

كلية المستقبل الجامعة قسم هندسة الطب الحيوي
المرحلة الثانية

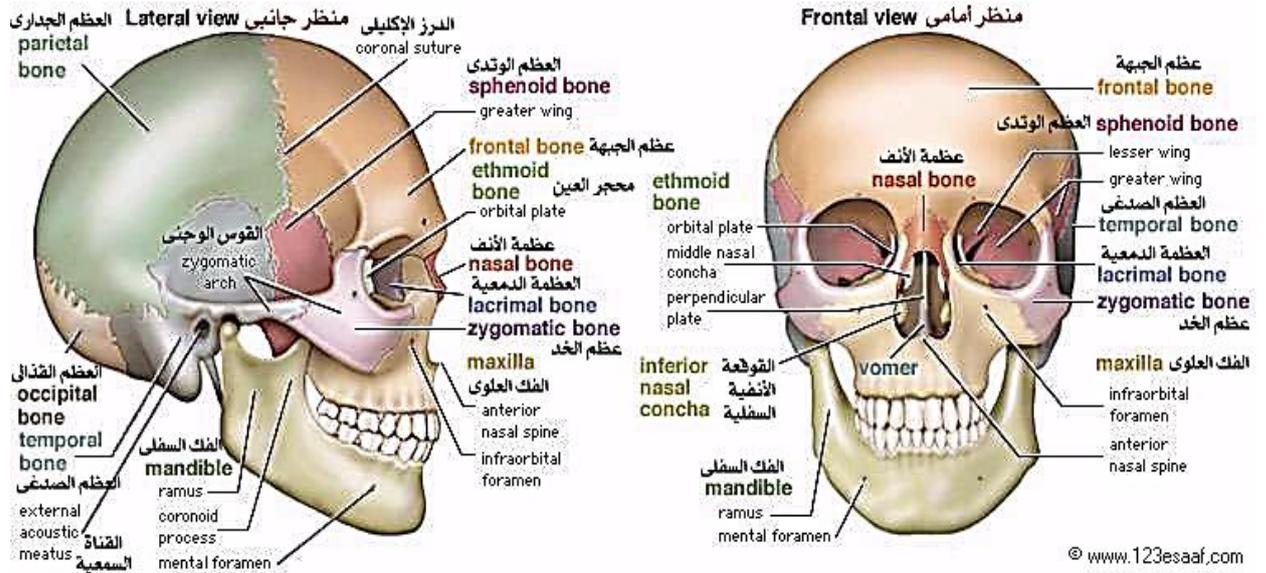
ANATOMY

HEAD & NECK

OSTEOLOGY

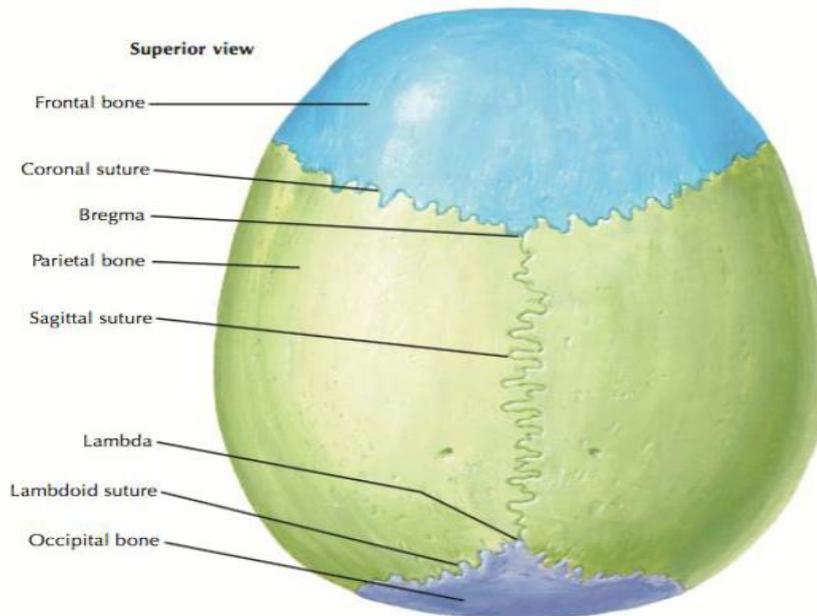
(L2)

Dr Abdulhusein Mizhir Almaamuri



Superior View of the Skull (Norma Verticalis)

