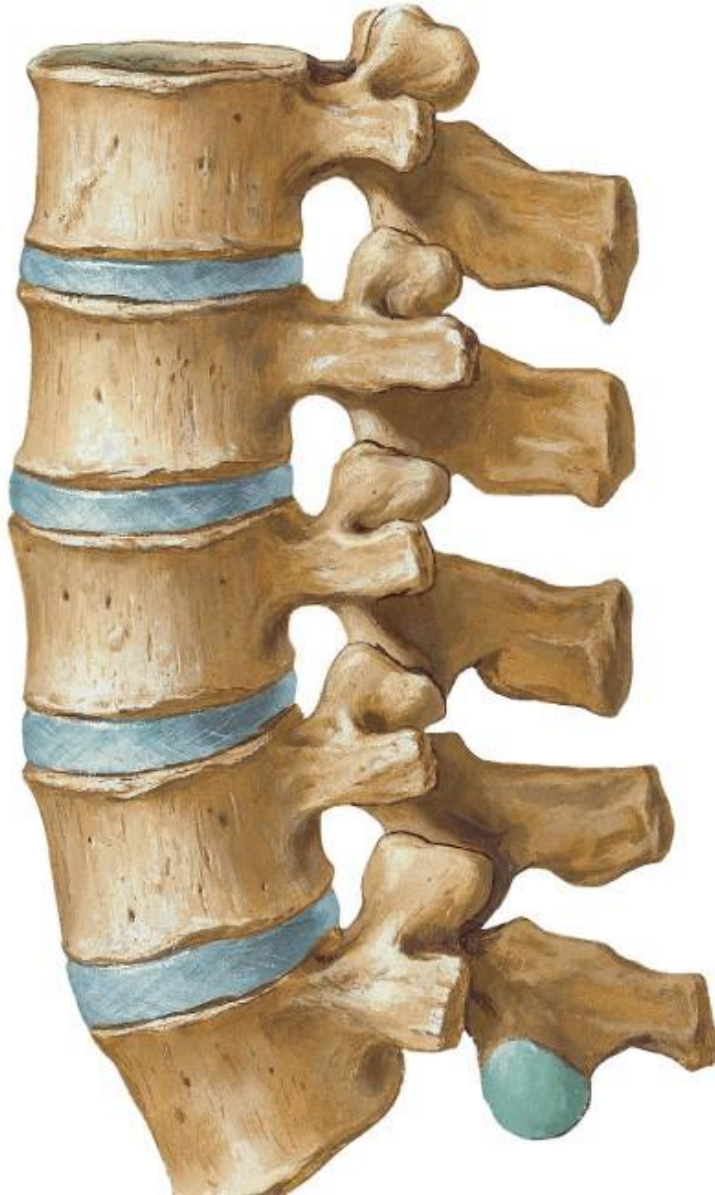


VERTEBRAL COLUMN



BY

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STRUCTURE

VERTEBRAE

7 cervical

12 thoracic

5 lumbar

5 sacral

3±1 coccygeal

INTERVERTEBRAL DISCS

each disc is formed of 2 parts

Annulus fibrosus

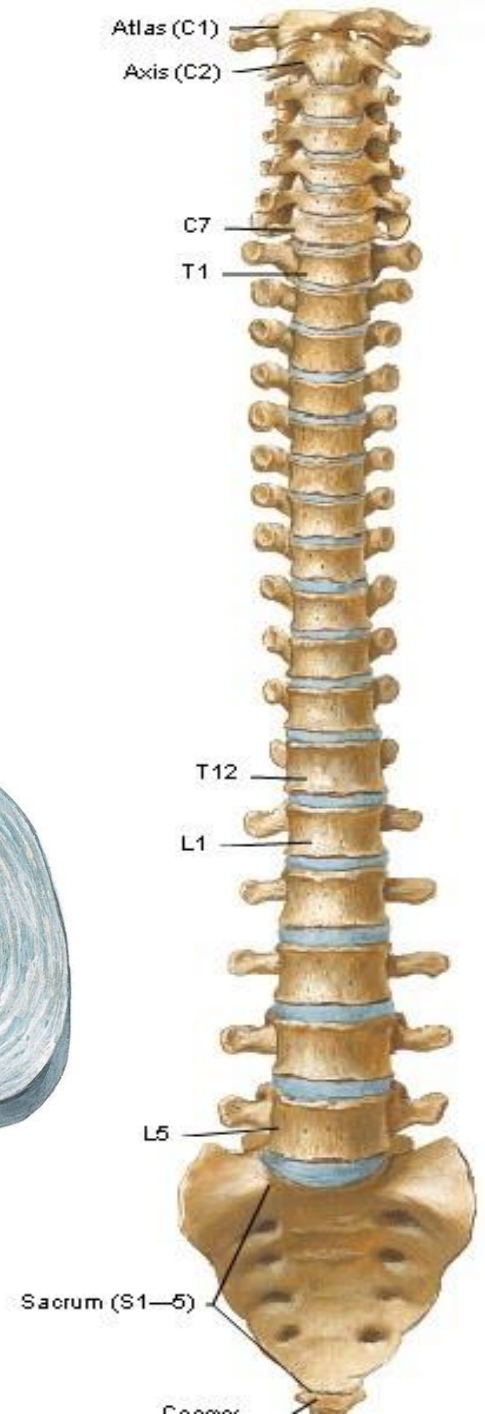
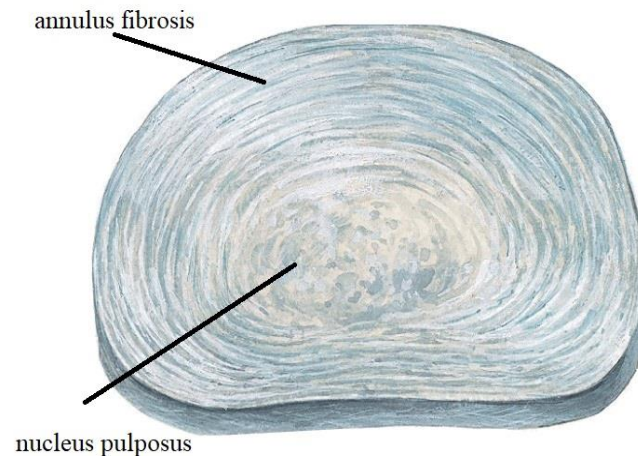
a fibrous ring

in the periphery of the disc

Nucleus pulposus

a gelatinous material

in the center of the disc to absorb shocks



PARTS OF VERTEBRA

A-Body:

B- 2 vertebral (neural)arches:

each arch is formed of

Pedicle:

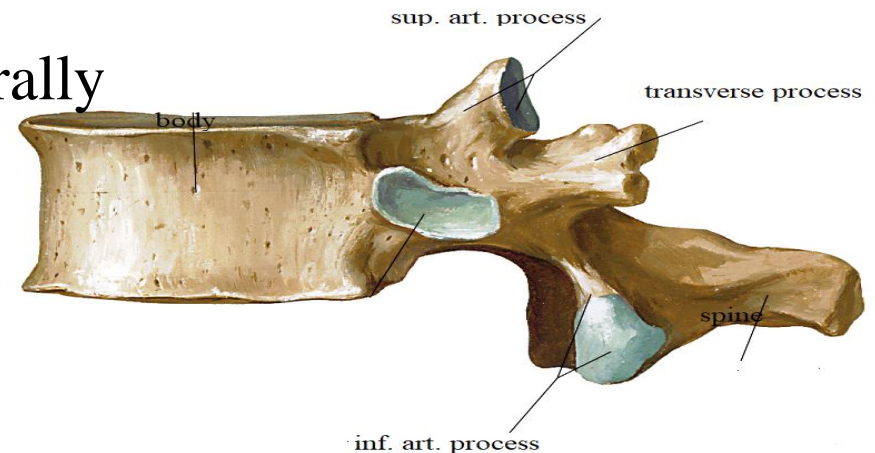
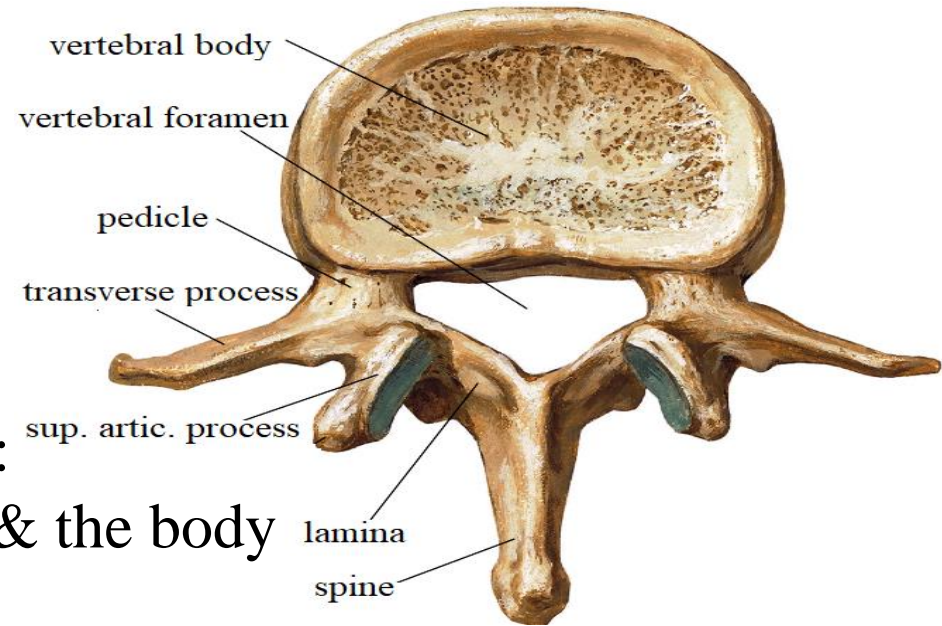
Lamina:

N.B.:- Vertebral foramen (or canal):
lies between the 2 vertebral arches & the body

C- 7 processes:

- **Spine:** directed posteriorly
- **2 transverse processes:** directed laterally
- **2 Superior articular processes:** articulate with the inferior articular process of the vertebra above
- **2 Inferior articular processes:**

articulate with the superior articular process of the vertebra below



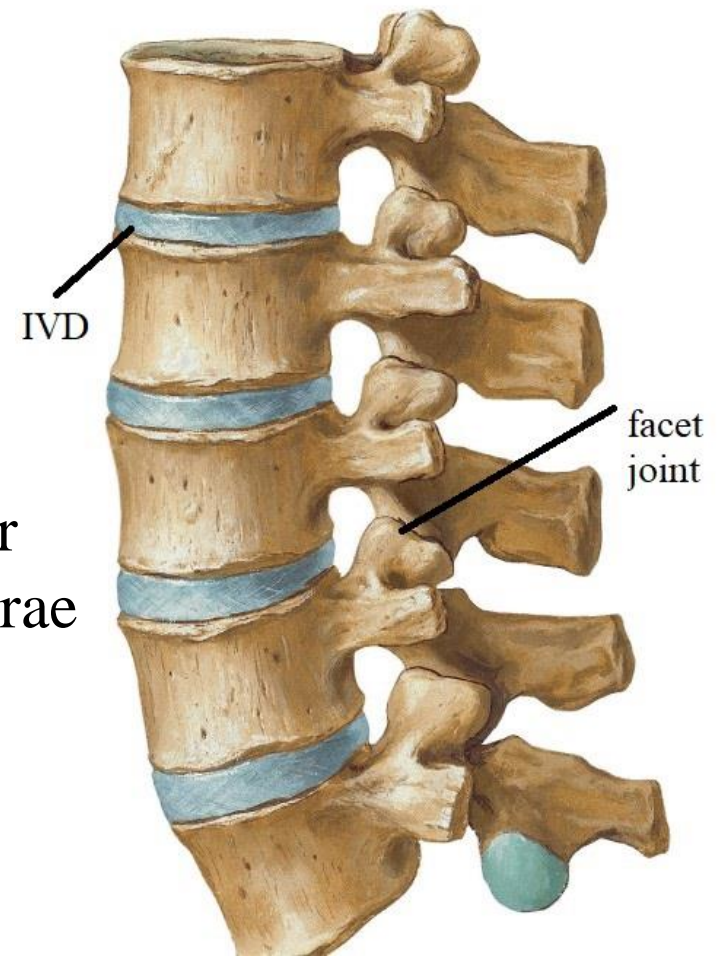
JOINTS OF VERTEBRA

Intervertebral disc

type & variety:- Secondary cartilaginous
between:- the 2 vertebral bodies

Facet joint

type & variety:- plane synovial
between:- The superior and inferior articular
processes of two adjacent vertebrae



LIGAMENTS OF VERTEBRA

Anterior longitudinal ligament

() the anterior surfaces of the vertebrae & IVD

Posterior longitudinal ligament

() the posterior surfaces of the vertebrae & IVD

Ligamentum flavum

() the laminae of the vertebrae

Intertransverse ligaments

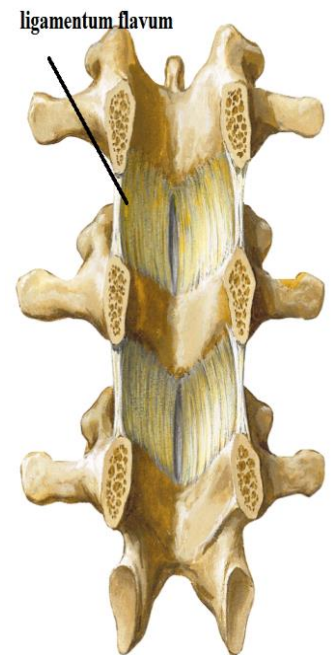
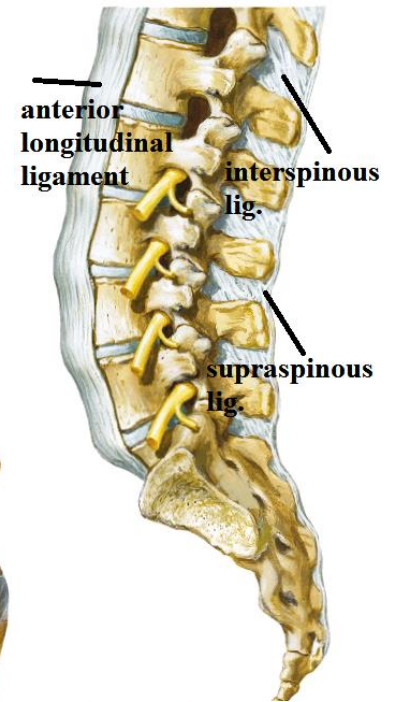
() the transverse processes of the vertebrae

Interspinous ligaments

() the spines the vertebrae

Supraspinous ligaments:

() the tips of vertebral spines



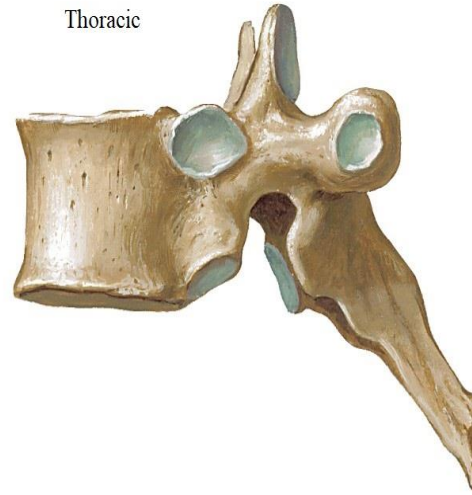
HOW TO IDENTIFY THE VERTEBRA

- If it has a **foramen in the transverse process** :
it is a cervical vertebra
- If **no foramen in the transverse process** with a **facet on the side of the body** of the vertebra :
it is thoracic vertebra
- **If no foramen in the transverse process** and **the body has no facet** :
it is lumbar vertebra.

