



Cervical vertebrae

Cervical vertebrae are (7) .The first 2 vertebrae are atypical vertebrae, they modified to be suitable with the movement of the head, while, the other cervical vertebrae are typical with some characteristic features for each of them.

The atlas (first cervical vertebra) in horse:

Atypical vertebra; the body & spinous process are absent. It characterized by:

1-It has the form of strong ring consist of 2 lateral masses connected by dorsal and ventral arches.

2-The two lateral masses have pair of deep oval cranial articular cavities, which receive the occipital condyles.

3-The caudal articular surface: saddle-shape confluent on ventral arch, corresponding with that of the axis.

4-Dorsal arch has dorsal median tubercle. There is a lateral vertebral foramen near its cranial margin.

5-Ventral arch has ventral tubercle on its ventral surface.

6- The fovea dentis present on its dorsal surface of ventral arch for articulation with the dense of the axis.

7-The wings (modified transverse processes) are curved.

8- Deep atlantal fossa lies between the ventral aspect of the wing and the lateral mass.

Two foramina penetrated each wing:

a/The rostral foramen is the alar foramen, which connect to the lateral vertebral foramen by a short groove.

b/The caudal foramen is the transverse foramen.



The axis (second cervical vertebra) in horse:

The longest one of the cervical vertebrae in horse. It characterized by:

- 1-The body cranially has odontoid process (the dense of axis) which has convex articular surface ventrally for articulation with the dental fovea (dental fovea) of the atlas.
- 2-The cranial articular processes has saddle shape confluent ventrally with that of the dense.
- 3-Transverse processes are small project caudally.
- 4-The transverse foramen small.
- 5-Spinous process: very large and strong, increase in height gradually and decrease gradually. It's free edge is rough, thickens caudally continue with the caudal articular processes by two ridges.
- 6-The arch has a notch on each rostral border in young animals (foals), converted by ossification of fibrous ridge into lateral vertebral foramen in an older ages.

The 3rd, 4th, 5th cervical vertebrae in horse:

Typical vertebrae characterize by:

- 1-Long body.
- 2-Ventral surface has median ventral crest end by a tubercle.
- 3-The cranial extremity has very convex articular surface.
- 4-The caudal extremity has circular cotyloid cavity.
- 5-The arches are big.
- 6-The vertebral notch is large.
- 7-The processes present in cervical vertebrae are:

a/Articular processes:

1. Big, have oval articular surface.
2. The cranial articular processes directed dorsorostrally.
3. The caudal processes directed ventrolaterally.



4. From each caudal articular process a crest extend rostrally attach to cranial articular process except the third cervical vertebra, where, the crest doesn't reach the cranial articular process.

b/Transverse processes:

1. Big and lamellated.
2. Each process divides into cranial & caudal parts for muscular attachments.

c/Spinous process: low crest, wide caudally, attach with each caudal articular process by a ridge.

The 6th cervical vertebra in horse:

- 1-Shorter & wider than the 5th cervical vertebra.
- 2-The caudal articular processes are shorter & thicker, each one attach with the cranial articular one by a thick ridge.
- 3-Spinous process: about 1.5 cm in height.
- 4-Each transverse process has three divisions; cranial, caudal & ventral lamina.
- 5-Transverse foramen is large, a deep fossa present ventral to this foramen.
- 6-Ventral crest: low, decrease in height caudally.

The 7th cervical vertebra in horse:

- 1-The shortest & widest vertebra among the cervical vertebrae.
- 2-The body flattened dorsoventrally.
- 3-There are two costal articular facets on its caudal sides for the articulation with the head of the first rib.
- 4-Cranial articular processes longer & wider than the caudal articular processes.
- 5-Spinous process: about 3 cm in height.
- 6-Transverse process is undivided & transverse foramen is absent.
- 7-Ventral crest: replaced by pair of ventral tubercles.



The comparison:

Atlas (1st cervical vertebra) in cattle:

- 1-Dorsal arch has large rough tuberosity.
- 2-The caudal articular processes are flattened caudally, continue ventrally with the vertebral canal to form wide surface for articulation with the dens of axis.
- 3-Tranverse foramen is absent.
- 4-The two wings are less curved than in horse; nearly horizontal, so atlantal fossa is shallow.

