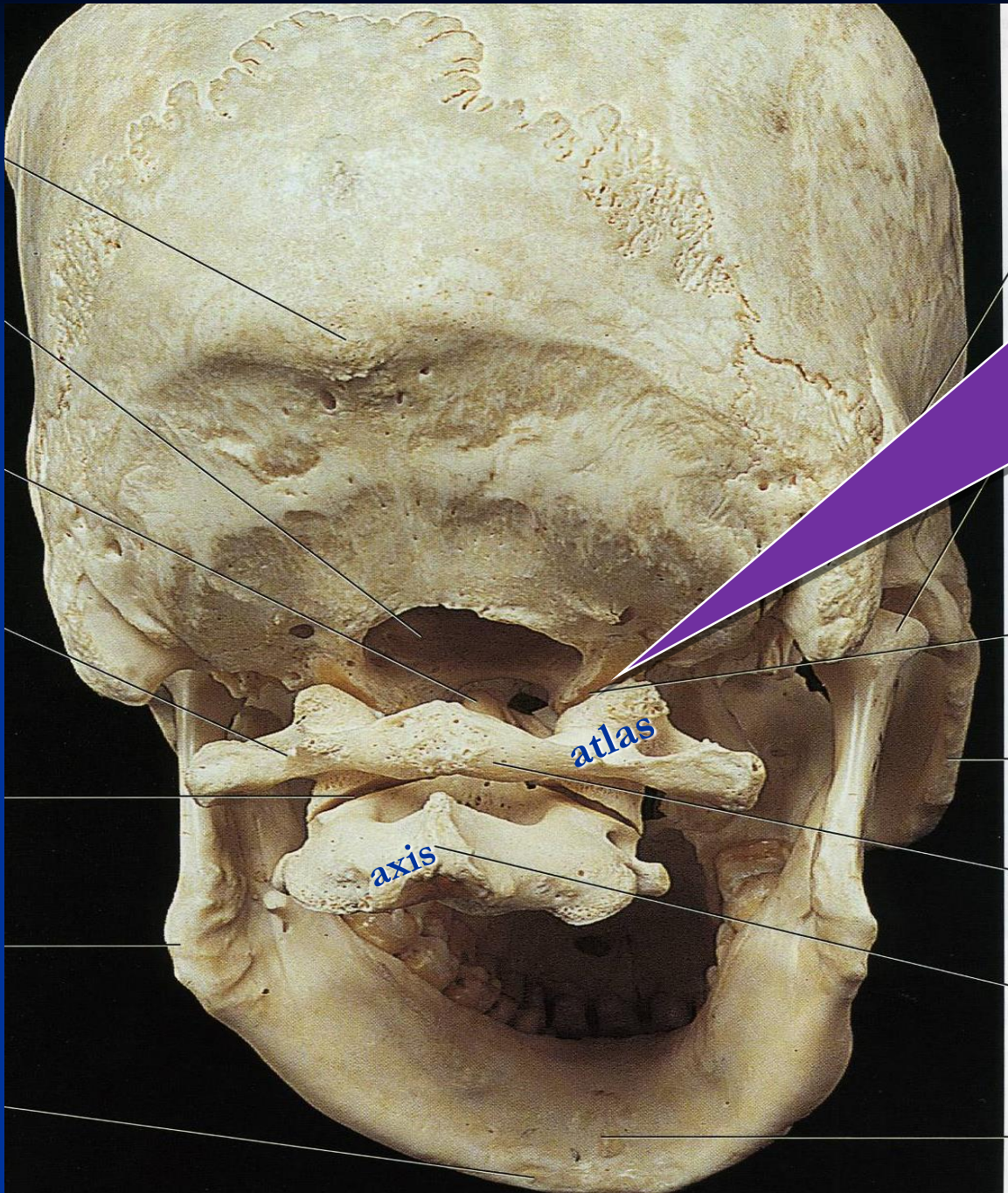
Atlanto-Occipital Joints

- Synovial joints between the occipital condyles of skull and upper facets on the lateral mass of the atlas.



Joints of Cervical Vertebrae





The **Atlanto-occipital joints** are **synovial joints** between the **occipital condyles**, and the **superior facets** of the **lateral masses** of the **atlas** below.

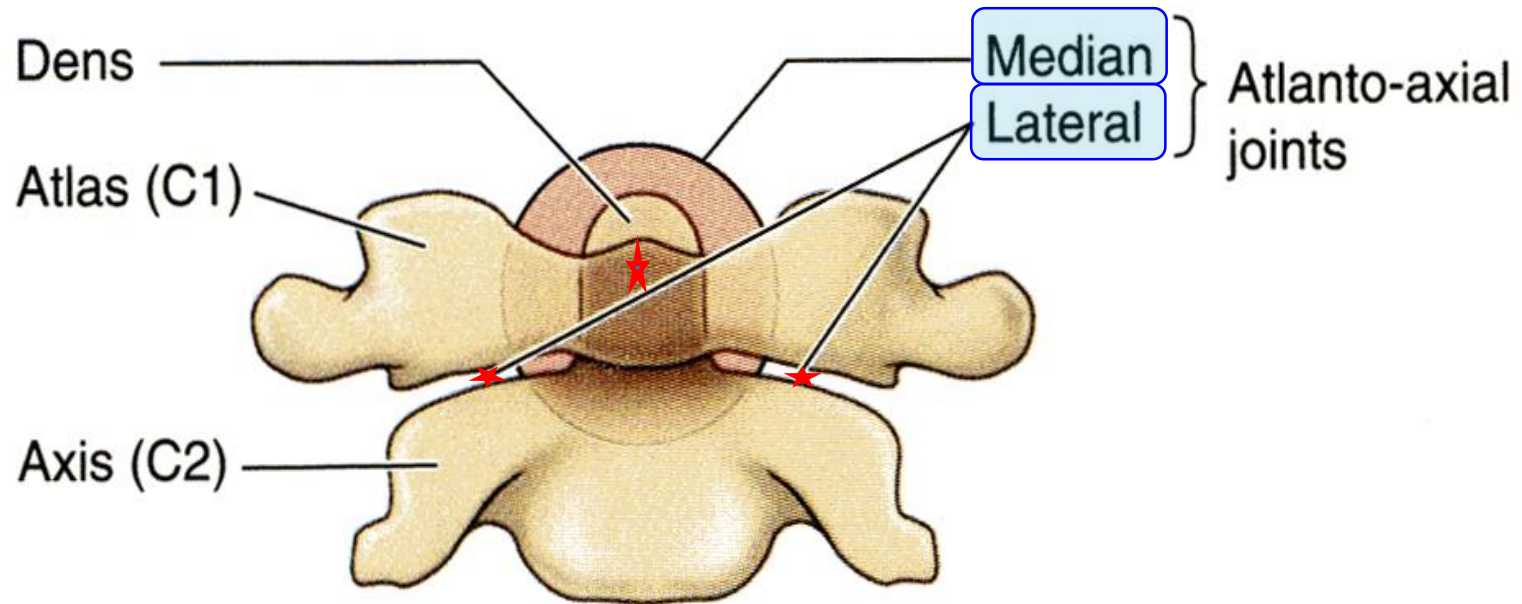
MOVEMENTS IN THE ATLANTO-OCCIPITAL JOINT