Lumbar



Thoracic



cervical



CERVICAL VERTEBRAE

NO. 7

characters

- 1-presence of foramen transversarium
- 2-bifid spine

classified into

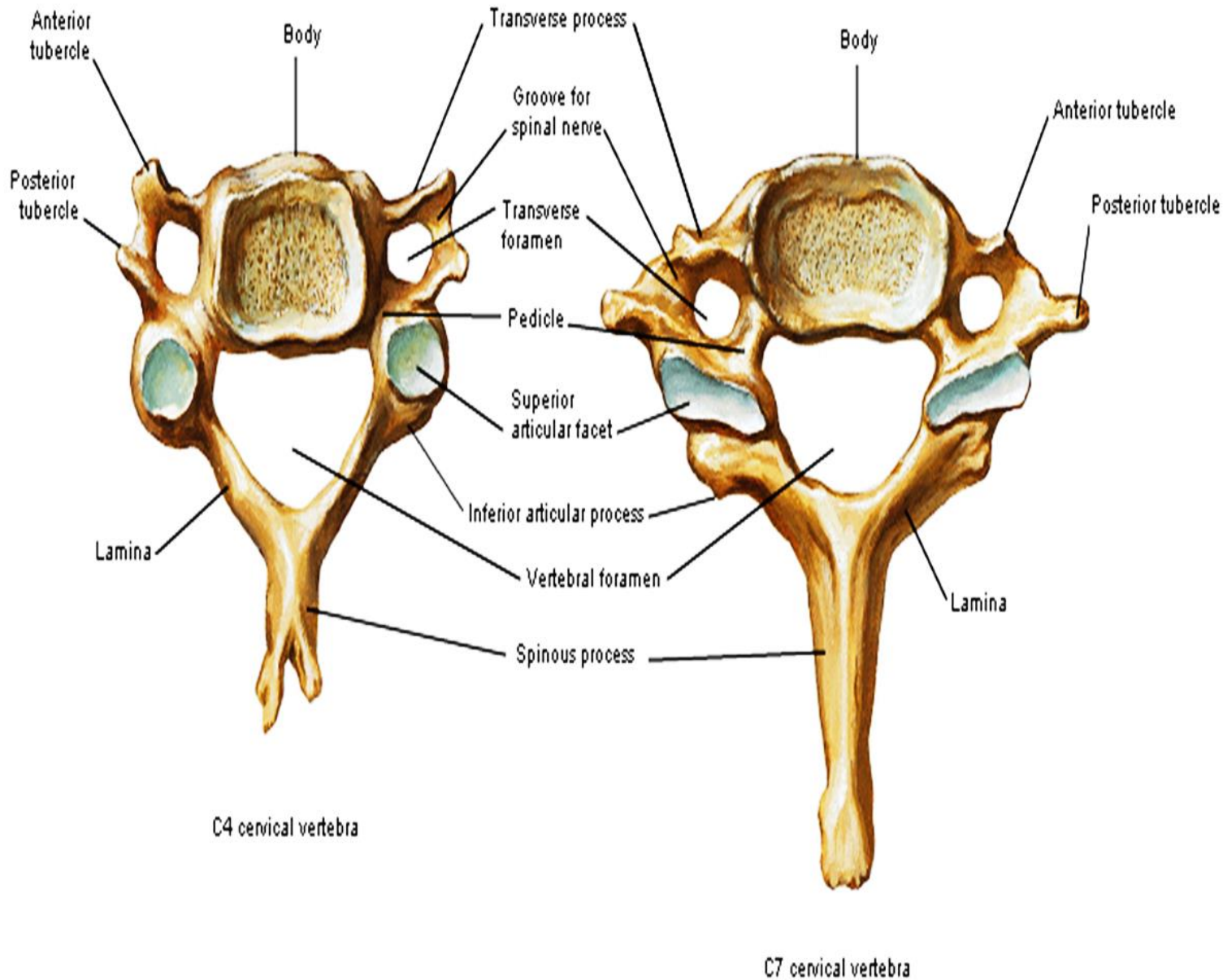
a- Typical 3-6.

b- atypical

1 (atlas)

2 (axis)

7 its spine is not bifid

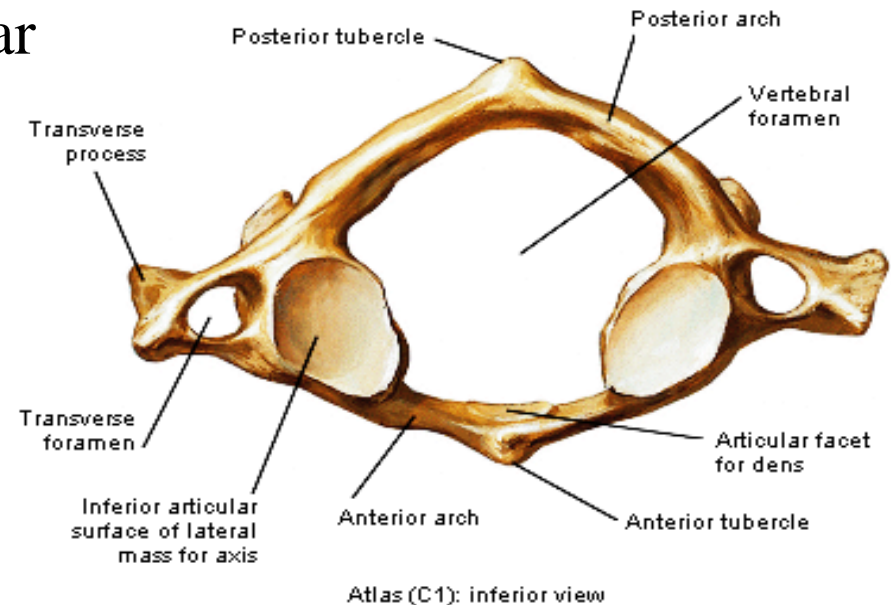
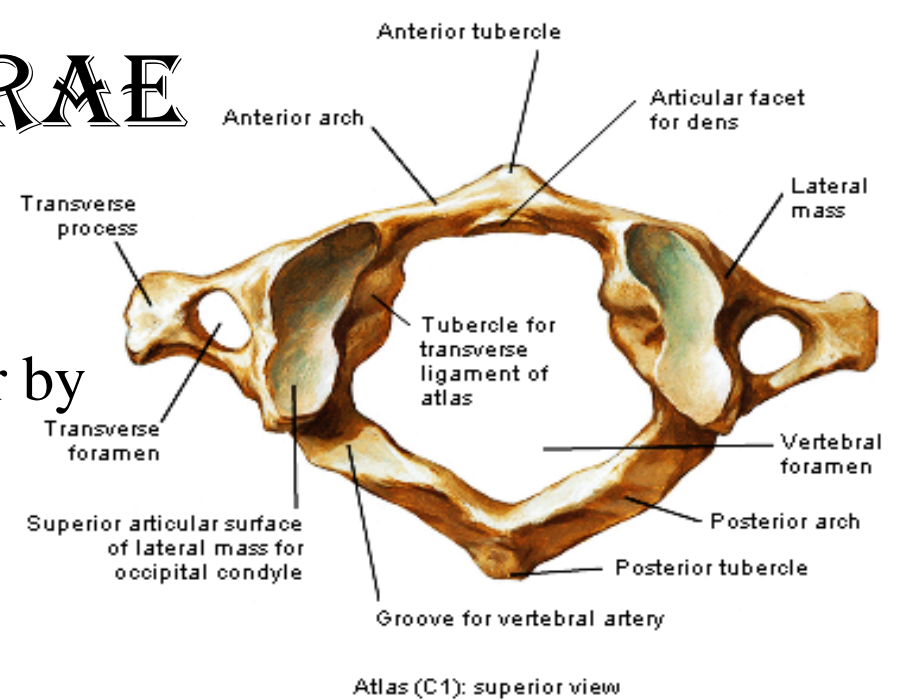


