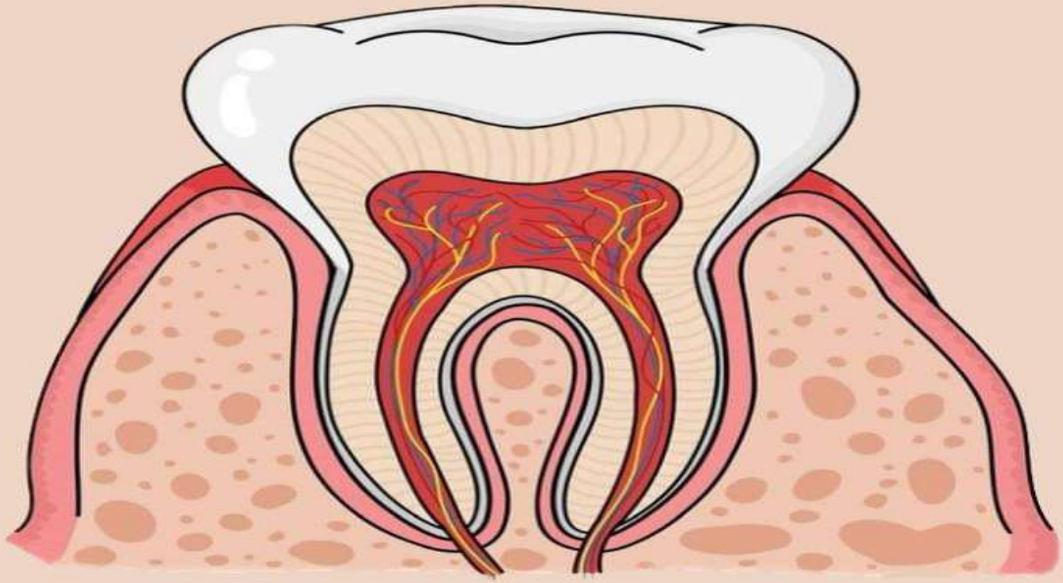
النادي الطبي

ANATOMY



LEC NO. : 3

DONE BY : Nour Al-amarsh.

وقل رب زدني علماً

The Axial Skeleton

Facial Bones:

Maxillae bone articulates with every bone of the face except the mandible

- **Nasal Bones**
  - Form the bridge of the nose
- **Maxillae**
  - Form the upper jawbone
  - Has the following processes:
    1. Frontal process superiorly
    2. Zygomatic process laterally
    3. Palatine process posteriorly
    4. Alveolar process inferiorly. This one contains sockets for the teeth.
  - The palatine process form most of the hard palate
    - Separates the nasal cavity from the oral cavity
- **Zygomatic Bones**
  - Commonly called cheekbones, form the prominences of the cheeks
  - The **temporal** process of this bone unite with the **zygomatic** process of the temporal bone to form the **zygomatic arch**.

lacrimal gland هي و الدمع لأنه فيها غدة Lacrimal ← تسميت naso lacrimal duct ← تحتوي ع (مش مطلوبة هسا)

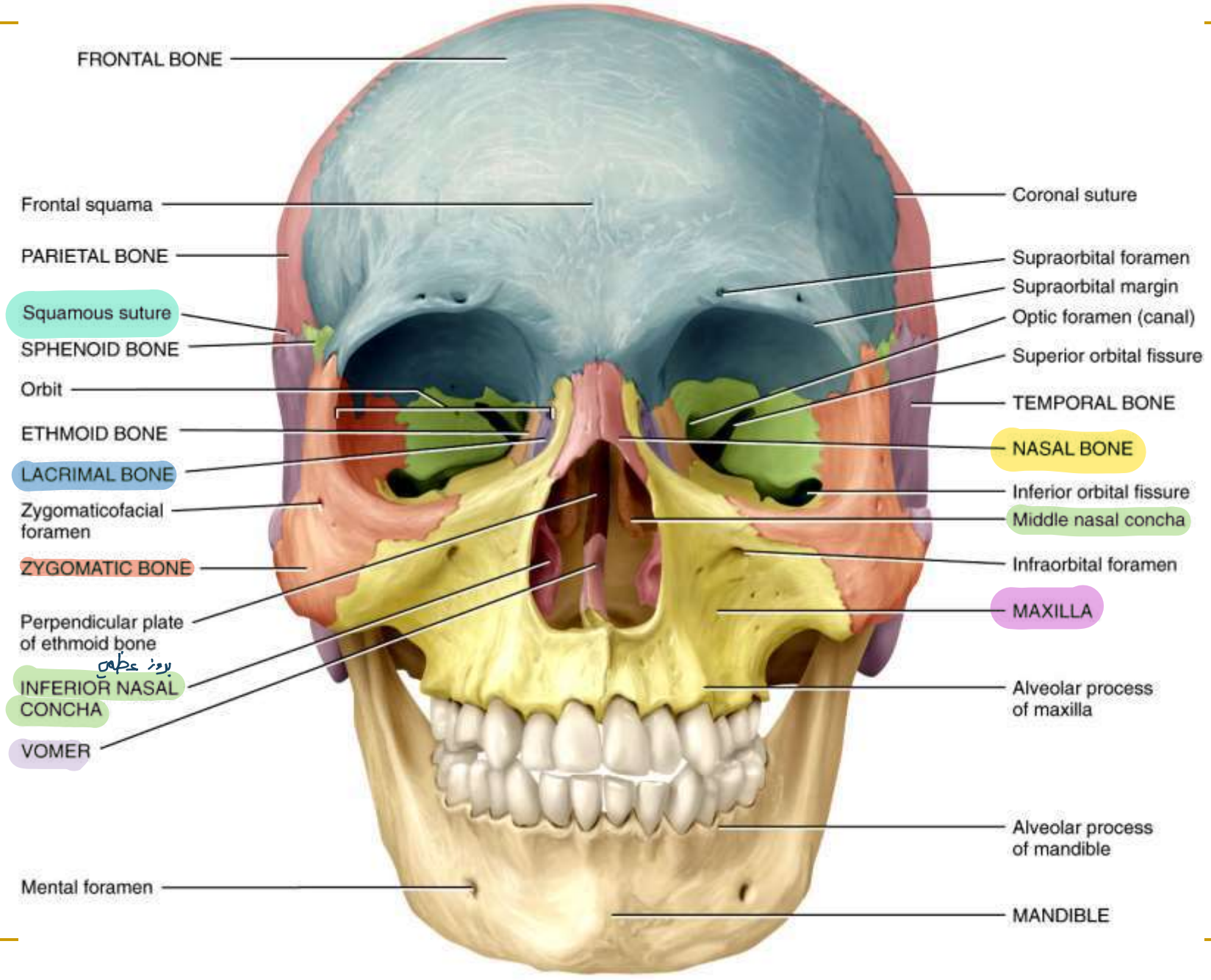
- **Lacrimal Bones** eye socket و تجويف العين ←
  - Form a part of the medial wall of each orbit
- **Palatine Bones** + maxilla → hardpalate و hard + soft palate → palate
  - Form the posterior portion of the hard palate
- **Inferior Nasal Conchae** بروز

  Conchae : superior, middle, inferior → بطلع من مصدر واحد
  ethmoid من
  - Form a part of the inferior lateral wall of the nasal cavity
- **Vomer**
  - Forms the inferior portion of the nasal septum lower part

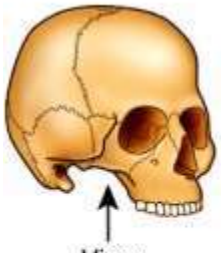
nasal septum separates the right and left sides of your nasal cavity

و الجزء العلوي من ethmoid bone

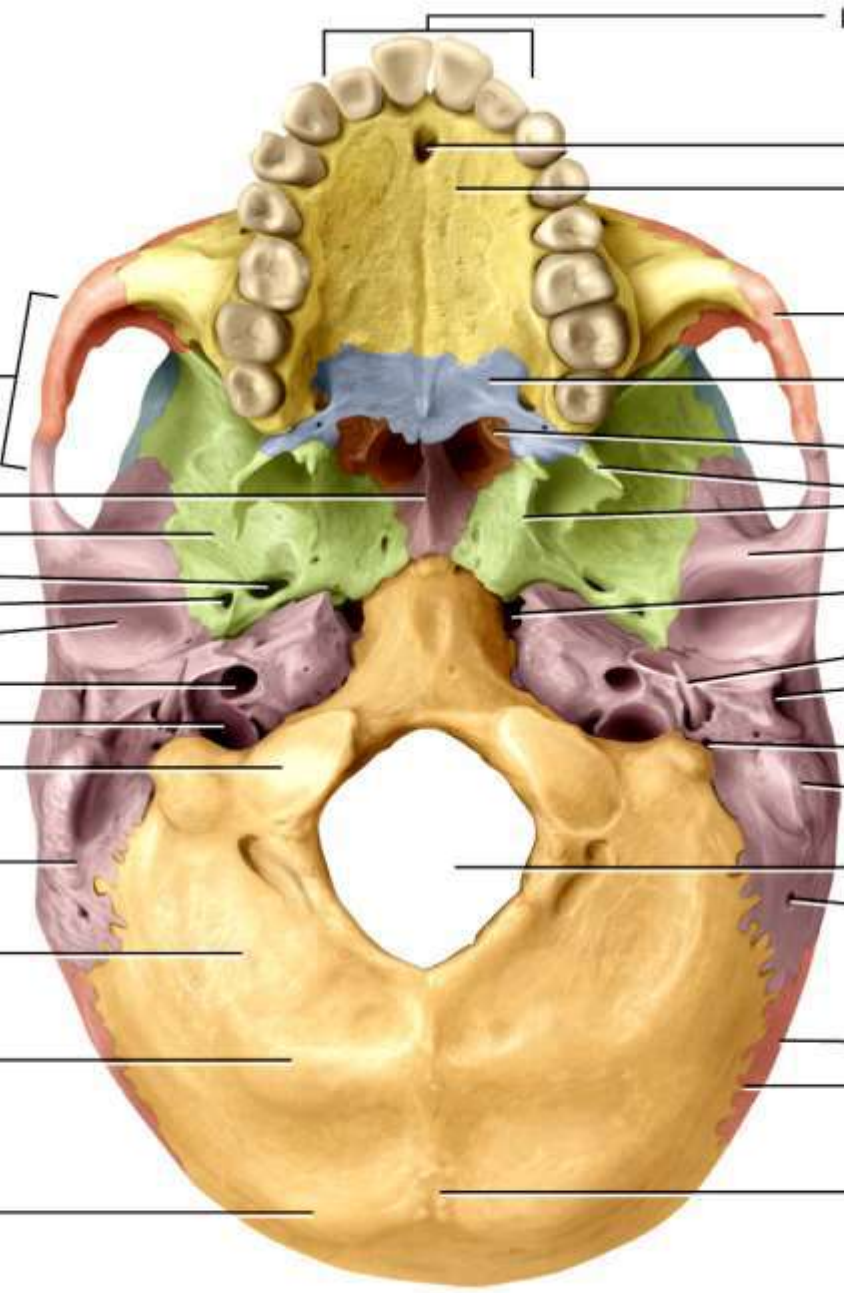
Anterior part of the nasel septum is cartilage



Anterior view



View



Incisor teeth

MAXILLA:
Incisive foramen
Palatine process of the maxilla

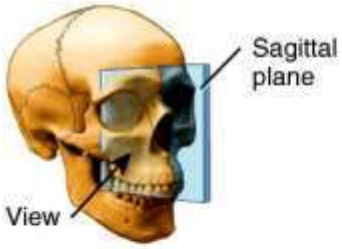
ZYGOMATIC BONE
PALATINE BONE (horizontal plate)
Inferior nasal concha
Pterygoid processes
Articular tubercle
Foramen lacerum
Styloid process
External auditory meatus
Stylomastoid foramen
Mastoid process
Foramen magnum
Mastoid foramen
PARIETAL BONE
Lambdoid suture
External occipital protuberance