The joints are capable of:

- Flexion,
- Extension, and
- Lateral flexion;
- *They do not rotate.*



ATLANTO-AXIAL JOINTS



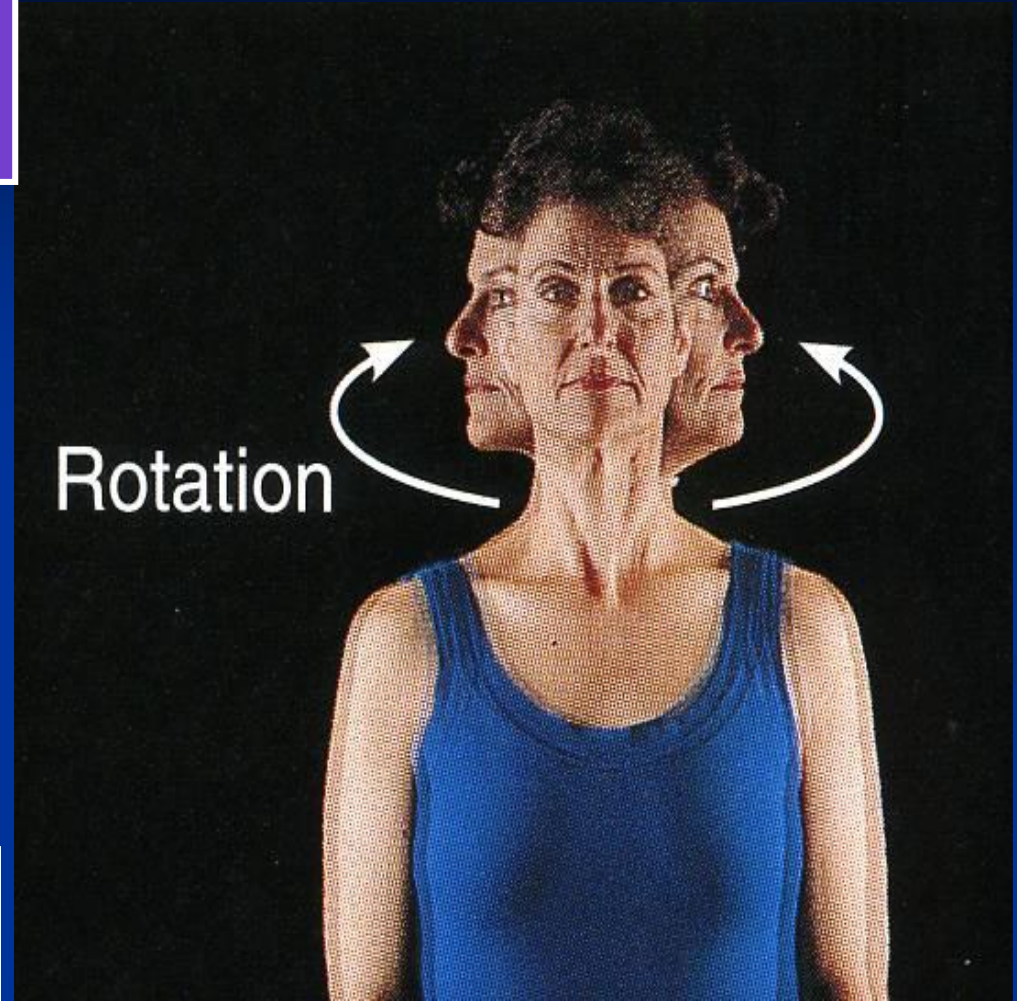
The Atlanto-axial joints are *Three Synovial Joints:*

- **One median**, between the odontoid process and the anterior arch of the atlas.
- the **other two** are between the inferior facet of lateral masses of the atlas and superior facets of the axis.

MOVEMENTS IN THE ATLANTO-AXIAL JOINT

❖ There can be **extensive rotation** of the **atlas** and the **skull** (and thus of the head on the **axis**).

N.B Atlanto-axial joint allows you to “**Say No** “ **lateral rotation** of the face.