Atlas (1st cervical vertebra) in sheep:

- 1-Dorsal arch has small tubercle.
- 2-Cranial articular processes separate by median ridge.
- 3-Each wing ends by small extremity extend caudal than the level of the caudal articular process.

Atlas (1st cervical vertebra) in dog:

- 1-Dorsal surface of dorsal arch is very convex.
- 2-The ventral arch is narrow craniocaudally, has small tubercle caudally.
- 3-The wings are wide, flattened and horizontal.
- 4-There is alar notch in the cranial edge of the wing instead of alar foramen.

Axis (2nd cervical vertebra) in cattle:

Short and wide, characterized by:

- 1-Dental process is wide, the dorsal surface is very concave.
- 2-Lateral vertebral foramen: round, about 1 cm away from the cranial border of the dorsal arch.
- 3-Transverse process short & thick.



4-Transverse foramen small or absent.

5-Spinous process: increased in height caudally, then end suddenly (caudal edge of process is vertical).

Axis (2nd cervical vertebra) in sheep:

Similar to that of cattle except that the spinous process has thin edge and convex craniocaudally (spinous process end gradually).

Axis (2nd cervical vertebra) in dog:

It has flattened body characterized by:

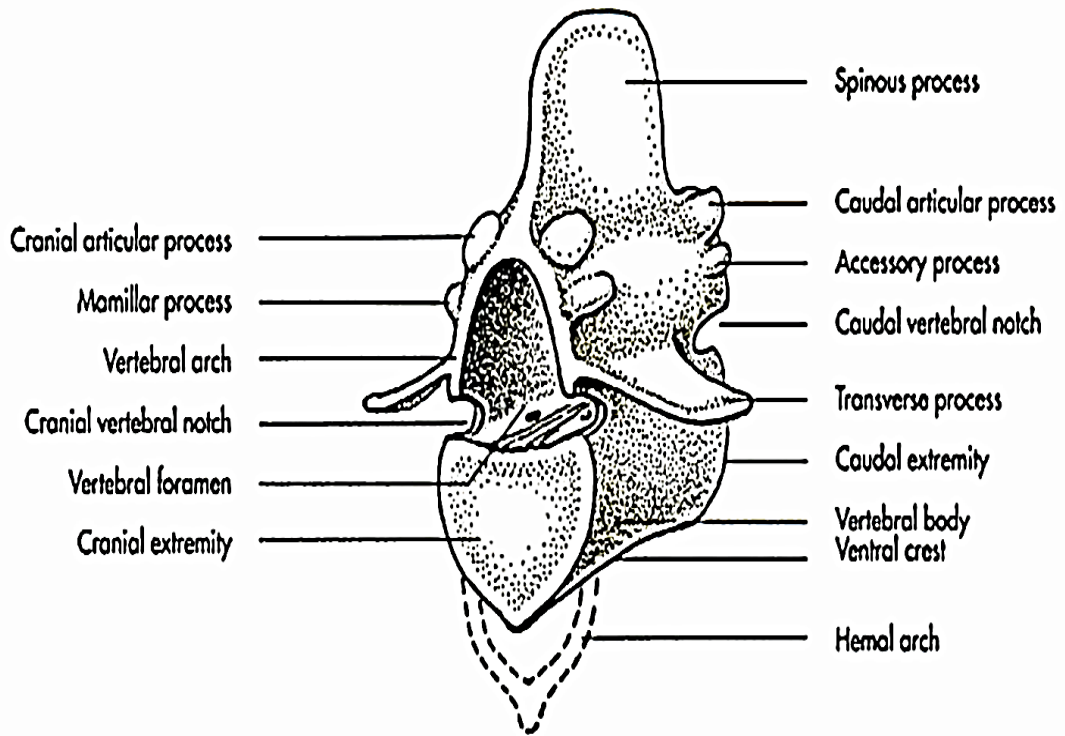
1-Dental process long and round.

2-There is lateral vertebral notch instead of the foramen.

3-The transverse process pointed caudolaterally.

4-The spinous process is thin & long, extend cranially over the dorsal arch of atlas.





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Cervical vertebra (schematic, cranial aspect).

