



# ANATOMY TEAM

# LECTURE (3)

## PRACTICAL

### Vertebral Column

#### OBJECTIVES:

- *Identify the bones (vertebrae) forming vertebral column.*
- *Identify the main general features and of each one.*

#### ***Vertebral column divided into:***

##### **Cervical:**

Bones of cervical.

Features of cervical bones and exceptions .

##### **Thoracic:**

Bones of thoracic.

Features of thoracic bones and exceptions.

##### **Lumber:**

Bones of Lumber.

Features of lumber bones and exceptions.

##### **Sacral:**

Bones of sacral .

Features of sacral bones and exceptions.

Forming of sacrum.

##### **Cocccidial**

# Vertebrae in general have :

- Pedicle

- Lamina

Those two form Arch

Arch + Body of vertebra (sometimes doesn't exist) = foramen

Along the vertebral column -> vertebral foramen

Where the spinal cord presents.

- Articular processes for articulation between vertebrae  
(synovial joints)

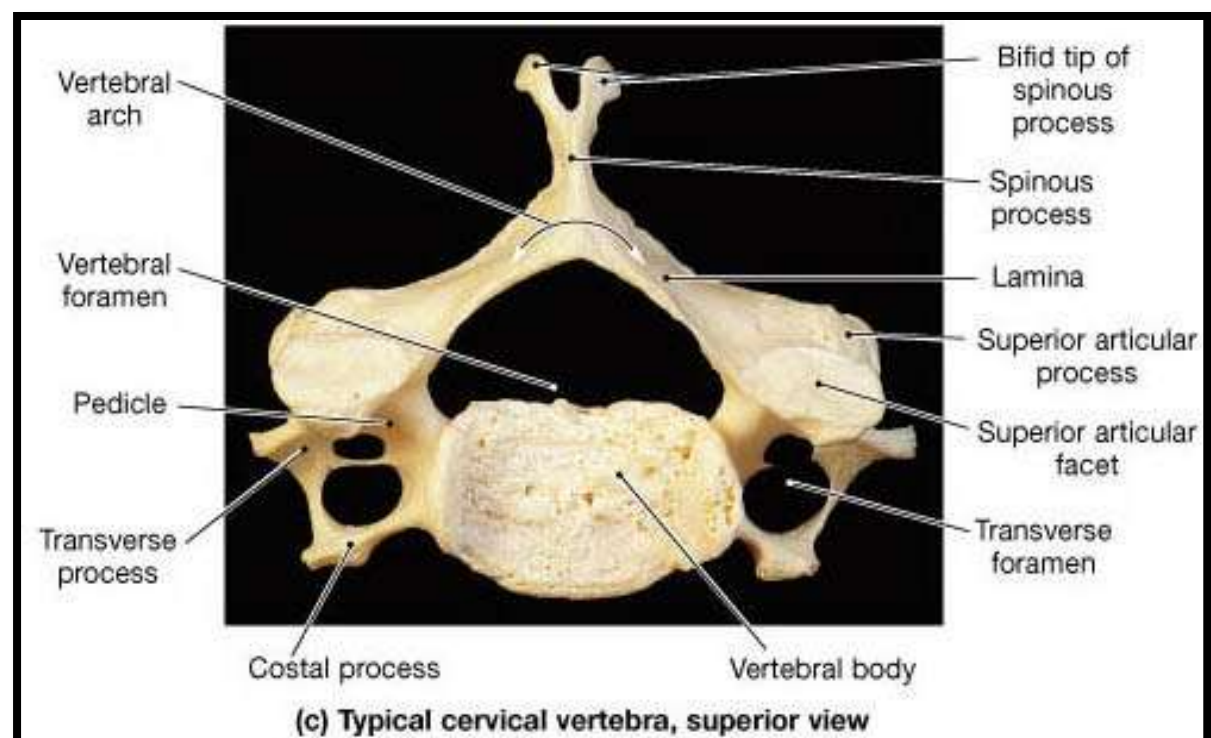
- Transverse processes for attachment of muscles or some  
bone (such as ribs articulate with thoracic vertebrae)

- Meningial covering surrounding the spinal cord (from inside) :

1) Pia

2) Archnoid

3) Dura



# Cervical :

General feature of cervical vertebrae : The transverse processes are each pierced by the foramen transversarium

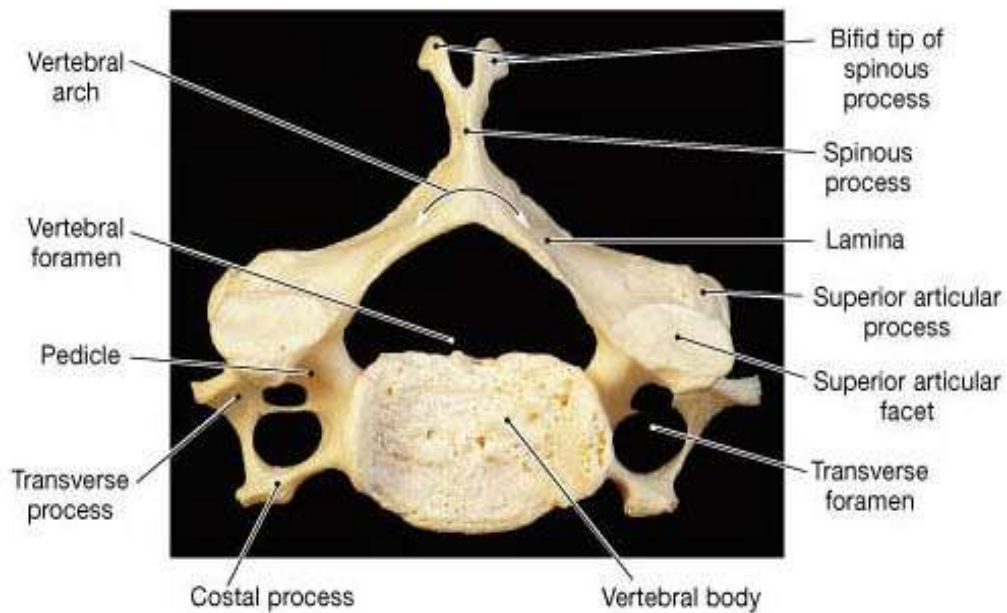
## 1) Typical

C3 ,C4 ,C5 & C6

Features :