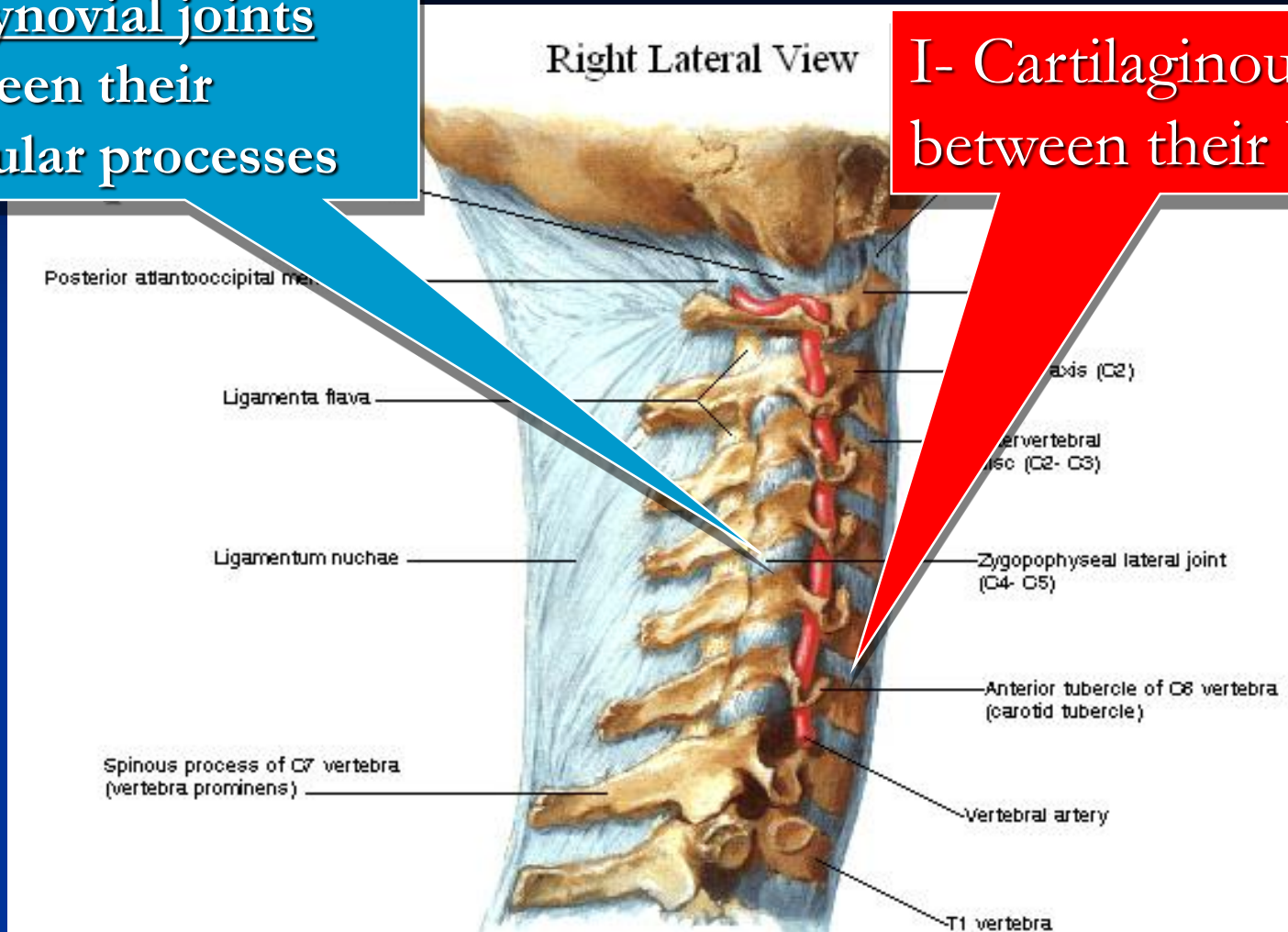


**JOINTS OF THE
VERTEBRAL COLUMN
BELOW THE AXIS**

**JOINTS BETWEEN
TWO VERTEBRAL
BODIES**

II- Synovial joints
between their
articular processes

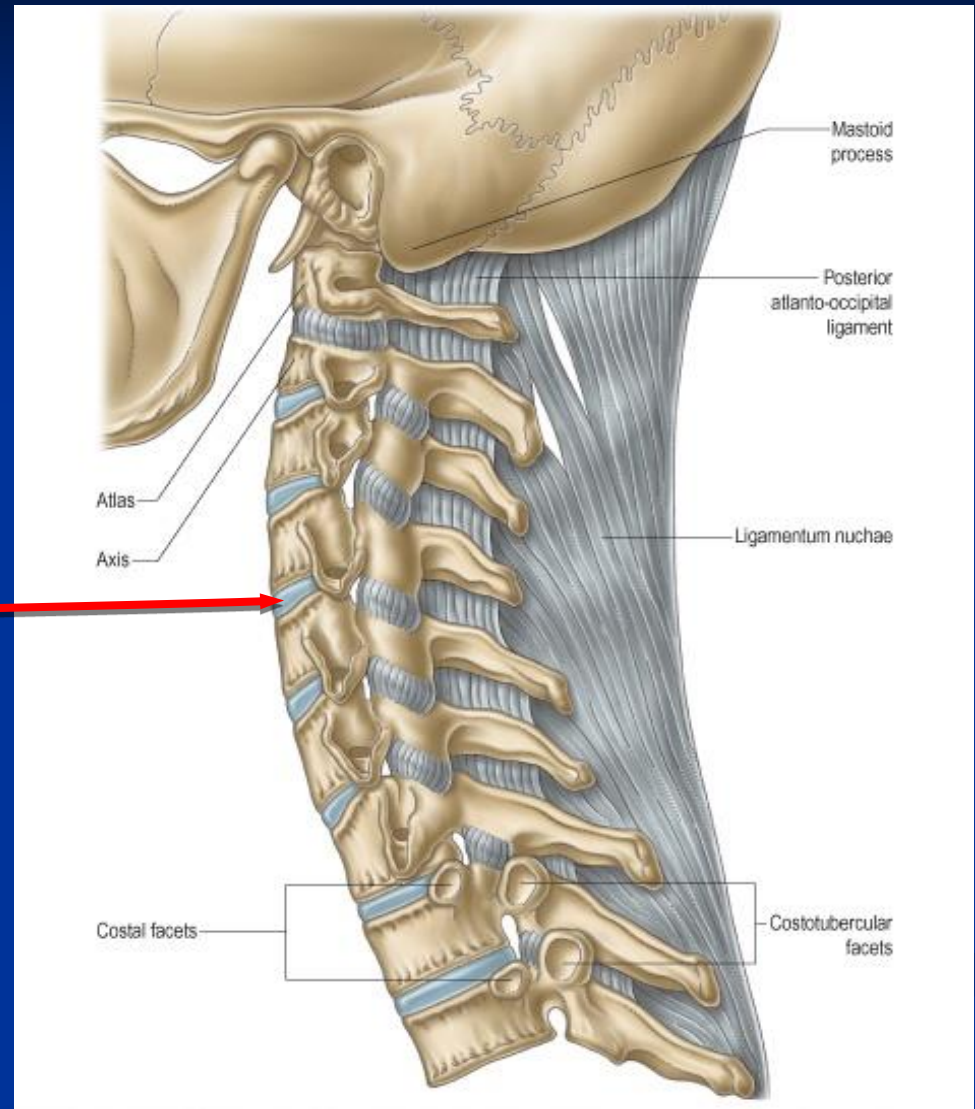
I- Cartilaginous joints
between their bodies .