CERVICAL VERTEBRÆ

C1 ATLAS

-a bony ring formed of
2 lateral masses connected together by
short anterior arch and
a longer posterior arch.

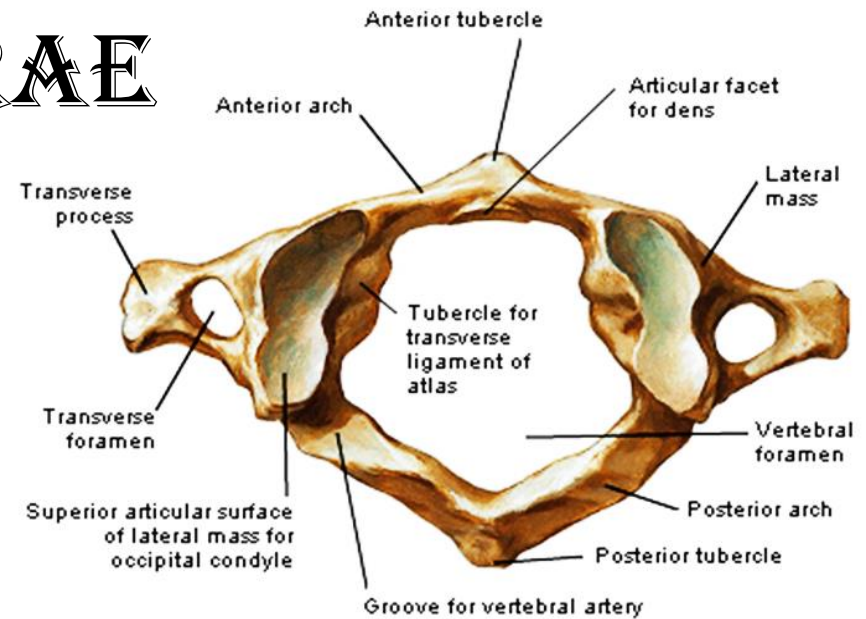
-the **2 Lateral mass** carries
a kidney-shaped superior articular facet
and a nearly circular inferior articular
facet



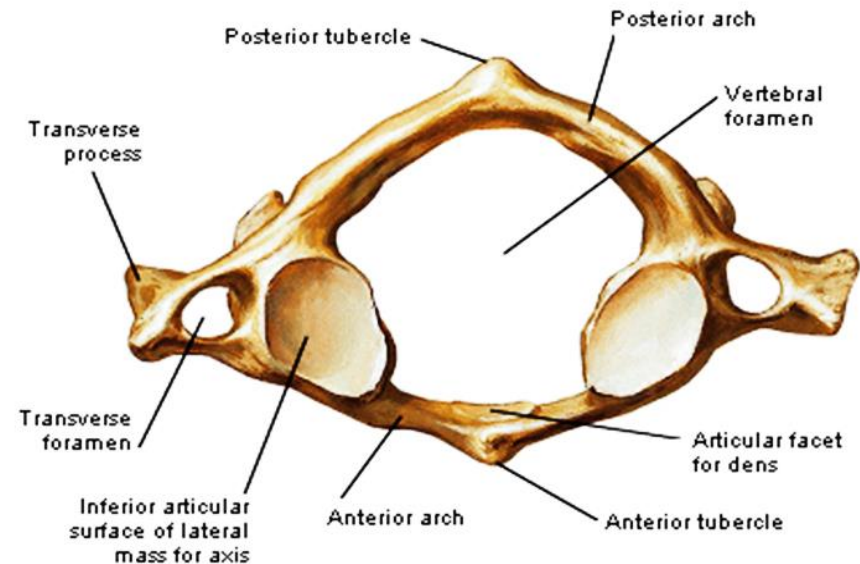
CERVICAL VERTEBRAE

C1 ATLAS

- The medial side of each lateral mass presents a tubercle for attachment of the transverse ligament of the atlas.
- **The anterior arch** carries an anterior tubercle.
- **Posterior arch** shows a posterior tubercle