- \* The body of these four vertebrae is small ,broader from side to side than from front to back ,The upper surface is concave.
- \* The laminae are narrow, and thinner above than below; the vertebral foramen is large, and of a triangular form.
- \* The spinous process is short and bifid, the two divisions being often of unequal size.
- \* The articular facets are flat and of an oval form:
  - the superior face backward, upward, and slightly medially.
  - the inferior face forward, downward, and slightly laterally.
- \* the foramen transversarium in the upper six vertebrae, gives passage to the vertebral artery , vein & nervs.

( unique features )



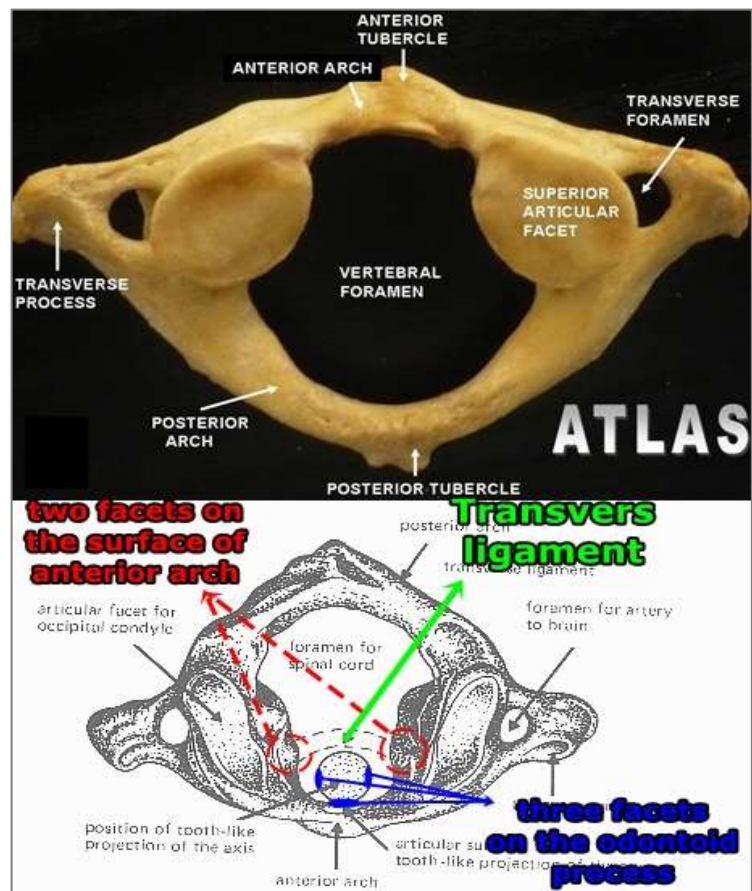
2) Atypical

C1 ,C2 & C7

## C1 : Atlas

### Features:

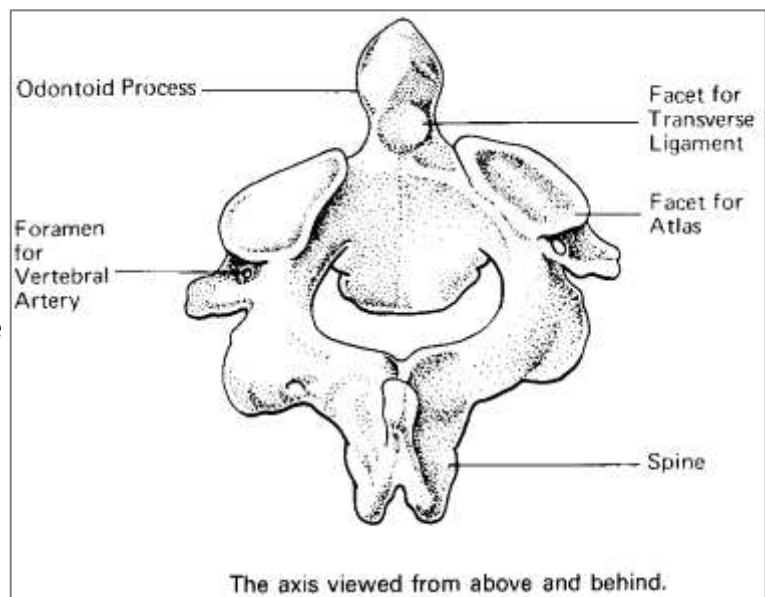
the topmost vertebra. Its chief peculiarity is that **it has no body**, and this is due to the fact that the body of the atlas has fused with that of the next vertebra. The posterior surface of the anterior arch has three facets one in the middle provide a range of rotation movement called transverse ligament, while two on the sides for attachment of odontoid process by ligament called apical ligament stabilize the odontoid process in the anterior arch of Atlas.