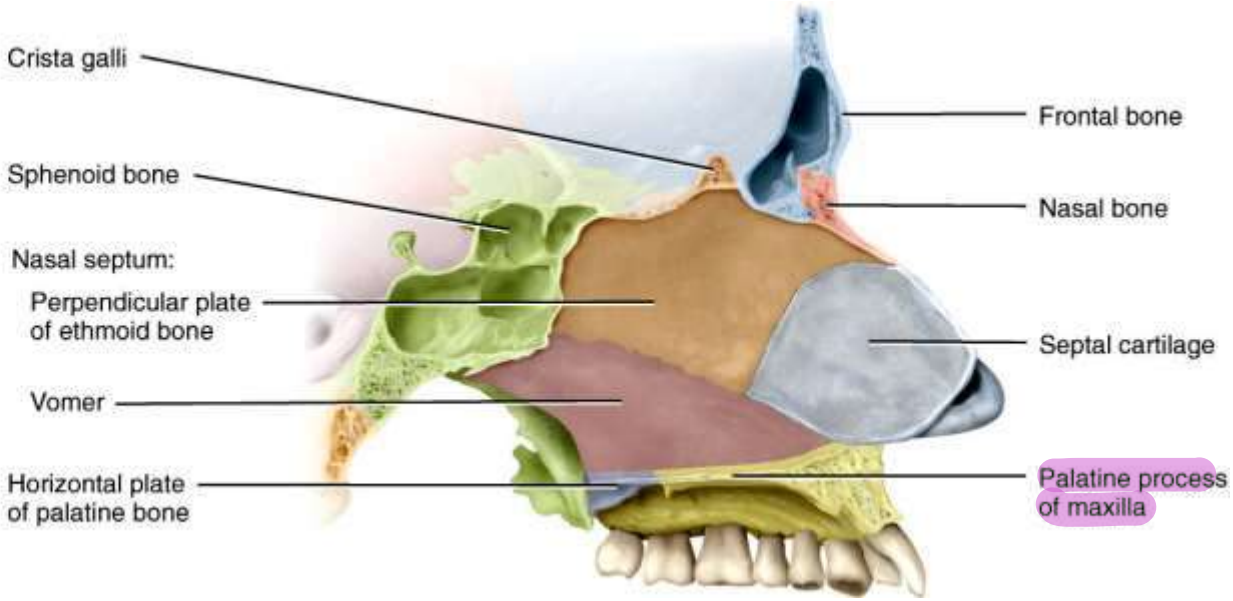
Zygomatic arch
VOMER
SPHENOID BONE
Foramen ovale
Foramen spinosum
Mandibular fossa
Carotid foramen
Jugular foramen
Occipital condyle
TEMPORAL BONE
OCCIPITAL BONE
Inferior nuchal line
Superior nuchal line

TMJ

Inferior view

The Nasal Septum:





A partition that divides the nasal cavity into right and left halves. It's formed of **2 bony part** and **1 cartilaginous part**:

Anterior.

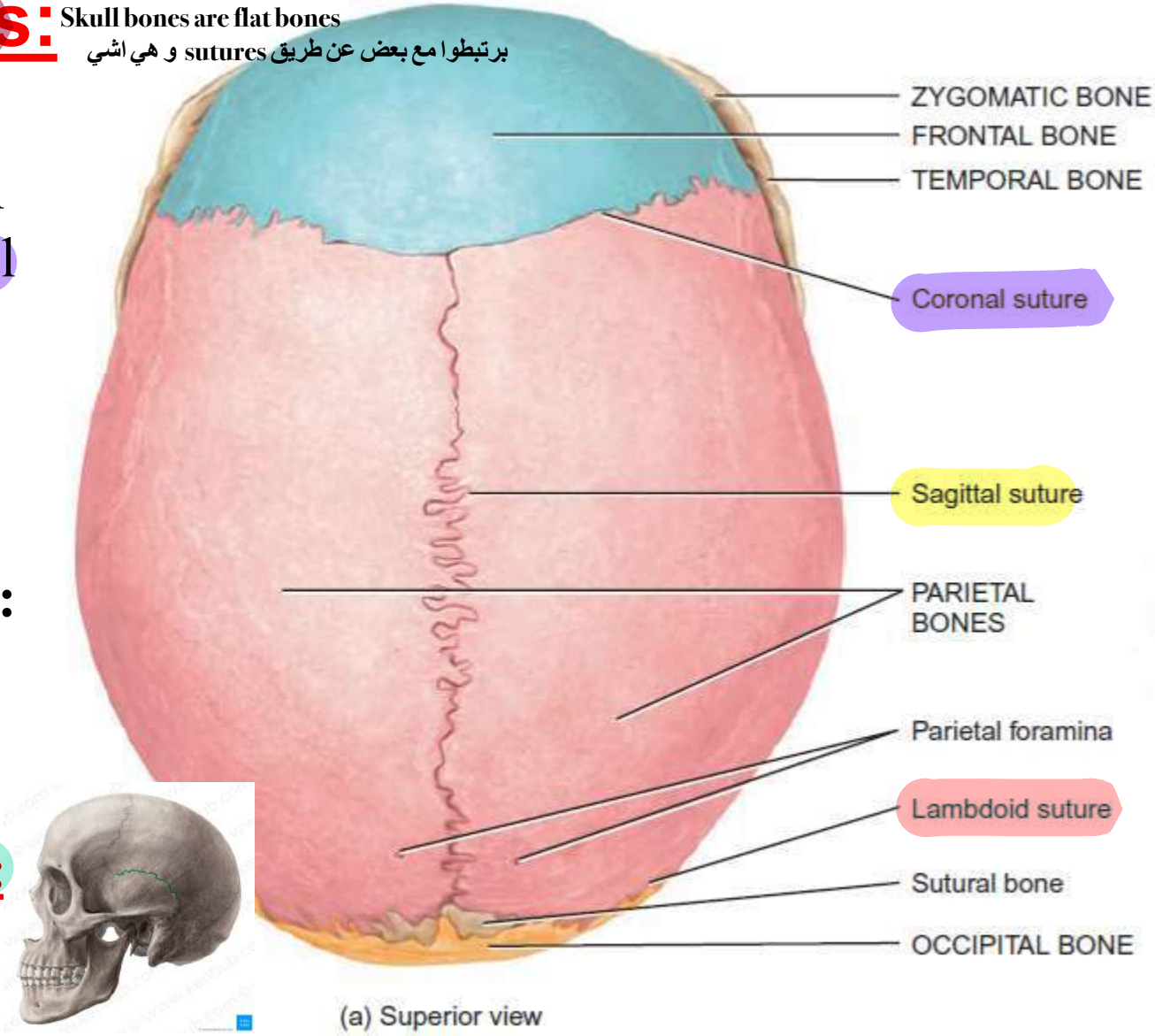
1. **Ethmoid bone**
2. **The vomer bone**
3. **Septal cartilage (hyaline cartilage) anteriorly**.

Main Sutures:

Skull bones are flat bones
برتبطوا مع بعض عن طريق sutures و هي اشي

1) **Coronal Suture:** between the frontal and the two parietal bones.
2) **Sagittal Suture:** between the two parietal bones.
3) **Lambdoid Suture:** between the two parietal and the occipital bones.
4) **Squamous suture:** Temporal and parietal

slide 3

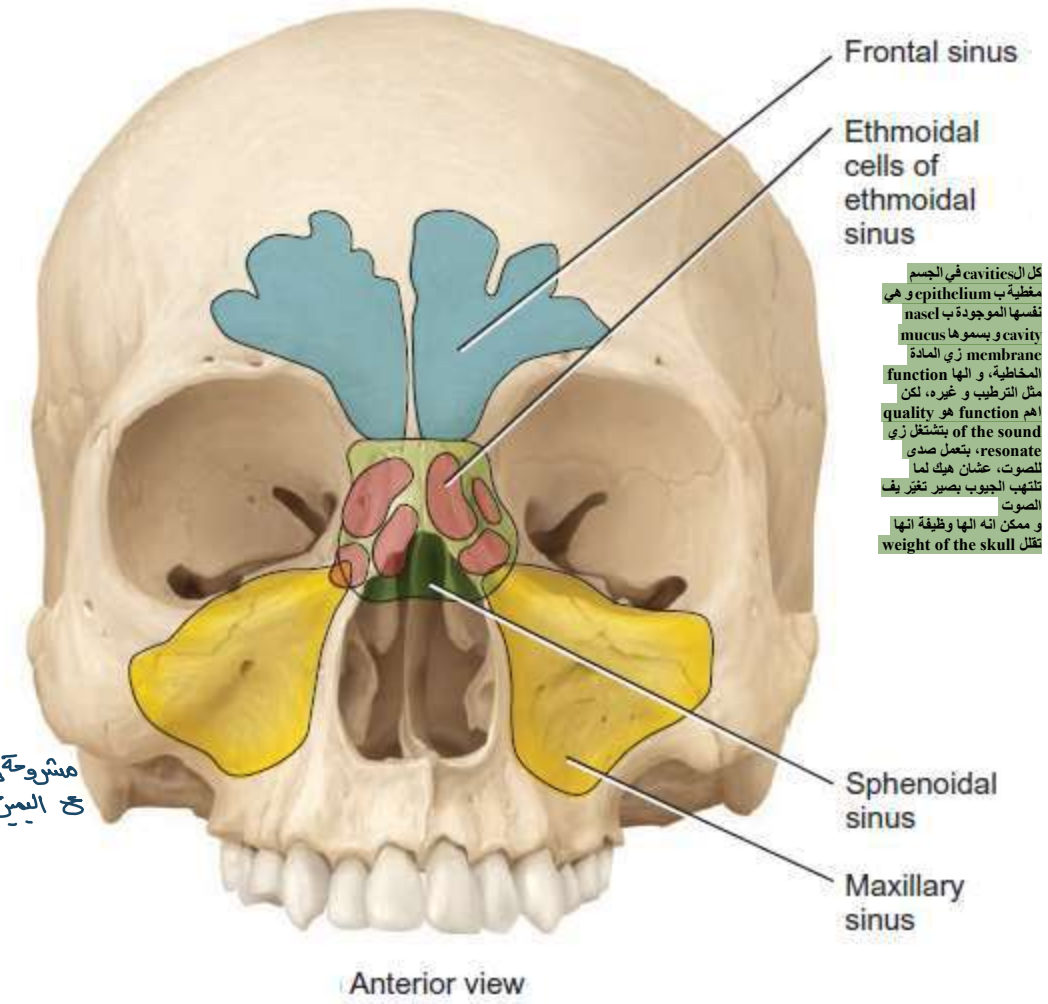


(a) Superior view

Paranasal Sinuses:

بتكون single bone و الcavity جواتها

- Cavities within cranial and facial bones near the nasal cavity
- Secretions produced by the mucous membranes which line the sinuses, drain into the nasal cavity
- Serve as resonating chambers that intensify and prolong sounds



كل الcavities في الجسم مغطية ب epithelium و هي نفسها الموجودة ب nasal cavity و يسموها mucus membrane زي المادة المخاطية، و الها function مثل الترطيب و غيره، لكن اهم function هو quality of the sound يتشتغل زي resonate، بتعمل صدى للصوت، عشان هيك لما تلتهب الجيوب بصير تغير يف الصوت
و ممكن انه الها وظيفة انها weight of the skull تقلل

- Found in the following bones

1-Frontal 2-Ethmoid

3-Sphenoid 4-Maxillary : Largest related to the upper teeth.