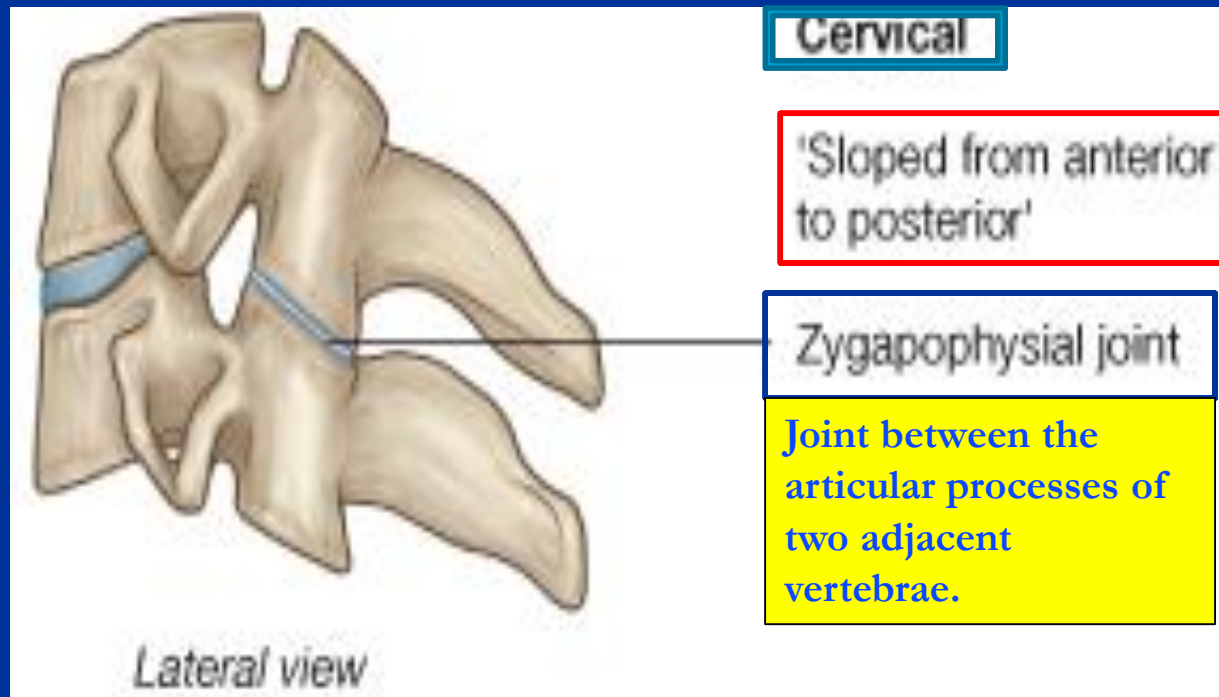
With exception of the first two cervical vertebrae, the other cervical vertebrae articulate with each other by means of :

I- Intervertebral disc

- The upper and lower surfaces of the bodies of 2 adjacent vertebrae are covered by thin plates of **hyaline cartilage**.
- Between the plates of hyaline cartilage is an **intervertebral disc** of ***fibrocartilage***.
- The collagen fibers of the disc strongly connect the bodies of the two vertebrae.