Caudal articular process
Cranial articular process
with the articular surface
Spinous process
Cranial extremity
Cranial articular process
Transverso foramen
Transverse process with
ventral tubercle

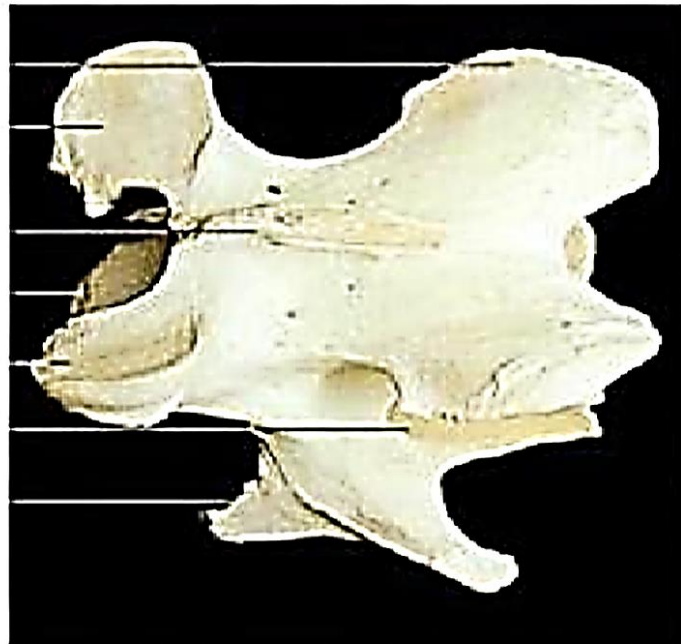
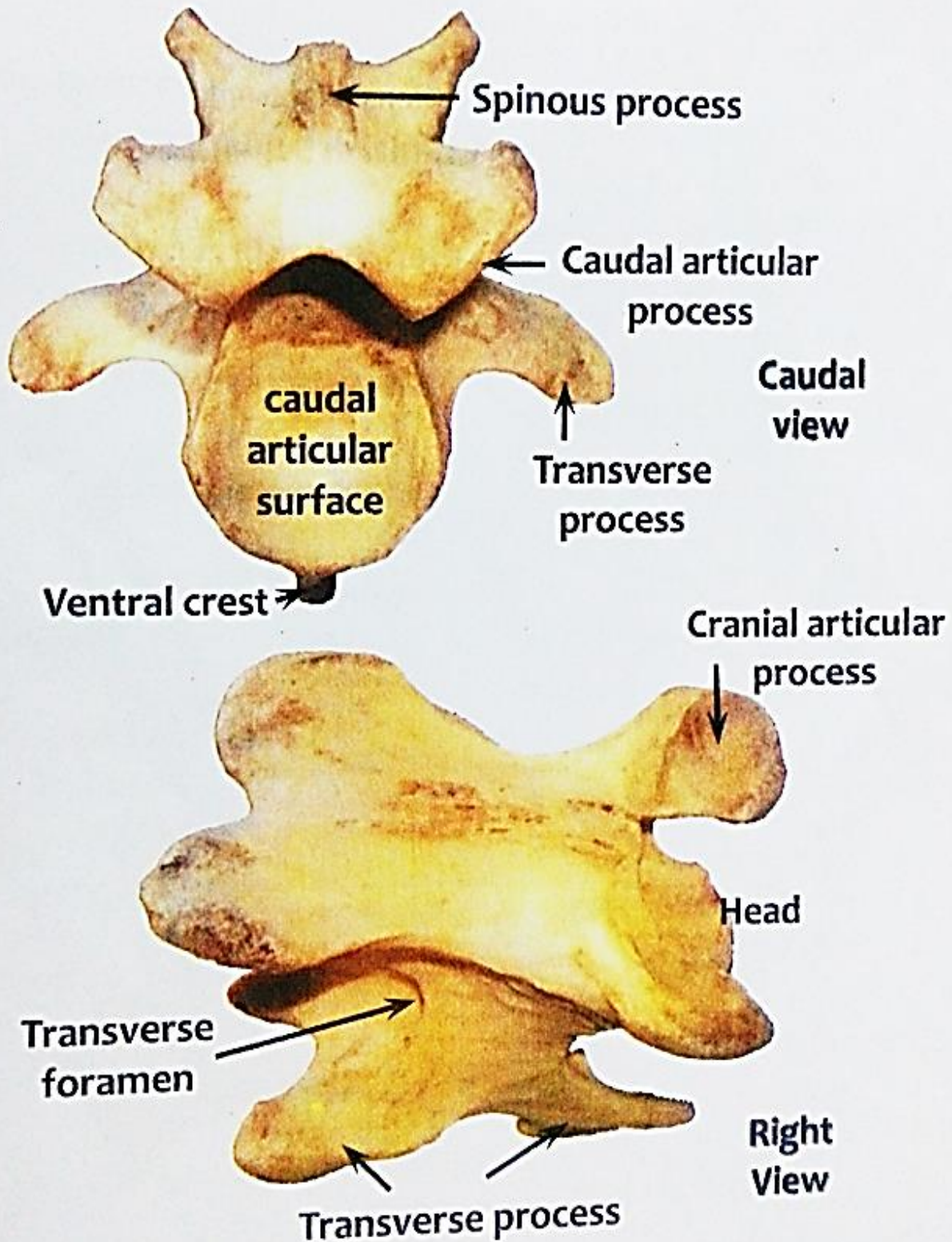