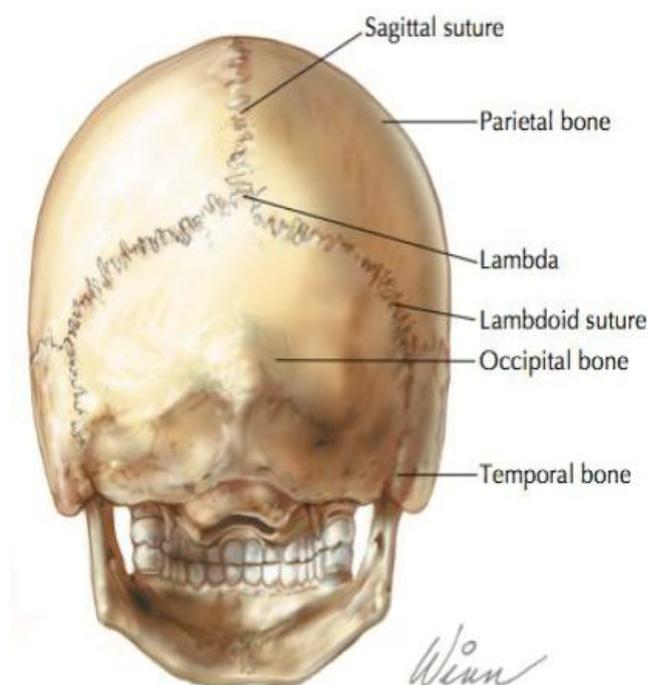
Anteriorly, the frontal bone articulates with the two parietal bones at the coronal suture. Occasionally, the two halves of the frontal bone fail to fuse, leaving a midline metopic suture. Behind, the two parietal bones articulate in the midline at the sagittal suture.



Posterior View of the Skull (Norma Occipitalis)

The posterior parts of the two parietal bones with the intervening sagittal suture are seen above. Below, the parietal bones articulate with the squamous part of the occipital bone at the lambdoid suture. On each side, the occipital bone articulates with the temporal bone.

In the midline of the occipital bone is a roughened elevation called the external occipital protuberance. On either side of the protuberance the superior nuchal lines extend laterally toward the temporal bone.



Inferior View of the Skull (Norma Basalis)

If the mandible is discarded, the anterior part of this aspect of the skull is seen to be formed by the hard palate. The palatal processes of the maxillae and the horizontal plates of the palatine bones can be identified. In the midline anteriorly is the incisive fossa and foramen. Posterolaterally are the greater and lesser palatine foramina. Above the posterior edge of the hard palate are the choanae (posterior nasal apertures). These are separated from each other by the posterior margin

of the vomer and are bounded laterally by the medial pterygoid plates of the sphenoid bone. The inferior end of the medial pterygoid plate is prolonged as a curved spike of bone, the pterygoid hamulus.

- Posterolateral to the lateral pterygoid plate, the greater wing of the sphenoid is pierced by the large foramen ovale and the small foramen spinosum.

- Behind the spine of the sphenoid, in the interval between the greater wing of the sphenoid and the petrous part of the temporal bone, is a groove for the cartilaginous part of the auditory tube. The opening of the bony part of the tube can be identified.

- The mandibular fossa of the temporal bone and the articular tubercle form the upper articular surfaces for the temporomandibular joint.