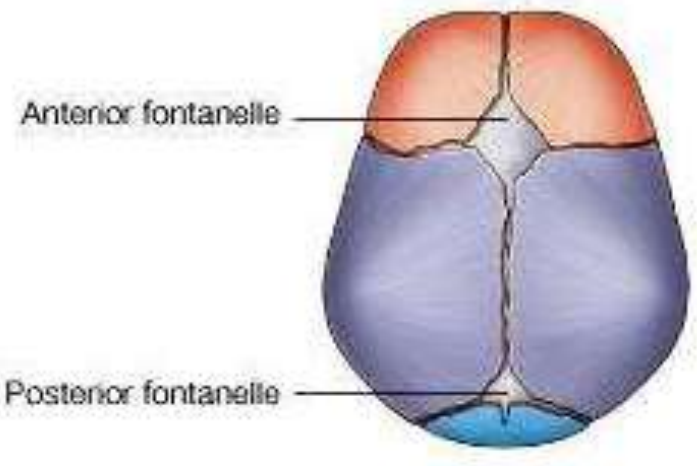
Sinusitis is an inflammation of the mucous membrane.

maxilla الفك الأعلى هو

عند المواليد الجدد بكون في مناطق بالرأس تكون لسا tissue و هي عبارة عن bone لسا ما تكون، عادةً بتكون في مكان التقاء sutures بالامام و الخلف، ممكن نلاقي anterior +posterior lateral بس الاهم هما يلي anterior and posterior و بدهم من سنة ونص الى سنتين لحتى يسكروا، اهمية هاي الsoft tissues انه خلال الولادة يكون عنا flexibility، و ممكن تعطيني flexibility للbrain للجنين

Fontanels

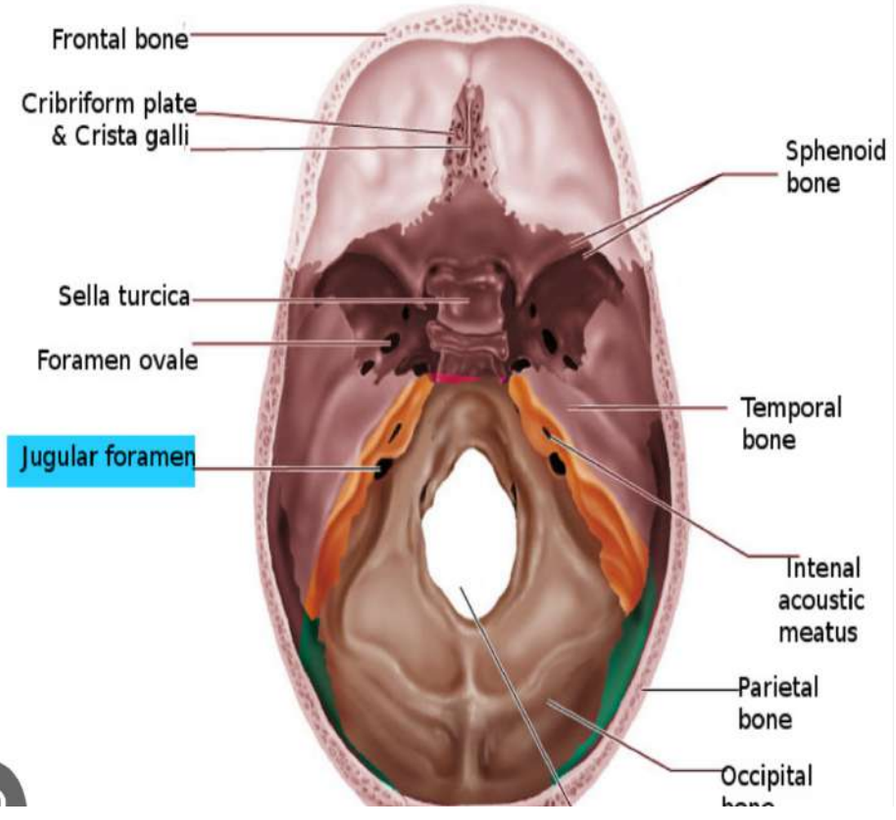
- Areas of **unossified** tissue that link the cranial bones at birth
- Eventually, they are **replaced with bone** to become sutures
- Provide **flexibility to the fetal skull**, allowing the skull to change shape as it passes through the birth canal

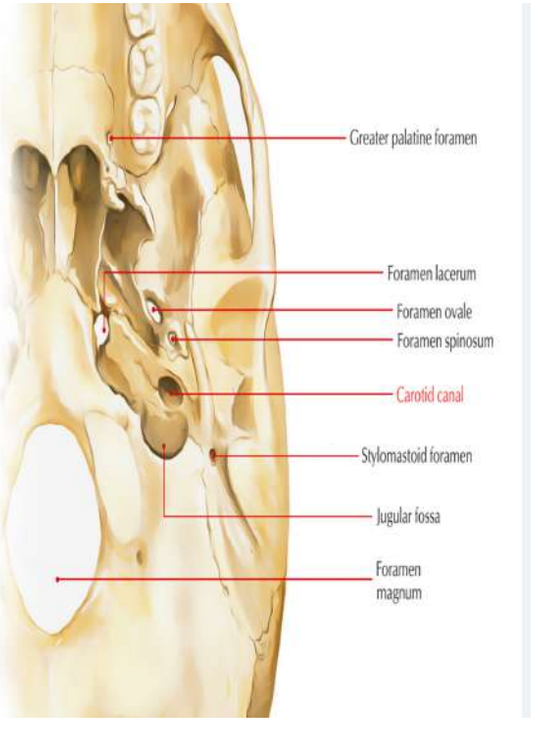


	Anterior Fontanel	Posterior Fontanel
Location	Between the frontal and parietal bones	Between the parietal and occipital bones
Shape	Diamond ♦	Triangular ▲
Size	Larger than the posterior	Smaller than the anterior
Closes	Later than the posterior (1.5 - 2 years)	Before the anterior (6 months)

Principal Foramina of the Skull

Foramen	Location	Structures passing through
Olfactory	Ethmoid	Cranial nerve I
Optic	Sphenoid	Cranial nerve II
Carotid	Temporal bone	Internal carotid artery
Jugular	Between Temporal and Occipital	Internal jugular vein
Mandibular	Mandible	Mandibular branch of cranial nerve V
Magnum	Occipital	Medulla oblongata and meninges

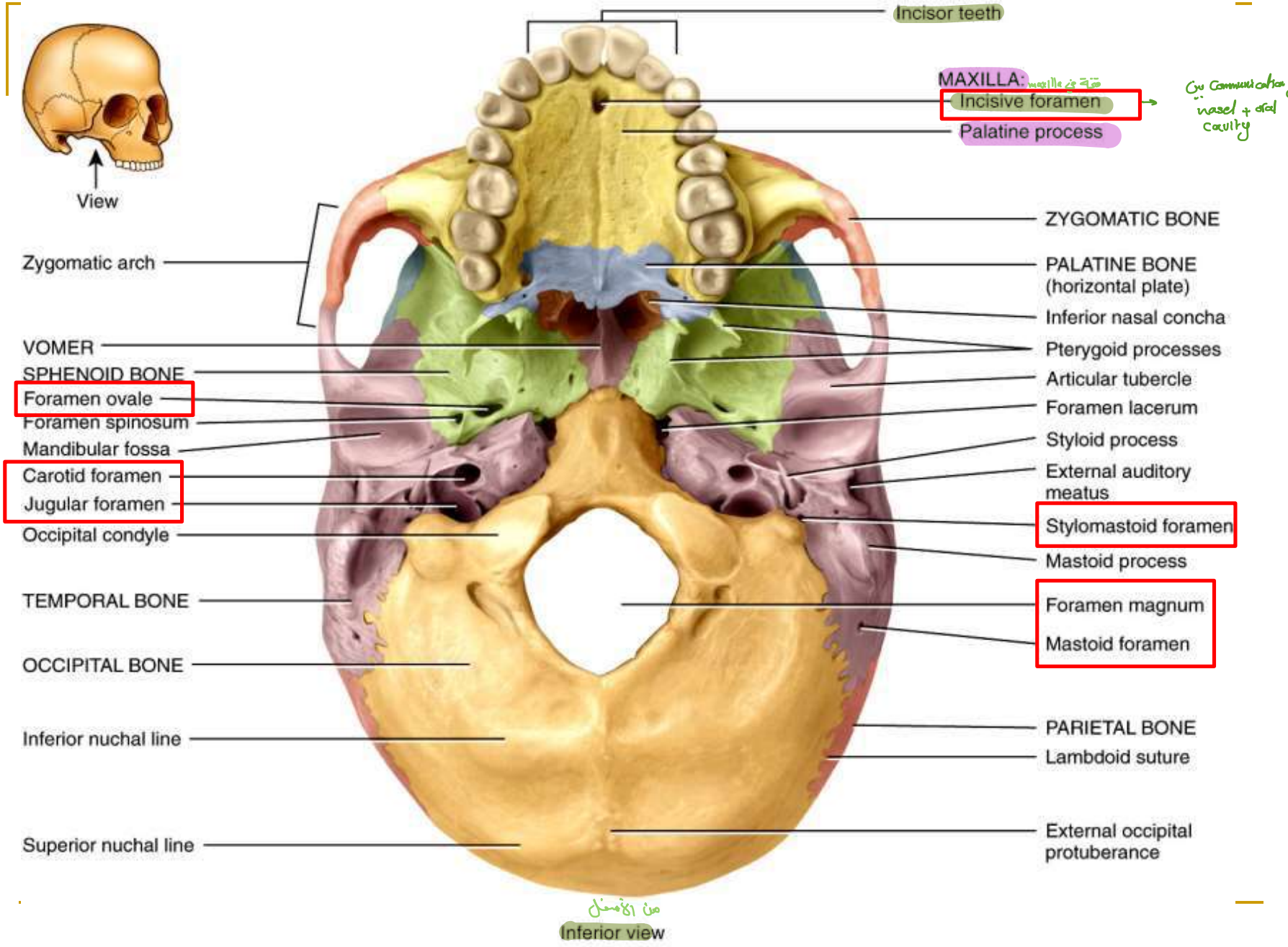




الثنين مهمين جدًا، لانه الcarotid بيدخّل internal carotid artery و هو شريان يغذّي الدماغ.

Jugular foramen, internal jagular vein

و هو بياخد الدم غير المؤكسد من الدماغ.