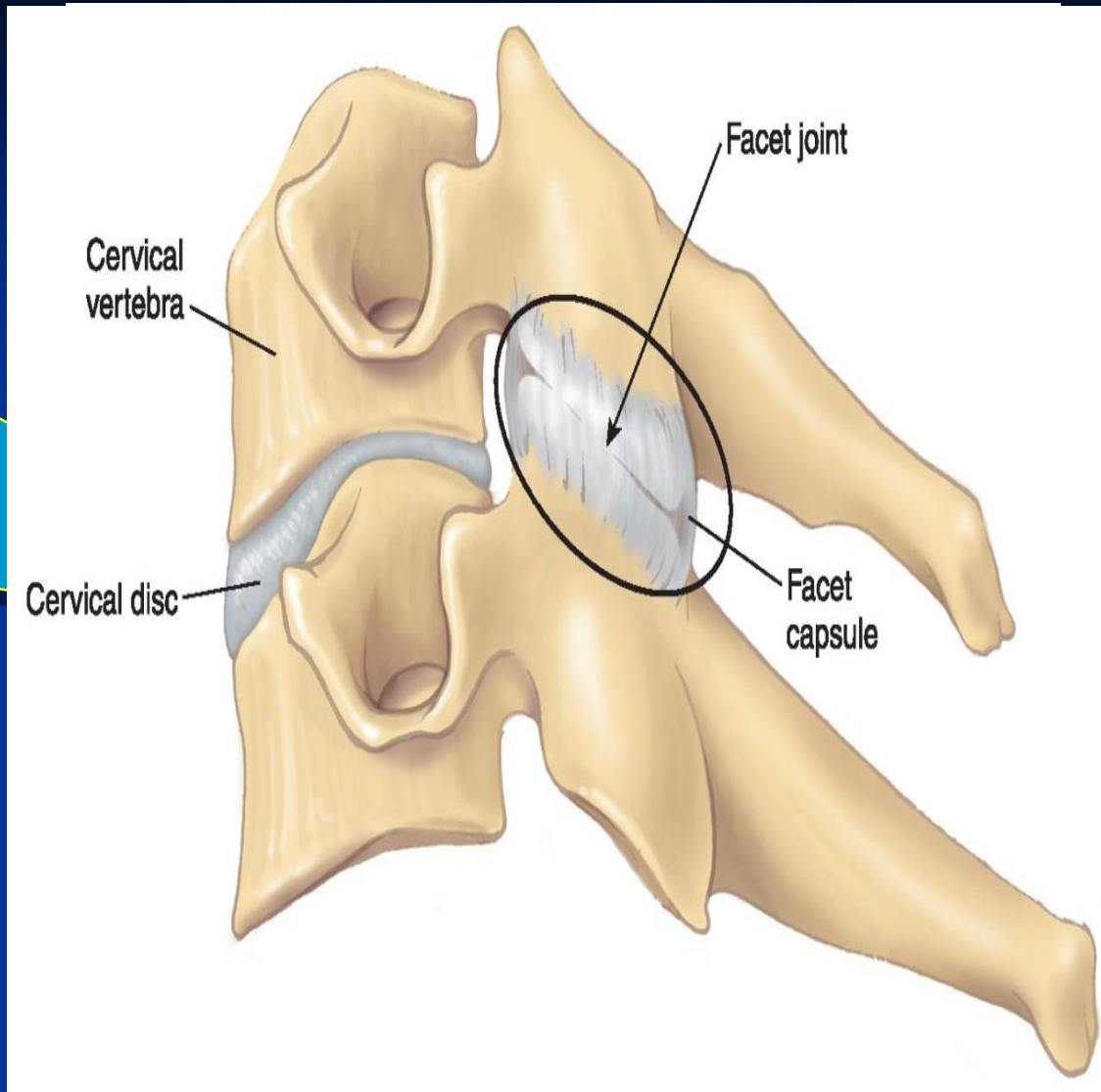


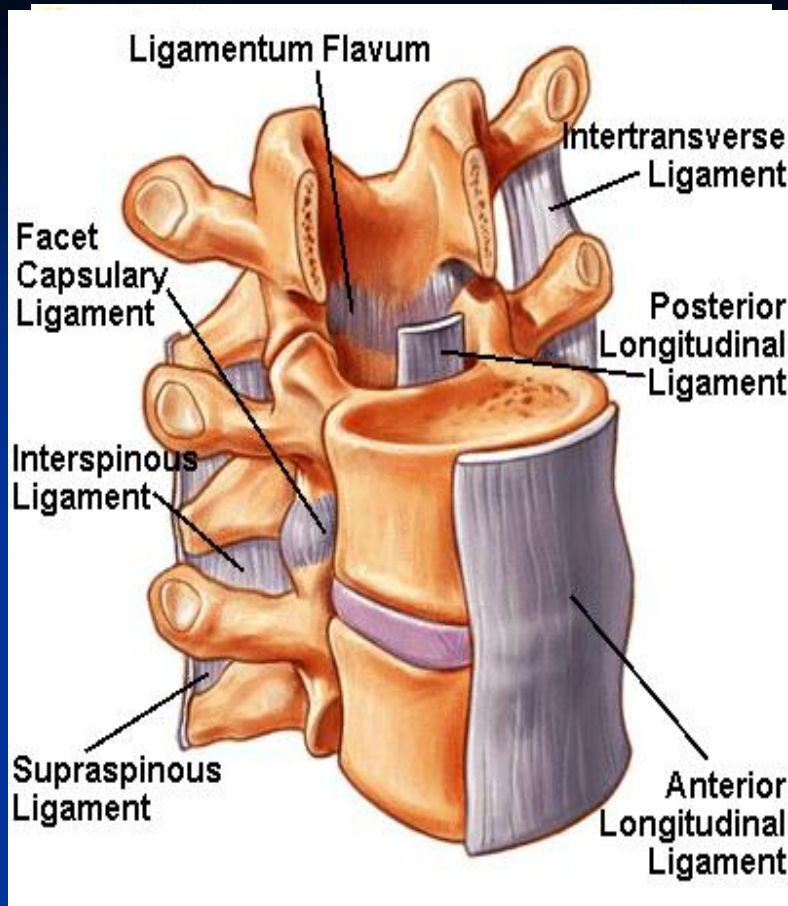
JOINTS BETWEEN TWO VERTEBRAL ARCHES



The joints between two **vertebral arches** consist of **synovial joints** between the **superior** and **inferior articular processes** of adjacent vertebrae.

The articular facets are covered with **hyaline cartilage**, and the joints are surrounded by a **capsule**.