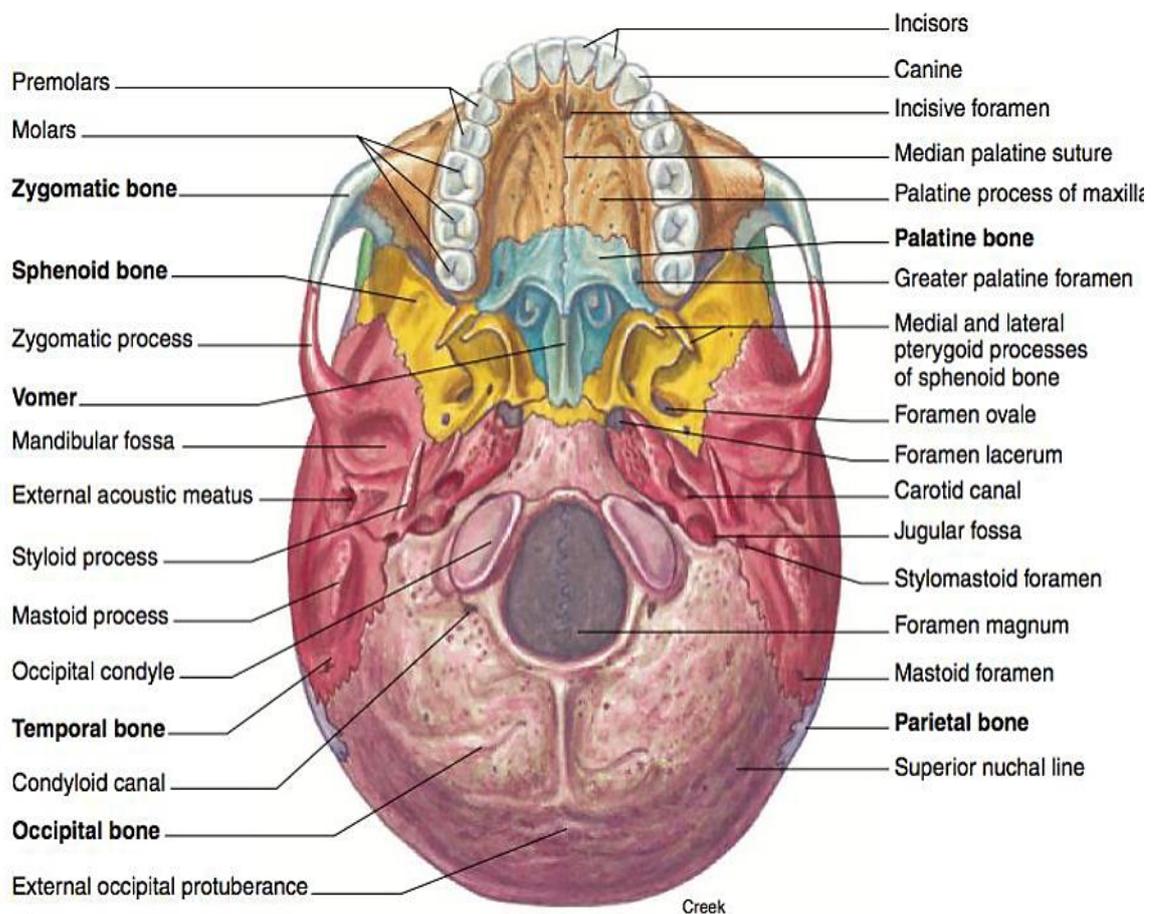
- The styloid process projects downward and forward from the inferior surface of the temporal bone. The opening of the carotid canal can be seen on the inferior surface of the petrous part of the temporal bone.

- The medial end of the petrous part of the temporal bone is irregular and, together with the basilar part of the occipital bone and the greater wing of the sphenoid, forms the foramen lacerum. During life, the foramen lacerum is closed with fibrous tissue, and only a few small vessels pass through this foramen from the cavity of the skull to the exterior.

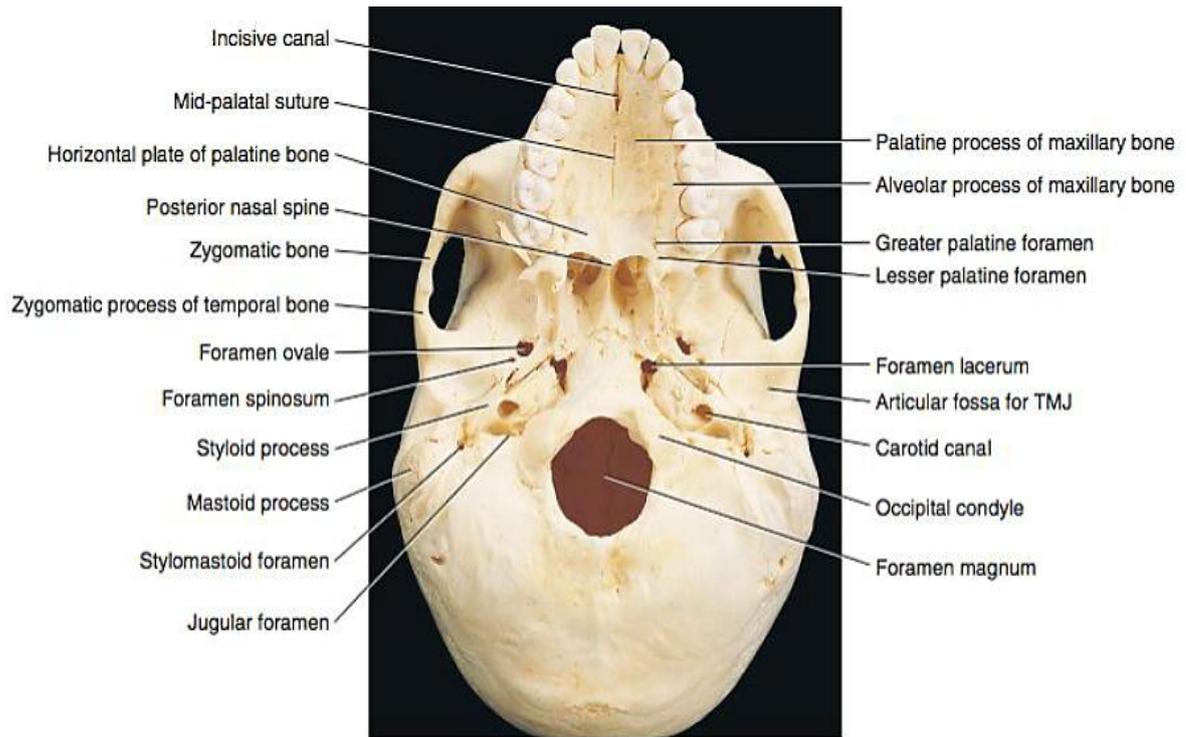
In the interval between the styloid and mastoid processes, the stylomastoid foramen can be seen. Medial to the styloid process, the petrous part of the temporal bone has a deep notch, which, together with a shallower notch on the occipital bone, forms the jugular foramen.