View
Incisor teeth
MAXILLA:
Incisive foramen
Palatine process
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(horizontal plate)
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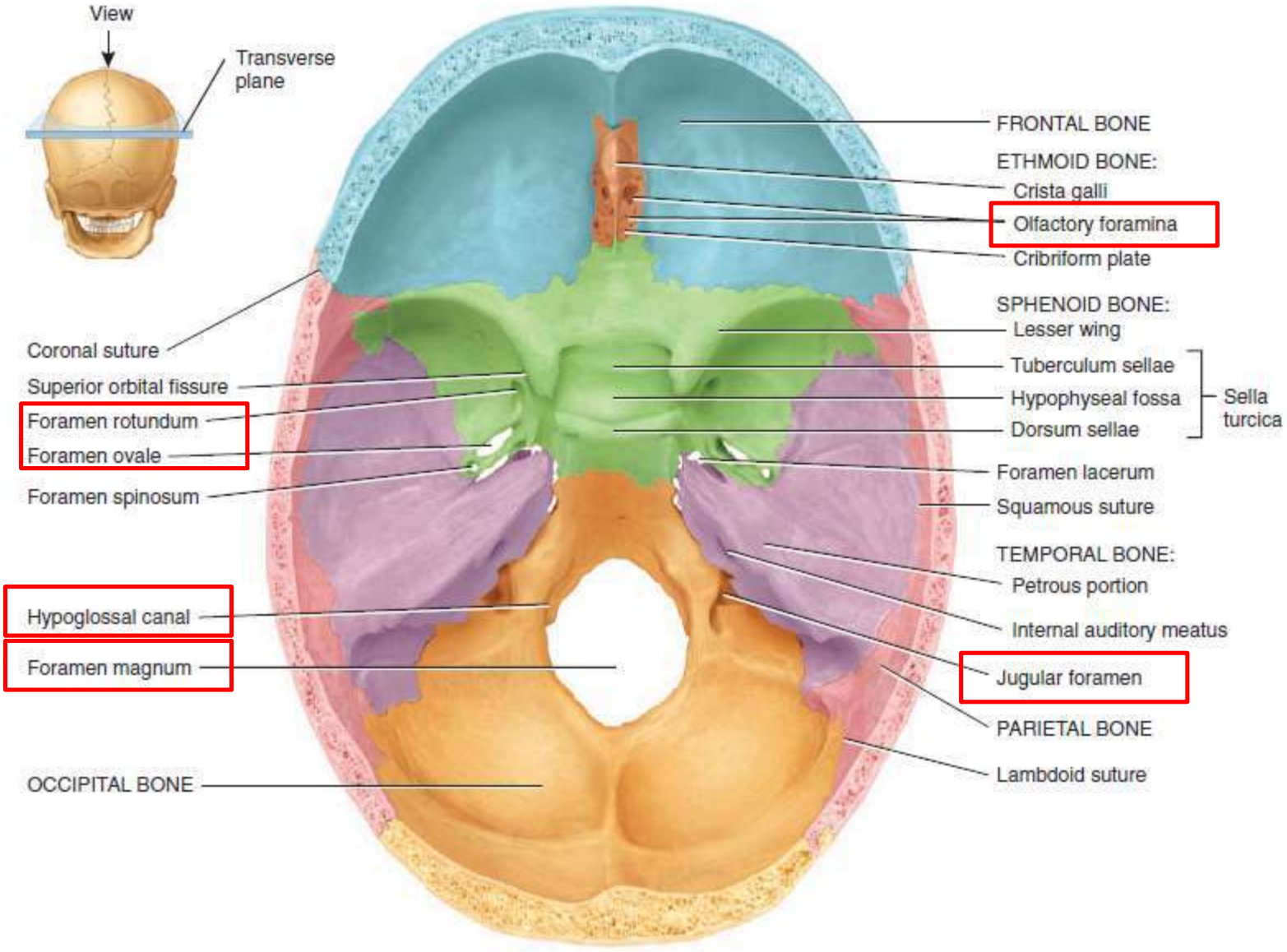
OCCIPITAL BONE
PARIETAL BONE
Inferior nuchal line
Lambdoid suture
Superior nuchal line
External occipital
protuberance
Inferior view



(a) Superior view of sphenoid bone in floor of cranium

Mandible

- Lower jawbone
- The largest, strongest facial bone
- The only movable skull bone

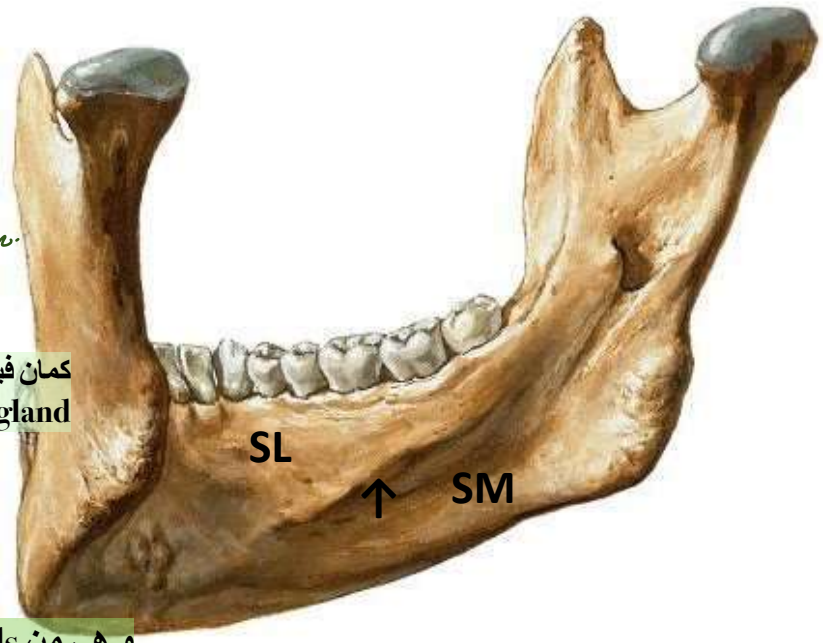
** Is formed of two bones, (right and left) which unite at the symphysis menti after the frist year.

** The mandible is formed of a body and two rami.

A. The body

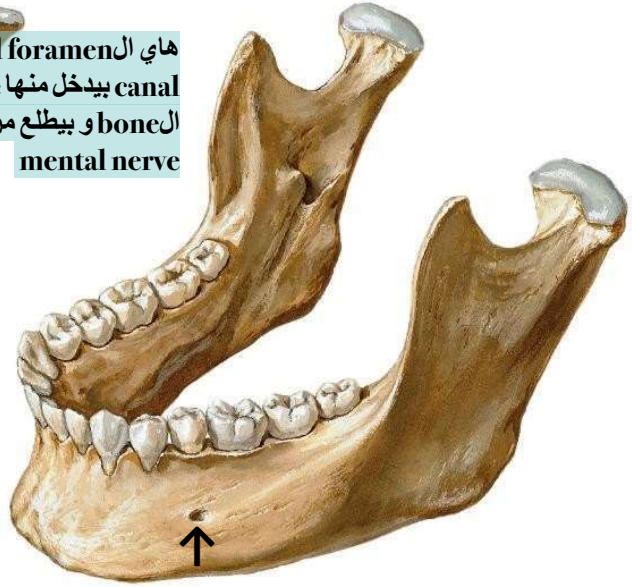
* Internal surface :

- It shows the mylohyoid line (↑).
  - mylohyoid → Floor of the mouth.
  - one of the muscles essential in performing the functions of swallowing and speaking.
- Below this line is the submandibular fossa (SM), while above this line is the sublingual fossa (SL).
  - submandibular كمان فيها gland
  - Sublingual gland و هي من salivary glands
  - عبارة عن cavity
  - related to the tongue



* External surface:

- The mental foramen lies midway between upper & lower borders, below 2nd premolar tooth.
  - هاي الmental foramen مهمة، لانه mandibular canal بيدخل منها mandibular nerve و بيكمل جوا الbone و بيطلع من lateral surface للجسم على شكل mental nerve
  - بتهمني وين احط البنج



B. Ramus of mandible

* It has two surfaces.

1. The medial surface: shows the mandibular foramen which leads to mandibular canal.

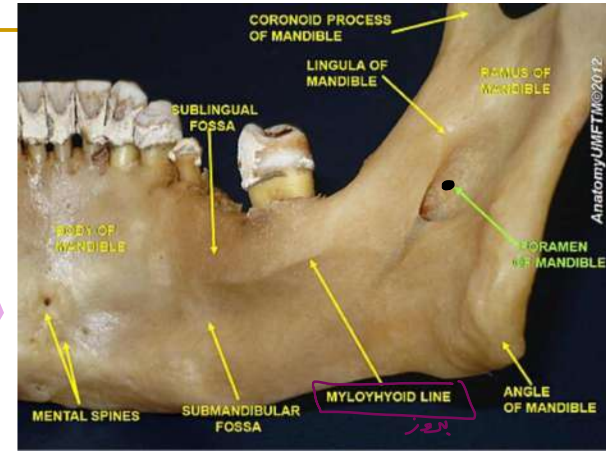
وبيطلع منها العصب الدماغي الخامس

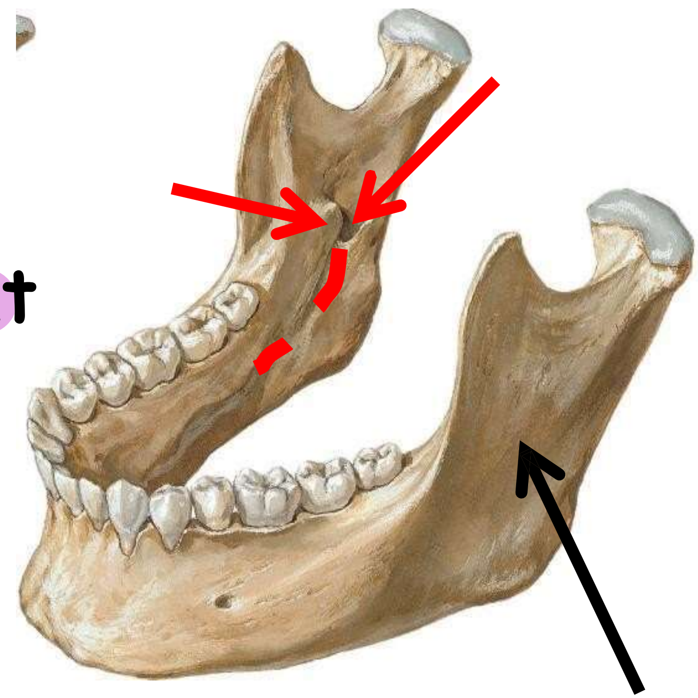
- Projecting over the foramen is the lingula.

بورز بشبه اللسان و وهي lateral to the foramen

2. The lateral surface: is flat

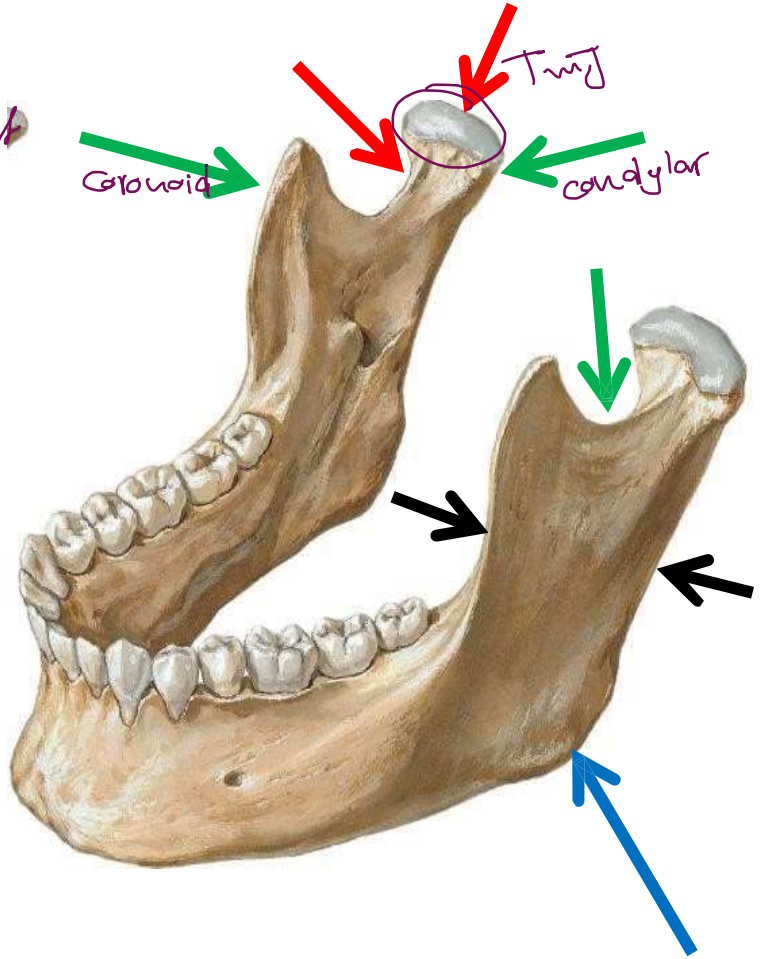
It is important for muscle attachments





** **Upper border:**

- Shows two process **coronoid** anteriorly and **condylar** process posteriorly and in between **the mandibular notch**.
- The condylar process is expanded to form the **head** of the mandible **(TMJ)**.
- The constricted area below the head is the **neck**.
- **Angle** of the mandible is the area of meeting of body and the ramus .