## C2 : Axis

### Features:

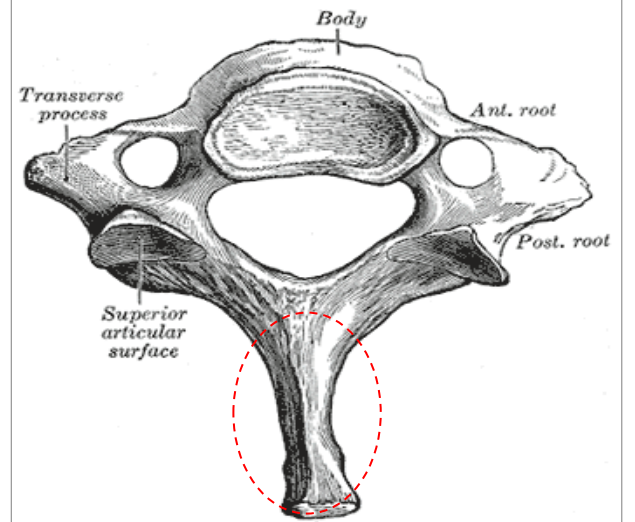
has a thick spinous process.  
forms the pivot upon which C1 rotates. The most distinctive characteristic of this bone **is (dens) odontoid process** that rises perpendicularly from the upper surface of the body.



## C7 : prominens

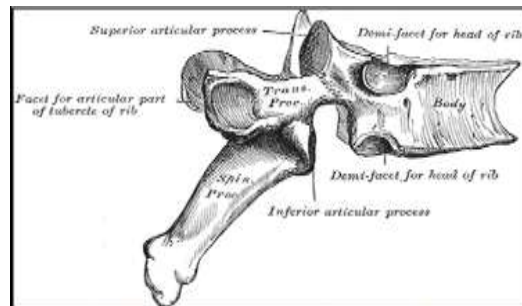
### Features:

The most distinctive characteristic is the existence of a **long and prominent spinous process (not bifid)**. It is the first spine to be felt subcutaneously . The foramen transversarium is small because it doesn't pass any artery but only veins.



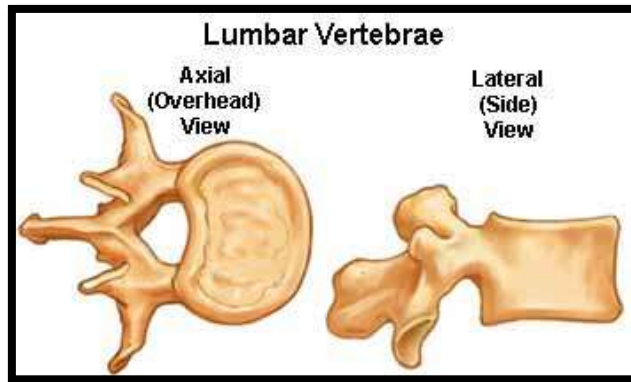
## Thoracic:

General features: Articulate with ribs of rib cage by **demi-facets** ,More rigid than cervical. **Heart shaped body**. Intermediate in size between those of the cervical and lumbar. they increase in size as one proceeds down the spine.



Typical thoracic general features : Present in : T2,T3,T4,T5,T6,T7,T8	Exception : T1,T9,T10,T11,T12
Heart shaped body.	Absent : T1
Sharp & long Spinous pointing downward.	Absent : T1(horizontal Spinous like C7)
two demi-facets (half moon) one near upper boarder on transverse process & one near lower boarder on the body in for articularation with ribs.	Circular not demi facets : T1. Two facets in the middle of the body instead of being in the upper & lower boarders : T9 & T10. Only one circular facet in each side(NO transverse facet here) : T11 & T12(T12 facet is near to pedicle)
Circular vertebral foramen	Triangular foramen : T1.
Superior articular processes are backward Inferior articular processes are forward	No exceptions

# Lumber :



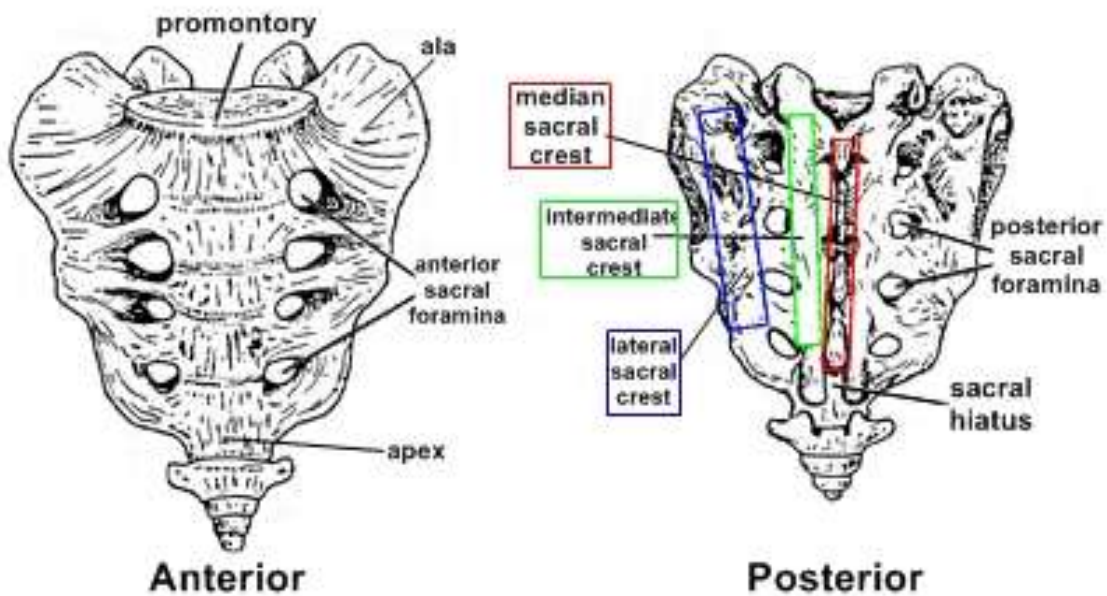
General features for typical : L1, L2, L3, L4	Exceptions for atypical : L5
<p>Larger &amp; kidney shaped body, triangular vertebral foramen. superior Articular processes are upward and medial directed. Inferior articular processes are downward and lateral directed. Has two processes : mammillary &amp; accessory (which present also in T12 only)</p>	<p>No exceptions</p>
<p>Spinous process is flat, short, thick &amp; quadrangular shaped. Long and narrow transverse processes.</p>	<p>Smaller spine Thick transverse process</p>