Atlas (C1): superior view



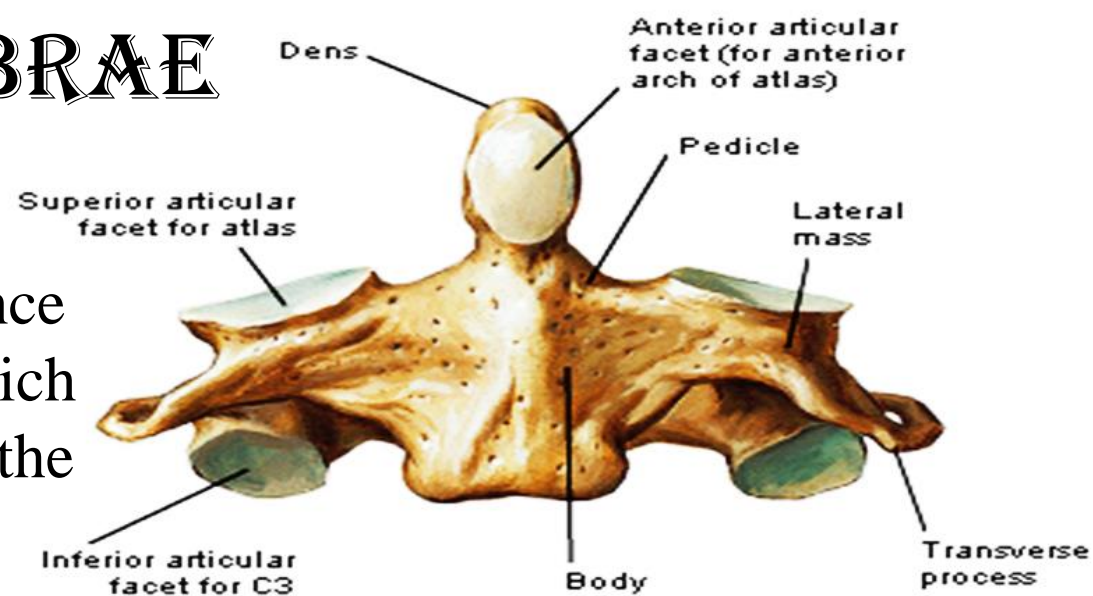
Atlas (C1): inferior view

CERVICAL VERTEBRAE

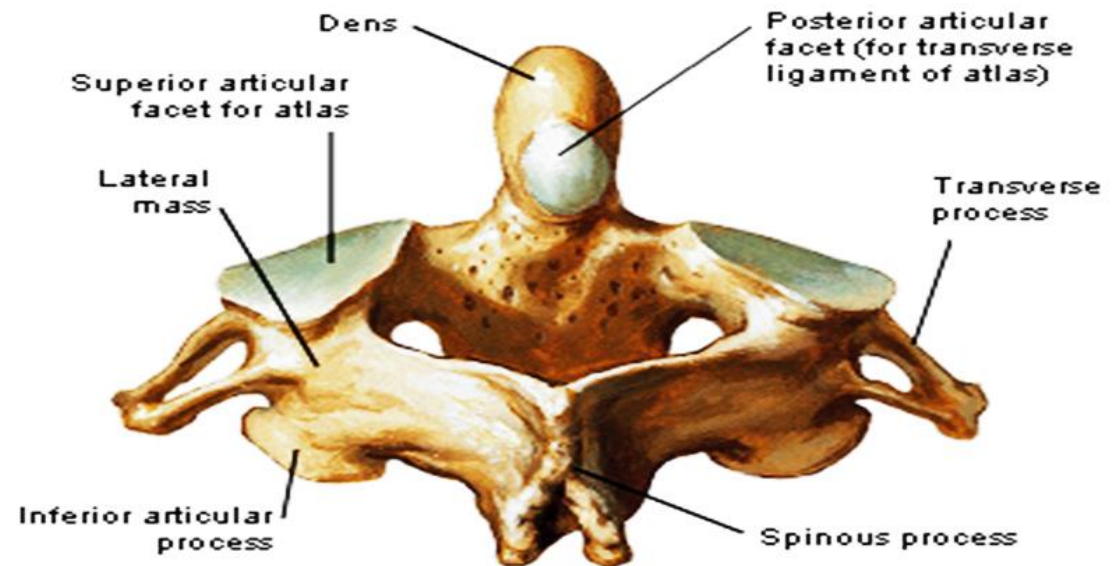
C2 AXIS

It is characterized by the presence of dens or odontoid process which projects from the upper part of the body.

The dens is grooved posteriorly by transverse ligament of atlas.