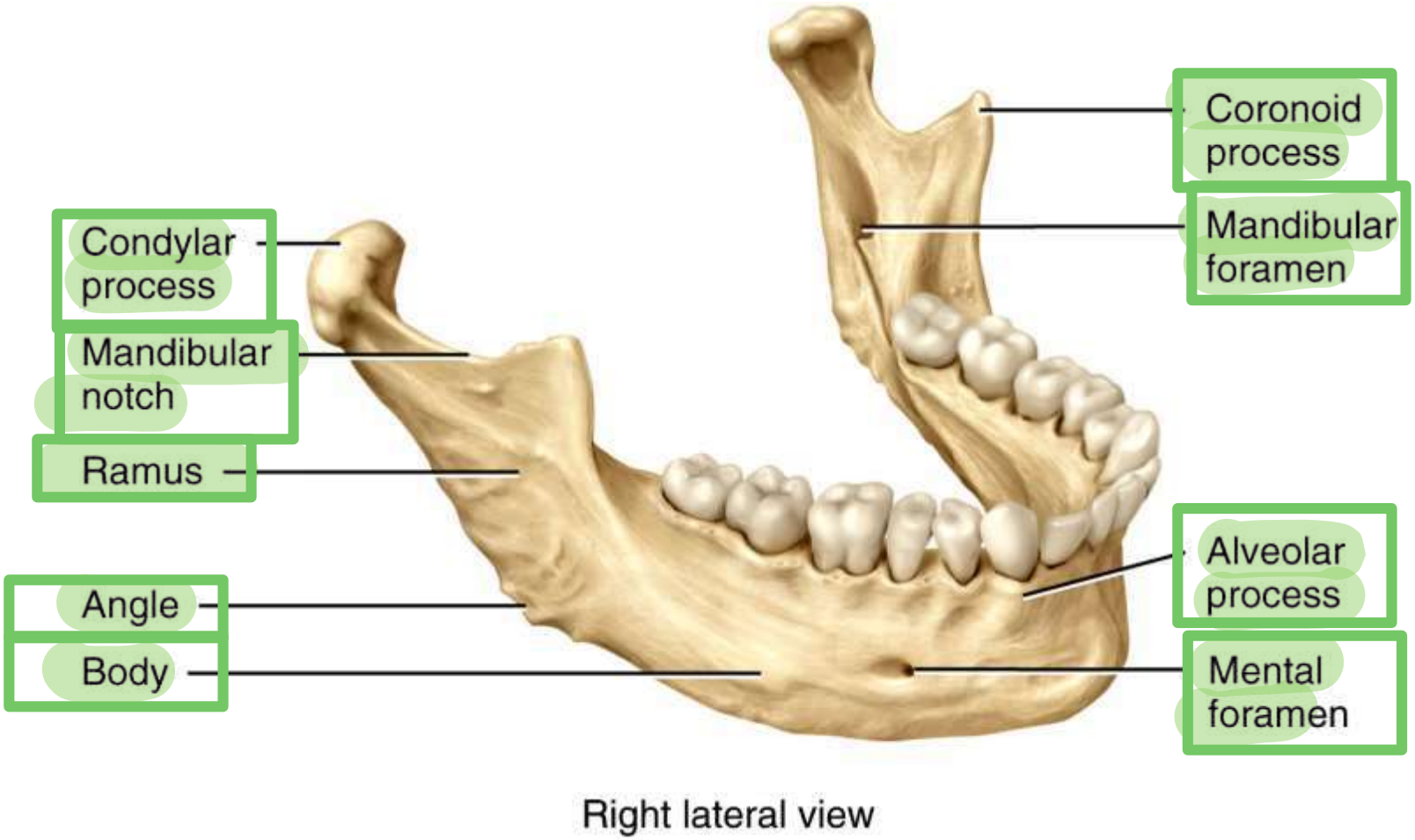


Temporomandibular joint (TMJ)

→ **Temporal bone and the mandible**

Parts of the Mandible:

مطلوبة كاملة



Right lateral view

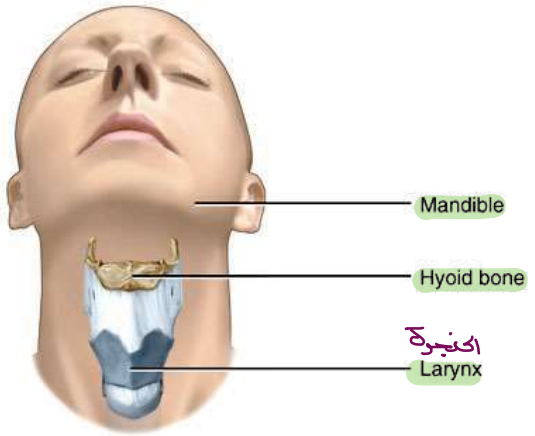
The Hyoid Bone

Single bone

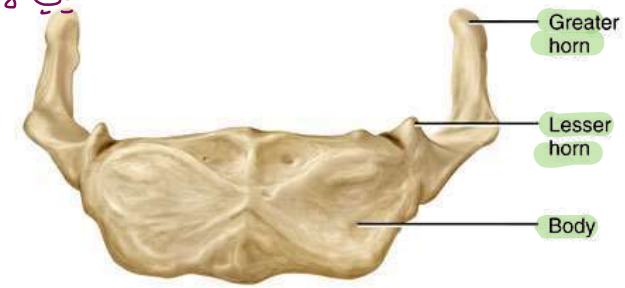
في عنا supera hyoid muscle بمسكو من اعلى

- Located in the **upper part of the neck**
- The only bone in the body that does **not articulate** with any other bone على عكس الجميع هي الوحيدة يلي لا تتفصل
- Supports the tongue, providing attachment sites for some tongue muscles and for muscles of the neck and pharynx and some ligaments بحتوي على bones
- Formed of **body**, **greater horns** and **lesser horns**

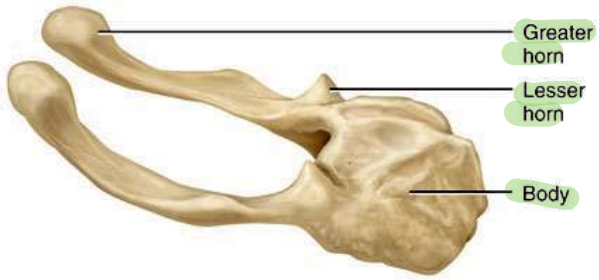
Type your text



(a) Position of hyoid



(b) Anterior view



(c) Right lateral view

The Vertebral Column

العمود الفقري

- Also called the spine, backbone, or spinal column
- Functions to:
  - Protect the spinal cord
  - Support the head
  - Serve as a point of attachment for the ribs, pelvic girdle, and muscles

its attachment to the vertebral column gives stability and ↑ less Flexibility

- Composed of a series of bones called **vertebrae** (Adult=26)
  - 7 **cervical** are in the neck region منطقة العنق
  - 12 **thoracic** are posterior to the thoracic cavity منطقة الصدر
  - 5 **lumbar** support the lower back أسفل الظهر
  - 1 **sacrum** consists of five fused sacral vertebrae الفقرة الجزية
  - 1 **coccyx** consists of four fused coccygeal vertebrae الفقرة العصعصية

- The vertebral column is curved to varying degrees in different locations

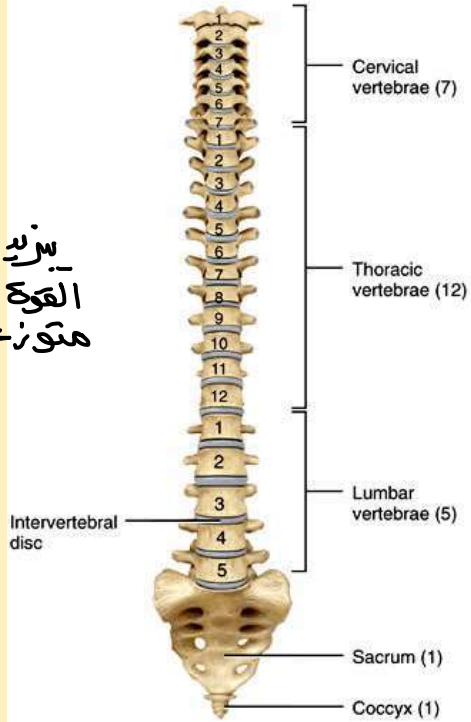
1. Curves increase the column strength
2. Help maintain balance in the upright position
3. Absorb shocks during walking, and help protect the vertebrae from fracture

يزيد من القوة لأنها متوزعة

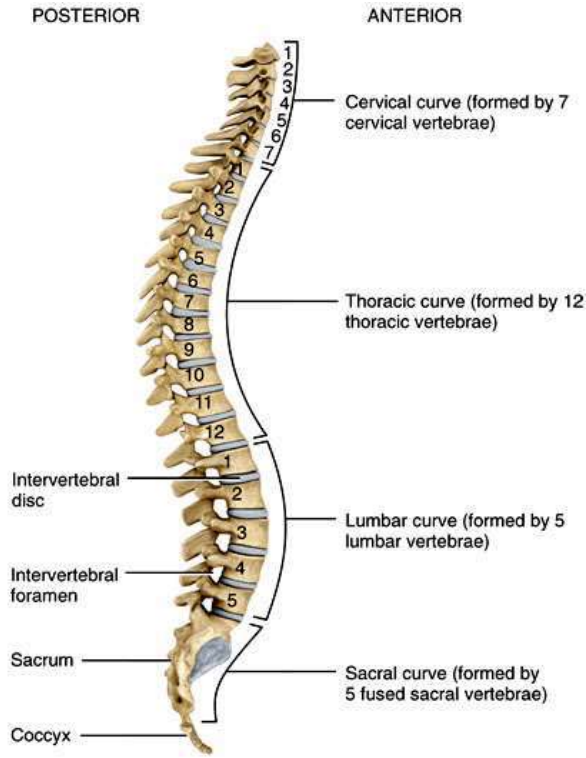
- **These curves are:**

1. **Cervical**
2. **Thoracic**
3. **Lumbar**
4. **Sacral**

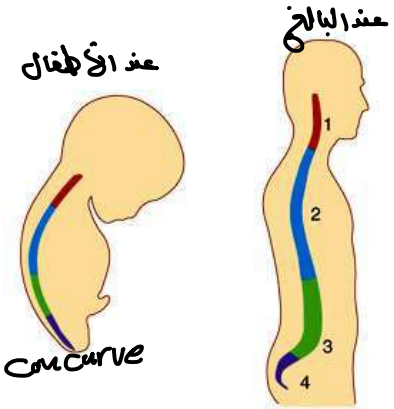
الاطفال عند الولادة بكن عمودهم الفقري concurve يعني مقعّر للامام، بعد ٣ـ٦ شهور رح يبدأ الطفل يثبت رأسه و العضلات تزيد قوتها، رح يتكون اول convex بمنطقة cervical area بعد السنة الاولى، رح يصير يوقّف بتتكون عنا convex التانية ب lumber و هم عبارة عن تحدّبات