## Sacrum: 5 vertebrae united together

Note: male sacrum is longer than female's ones

- Anterior side : concave anteriorly.
- Posterior side : convex posteriorly.
- Ala of the sacrum which connect directly with pelvic iliac while Apex forms sacrococcygeal joint.
- Fusion of :
  - spinous Processes => median sacral crest.
  - tubercles => intermediate sacral crest.
  - Transverse => lateral sacral crest



-S1 unite with L1 to form LumboSacral angle in the promontory region (anterior border of 1<sup>st</sup> sacral vertebra). This promontory with iliopectenial lines (from iliac) & pubic symphysis form the brim pelvis. Above it false pelvis, under it true pelvis.



## Coccyx : 4 vertebrae unite together



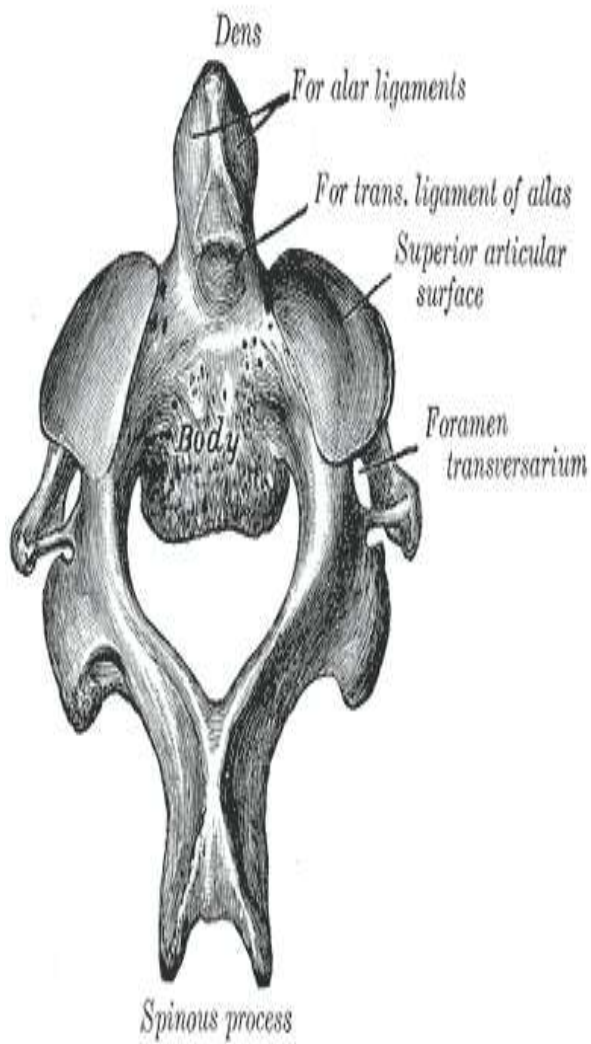


Figure 269

FIG. 269.—The first cervical vertebra, or atlas. Superior aspect.