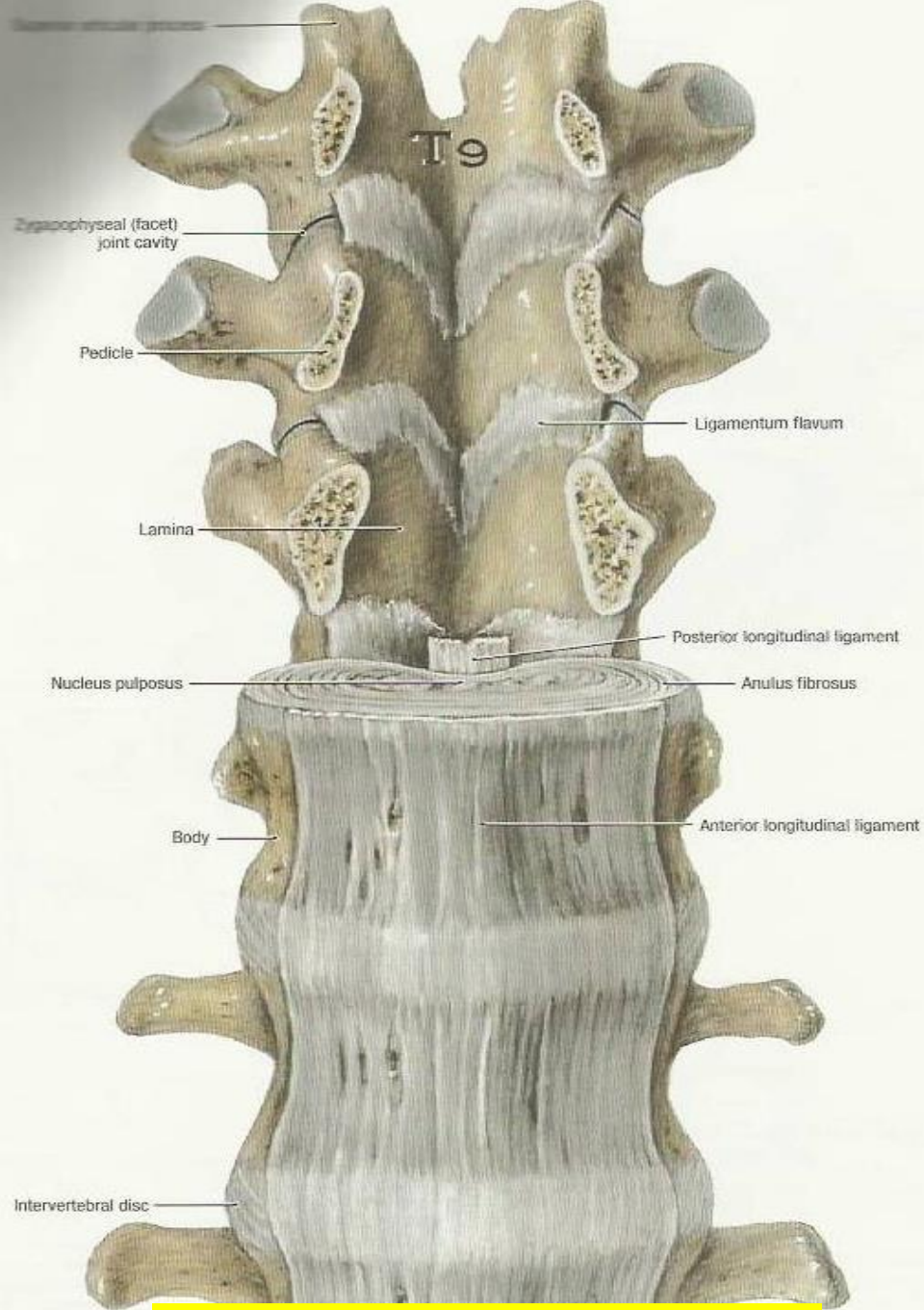




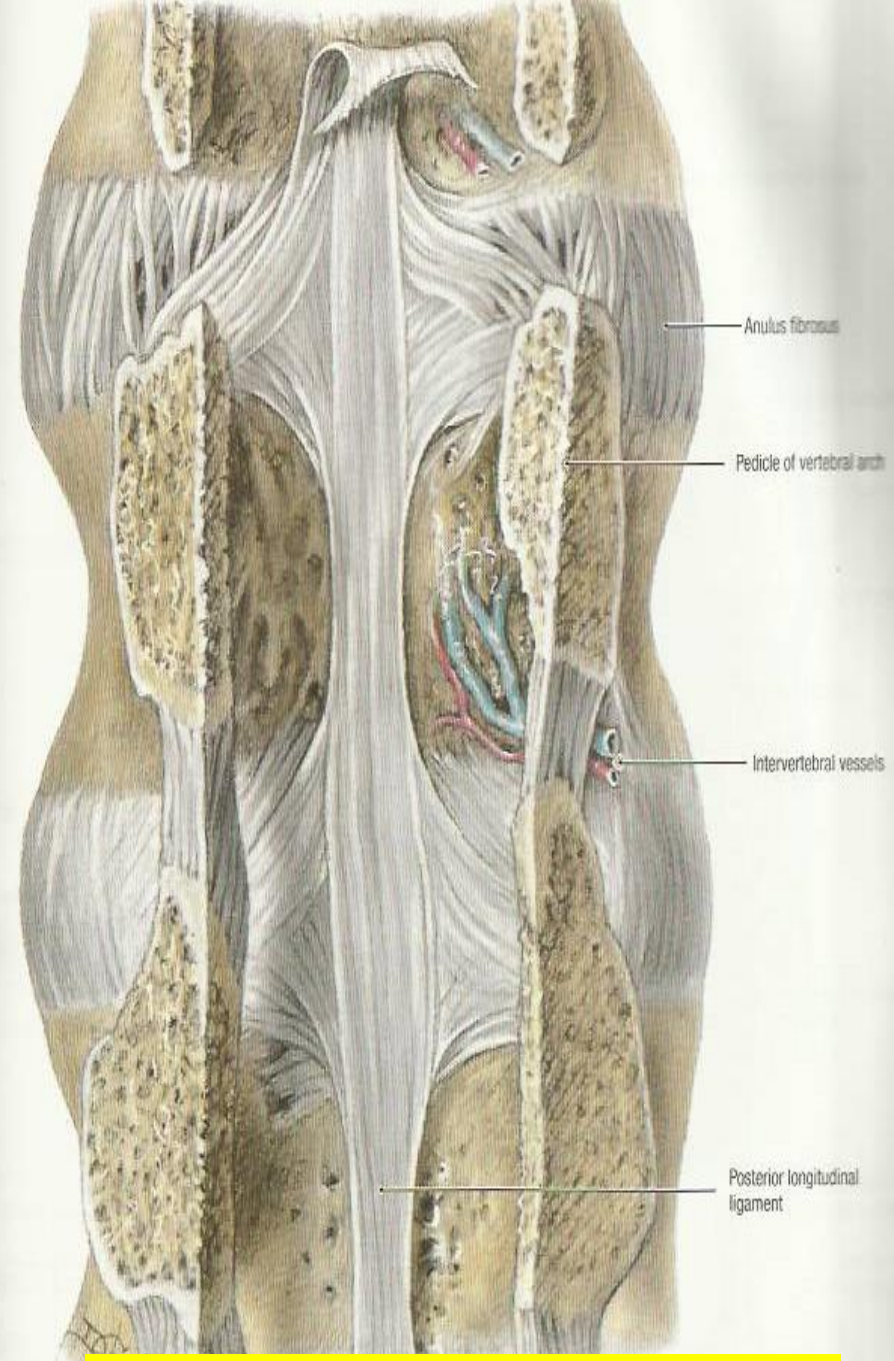
LIGAMENTS



- The anterior and posterior longitudinal ligaments run as continuous bands along the anterior & posterior surfaces of the vertebral bodies.
- These ligaments hold the vertebrae firmly together but at the same time permit a small amount of movement to take place.