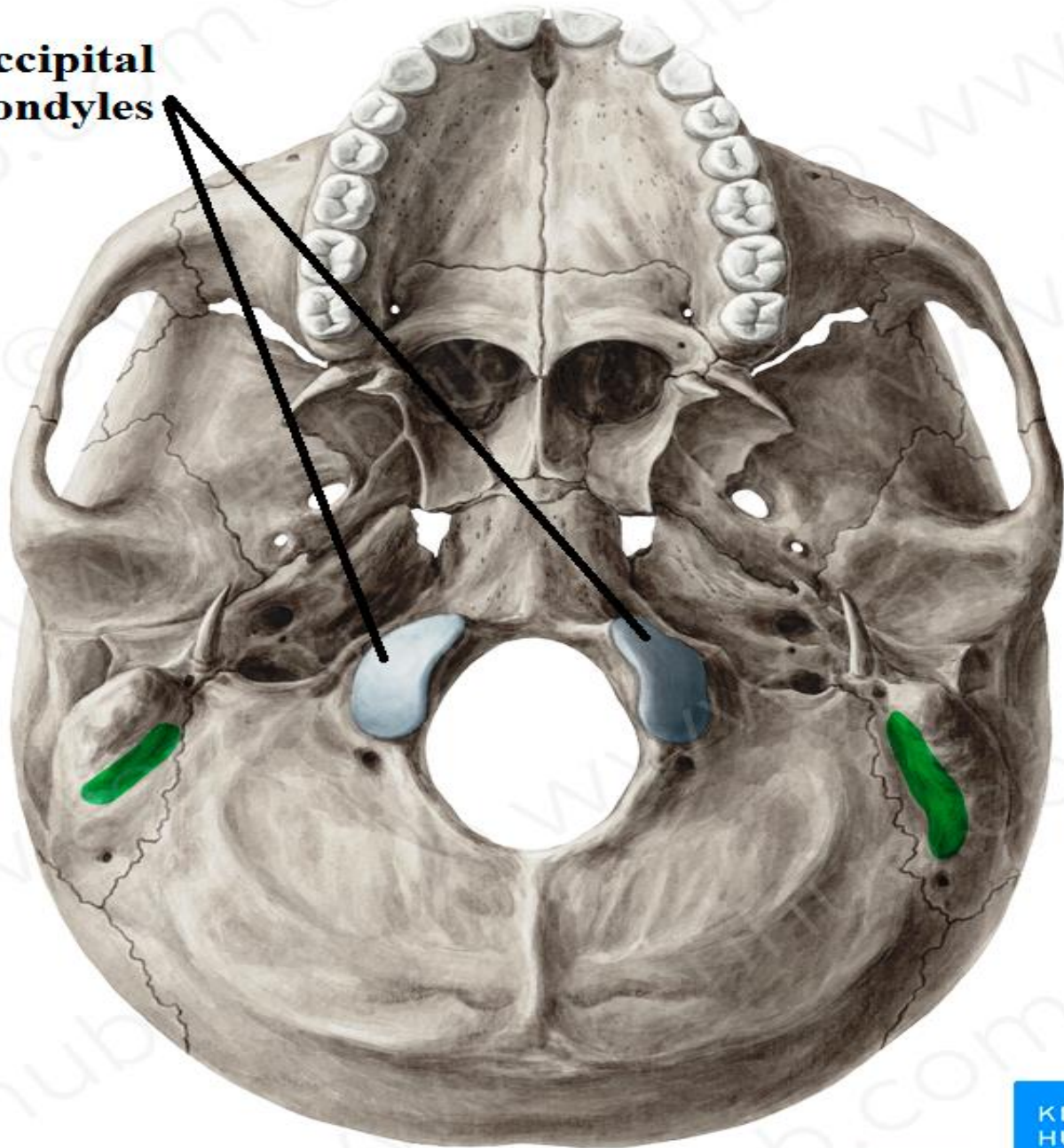


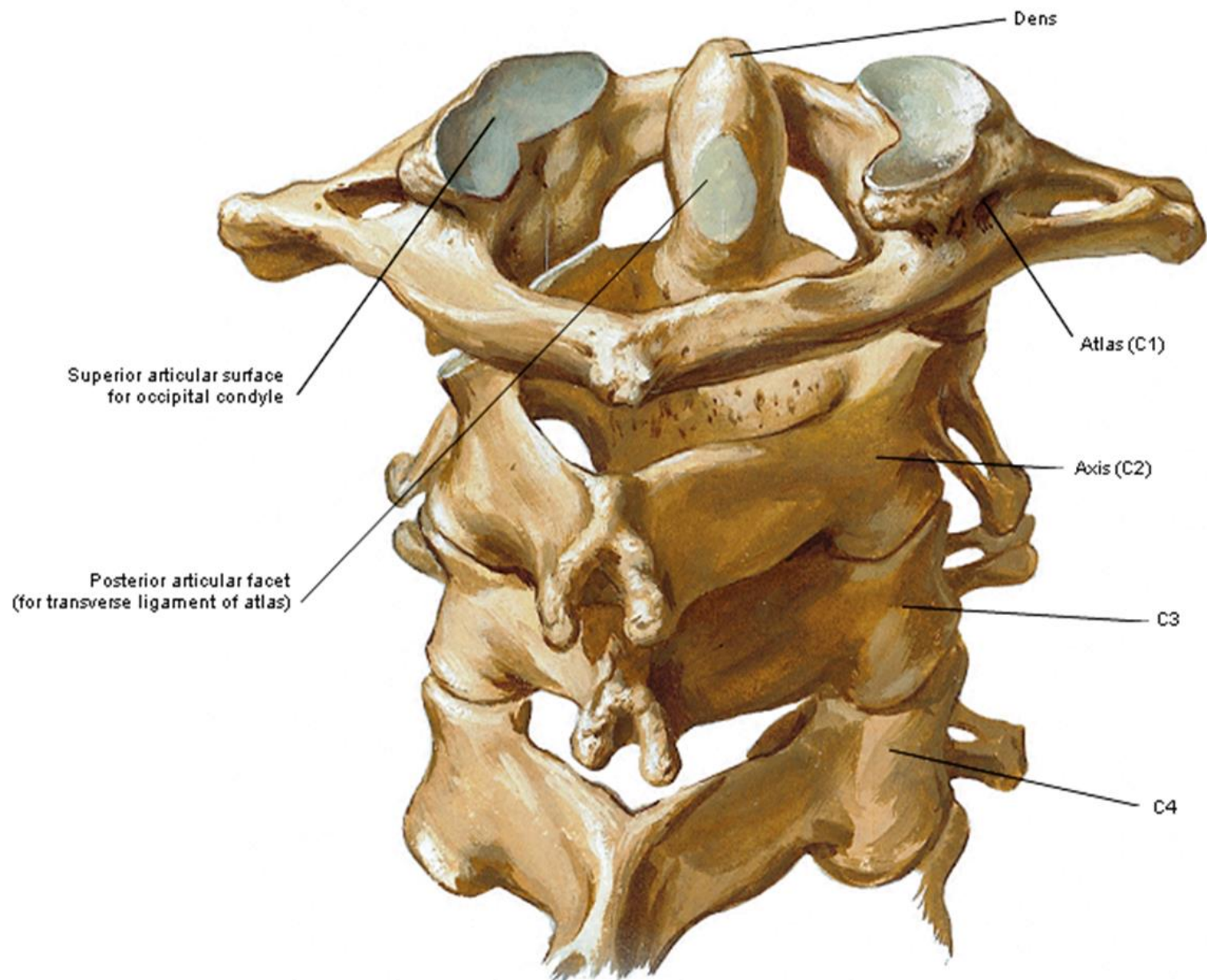
Axis (C2): anterior view



Axis (C2): posterosuperior view

**occipital
condyles**





ATLANTO OCCIPITAL JOINT

Type: synovial.

Variety: condylar.

Articular surfaces:

Above:

occipital condyles of the skull

Below:

the kidney shaped
articular facet of C1(atlas)

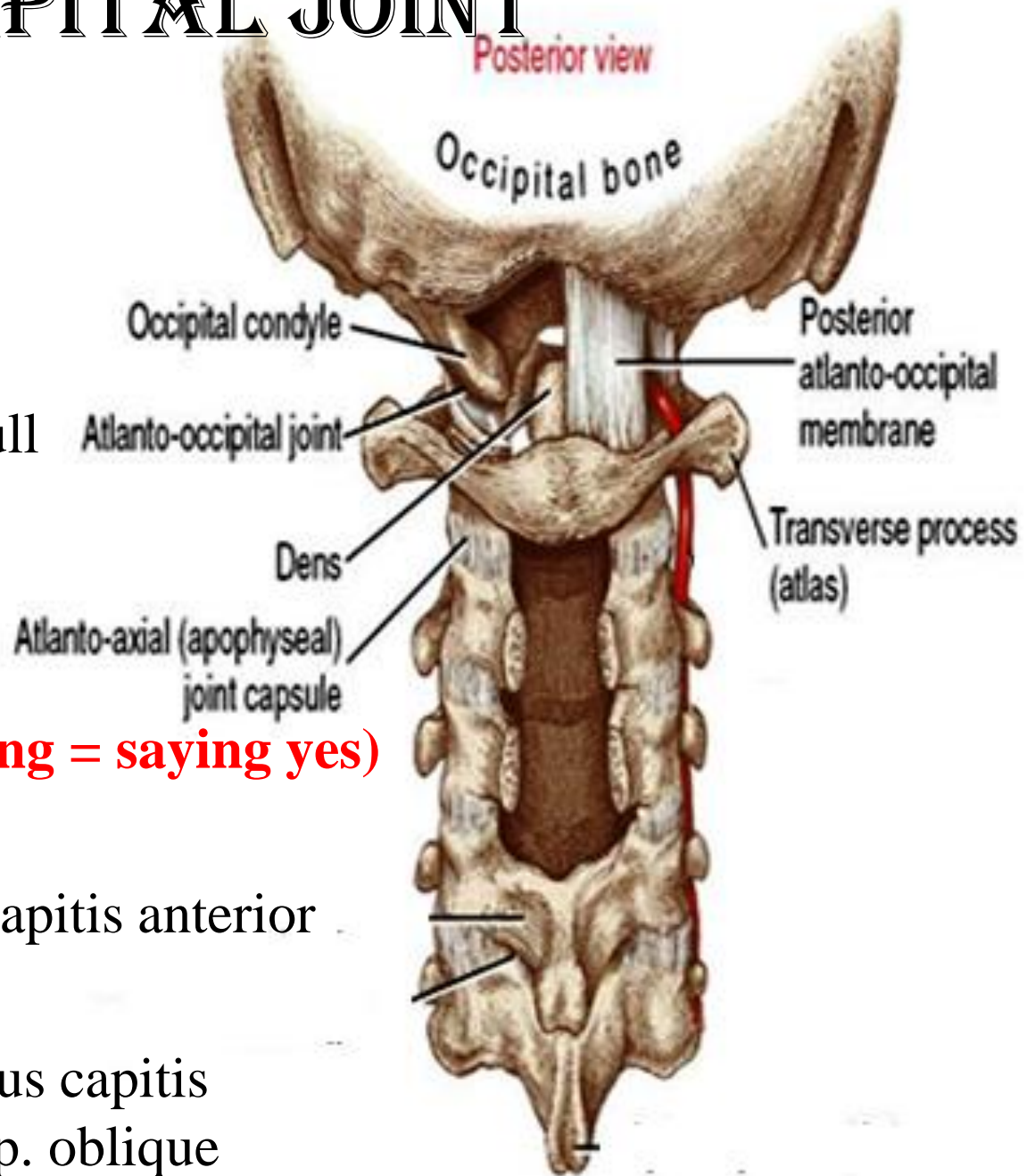
Movements: - (head nodding = saying yes)

1- Flexion.

By longus capitis & rectus capitis anterior

2- Extension

By semispinalis capitis, rectus capitis
posterior major & minor, sup. oblique



ATLANTO OCCIPITAL JOINT

Ligaments:

1- Anterior Atlanto-occipital membrane.