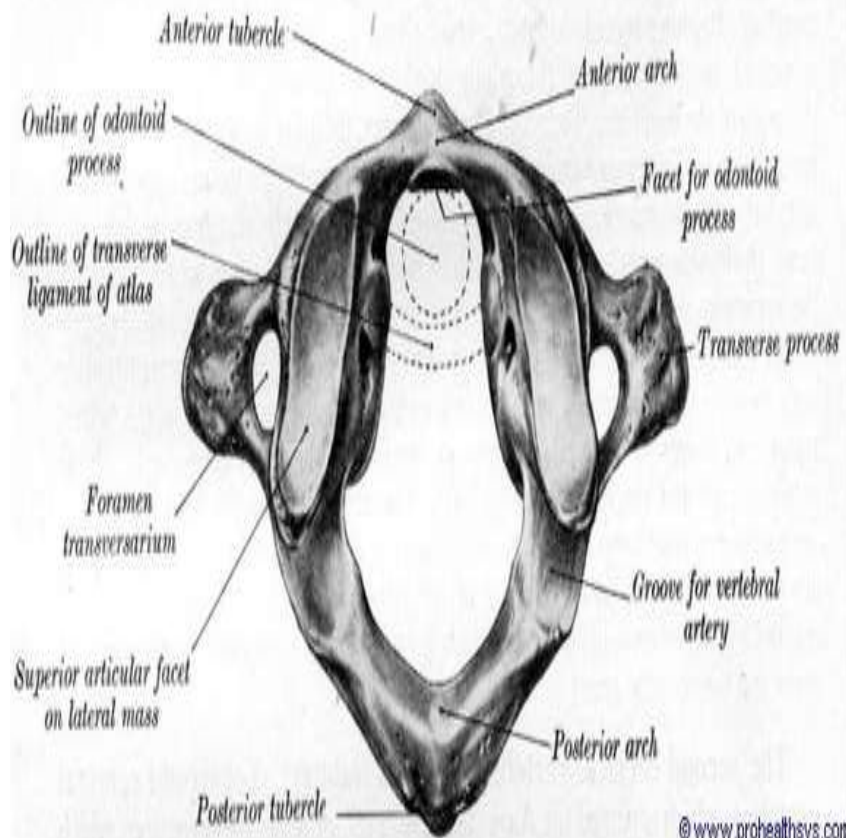


FIG. 271.—The second cervical vertebra, or axis. Left lateral aspect.

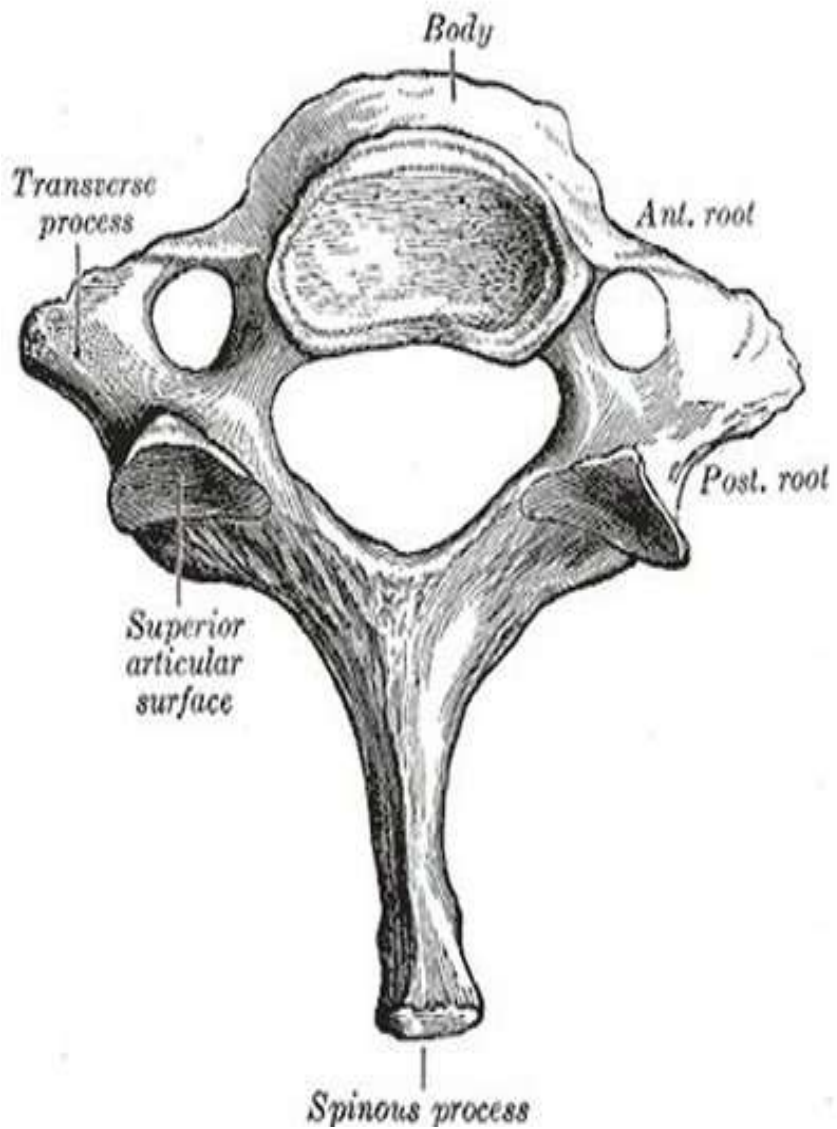
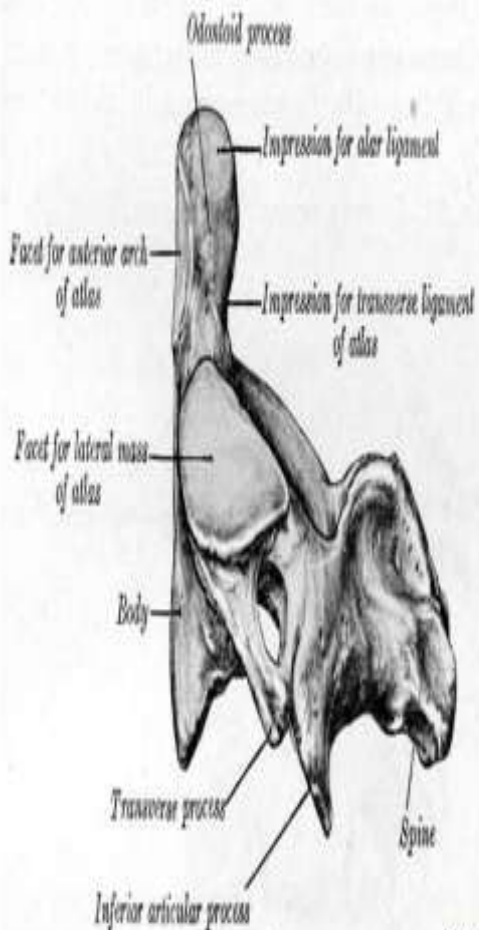


FIG. 272.—The seventh cervical vertebra. Superior aspect.