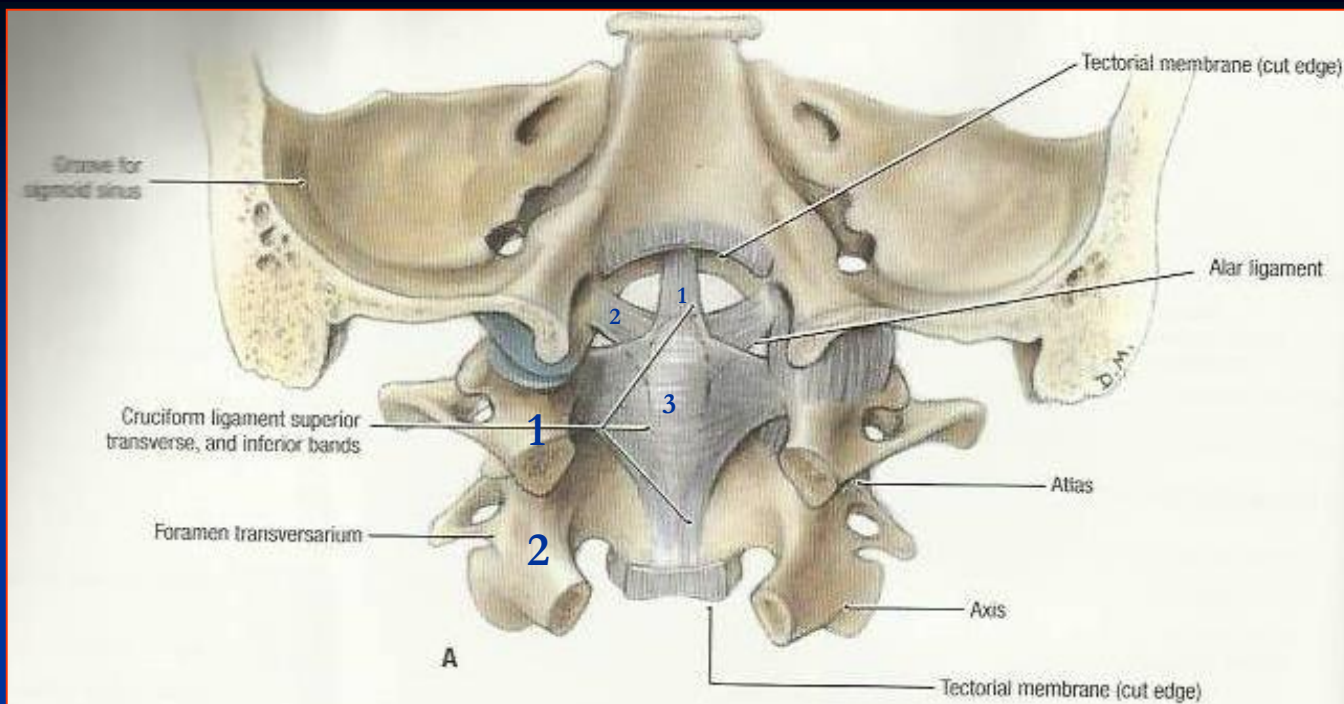
Anterior Longitudinal Ligament



Posterior Longitudinal Ligament

A

B



- **Apical ligament** : median ligament connects apex of odontoid process to foramen magnum (it is undercover of cruciate ligament).
- **Alar ligaments** : these lie on each side of apical ligament and connect odontoid process to medial side of occipital condyles.
- **Cruciate ligament** : consists of a transverse part & a vertical part/**vertical** (between body of axis and foramen magnum)/**transverse** (binds odontoid process to anterior arch of atlas).

OTHER LIGAMENTS

Supraspinous ligament:

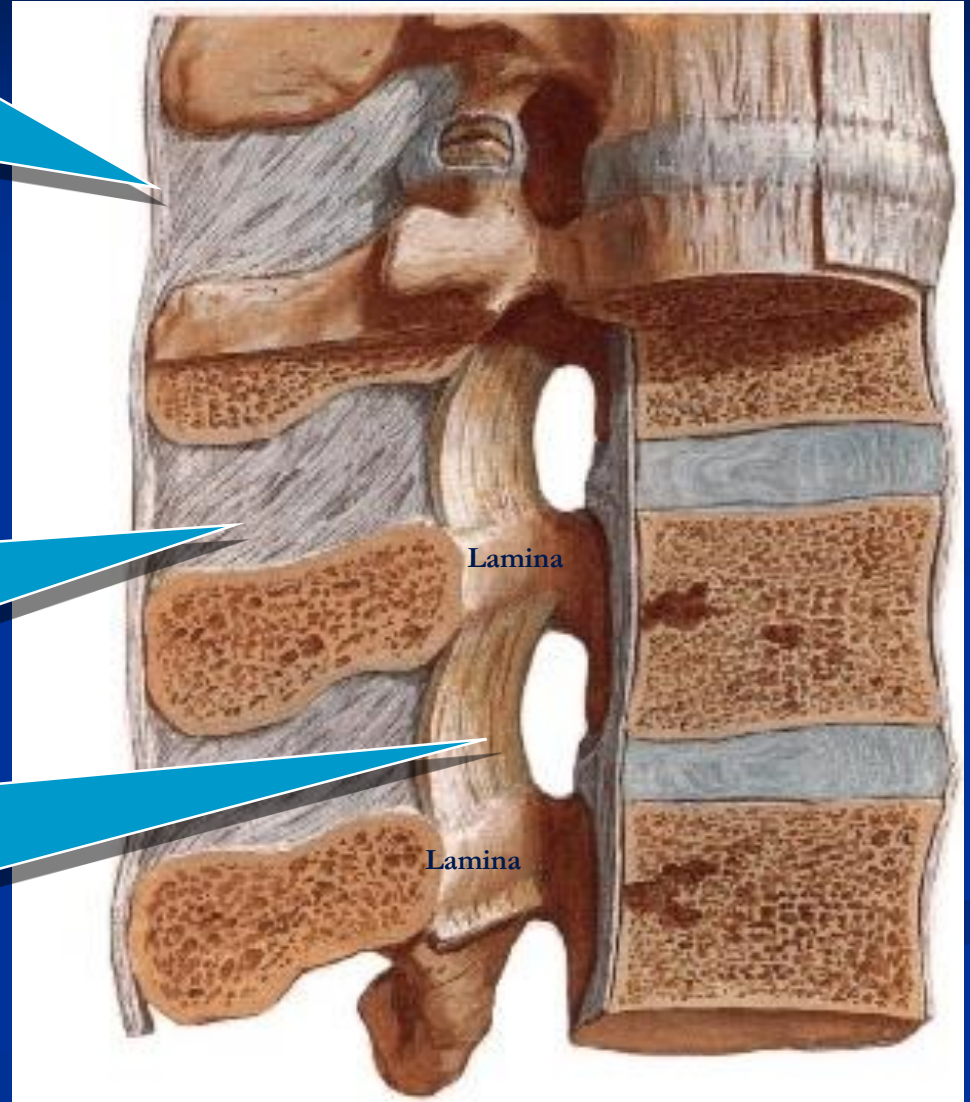
It runs between the **tips** of **adjacent spines**.

Interspinous ligament:

It connects **adjacent spines**.

Ligamentum flavum:

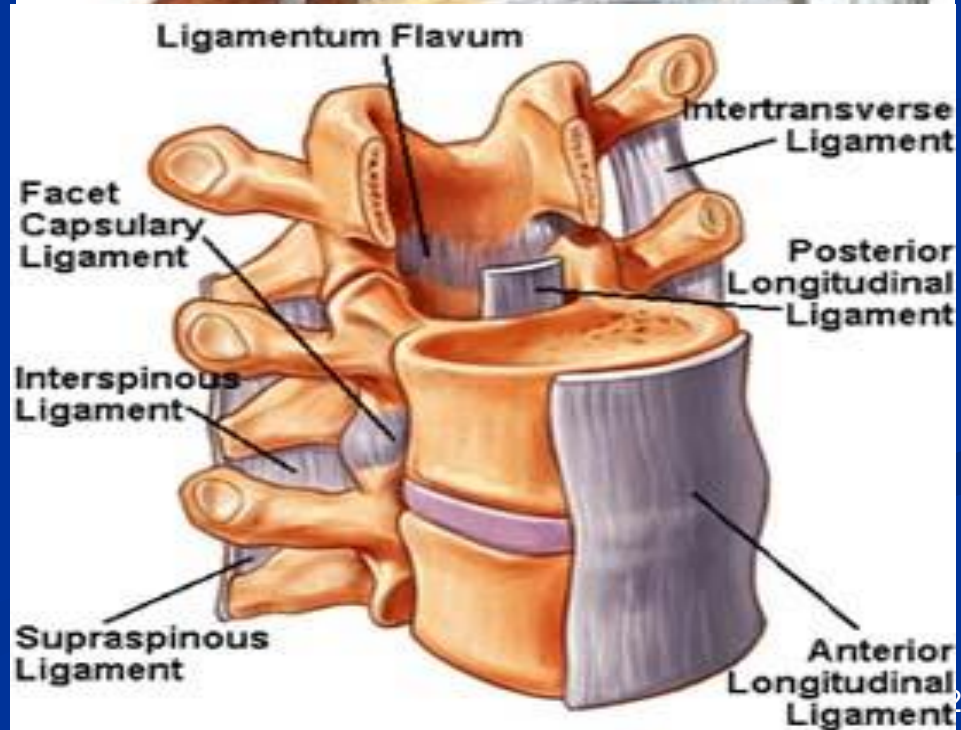
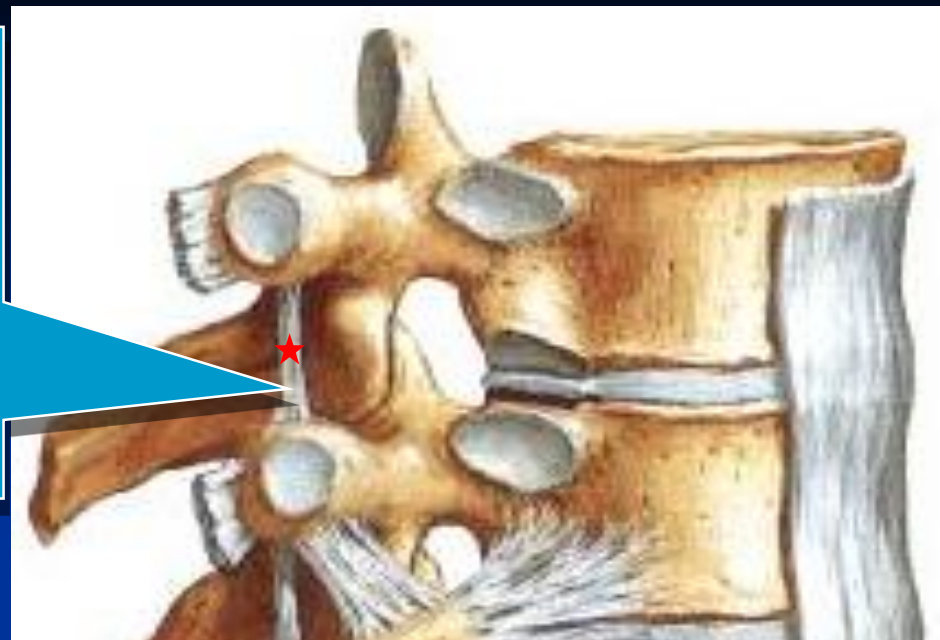
It connects the **laminae** of adjacent vertebrae.



Intertransverse

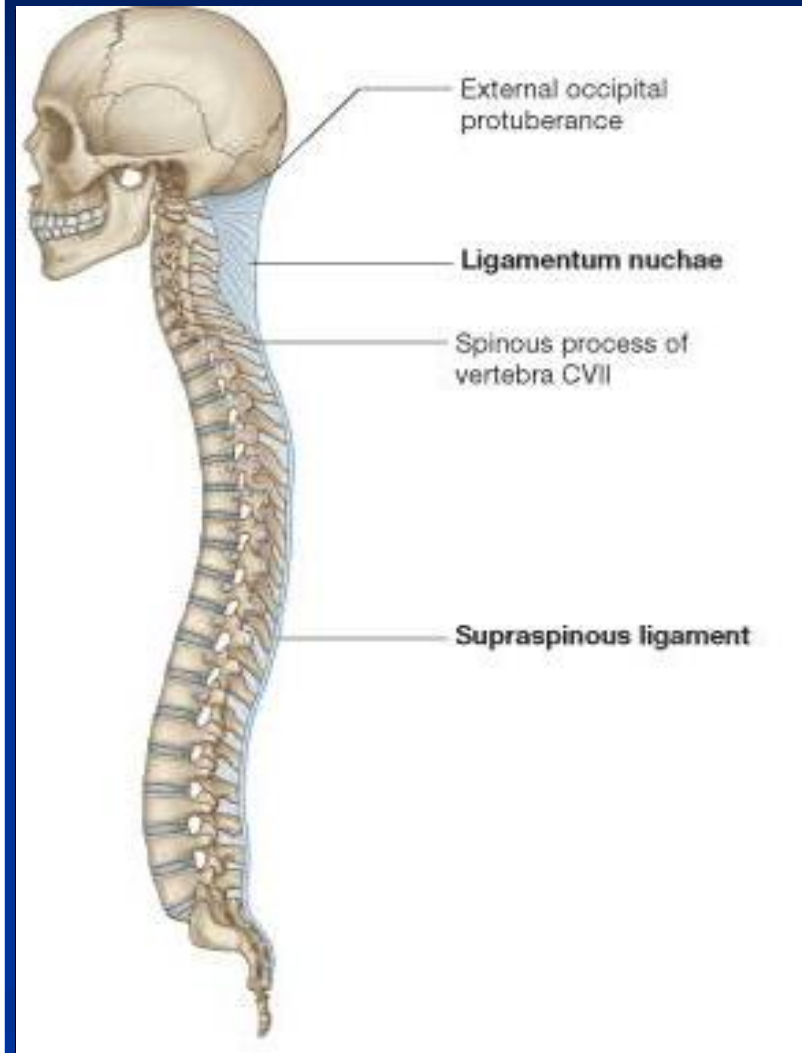
ligaments:

They run between
adjacent **transverse**
processes.



LIGAMENTUM NUCHAE

- In the cervical region, the Supraspinous and Interspinous ligaments are greatly thickened to form the strong **ligamentum nuchae**.
- It extends from the spine of the seventh cervical vertebra to the external occipital protuberance of the skull, with its anterior border being strongly attached to the cervical spines.



THANK YOU