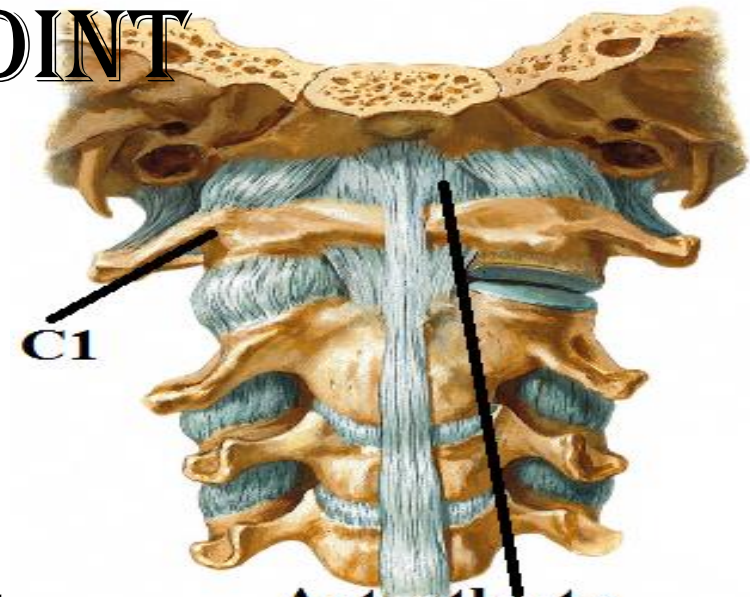
From: upper border of anterior arch of atlas

To : anterior margin of foramen magnum

2- Posterior Atlanto-occipital membrane.

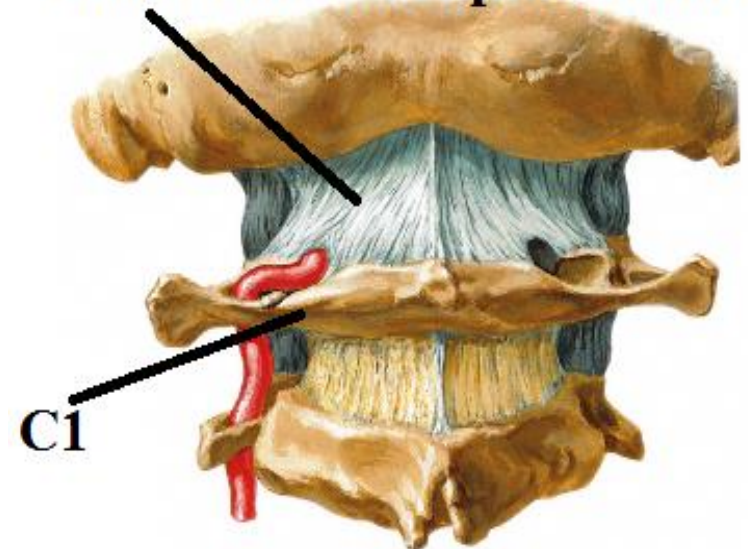
From: upper border of posterior arch of atlas

To : posterior margin of foramen magnum



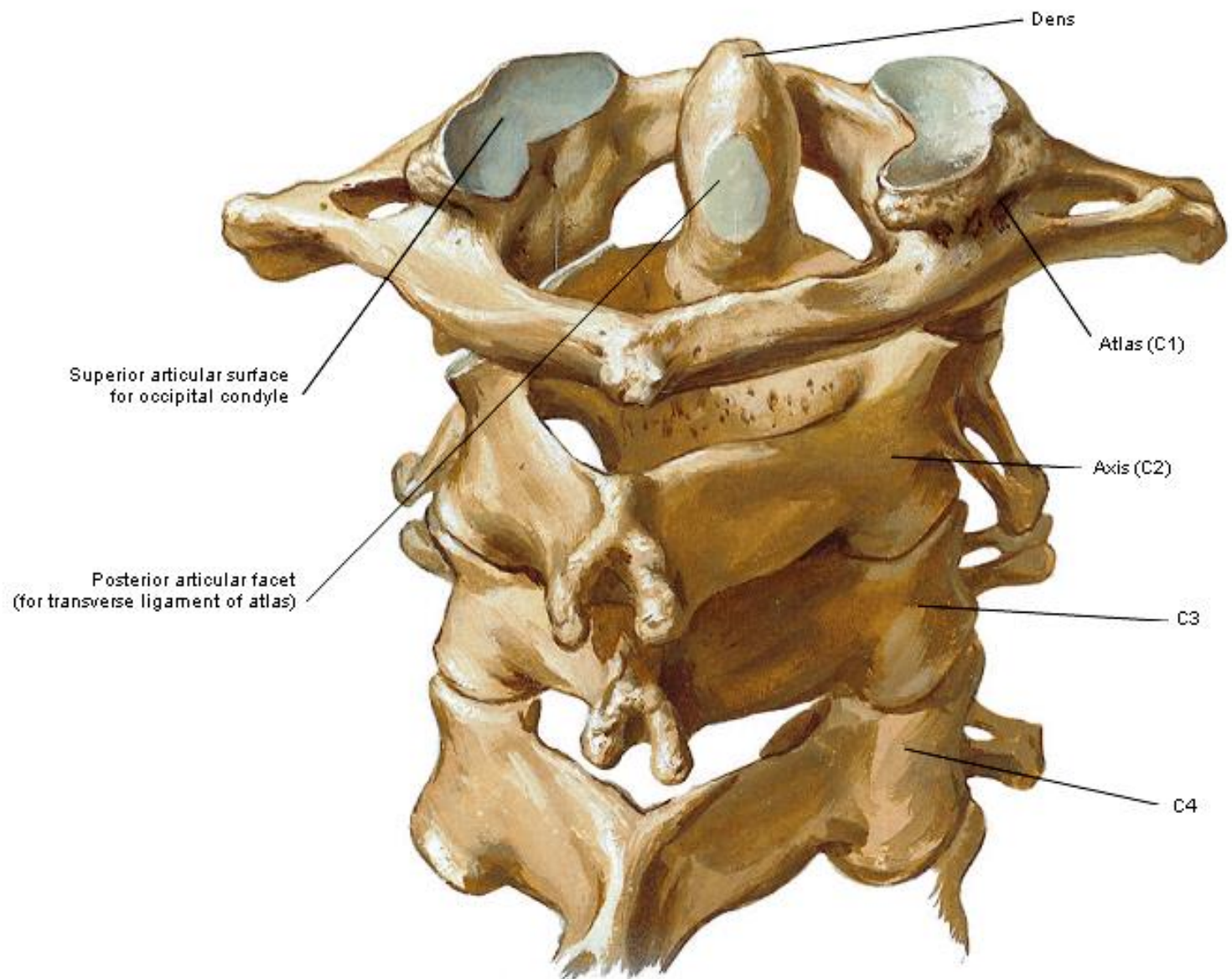
**Ant. atlanto
occipital memb.**

Post. atlanto occipital memb.