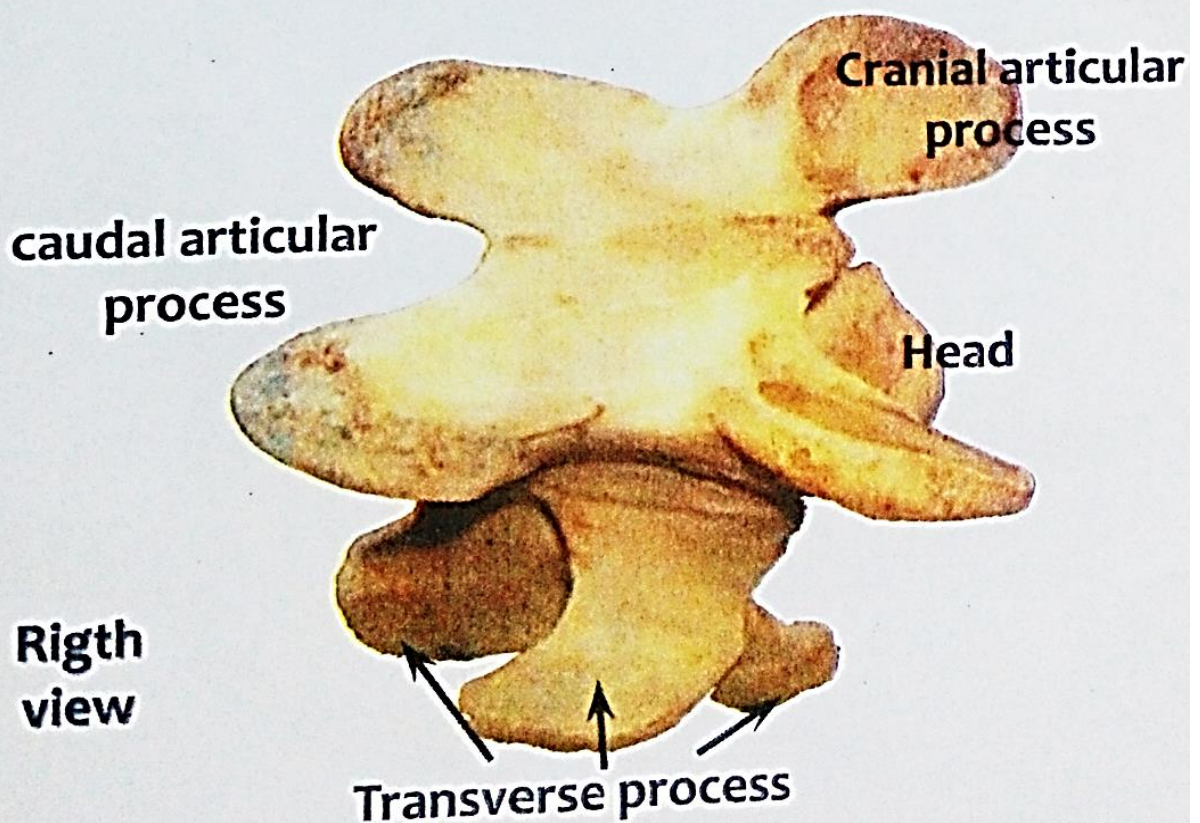
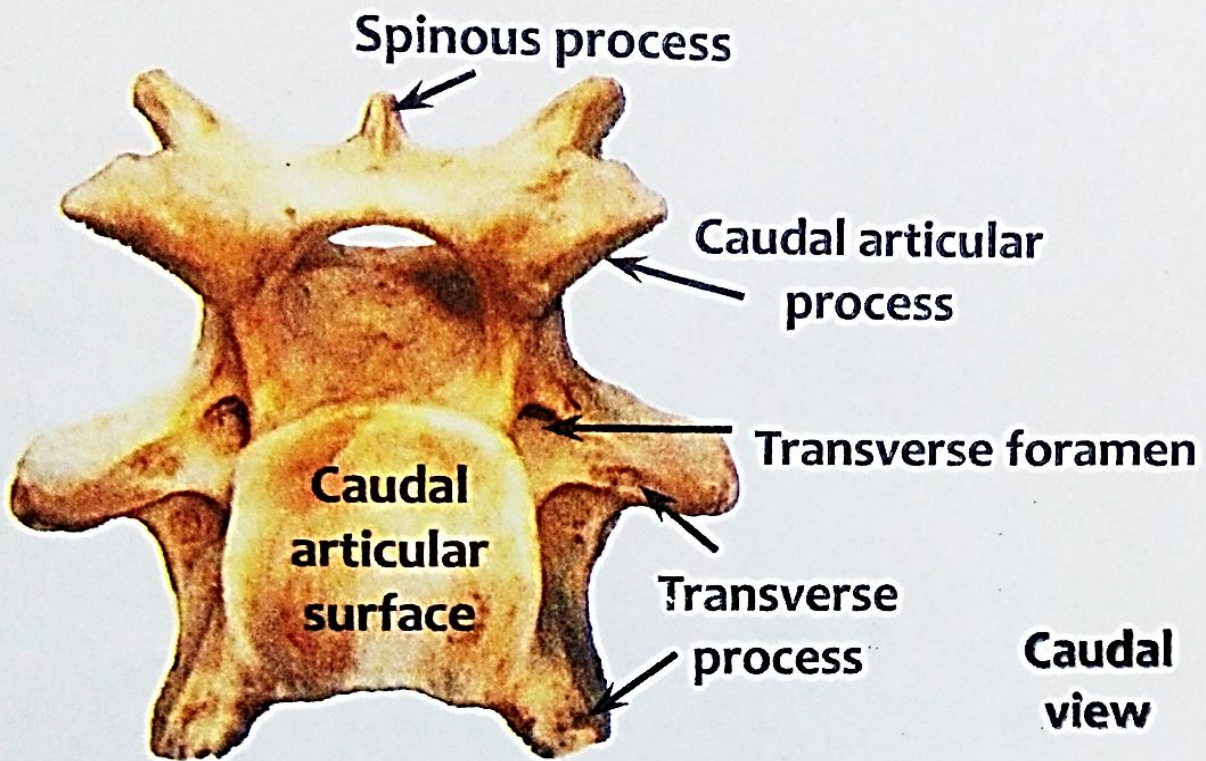
Fig. 1-62. Third cervical vertebra of a horse (dorsolateral aspect).