Behind the posterior apertures of the nose and in front of the foramen magnum are the sphenoid bone and the basilar part of the occipital bone. The pharyngeal tubercle is a small prominence on the undersurface of the basilar part of the occipital bone in the midline.

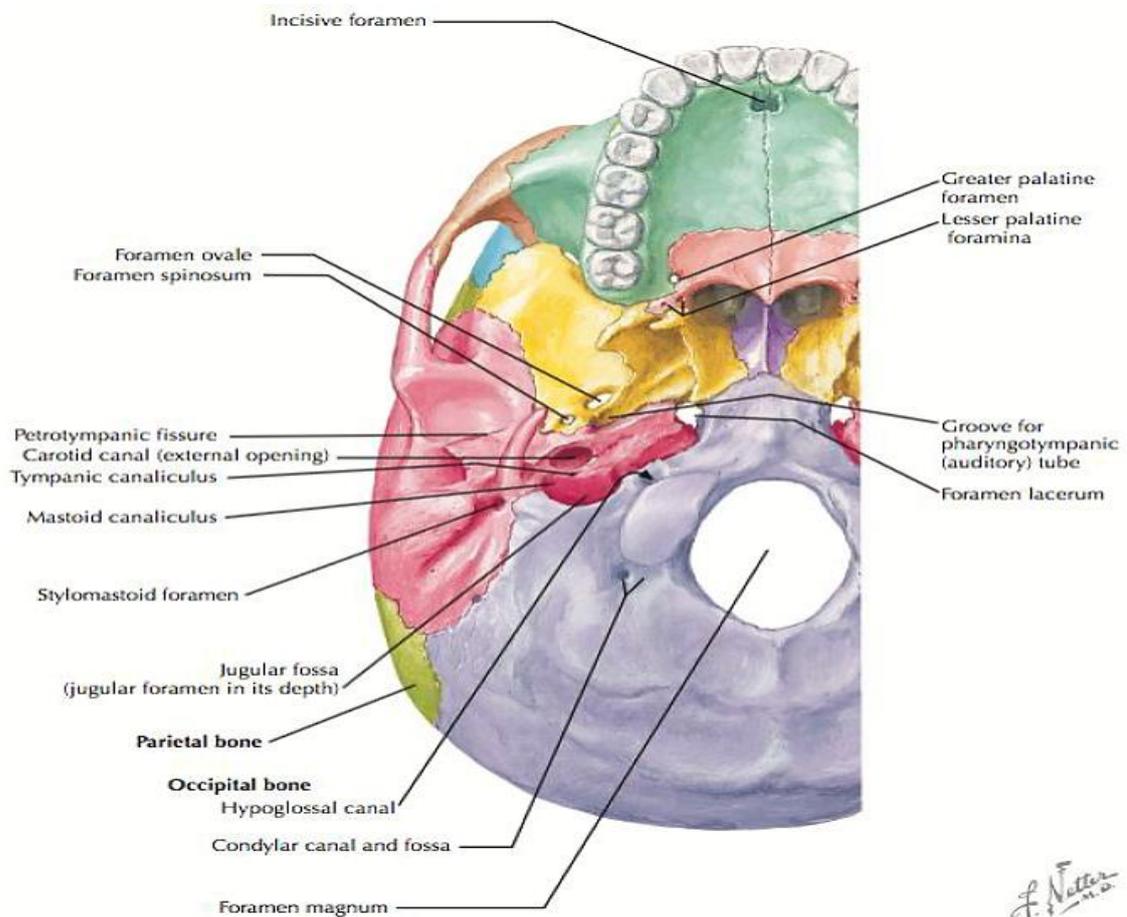
- The occipital condyles should be identified; they articulate with the superior aspect of the lateral mass of the first cervical vertebra, the atlas. Superior to the occipital condyle is the hypoglossal canal for transmission of the hypoglossal nerve.
- Posterior to the foramen magnum in the midline is the external occipital protuberance. The superior nuchal lines should be identified as they curve laterally on each side.