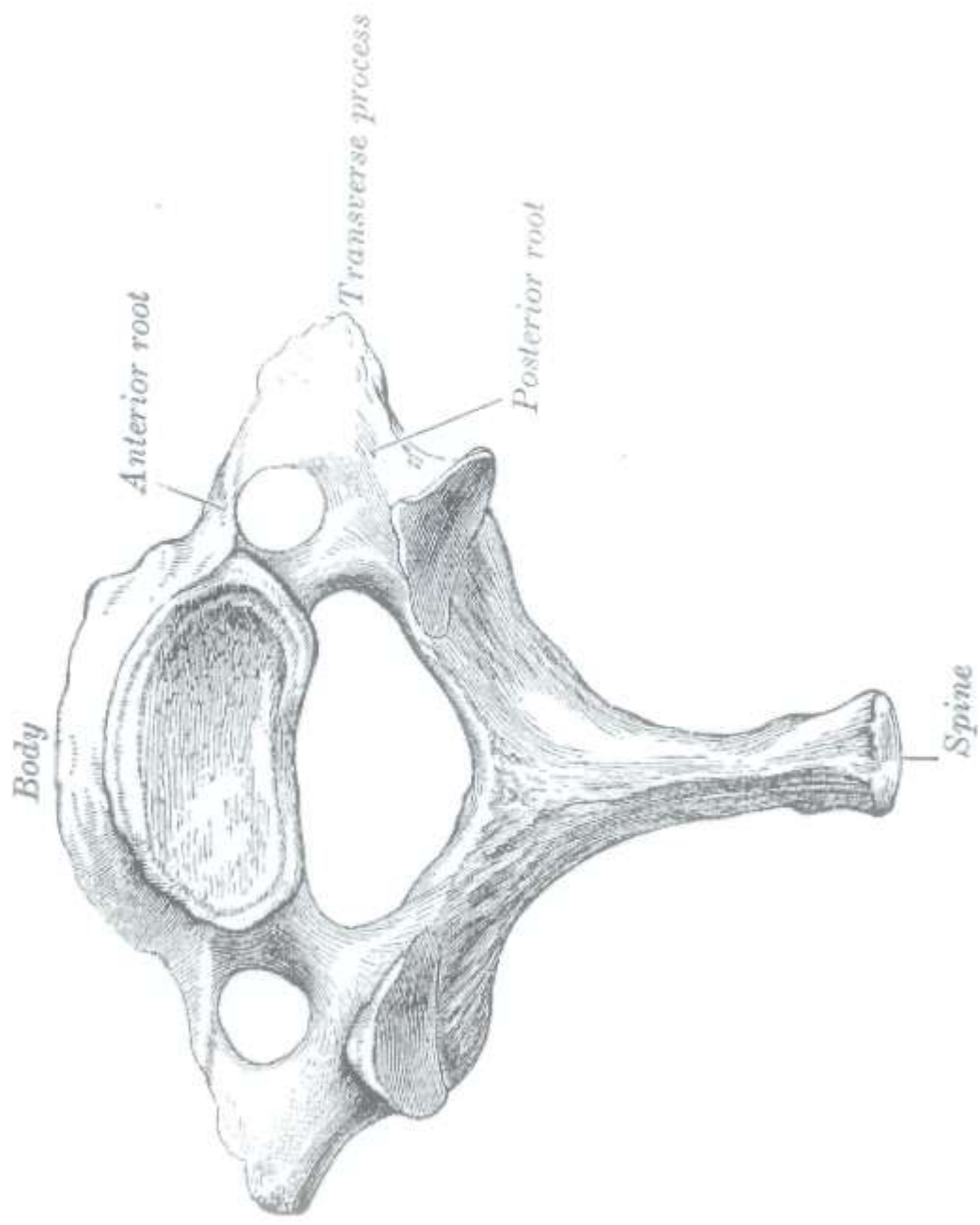


FIG. 269.—The first cervical vertebra, or atlas. Superior aspect

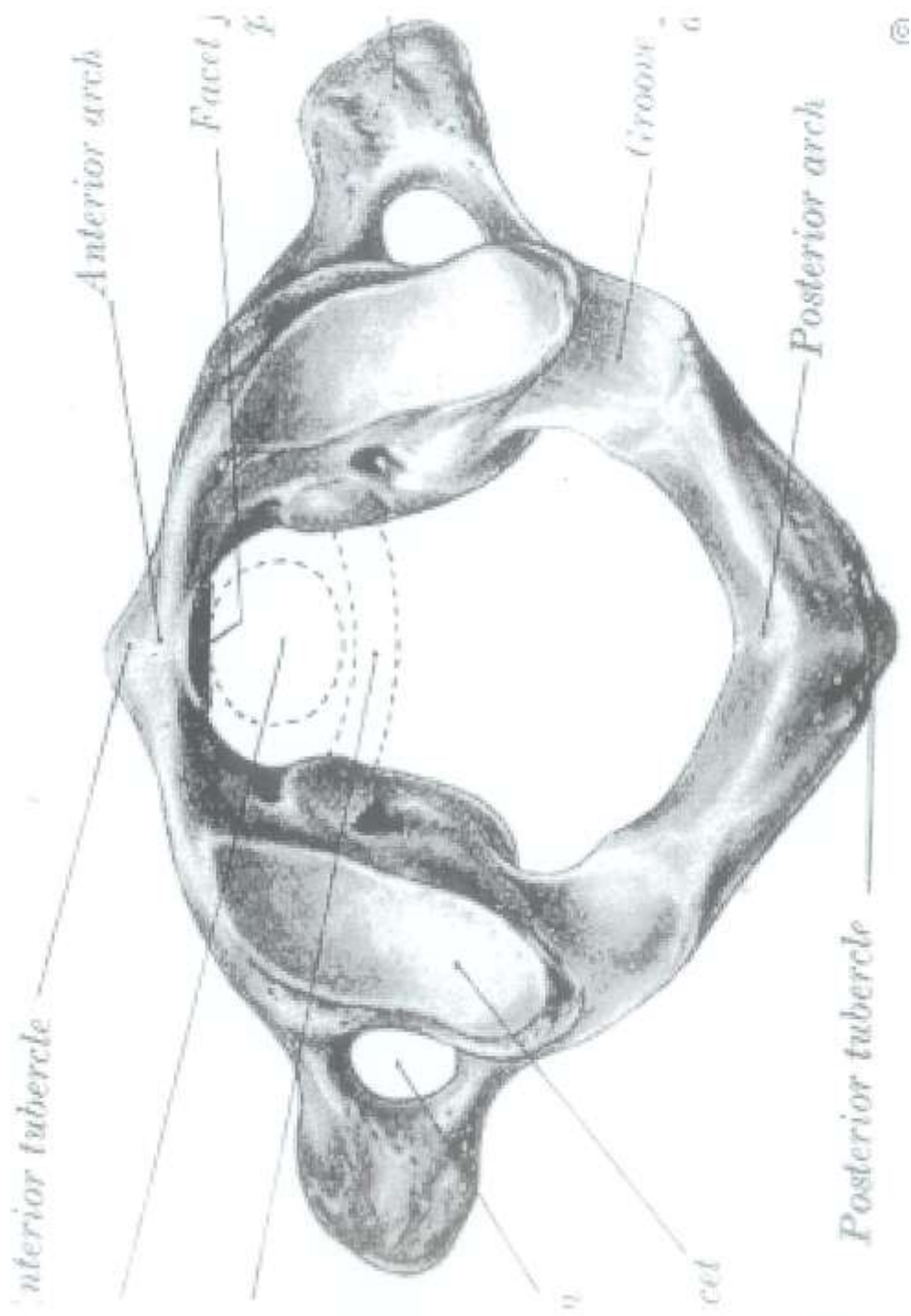