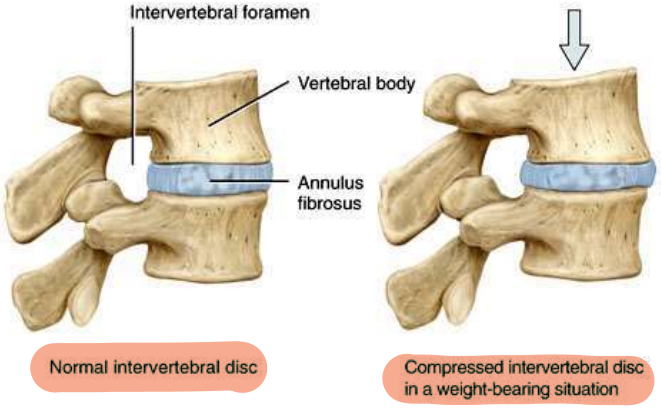
(a) Anterior view showing regions of the vertebral column



(b) Right lateral view showing four normal curves



(c) Fetal and adult curves

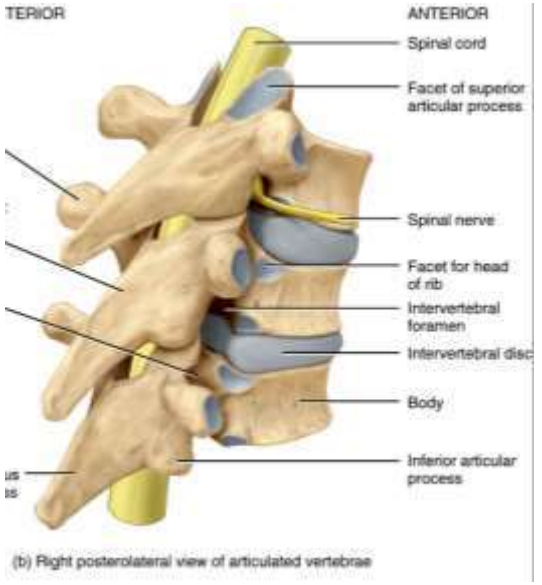


(d) Intervertebral disc

Intervertebral Disc

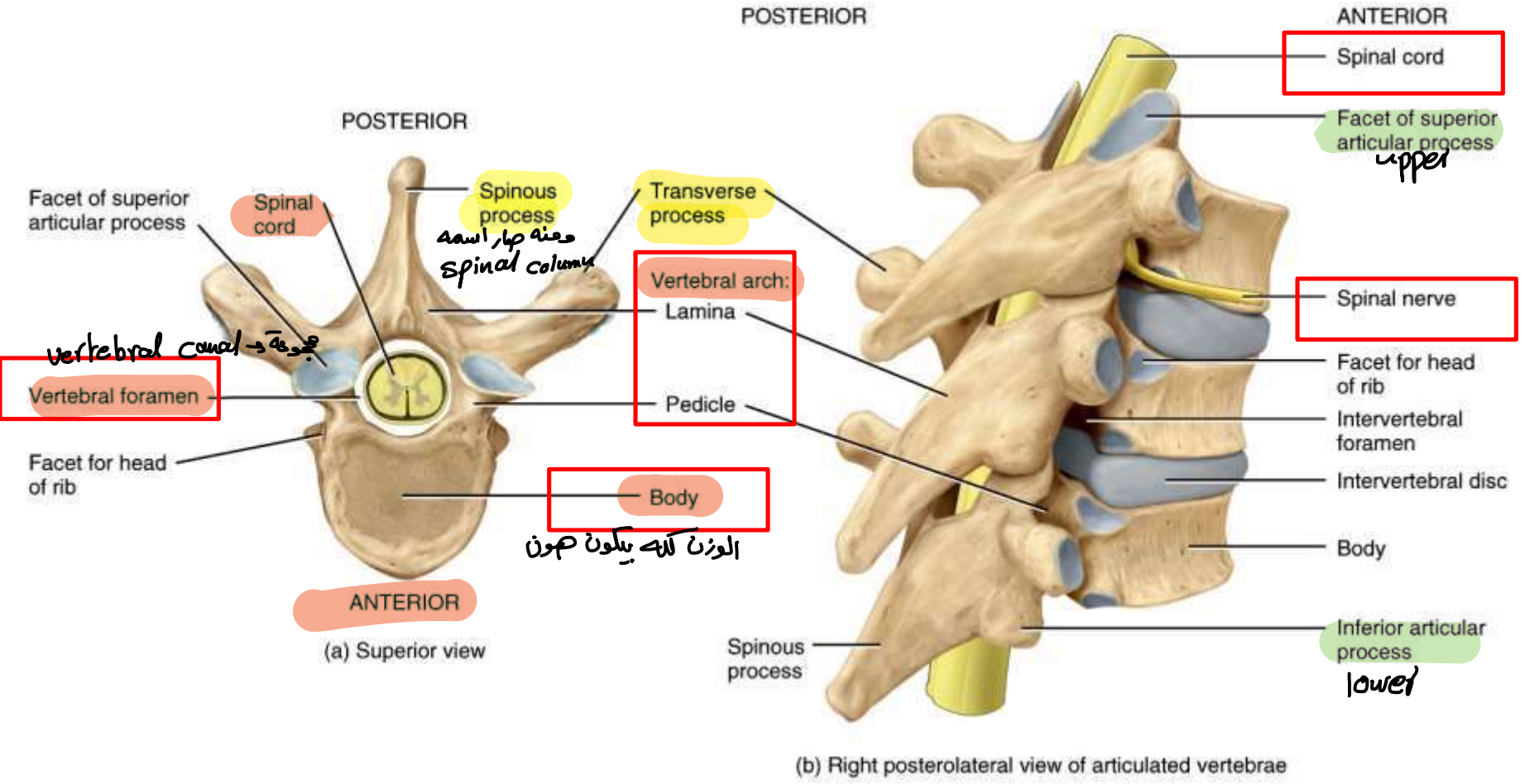
very strong joint between vertebra (body)

- It is formed of fibrocartilage- the hardest type of cartilage.
- Found between the bodies of adjacent vertebrae and function in:
  1. Form strong joints
  2. Permit various movements of the vertebral column
  3. Absorb vertical shock



Parts of vertebrae: Vertebrae typically consist of:

1. A Body (weight bearing)
2. A vertebral arch (surrounds the spinal cord)
3. Several processes (points of attachment for muscles +)



Differences between the typical vertebrae in the different regions:			
	Cervical	**Thoracic**	**Lumbar**
Body	Small and rectangular	Large and heart-shaped	Large and kidney-shaped
Transverse Process	Small with foramina	Large with no foramina	Large with no foramina →
Spinous Process	Short and bifid (7th)	Long and directed inferiorly	Broad and directed posteriorly

مستطيل

زي شكل القلب

زي شكل الكلية

Cervical Region

Cervical vertebrae (C1–C7)

The atlas (C1) articulates with the skull (occipital) **Atlanto-occipital joint**

The axis (C2) has a vertical process **(Odontoid or Dens)** that extends superiorly to articulate with atlas

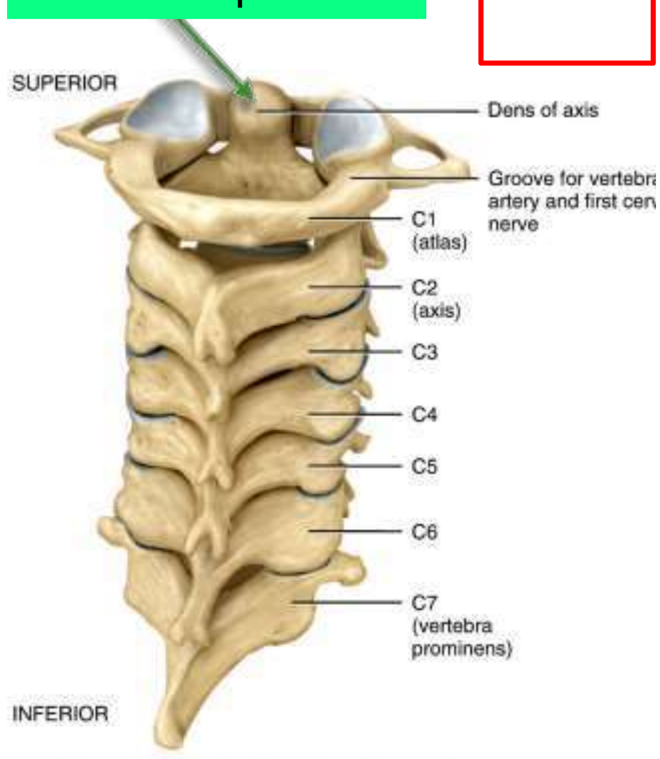
- هاي فيها 7 مش 8 process

حتى يدخل في foramen magnum (8)

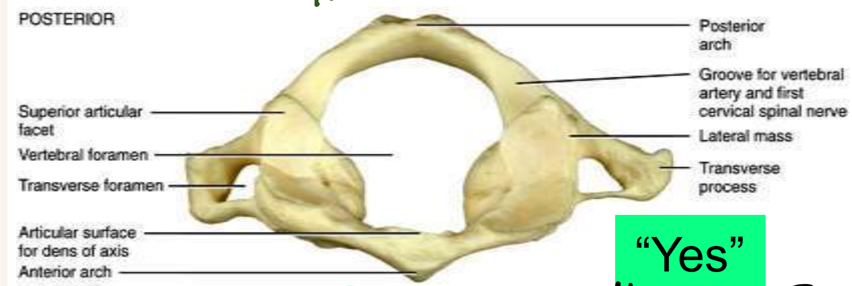
atlantoaxial joint

Odontoid process

Location of cervical vertebrae



Atlas



(b) Superior view of atlas (C1)

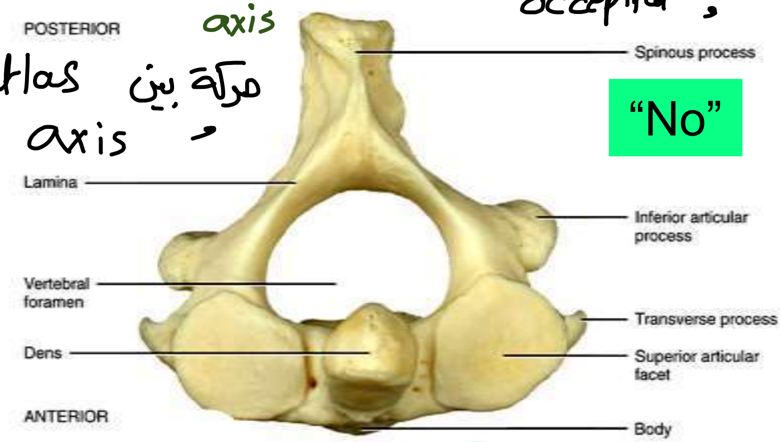
"Yes"

حركة بين atlas و occipital

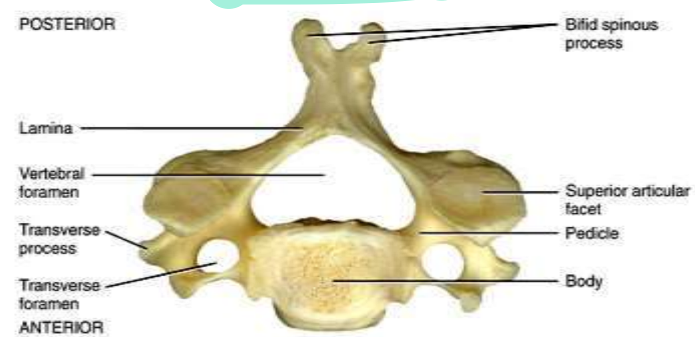
axis

حركة بين atlas و axis

"No"



(c) Superior view of axis (C2)

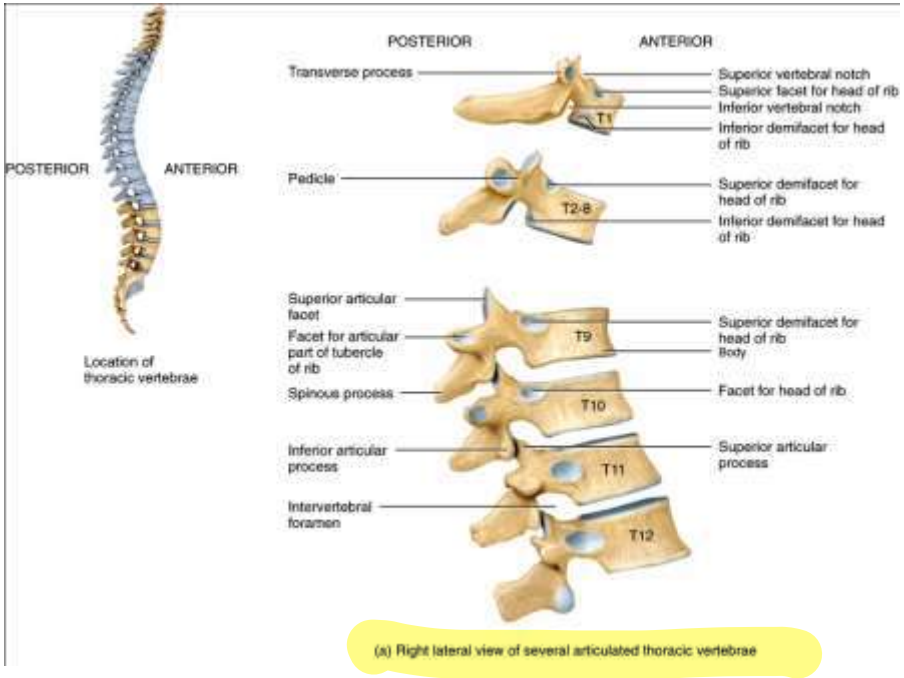


(d) Superior view of a typical cervical vertebra

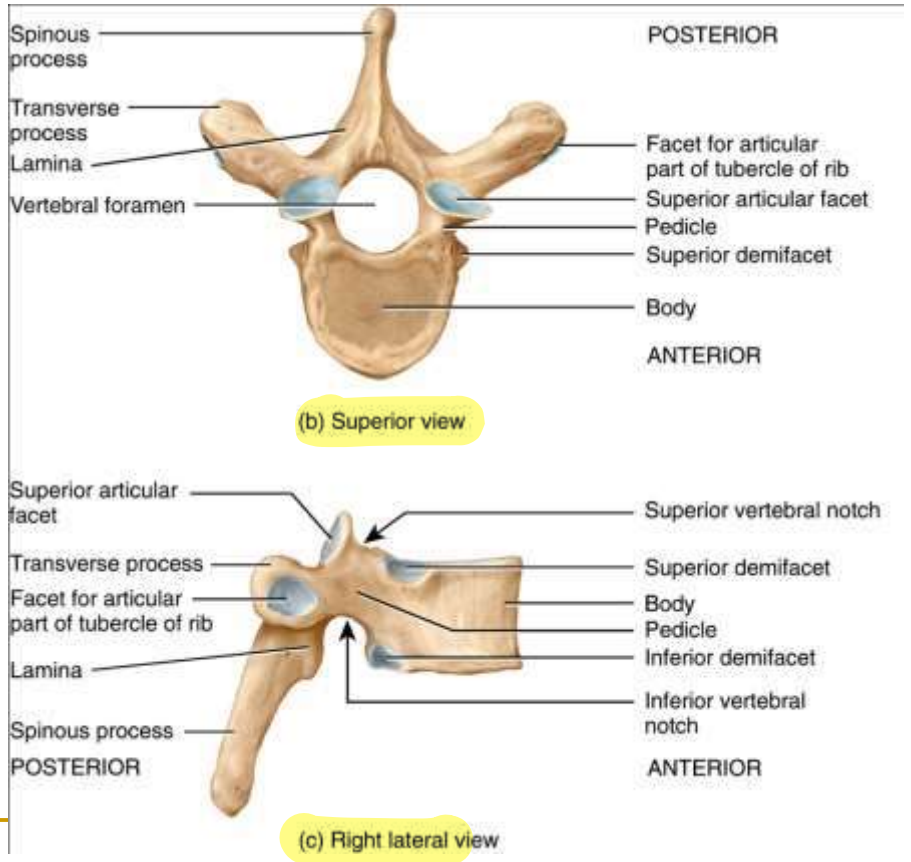
Thoracic Region

Thoracic vertebrae (T1–T12)

Articulate with the ribs



(a) Right lateral view of several articulated thoracic vertebrae



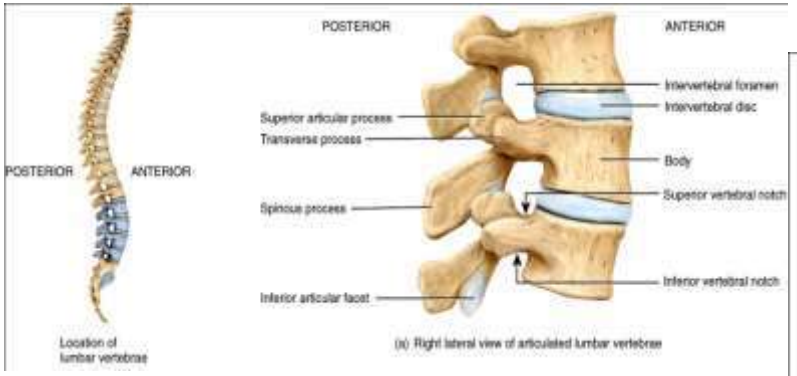
(b) Superior view

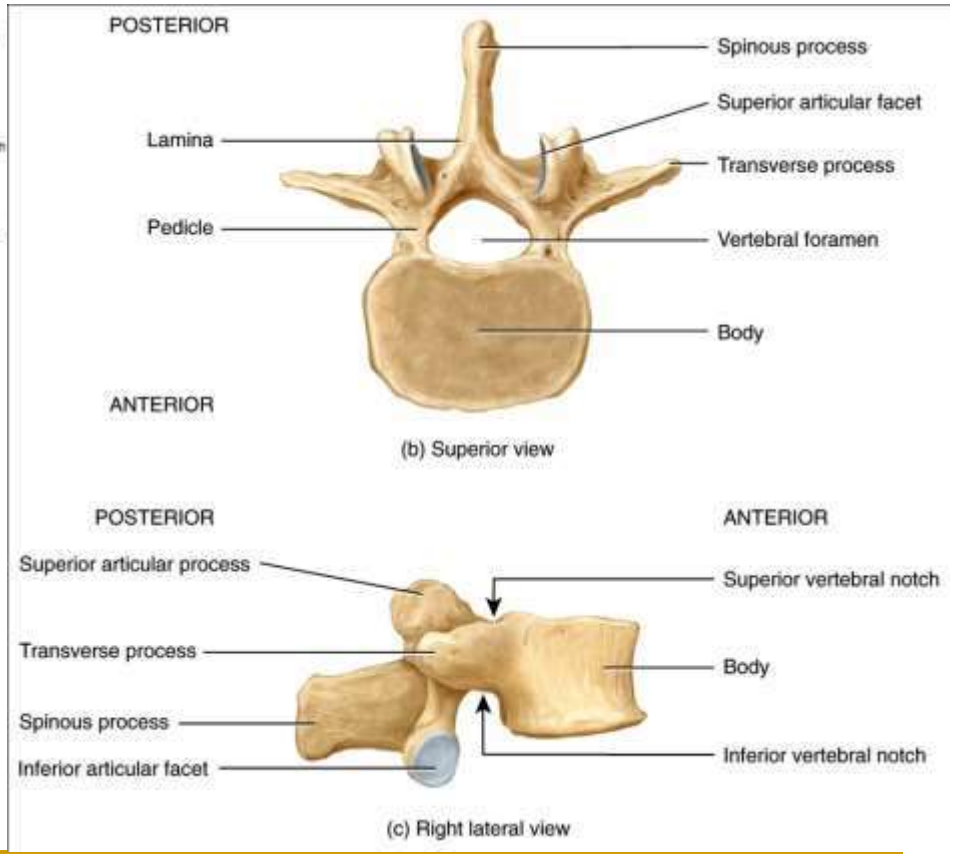
(c) Right lateral view

Lumbar Region

Lumbar vertebrae (L1–L5)

Provide for the attachment of the large back muscles





Sacrum → axial hip bone → appendicular Hip bone ثم cecrum الوزن رح ينقل من ←

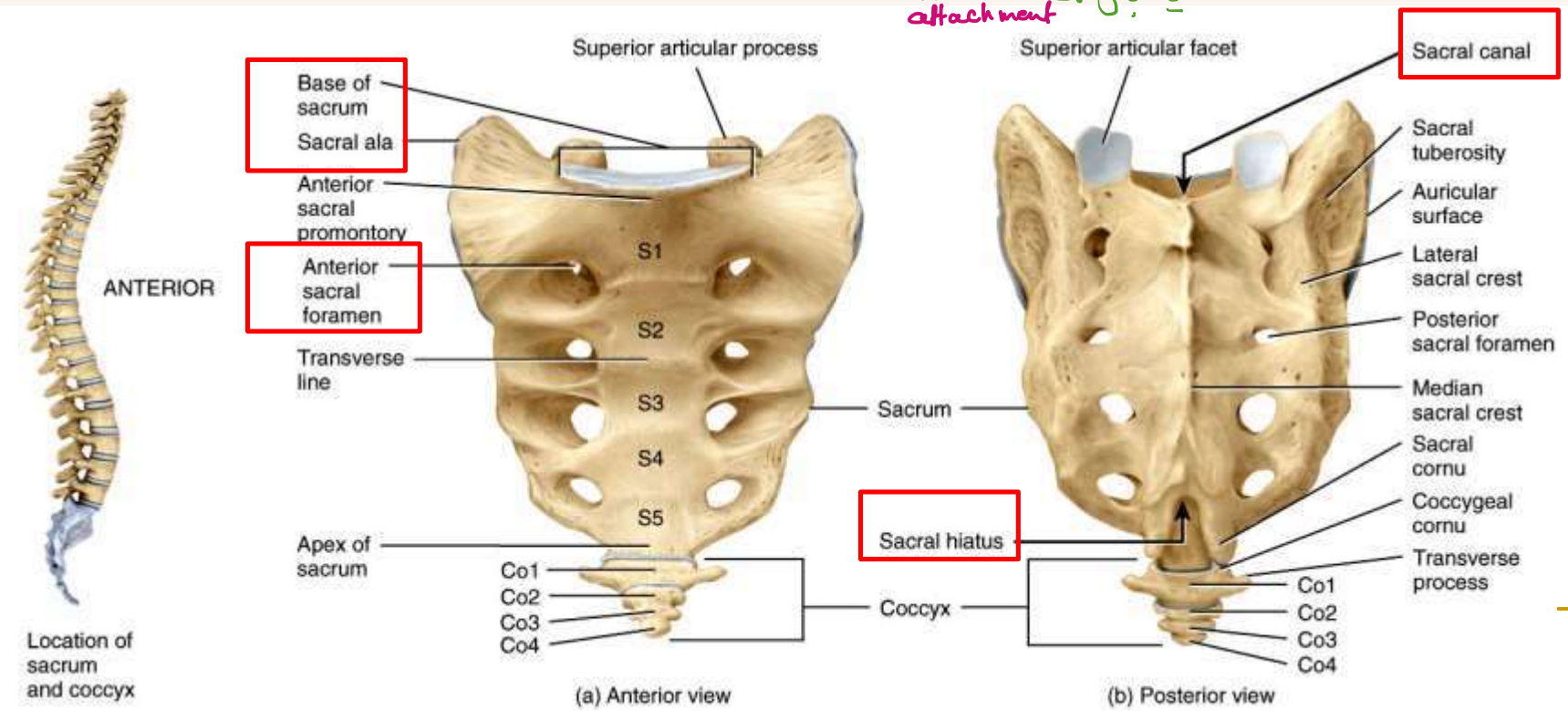
The sacrum is a triangular bone formed by the union of five sacral vertebrae (S1–S5) very strong