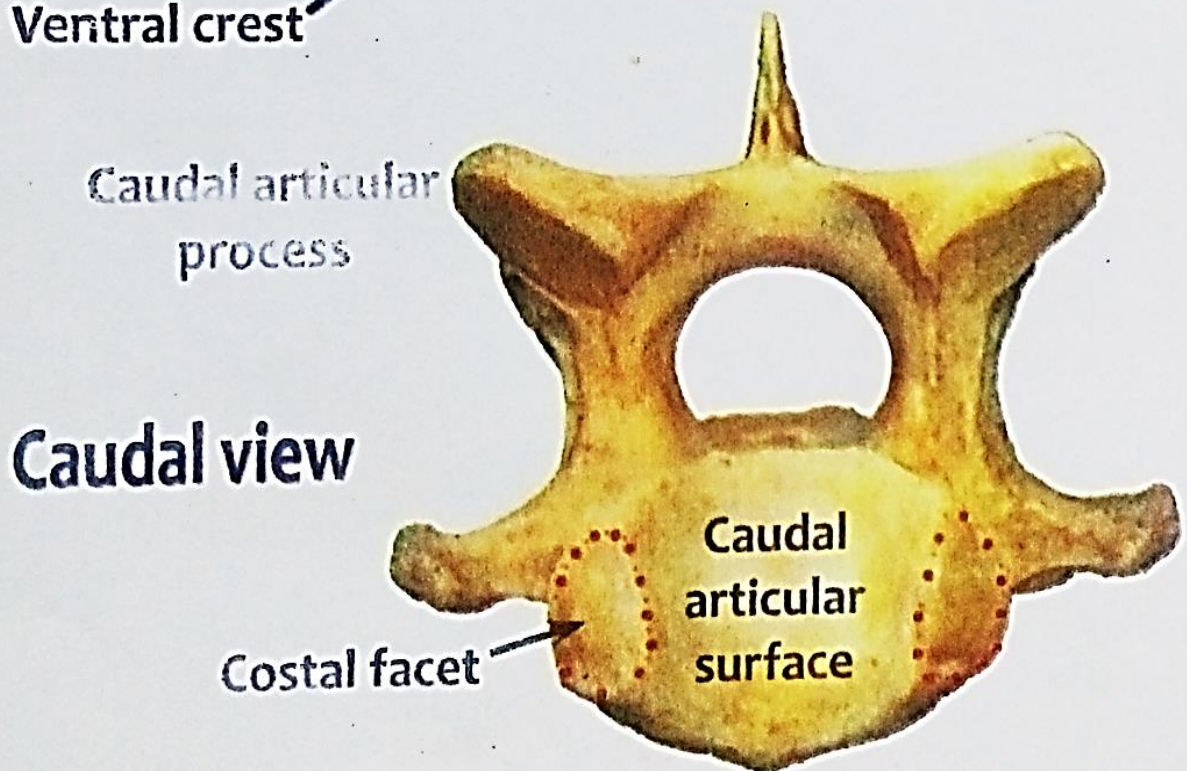