FIG. 217.—A typical thoracic vertebra. Right internal aspect.

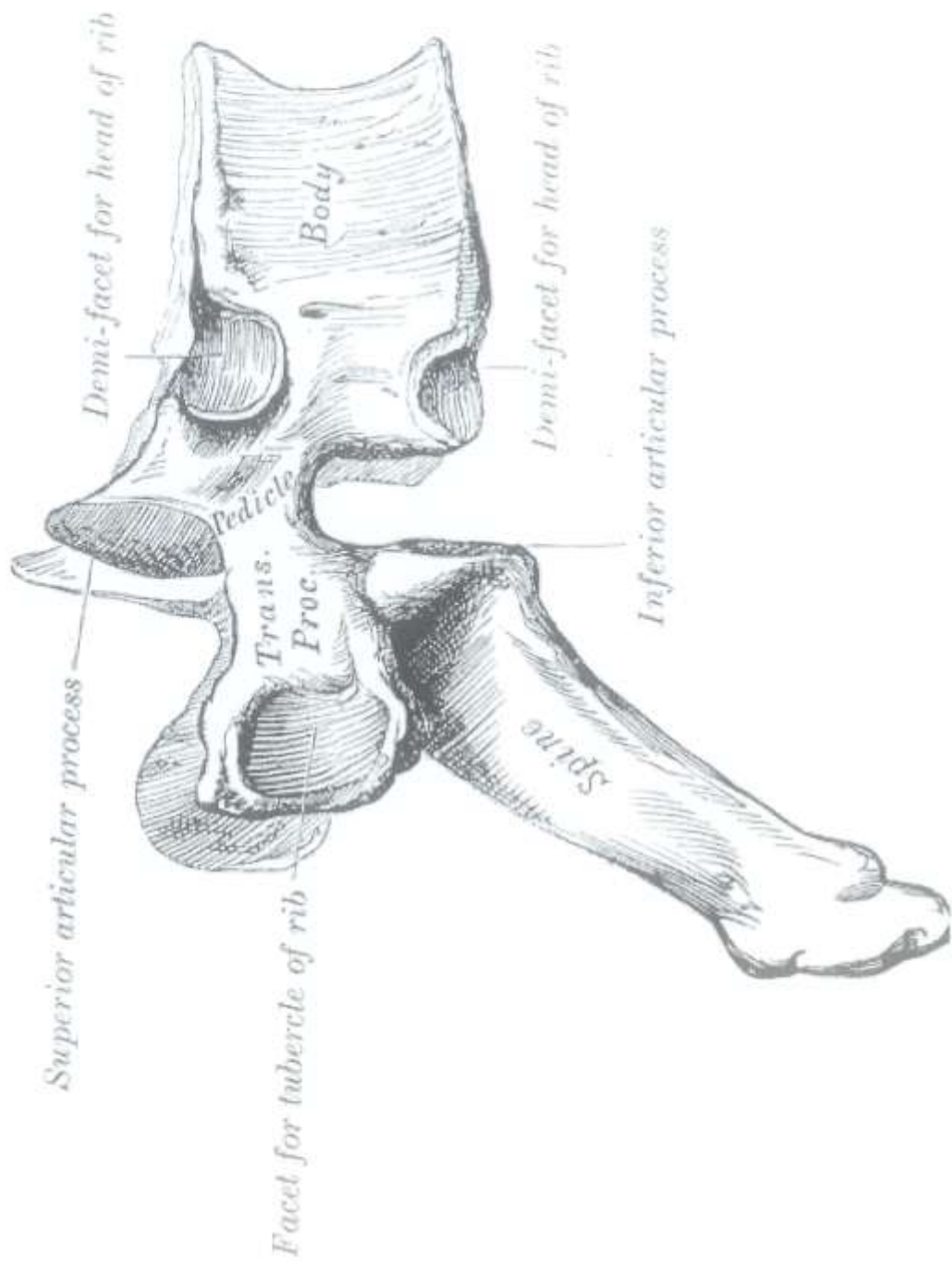
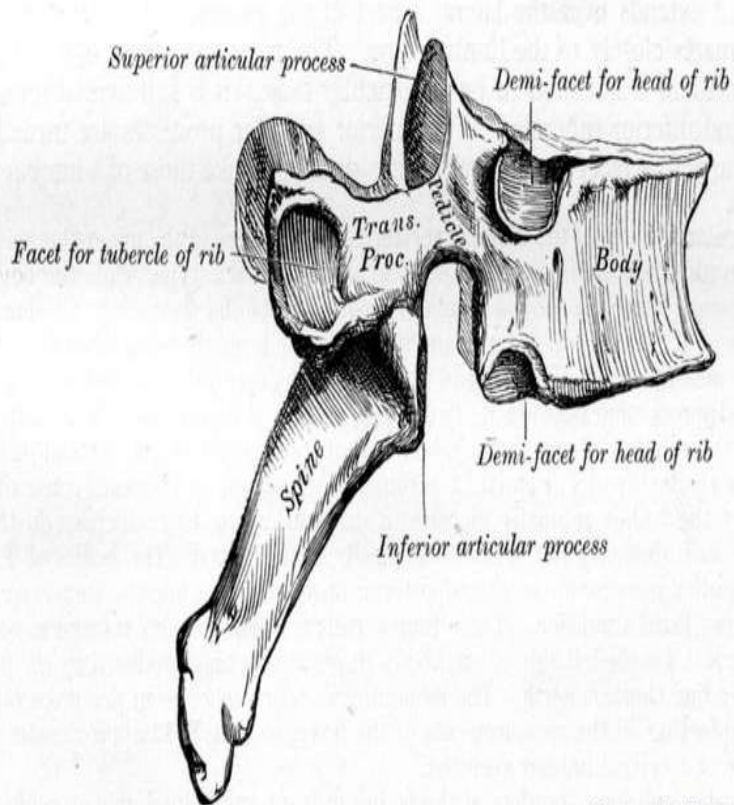