Serves as a strong foundation for the **pelvic girdle**

Coccyx

The coccyx, like the sacrum, is triangular in shape

It is formed by the fusion of usually four coccygeal vertebrae Co1 , Co2 , Co3 , Co4 ما بتحمل وزن هي بس الـ muscle attachment



The Thoracic Cage

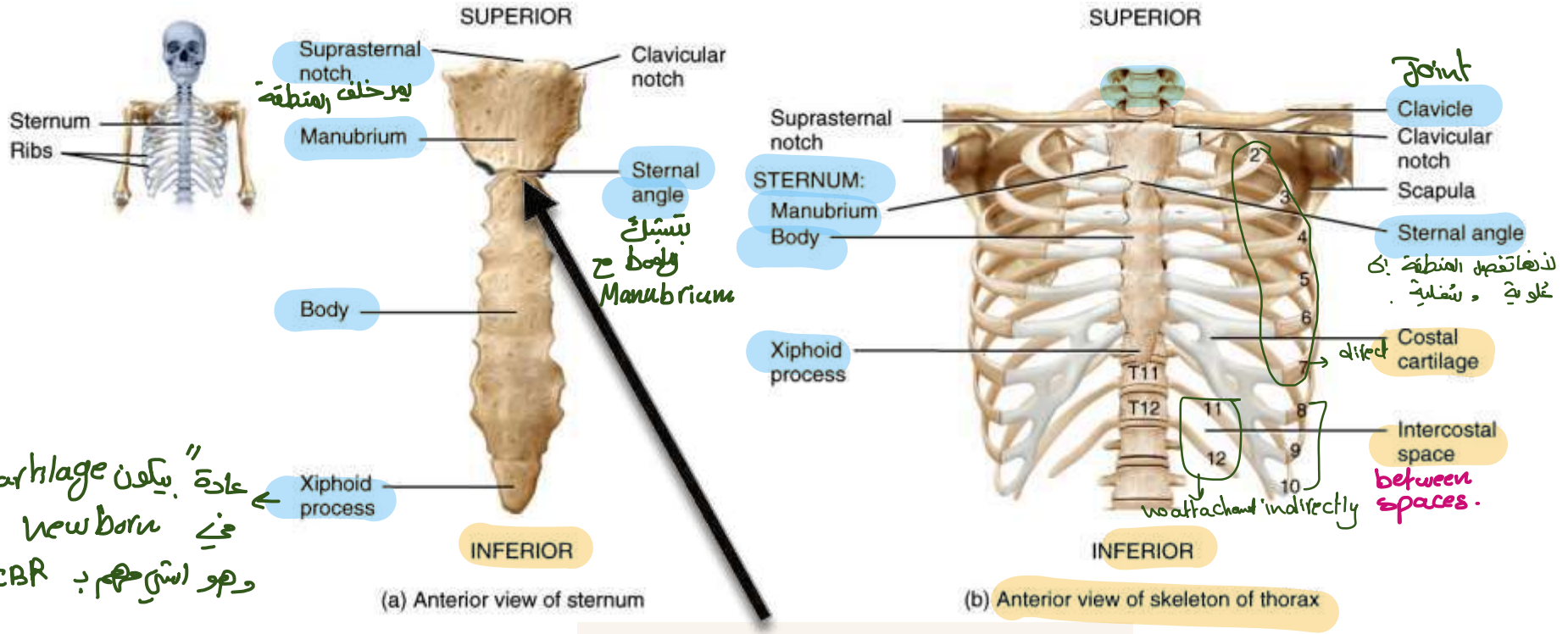
Boundries of the thoracic cavity

- Thoracic cage is formed by the:
  - **Sternum** عظمة القص (anteriorly)
  - **Ribs** الأضلاع (12 left و 12 right)
  - **Costal cartilages (attach ribs to sternum)**
  - **Thoracic vertebrae**
- Functions to:
  - Enclose and protect the organs in the thoracic and abdominal cavities
  - Provide support for the bones of the upper limbs
  - Play a role in breathing

* مهم في عملية التنفس لأنه تشكل thoracic cavity

The Sternum:

- "Breastbone" located in the center of the thoracic wall
- Consists of the manubrium, body, xiphoid process

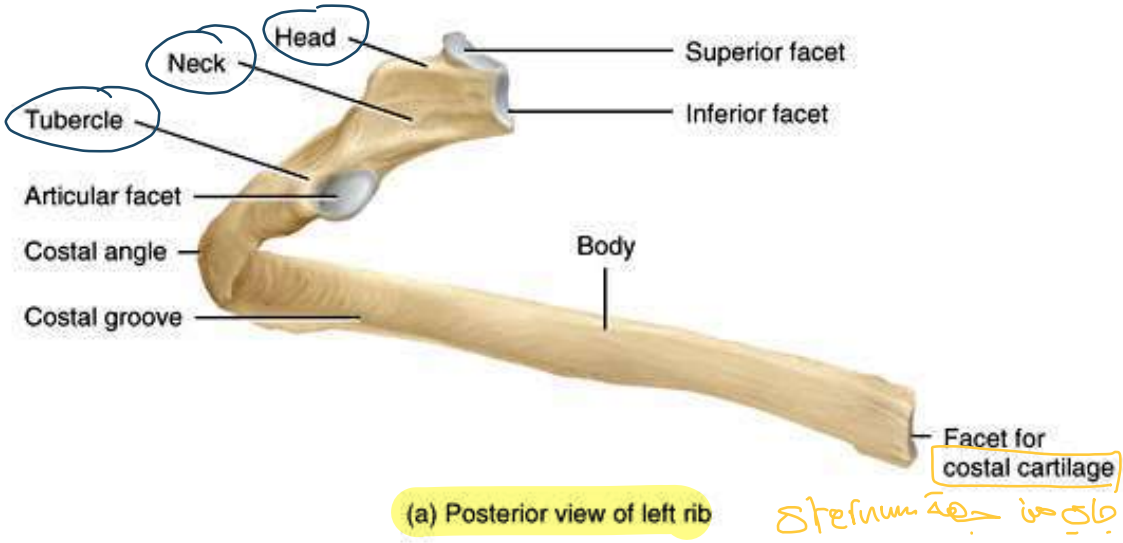


Angle of louis
2nd rib
Level: T4&T5
Count ribs

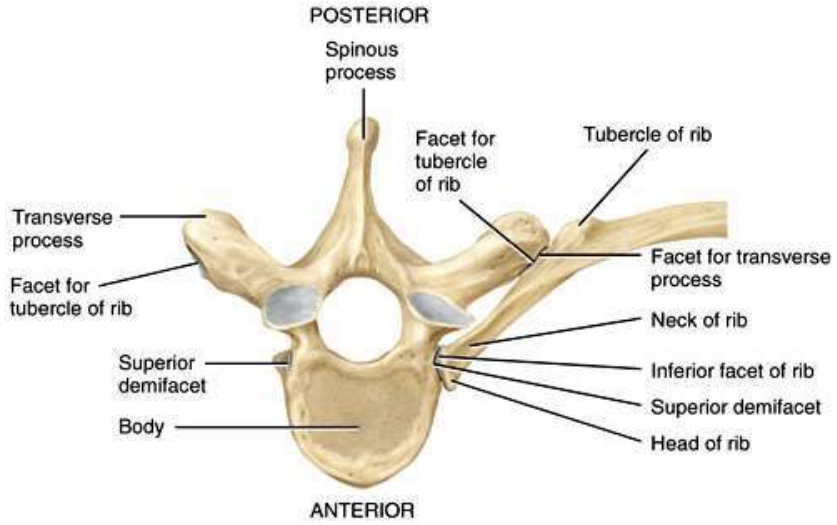
The Ribs:

Each rib is formed of:

1) **Head:** which articulates with the vertebrae.
2) **Neck:** a constricted region immediately after the head.
3) **Tubercle:** this contains an articular facet for the transverse process.
4) **Angle:** area where the shaft bends forwards.
5) **Shaft (Body).**
6) **Costal groove:** this runs along the inferior border of the inner surface of the shaft.



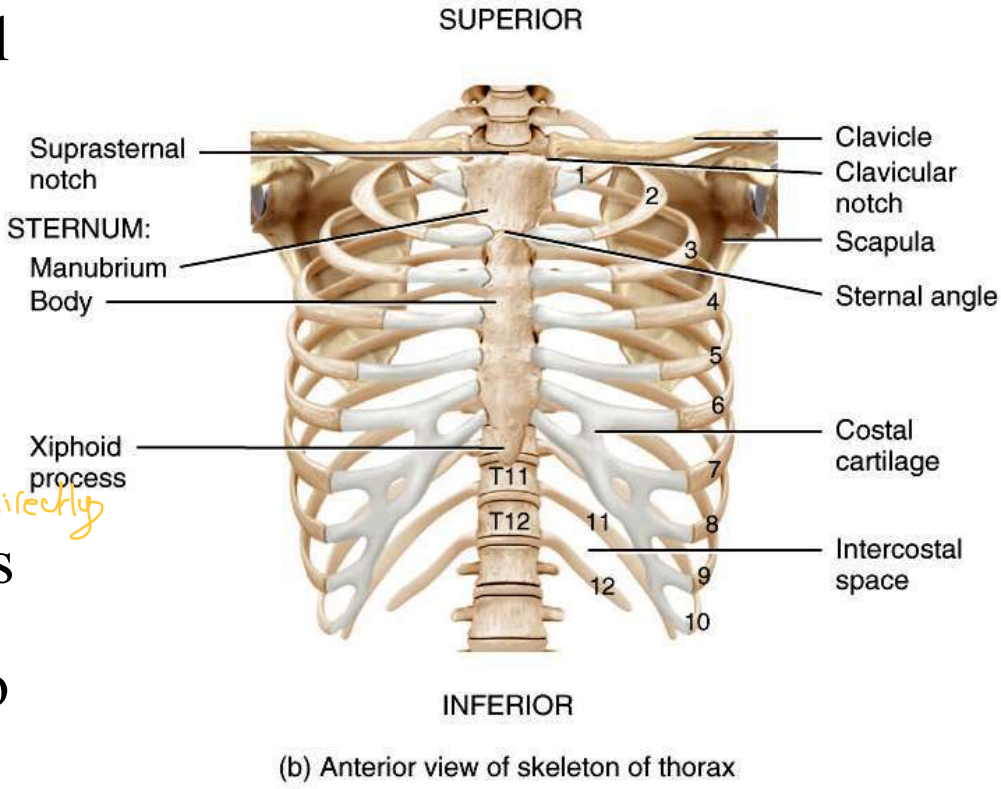
(a) Posterior view of left rib



(c) Superior view of left rib articulated with thoracic vertebra

The Ribs:

- 12 pairs of ribs give structural support to the sides of the thoracic cavity
- The upper 7 pairs are called true ribs because they're attached to the sternum through their own costal cartilage.
- Pairs 8-10 are called false ribs because they're attached anteriorly to each other and to the seventh rib by means of their costal cartilages.
- Pairs 11 and 12 are called floating ribs because they have no anterior attachment.



(b) Anterior view of skeleton of thorax

All ribs attach to the vertebral column, but not all ribs attach to the sternum