An inferior view of the skull.



Inferior view of skull



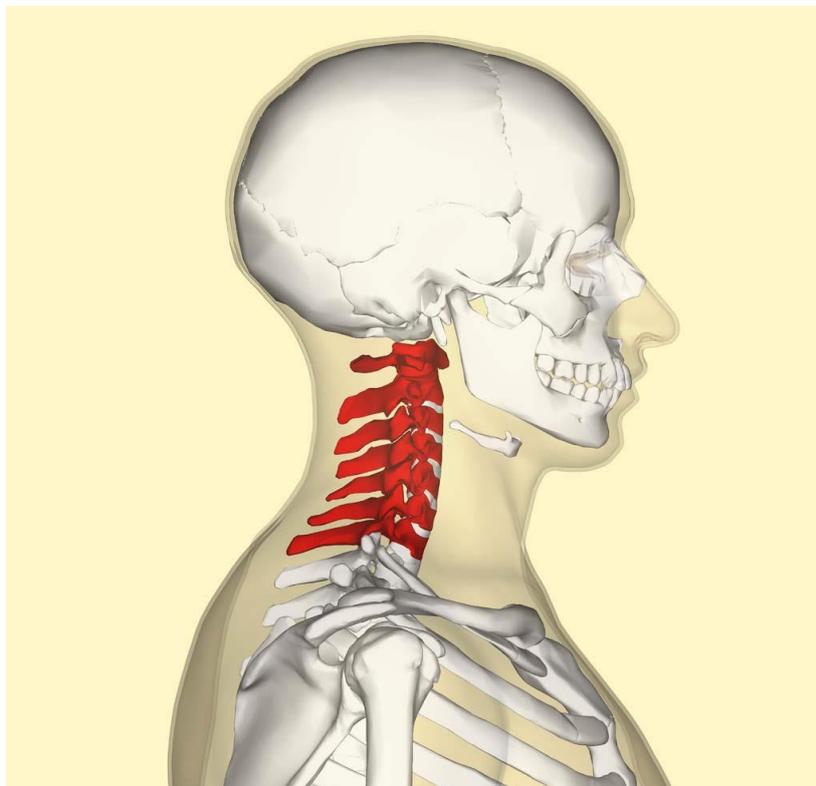
F. Netter M.D.

The Cervical Spine

The cervical spine is the most superior portion of the vertebral column, lying between the cranium and the thoracic vertebrae.

It consists of seven distinct vertebrae, two of which are given unique names:

- The first cervical vertebrae (C1) is known as the atlas.
- The second cervical vertebrae (C2) is known as the axis.

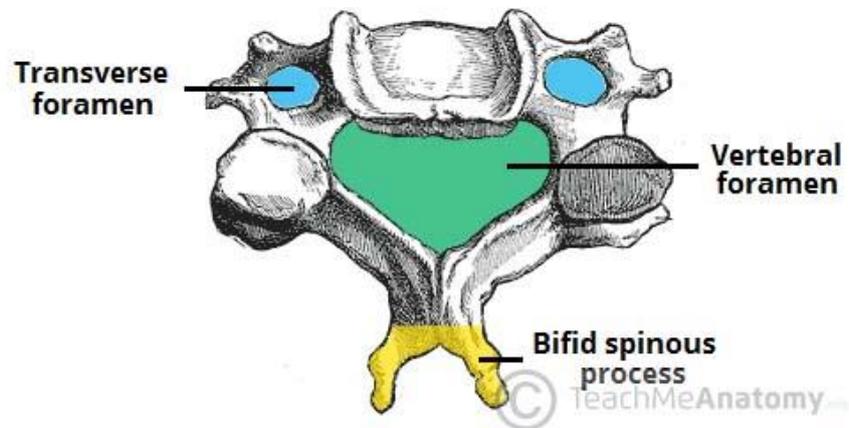


The cervical vertebrae have three main features which distinguish them from other vertebrae:

Triangular vertebral foramen.