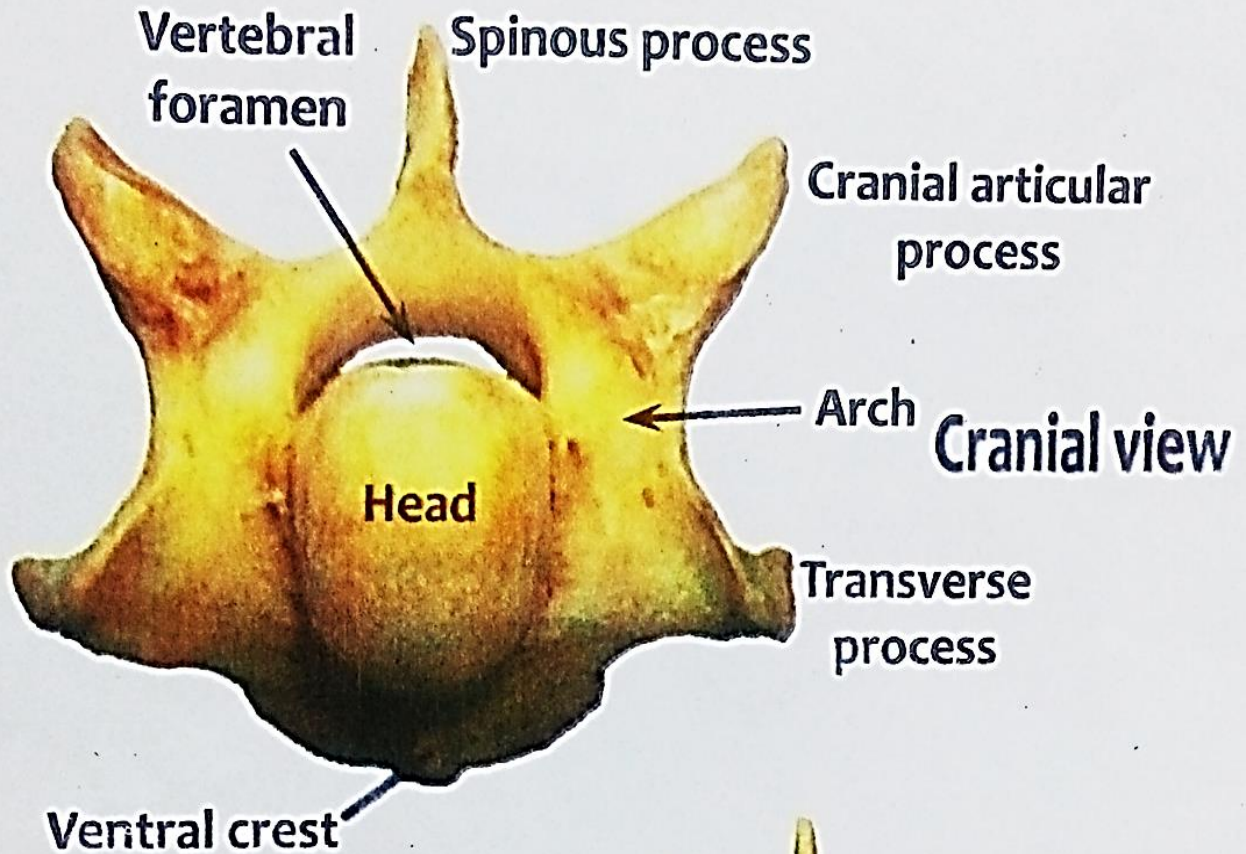
3rd, 4th and 5th cervical vertebra