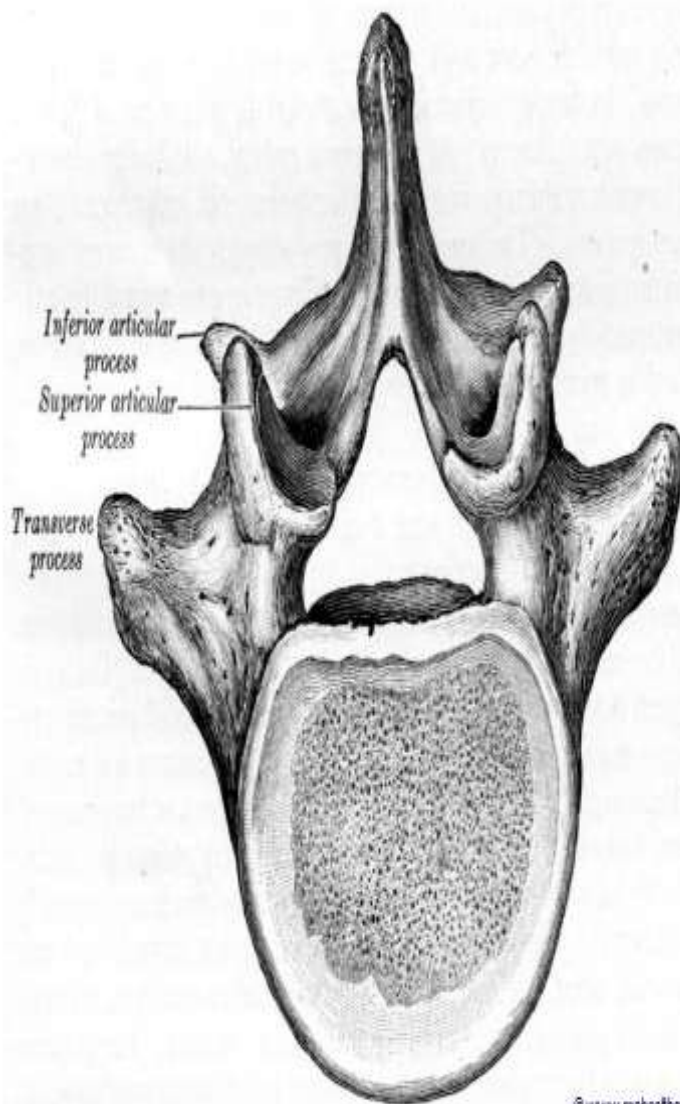


FIG. 274.—A typical thoracic vertebra. Right lateral aspect.



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FIG. 278.—The fifth lumbar vertebra. Superior aspect.



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