C1

ATLANTO AXIAL JOINTS



ATLANTO AXIAL JOINTS

3 joints (1 median & 2 lateral Atlanto axial)

Type: synovial

Variety: the median is pivot
while the 2 lateral are plane

Articular surfaces:

The median Atlanto axial:

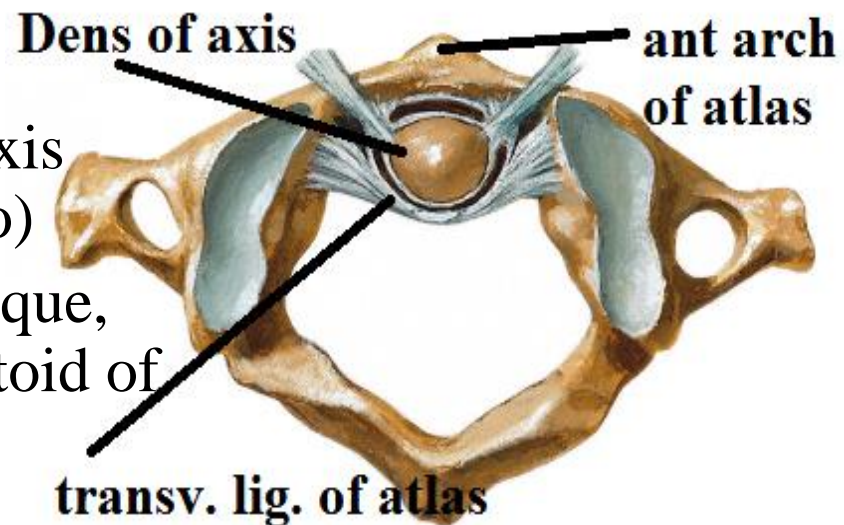
Between the odontoid process of axis
& anterior arch of atlas and transverse
ligament of atlas

The lateral Atlanto axial joints:

Between the articular facets of atlas & axis

Movements: - (head rotation = saying no)

By rectus capitis post major, inferior oblique,
splenius capitis of one side & Sternomastoid of
the opposite side



ATLANTO AXIAL JOINTS

Ligaments:

1- Apical ligament.

From: tip of odontoid process of C2

To : anterior margin of foramen magnum.

2- Alar ligament.

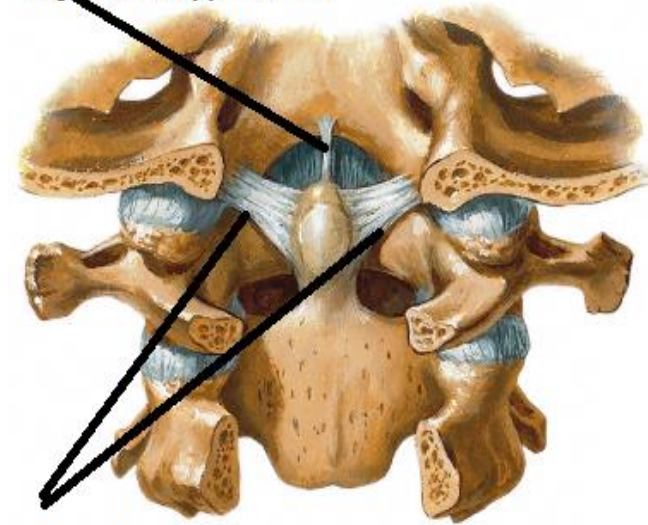
From: sides of odontoid process of C2

To : medial sides of occipital condyle.

3-Cruciate ligament:

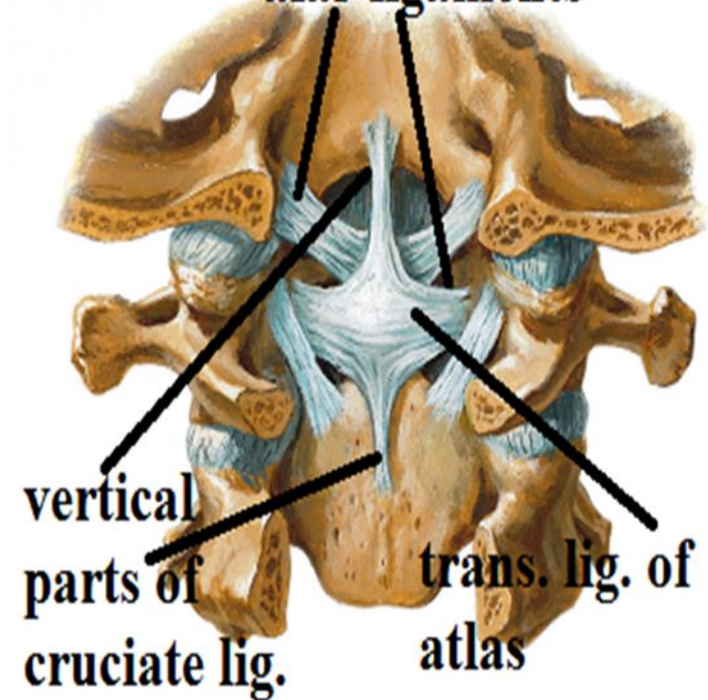
- Transverse ligament between two tubercles on the atlas.
- Vertical ligament, upper band, from transverse ligament to the basilar part of occipital bone, lower band from transverse ligament to the body of the axis

apical ligament



alar ligament

alar ligaments



vertical
parts of
cruciate lig.

trans. lig. of
atlas

ATLANTO AXIAL JOINTS

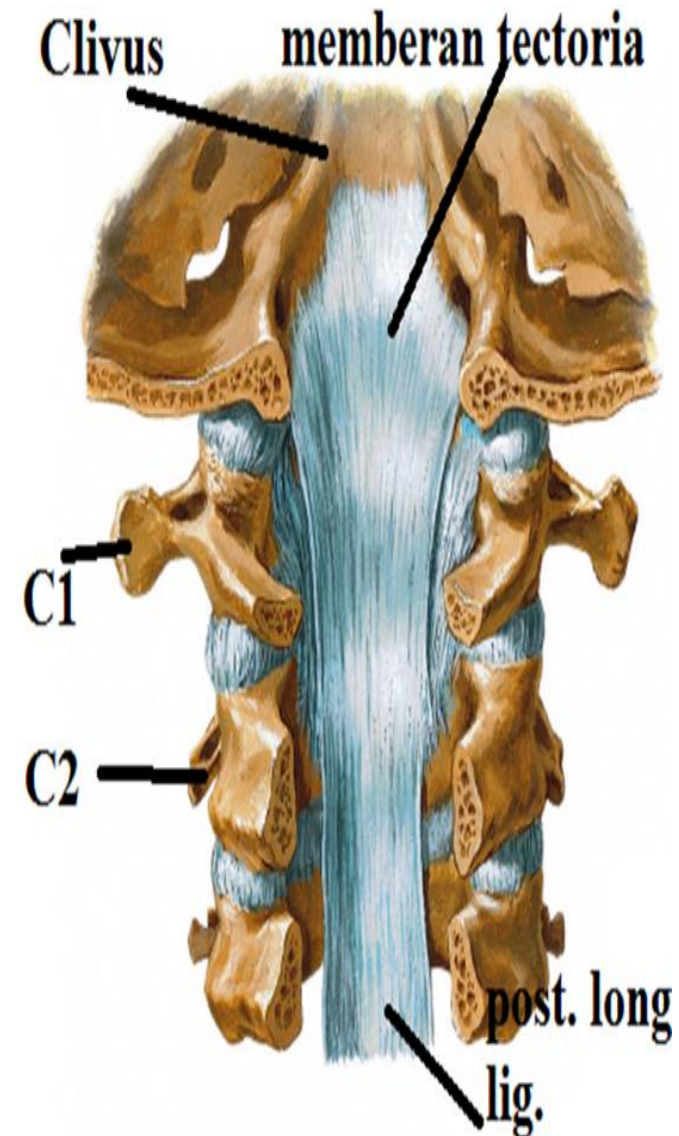
Ligaments:

4- Membrana tectoria

the continuation of post. Long. ligament

From: back of body of C2

To : clivus in front of foramen magnum



THANQ