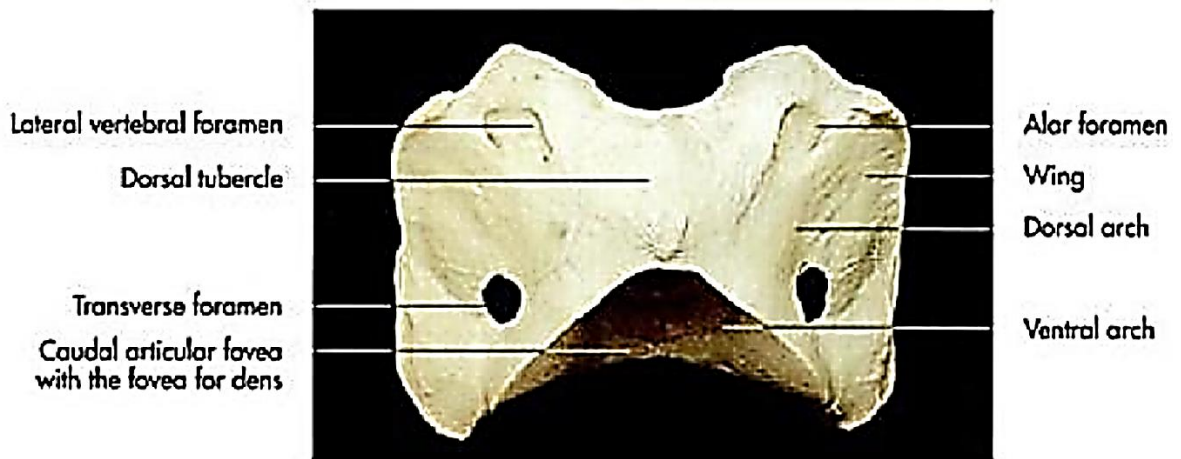


Sixth cervical vertebra

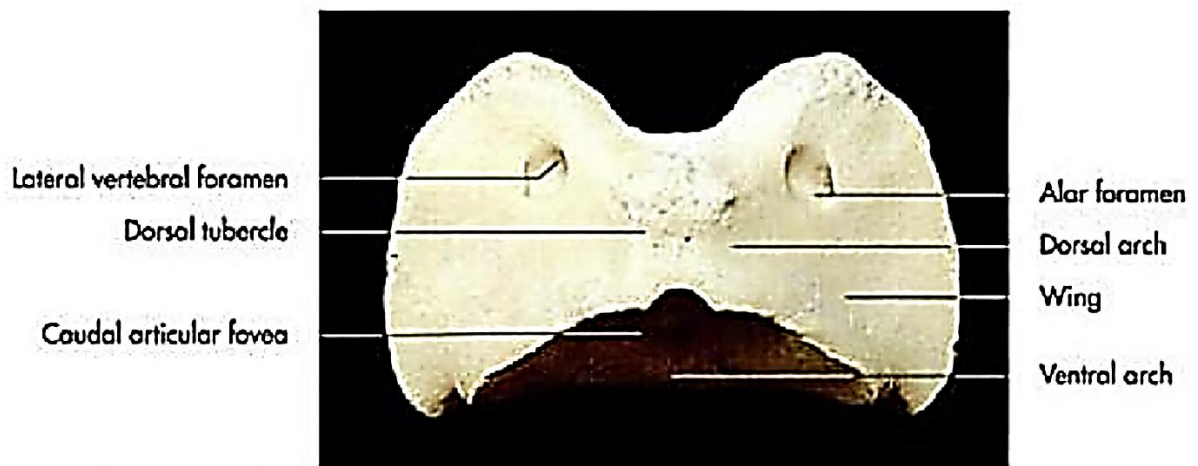


Seventh cervical vertebra





First cervical vertebra (atlas) of a horse (dorsal aspect).



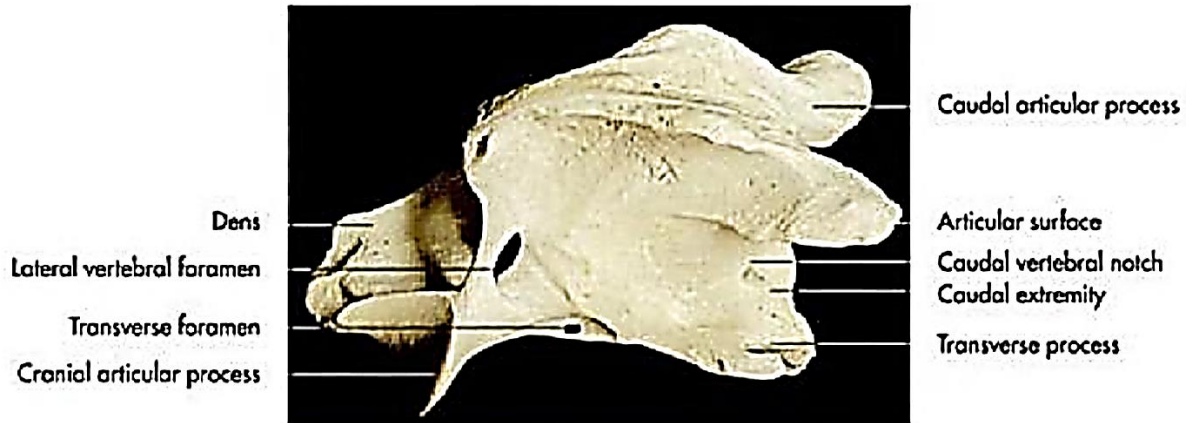
First cervical vertebra (atlas) of an ox (dorsal aspect).



First cervical vertebra (atlas) of a dog (dorsal aspect).

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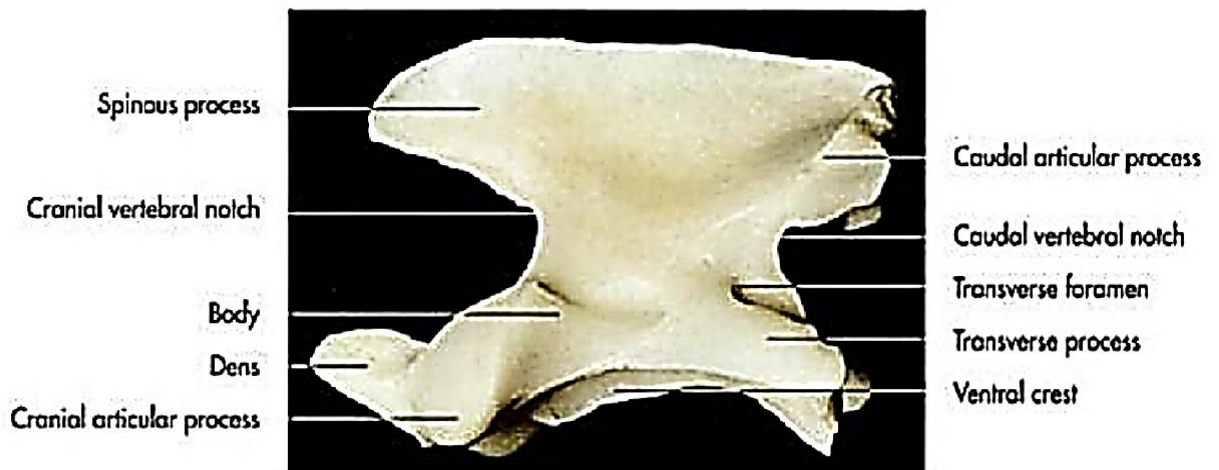


Second cervical vertebra (axis) of a horse (lateral aspect).



Second cervical vertebra (axis) of an ox (lateral aspect).

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Second cervical vertebra (axis) of a dog (lateral aspect).