Bifid spinous process – this is where the spinous process splits into two distally.

Transverse foramina – holes in the transverse processes. They give passage to the vertebral artery, vein and sympathetic nerves.



(Characteristic features of a cervical vertebrae)

Atlas and Axis

The atlas and axis have additional features that mark them apart from the other cervical vertebrae.

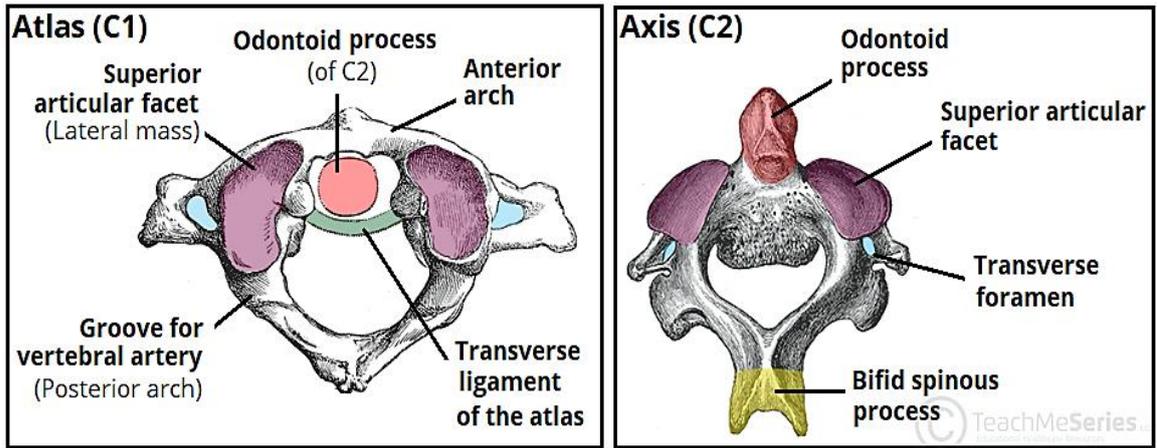
Atlas

The atlas is the first cervical vertebra and articulates with the occiput of the head by atlanto-occipital joint and the axis by atlanto-axial joint.

It differs from the other cervical vertebrae in that it has no vertebral body and no spinous process. Instead, the atlas has lateral masses which are connected by an anterior and posterior arch.

Axis

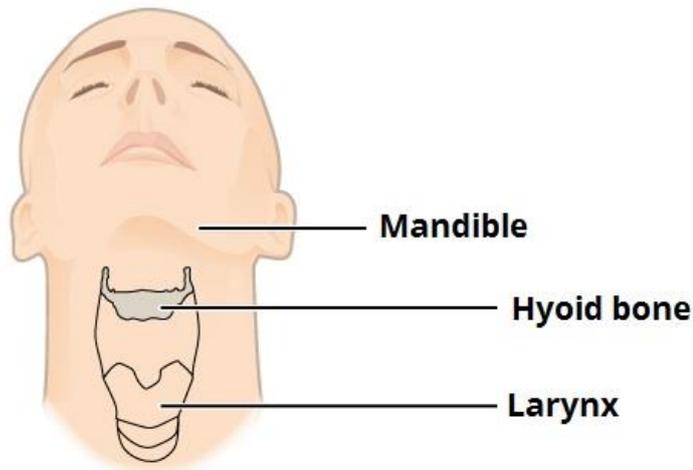
The axis (C2) is easily identifiable due to its dens (odontoid process) which extends superiorly from the anterior portion of the vertebra.



(The bony landmarks of the atlas and axis Joints)

The Hyoid Bone : is a 'U' shaped structure located in the anterior neck. It lies at the base of the mandible (approximately C3), where it acts as a site of attachment for the anterior neck muscles.

(Position of the hyoid bone in the neck)



The hyoid is composed of a body, two greater horns and two lesser horns:

