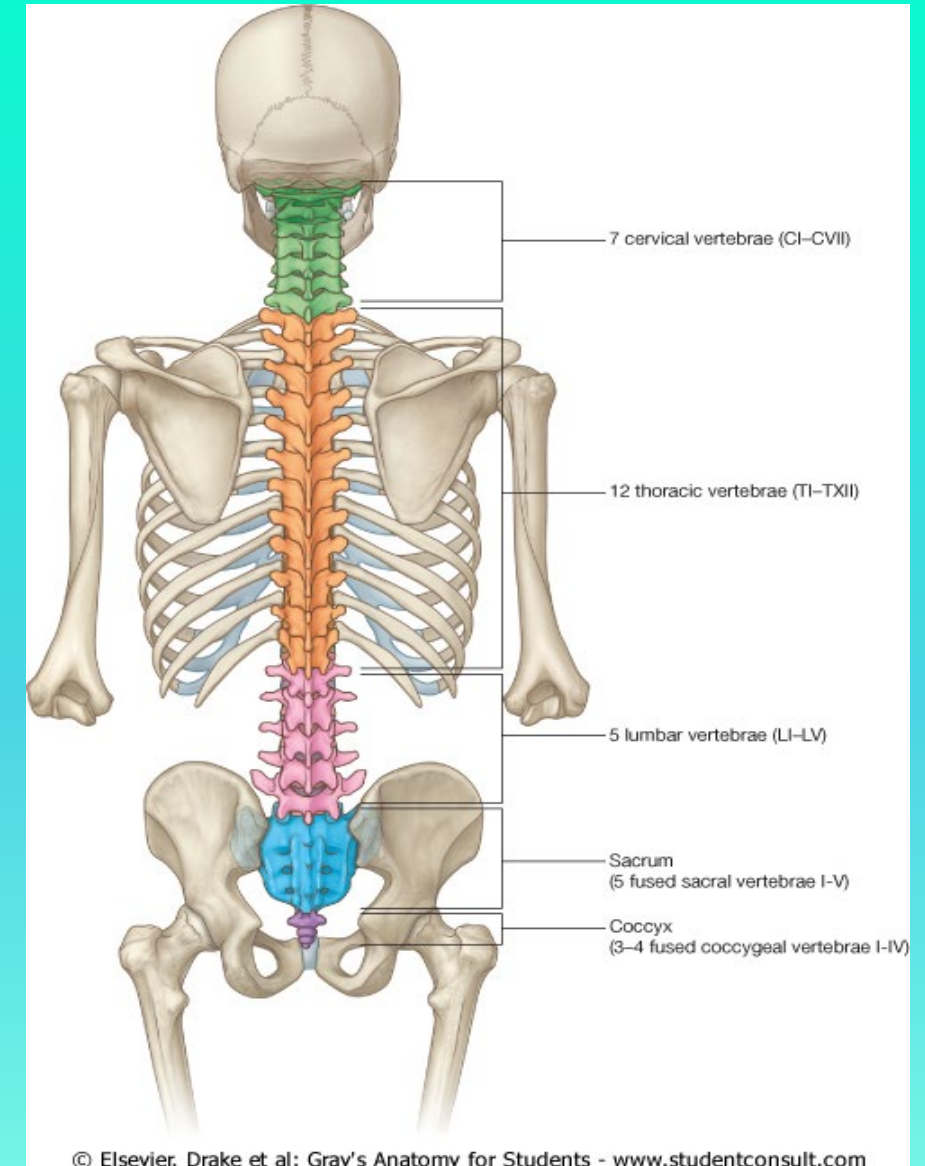
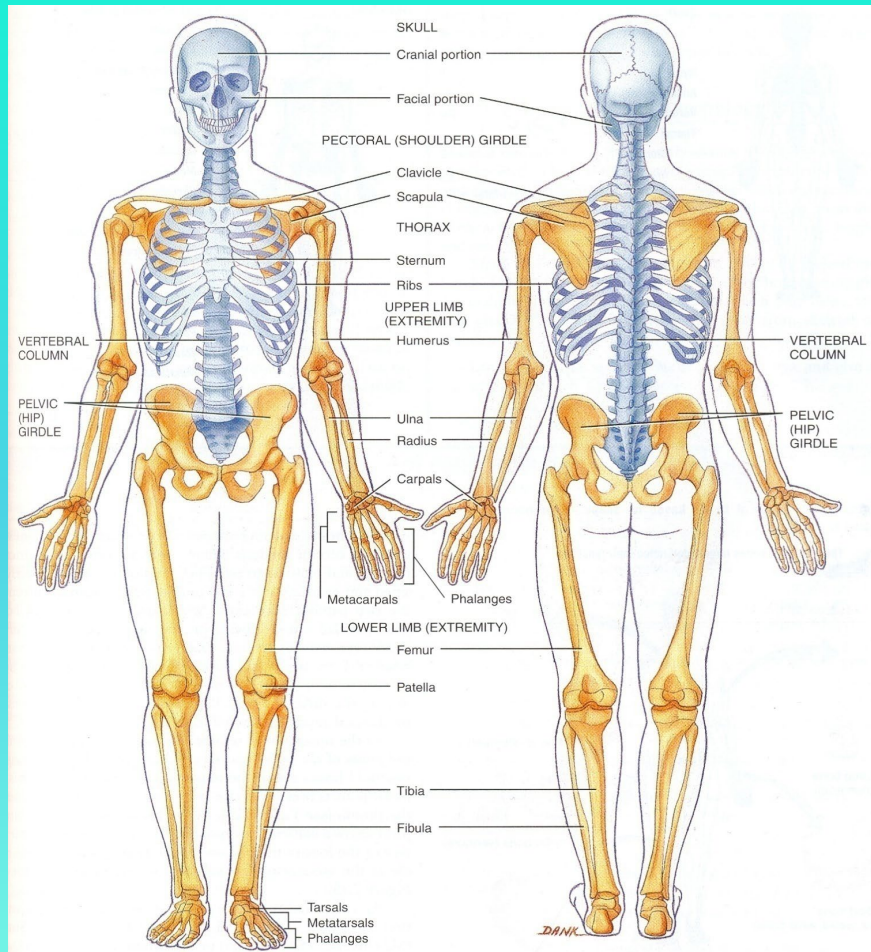




Skeletal System



Skeletal System

Functions :

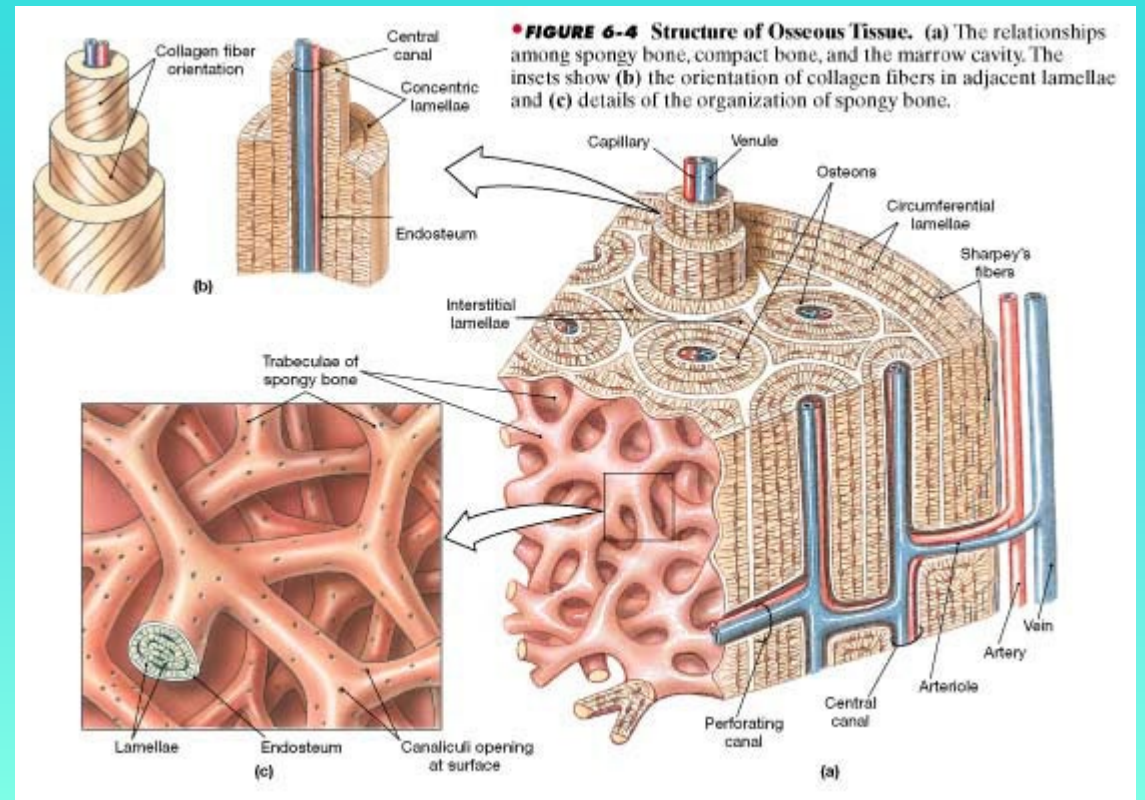
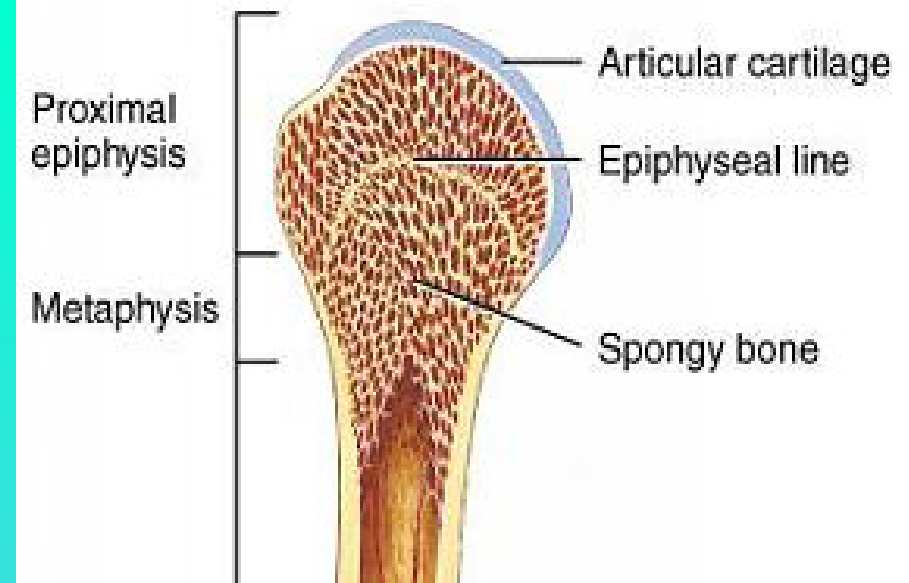
- 1- Structure
- 2- Support and Protection
- 3- Movement (Site for muscle attachment)
- 4- Mineral reservoir (calcium especially)
- 5- Hemopoiesis (Blood cell formation)

Classification

Histology :

1- Spongy bone

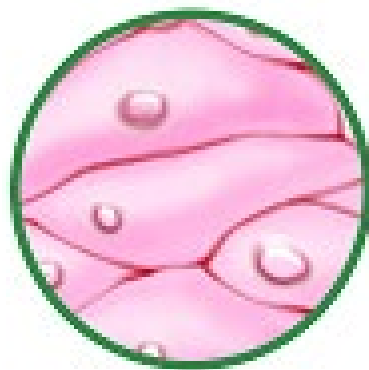
2- Compact bone



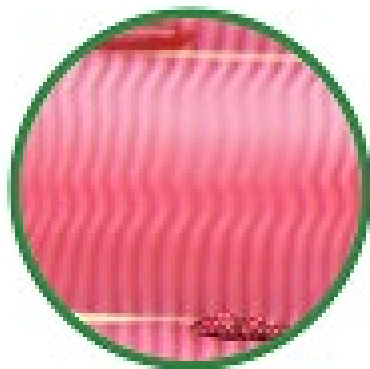
انواع بافت های بدن



Connective Tissue



Epithelial Tissue



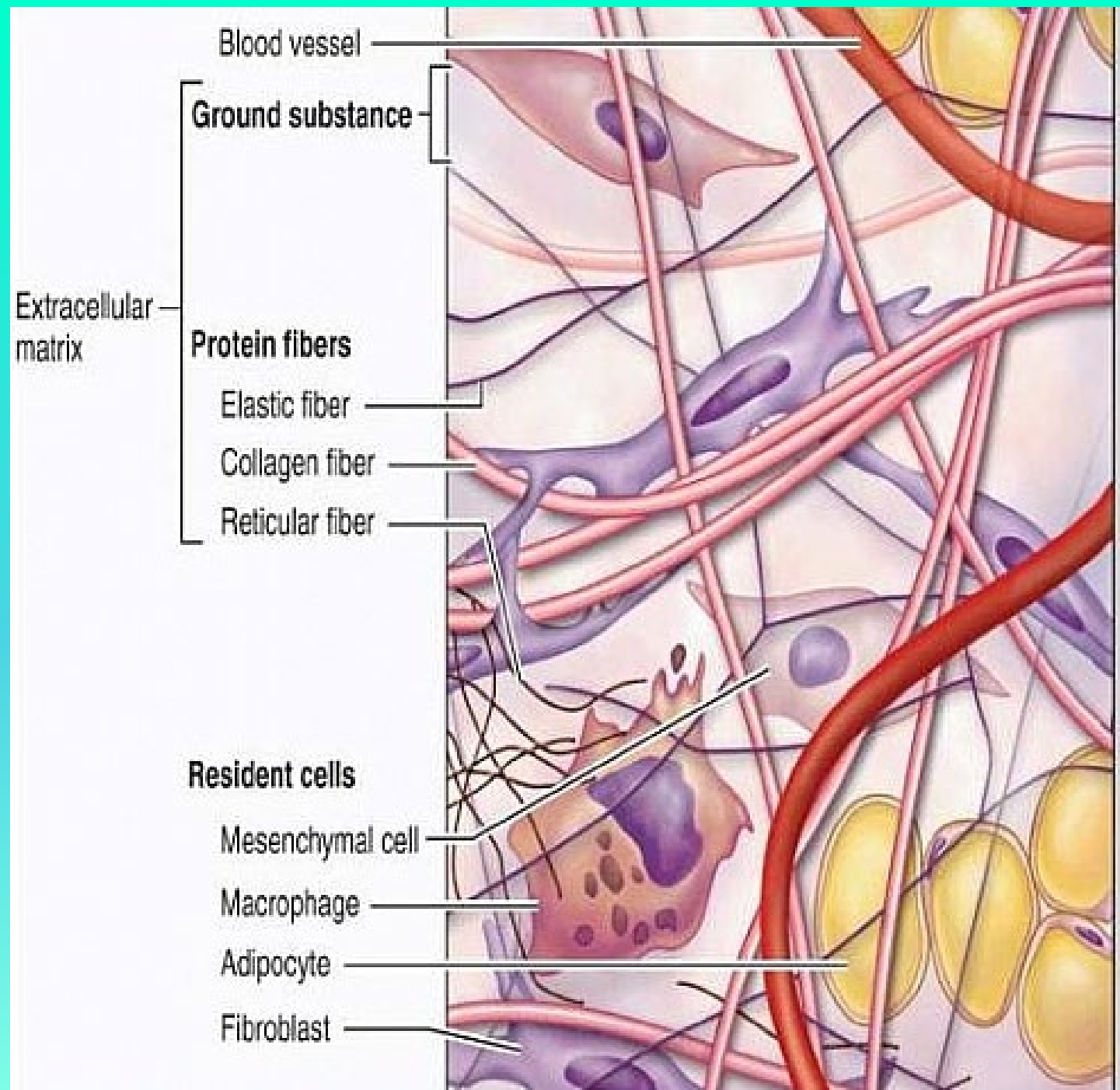
Muscle Tissue

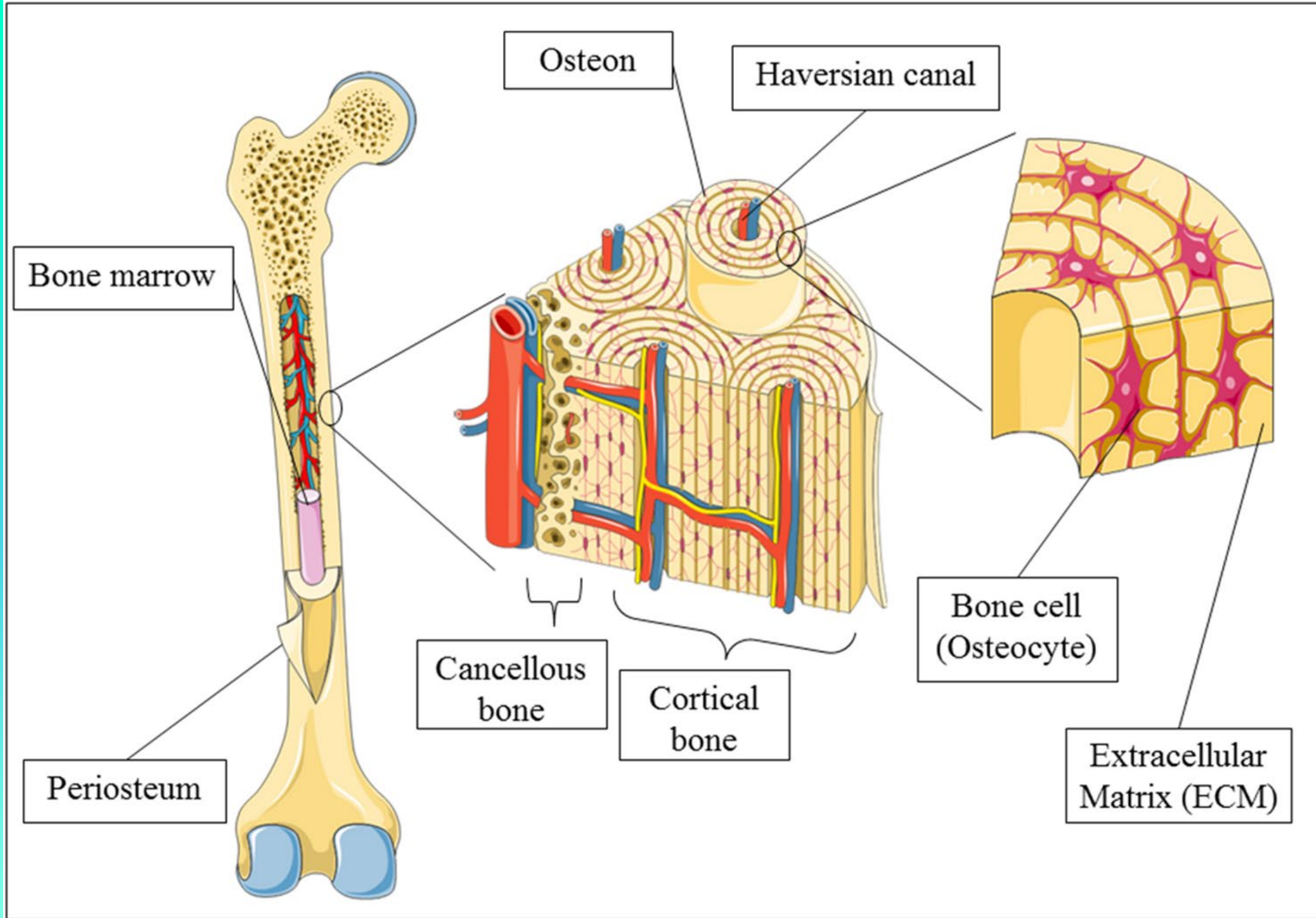


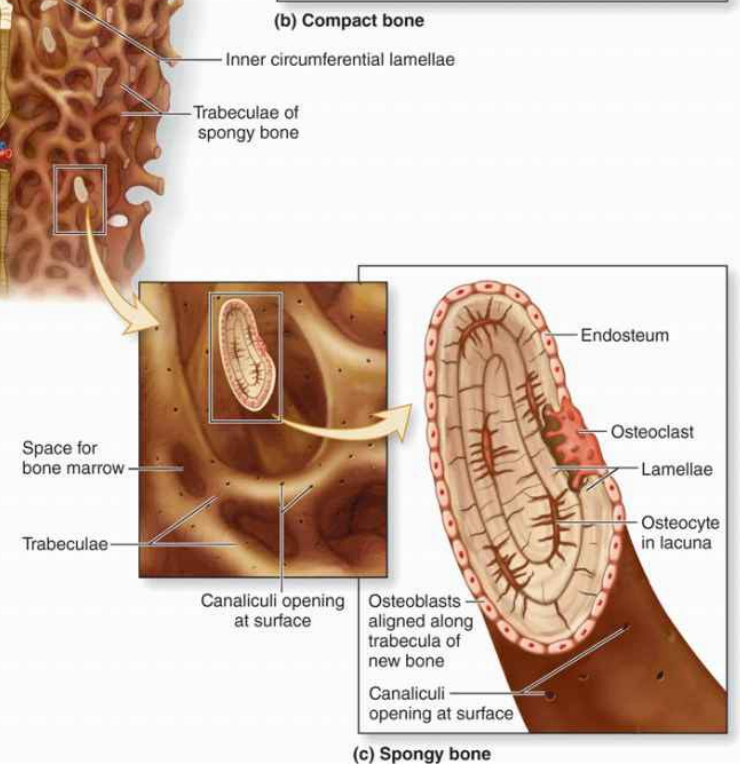
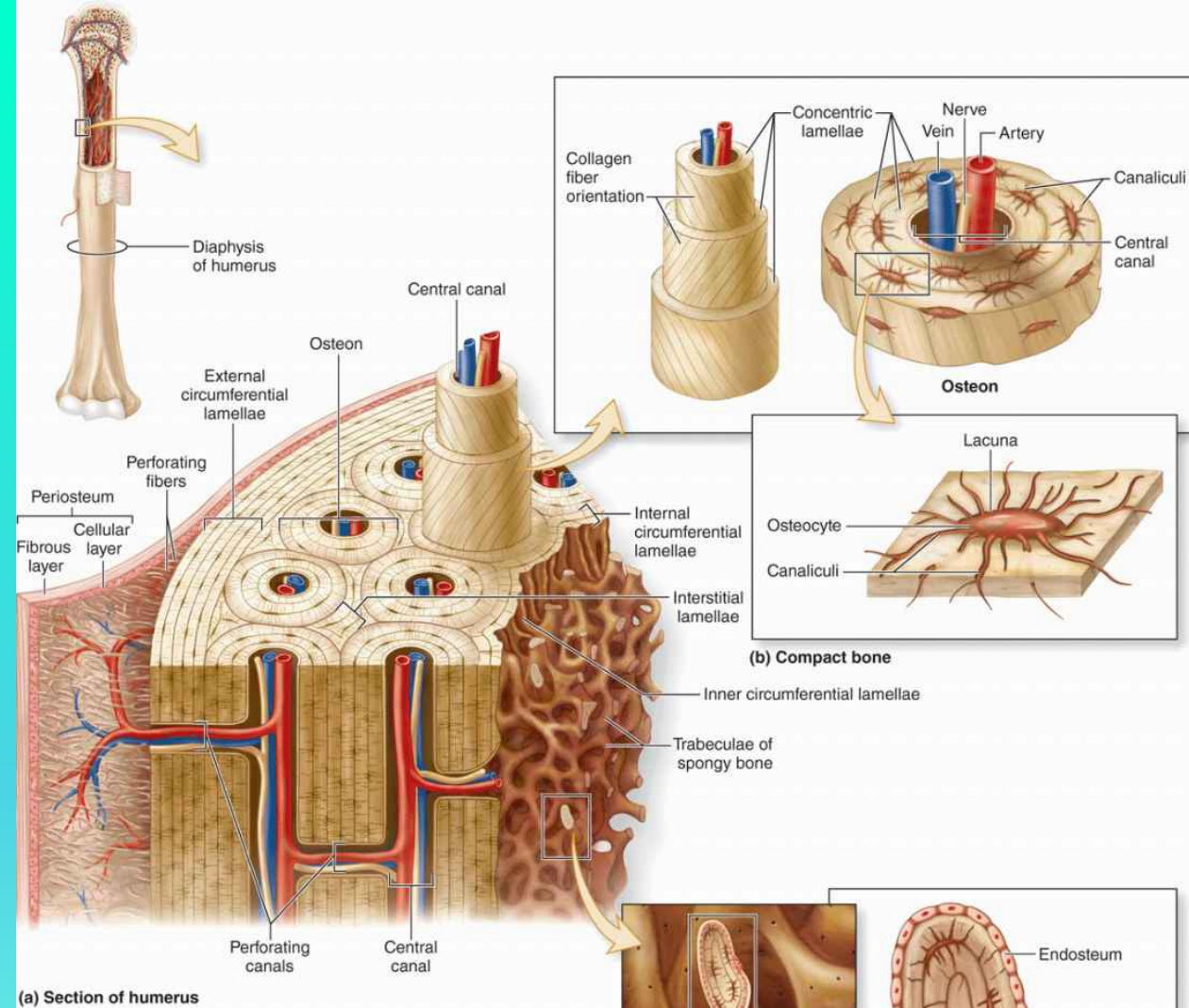
Nervous Tissue

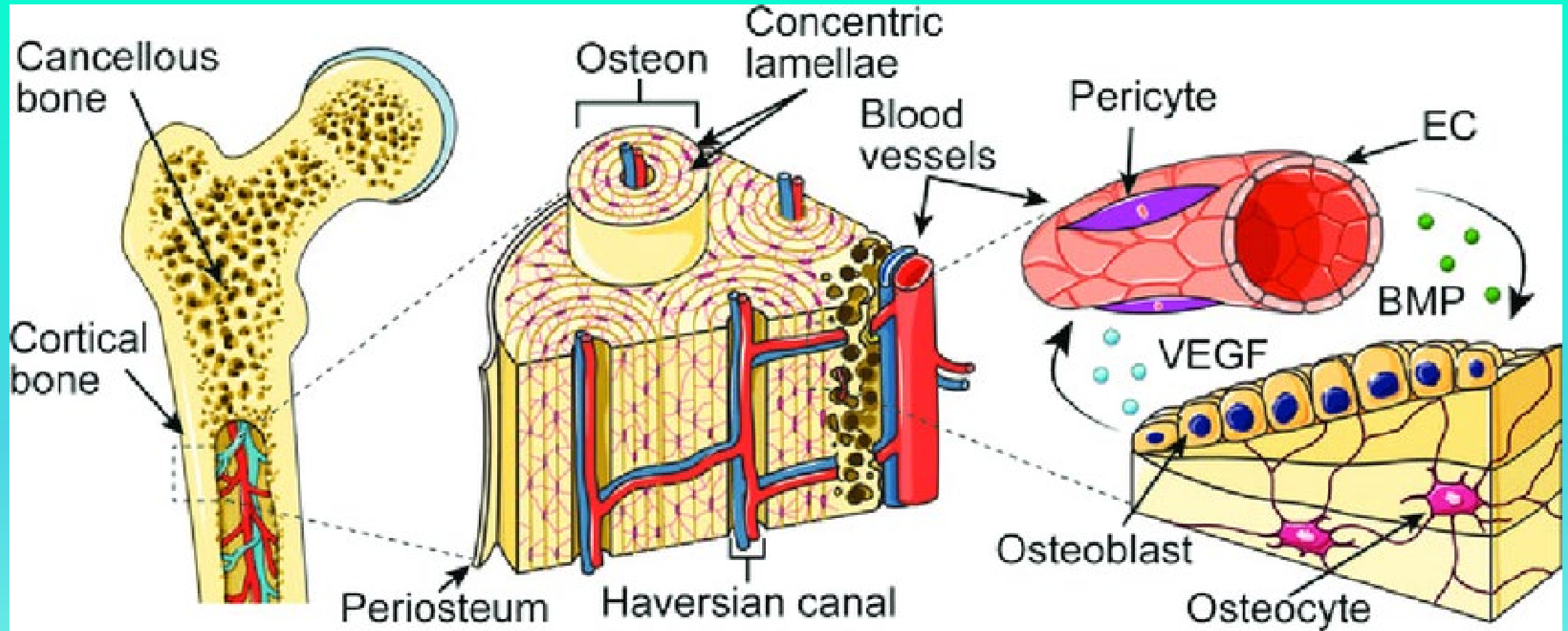
- بافت پوششی
- بافت پیوندی
- بافت عضلانی
- بافت عصبی

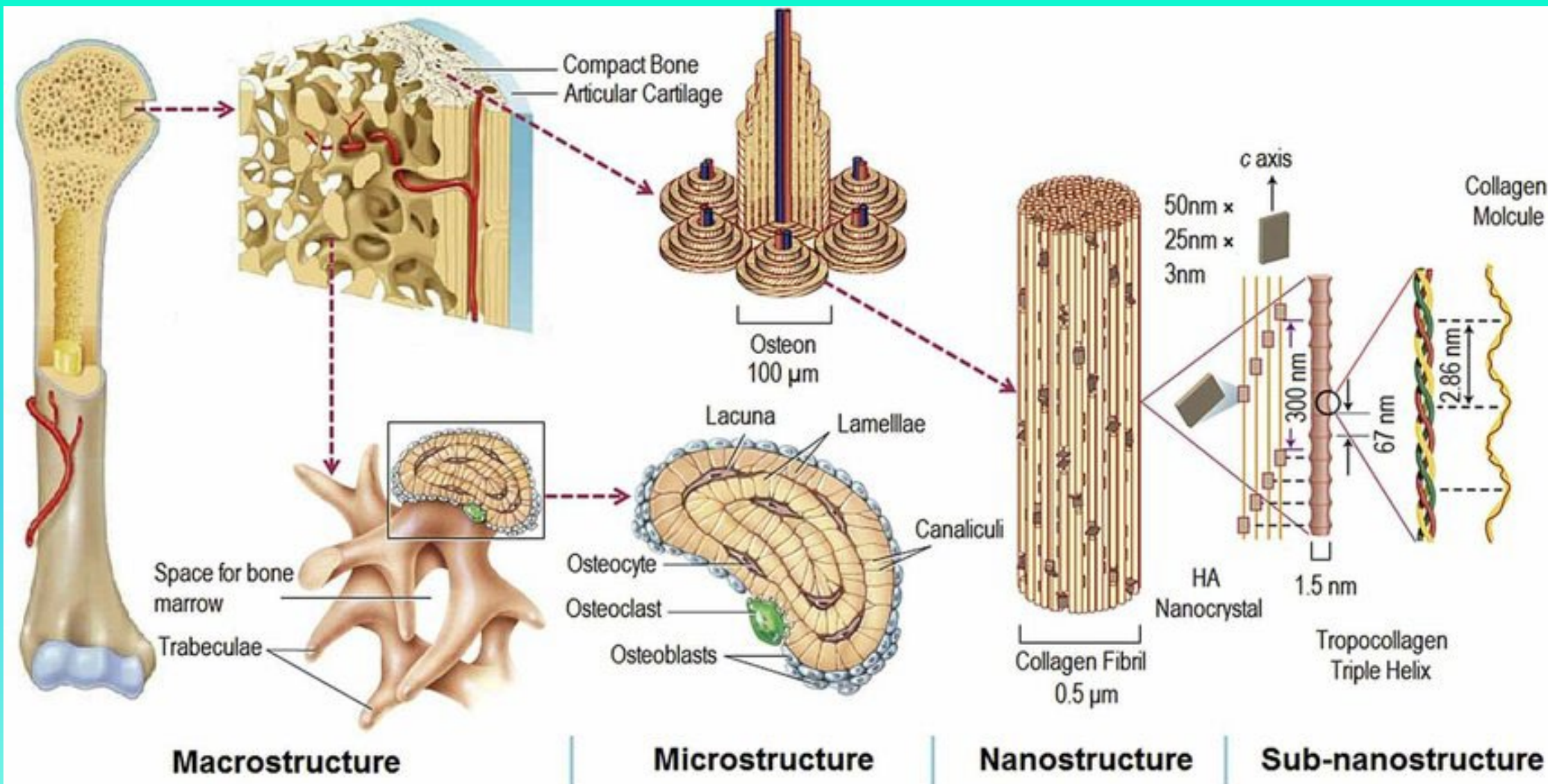
بافت همبند

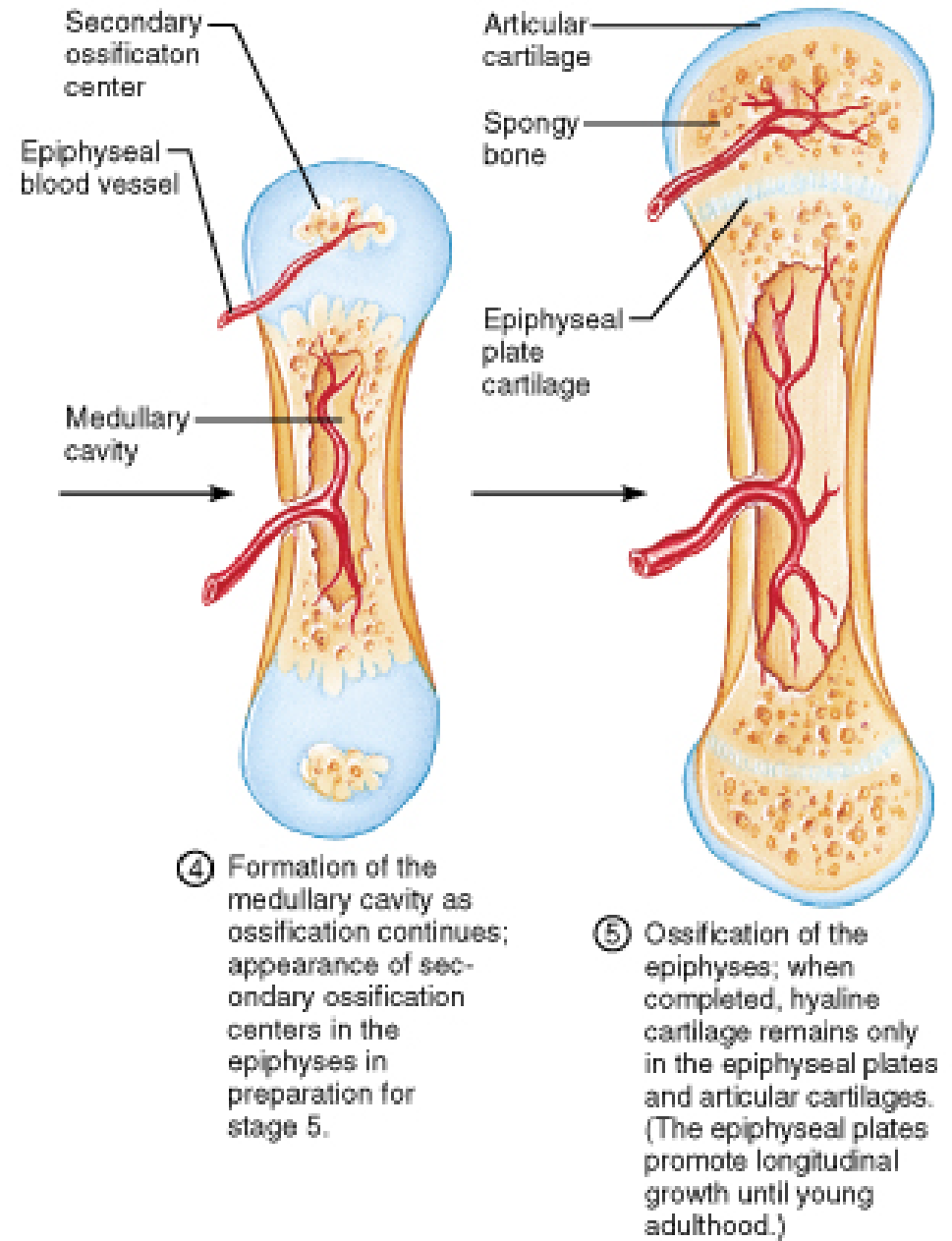
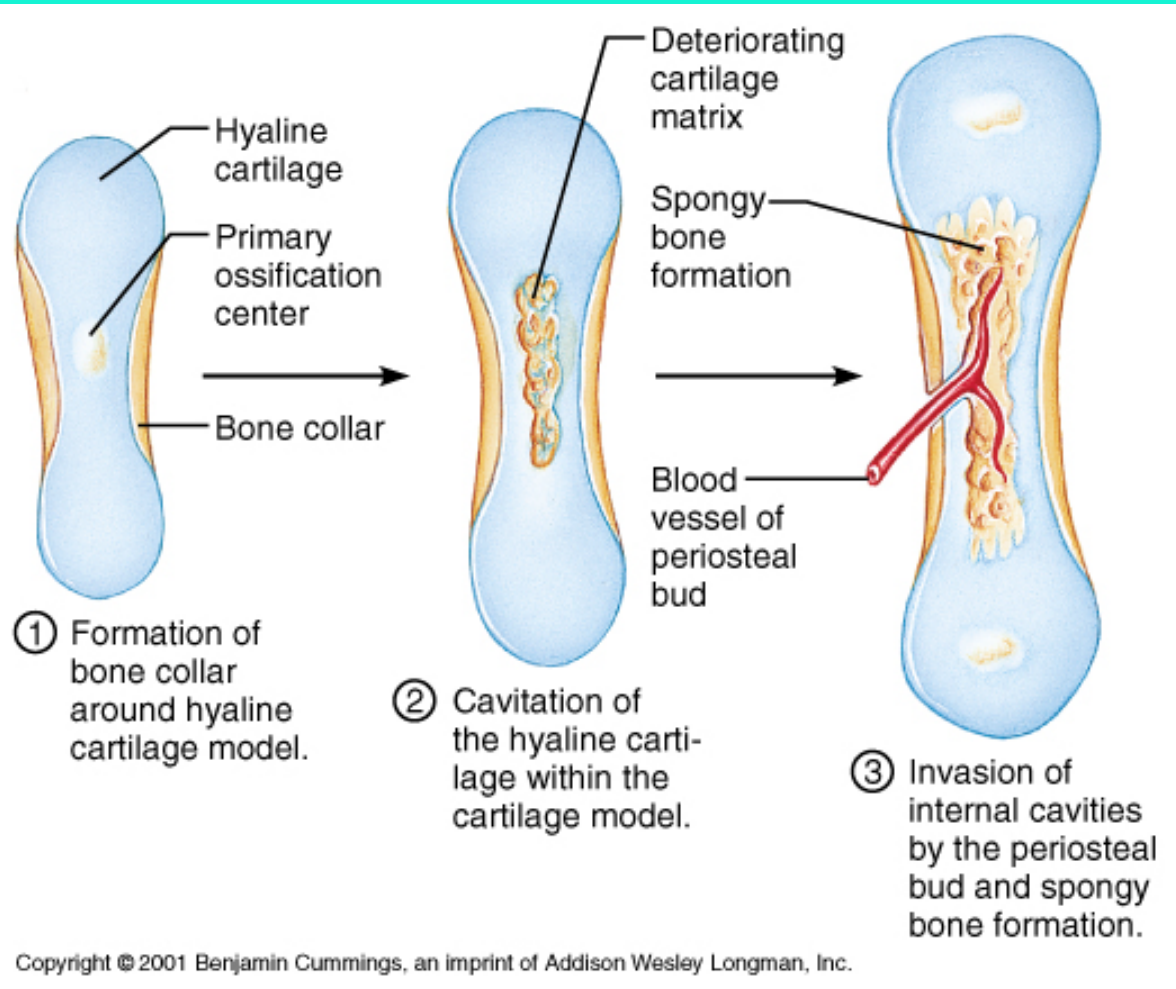




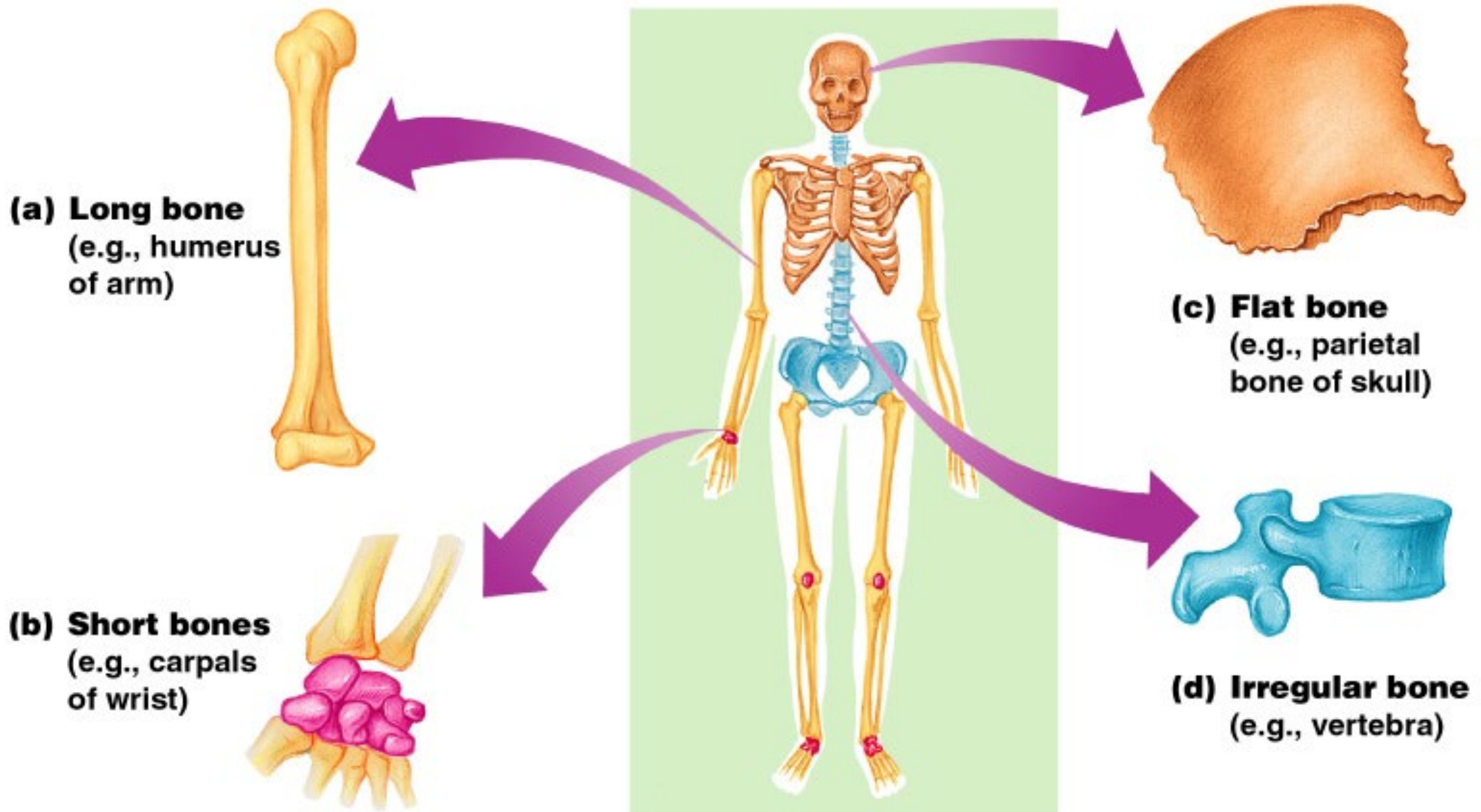


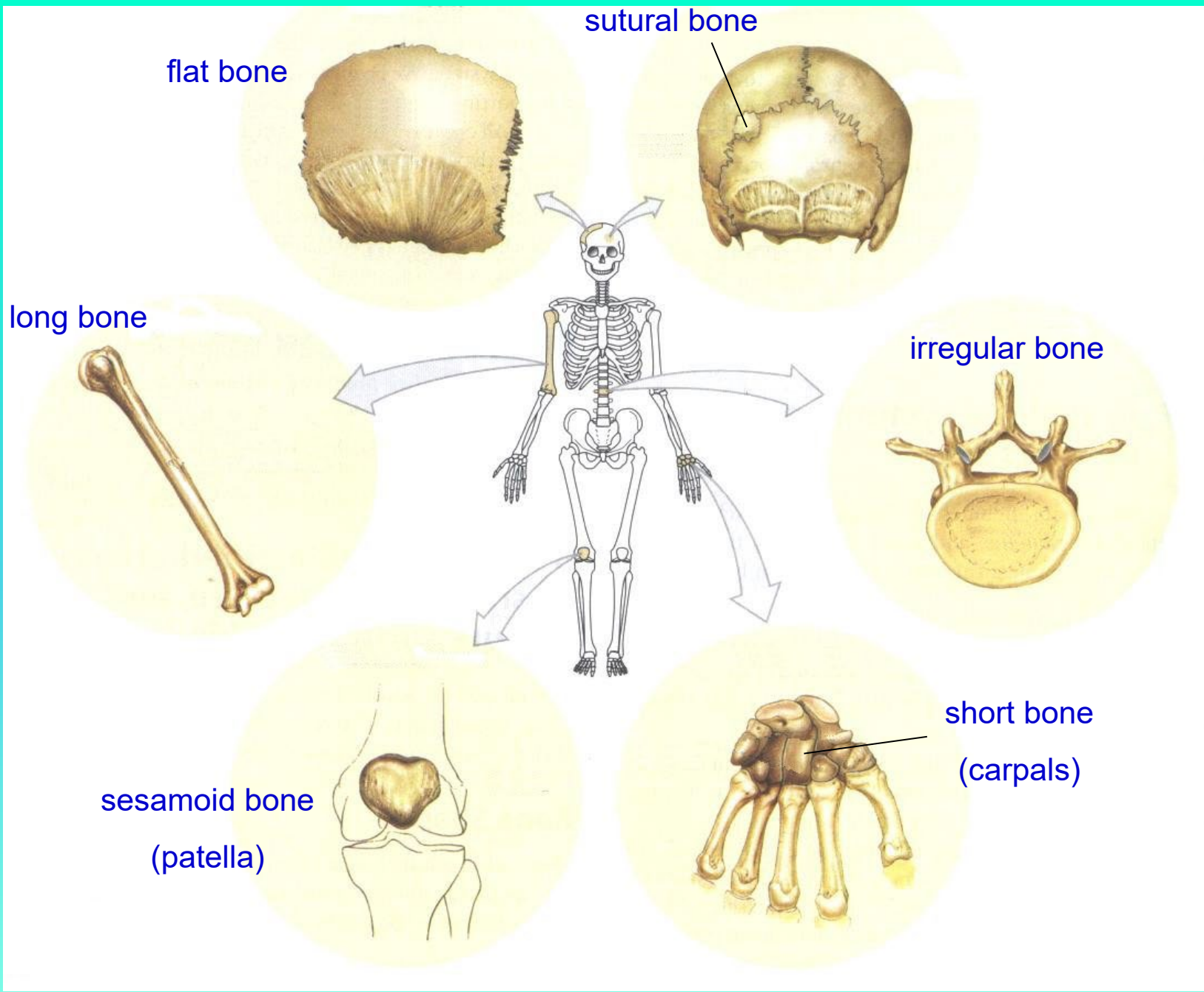






Classification of Bones on the Basis of Shape





flat bone

sutural bone

long bone

irregular bone

sesamoid bone
(patella)

short bone
(carpals)

1- Axial Skeleton

1- Skull

2- Vertebral column

3- Ribs = Costa

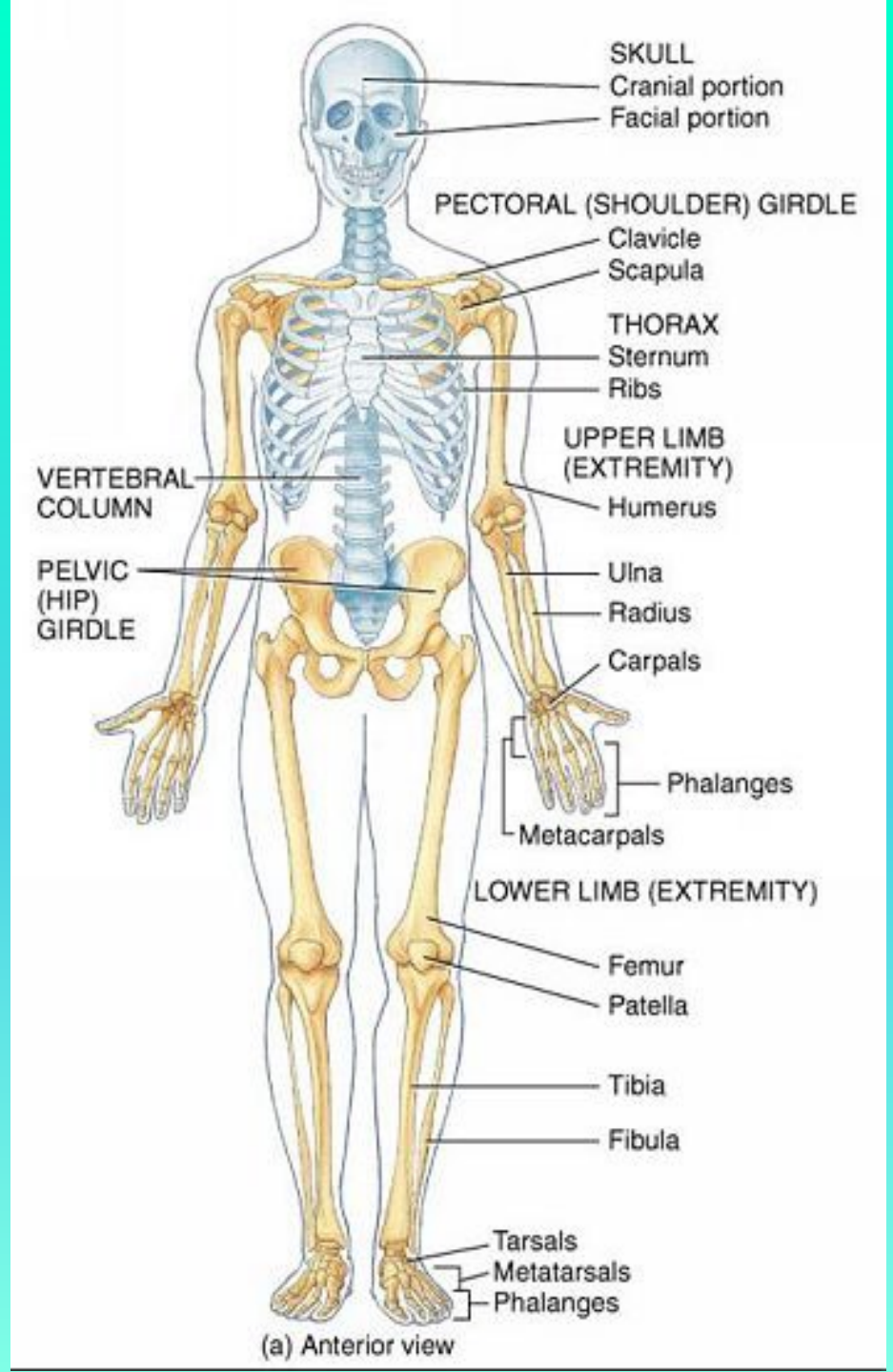
4- Sternum

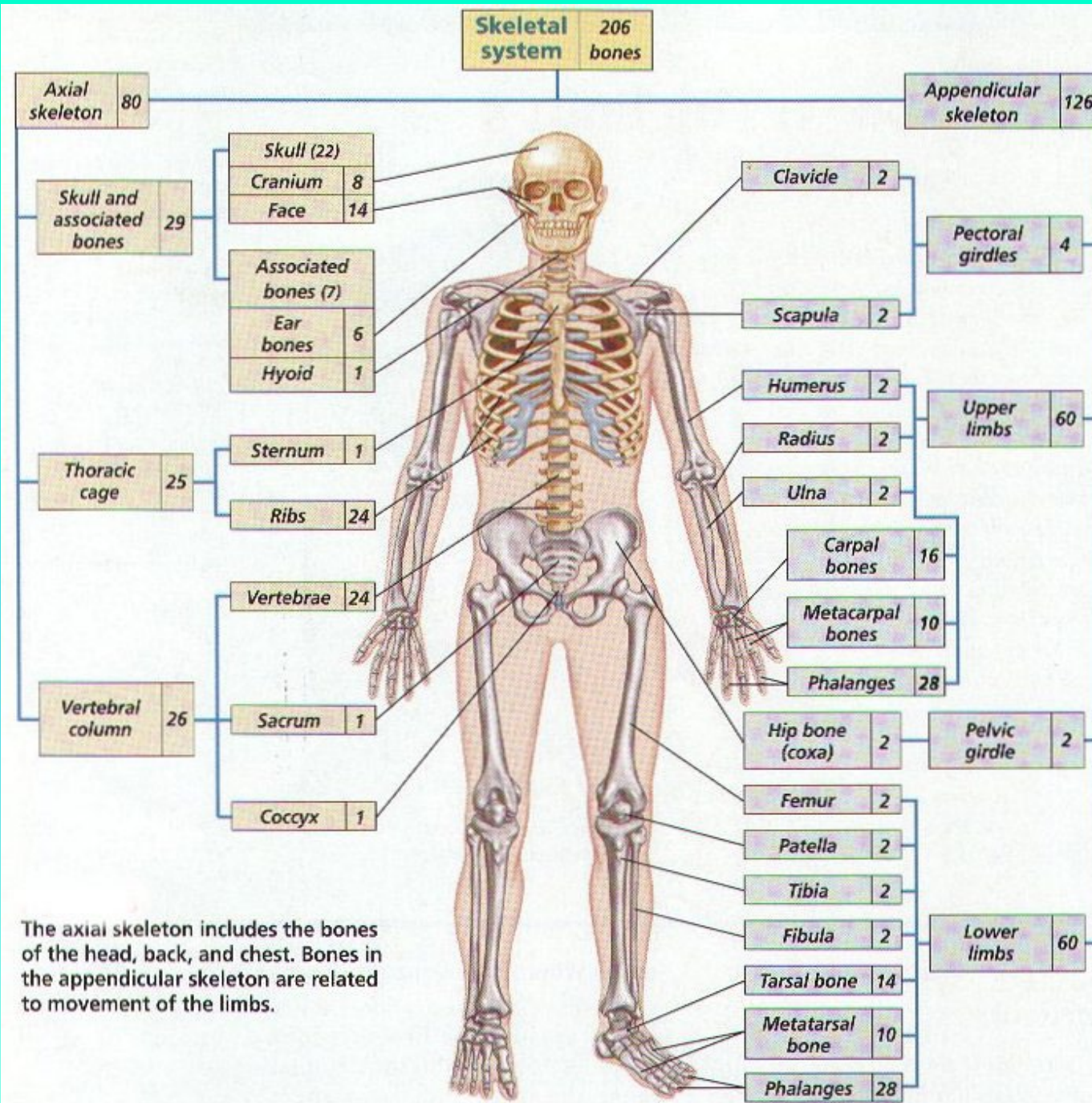
5- Hyoid

2- Appendicular Skeleton

1- Upper limb

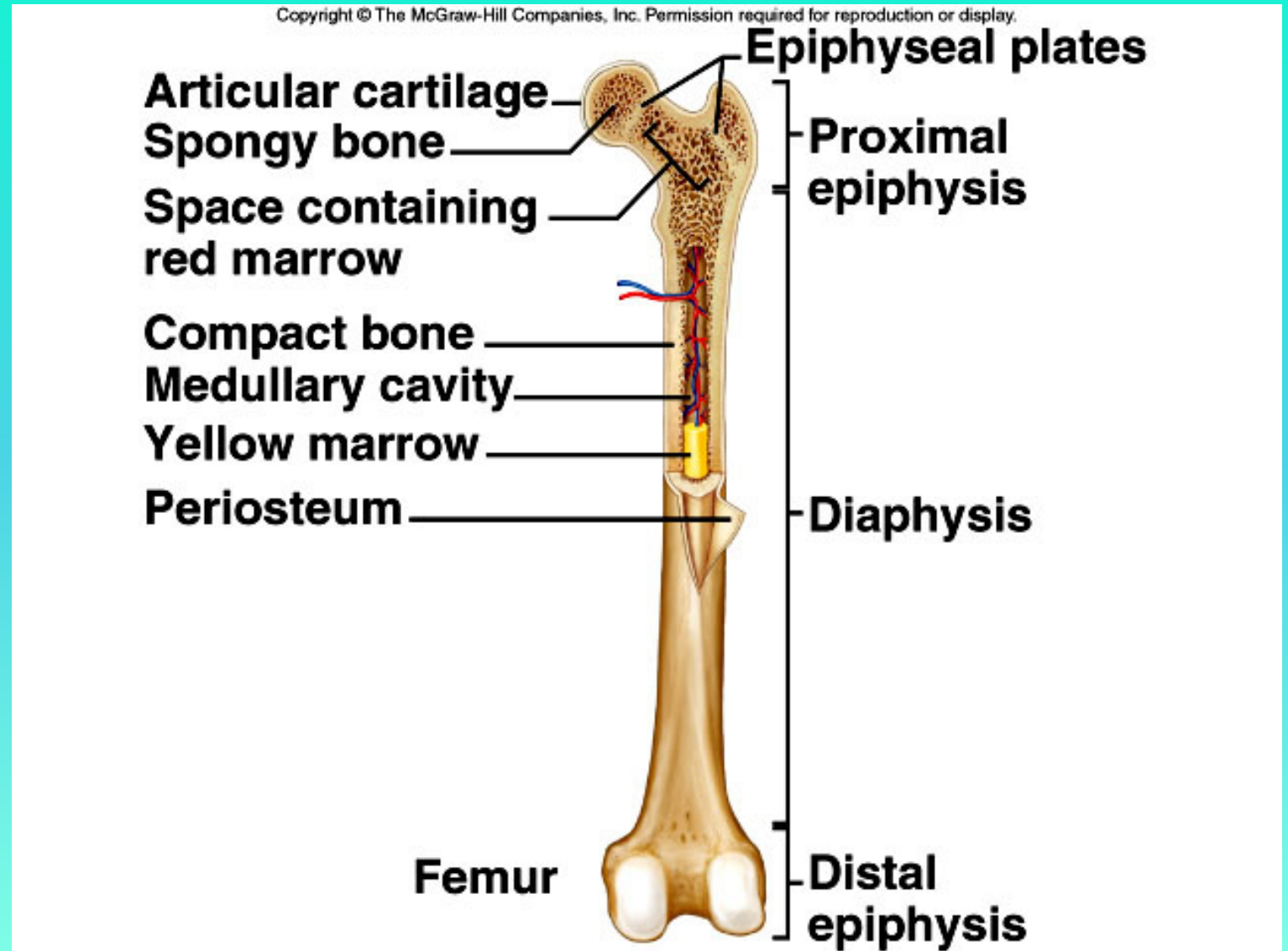
2- Lower limb



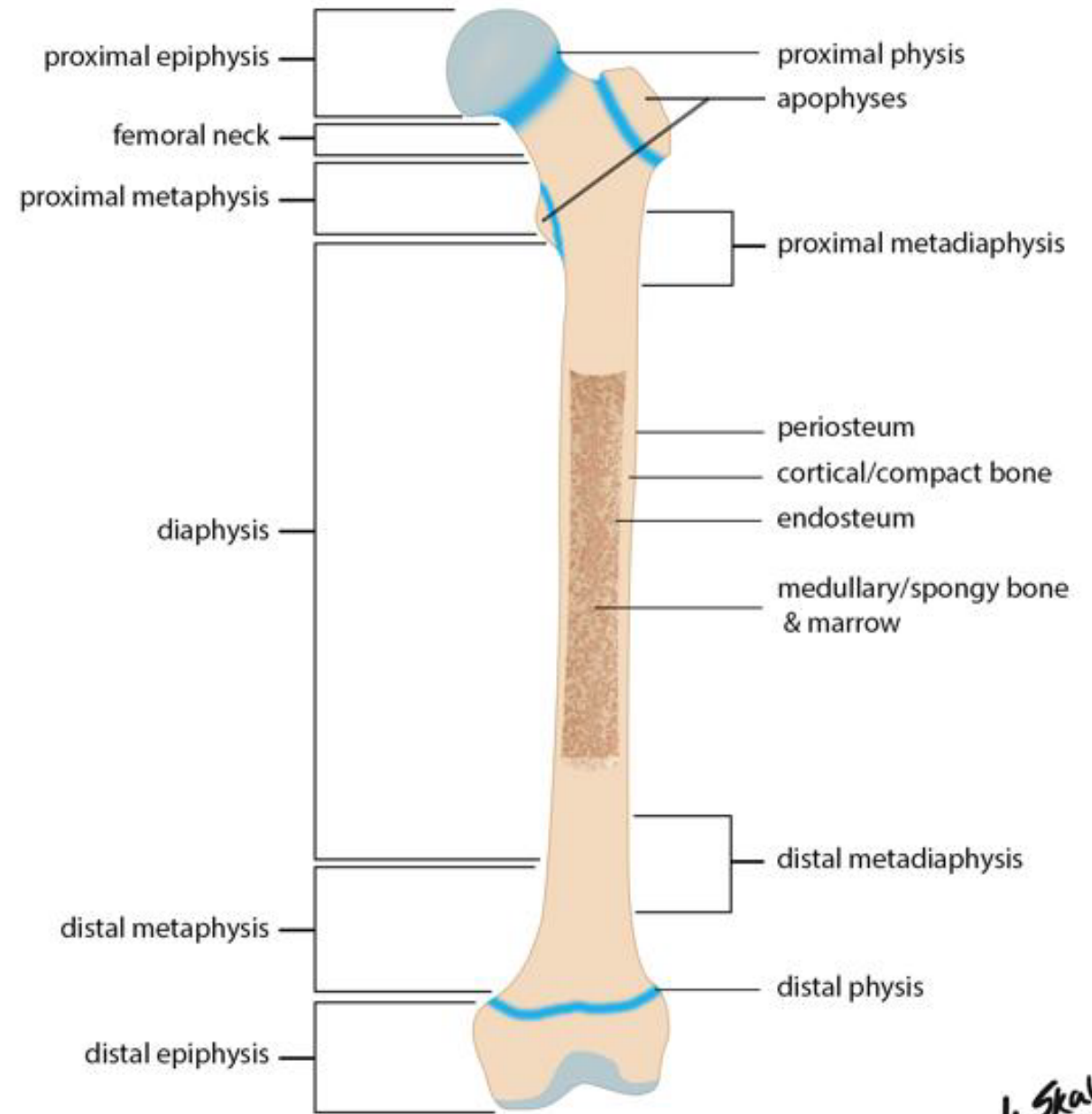
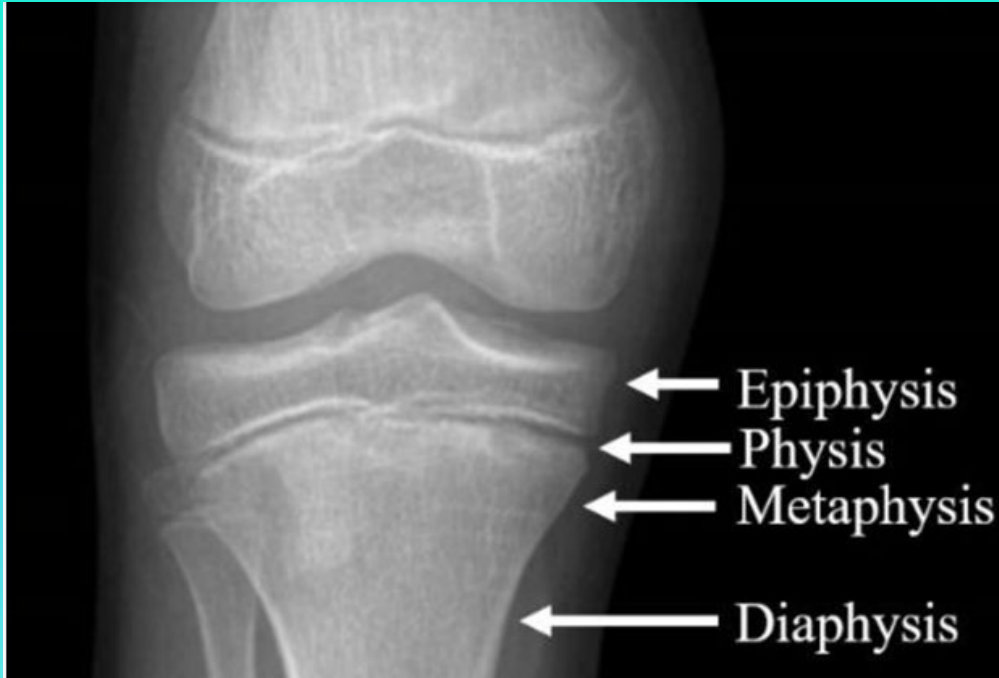


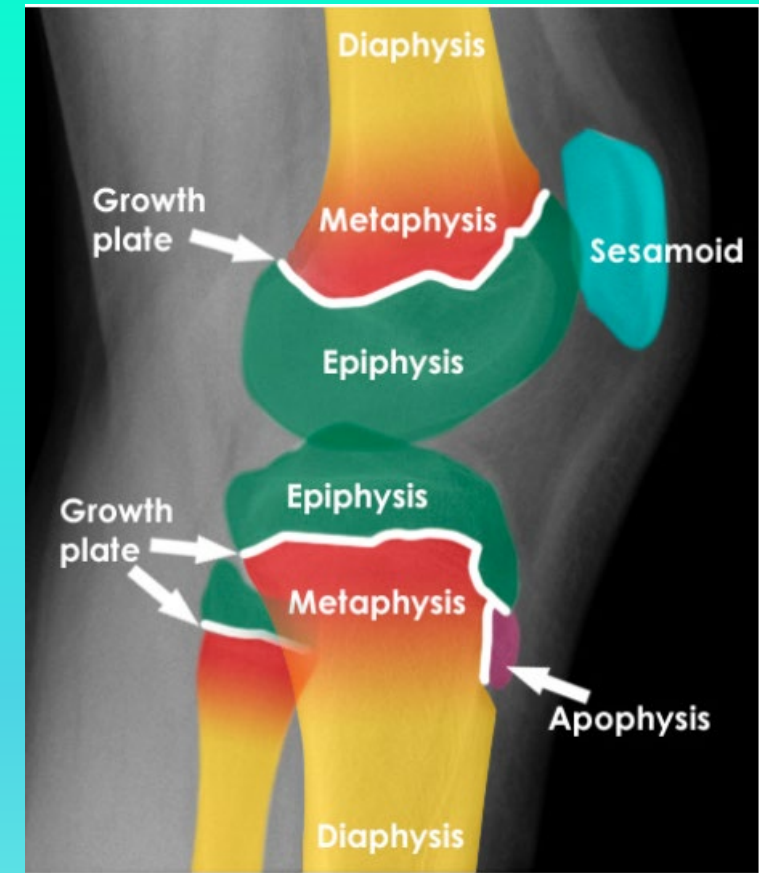
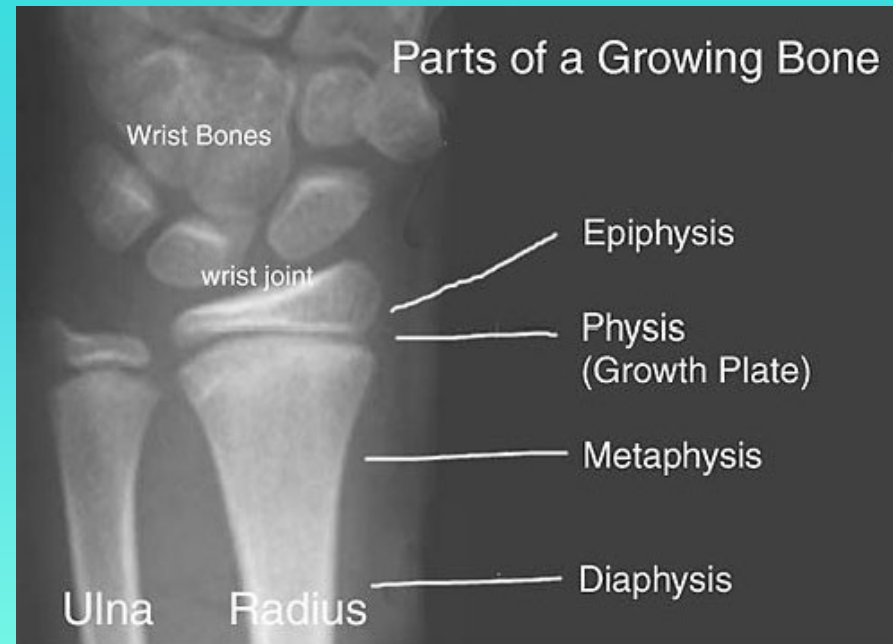
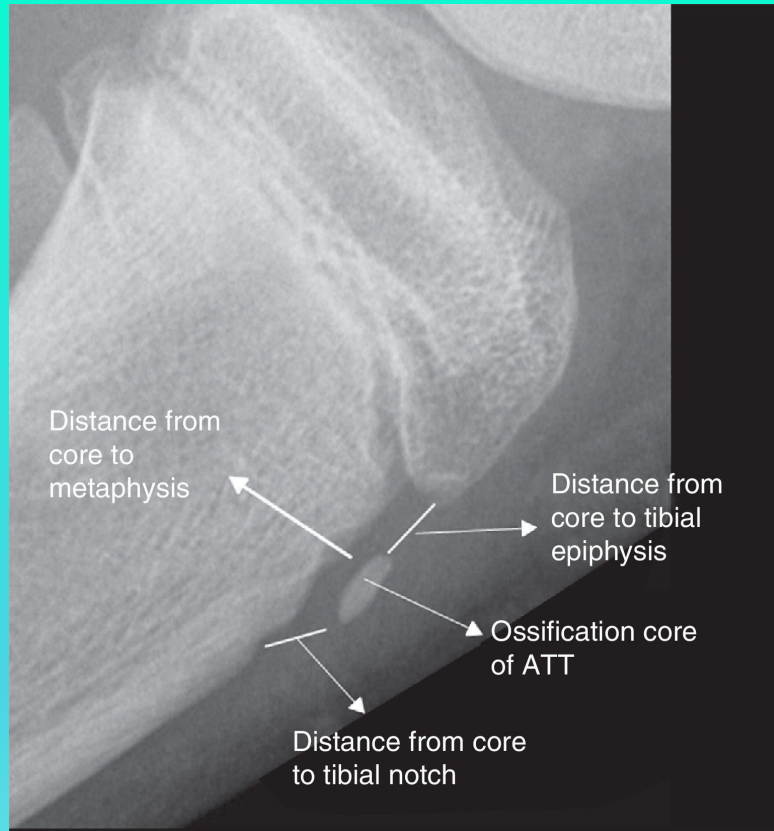
Structure of Bones

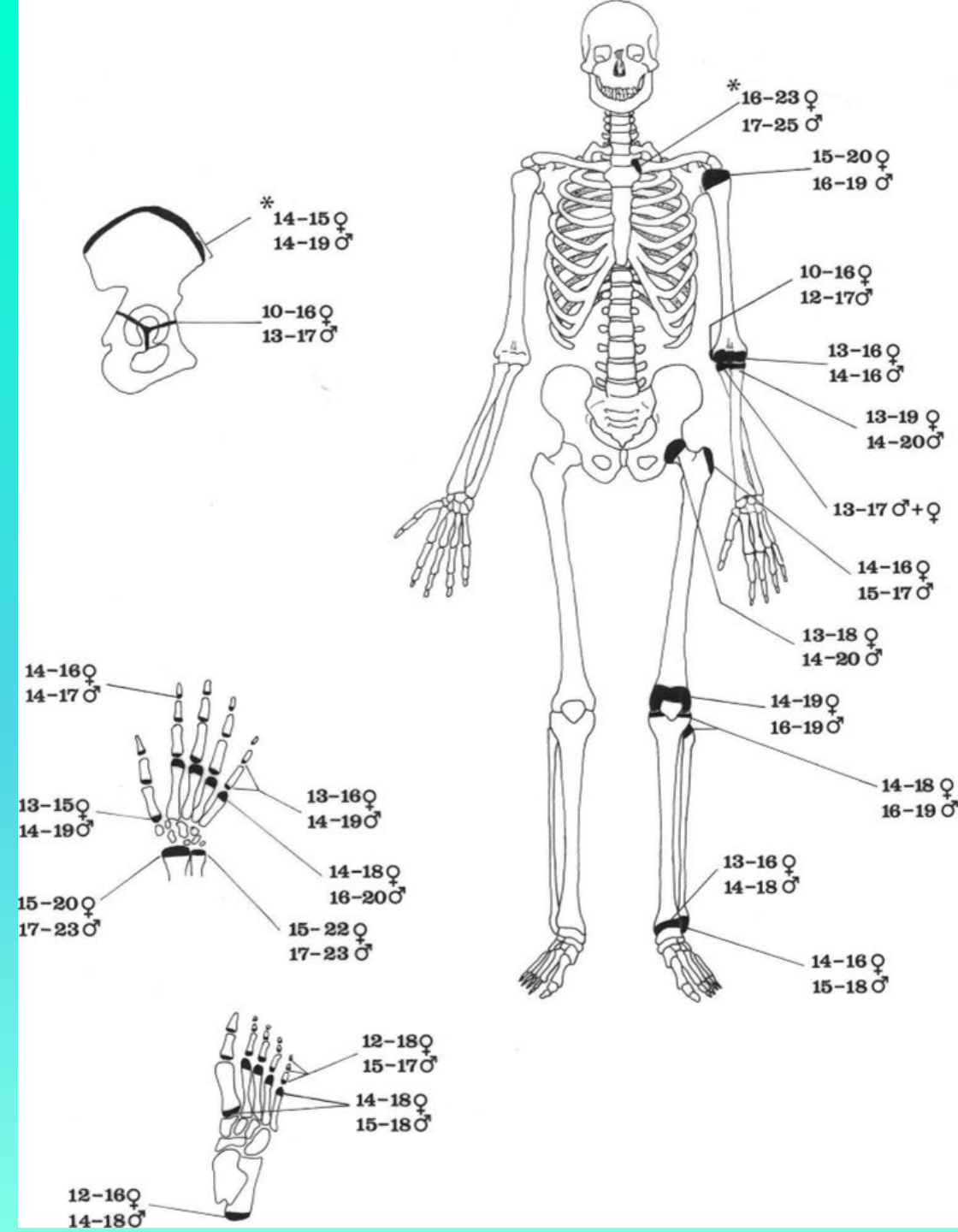
- The typical features of a long bone such as the humerus
 - Diaphysis
 - Epiphysis
 - Epiphyseal line
 - Articular cartilage
 - Periosteum



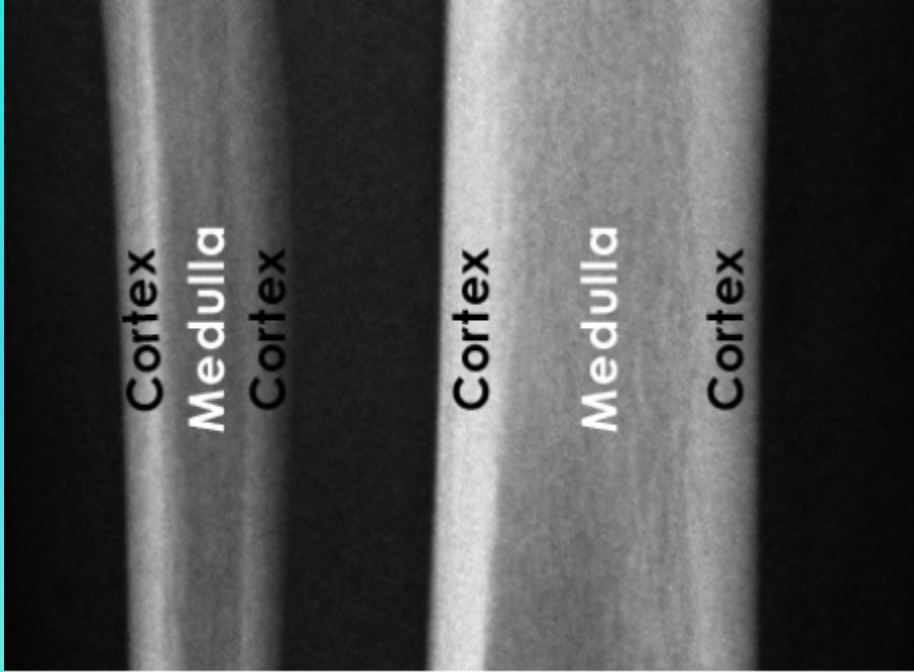
BONE PARTS







BONE CORTEX AND MEDULLA

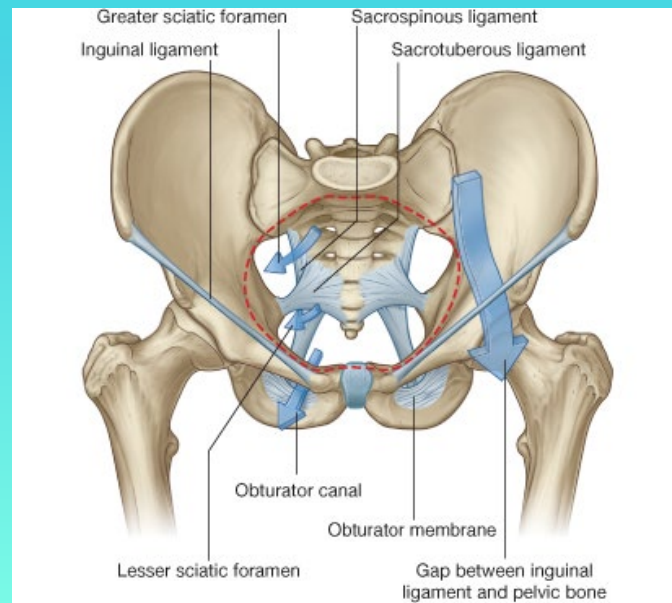
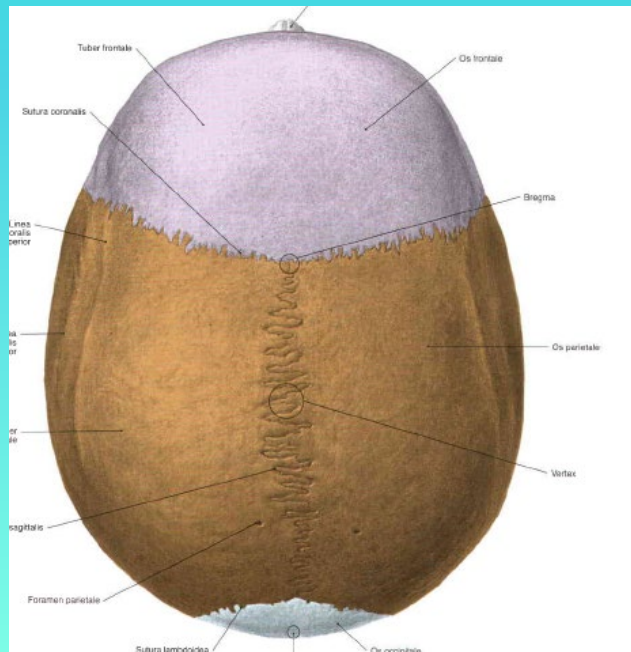


Joint or Articulation

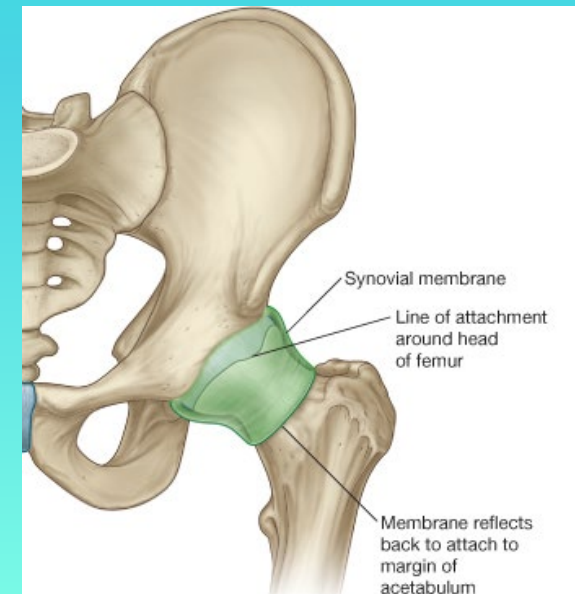
مفصل

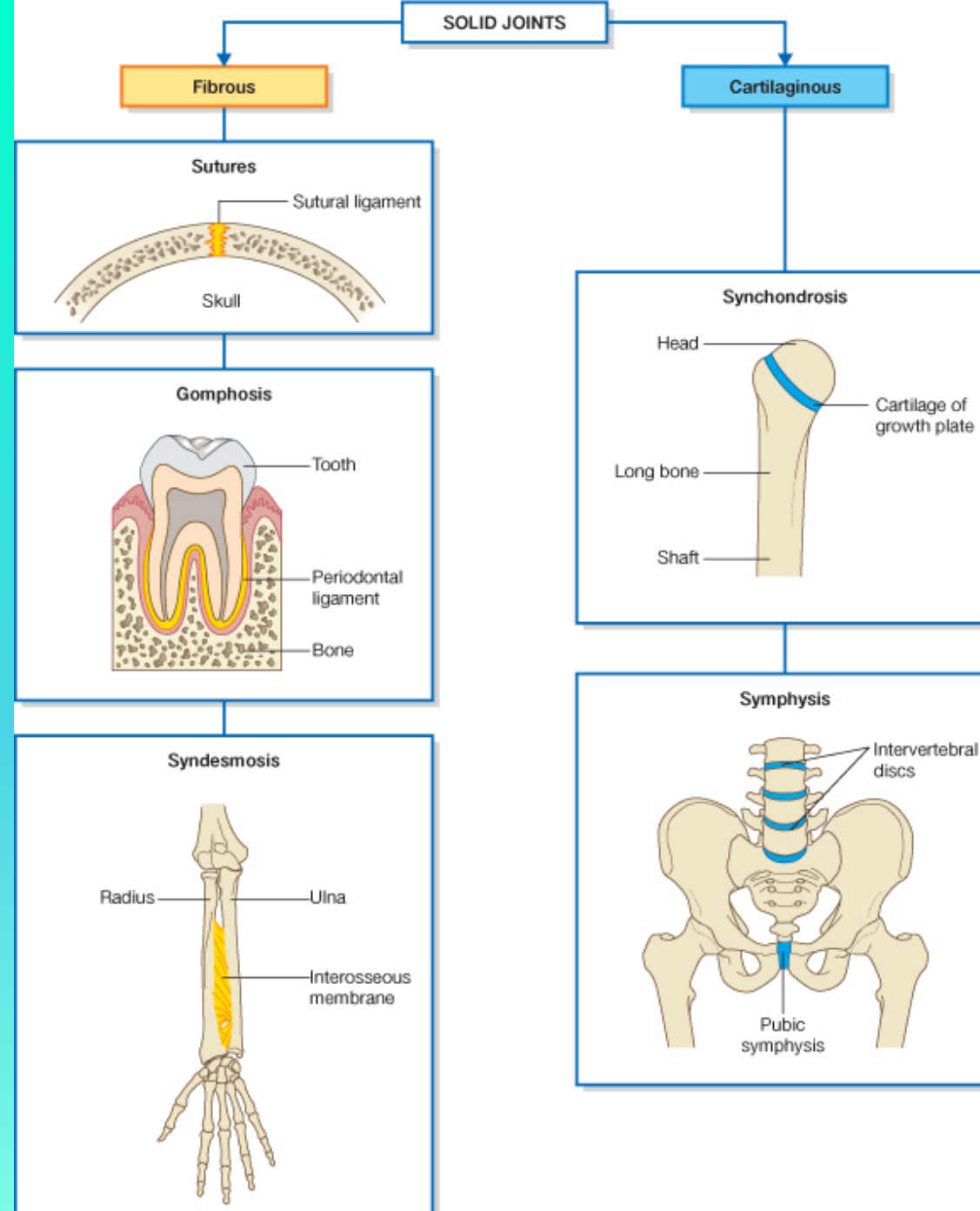
انواع مفاصل:

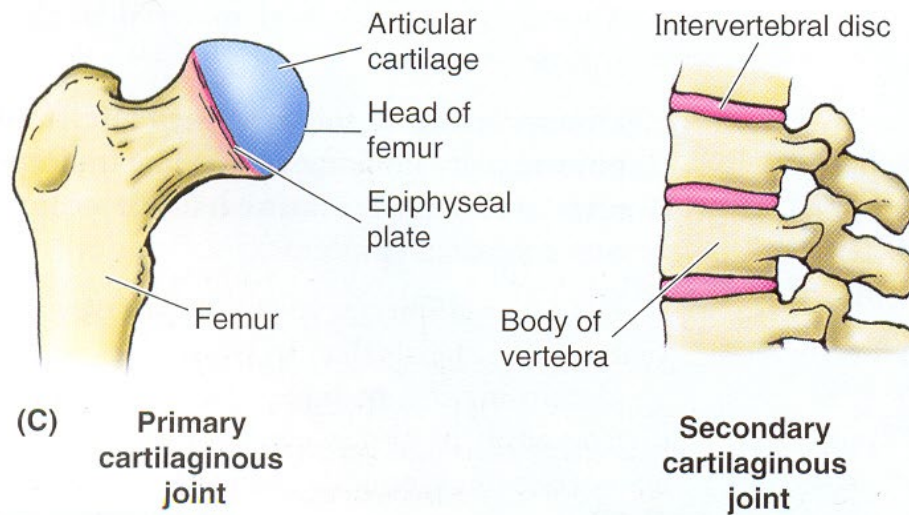
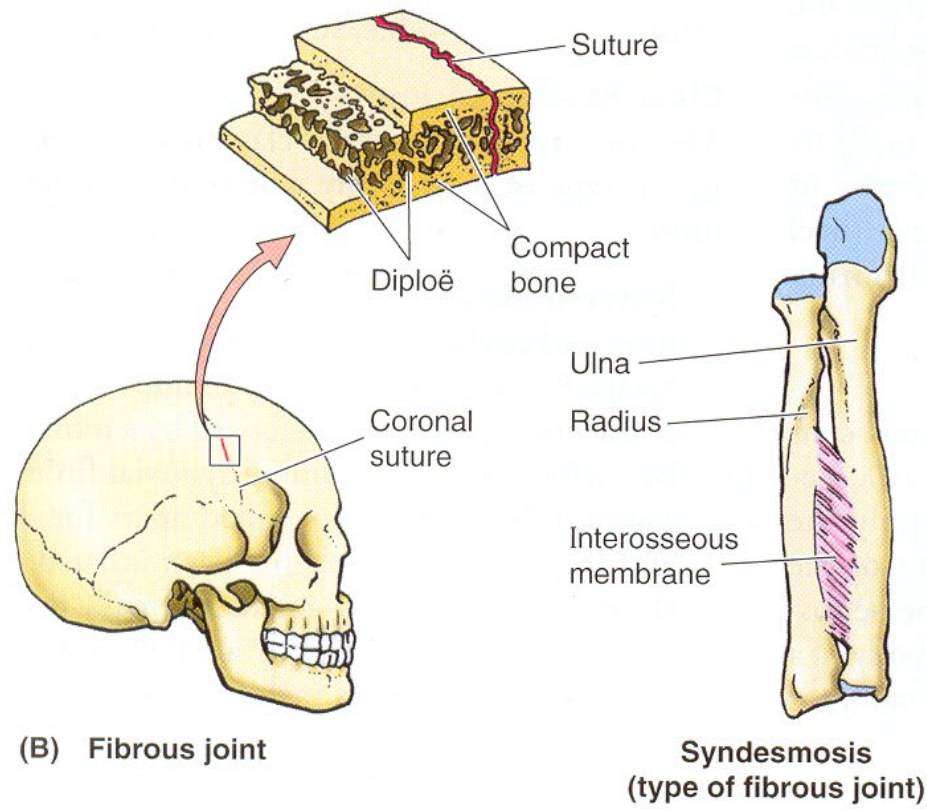
- مفاصل لیفی (فیروز) : بی حرکت ،مانند درزهای جمجمه
- مفاصل غضروفی (Cartilage) :نیمه متحرک مانند سمفیز پوییس ،
مفصل بین تنه مهره های مجاور
- مفاصل سینوویال :کاملا متحرک مانند مفاصل اندام فوقانی و تحتانی



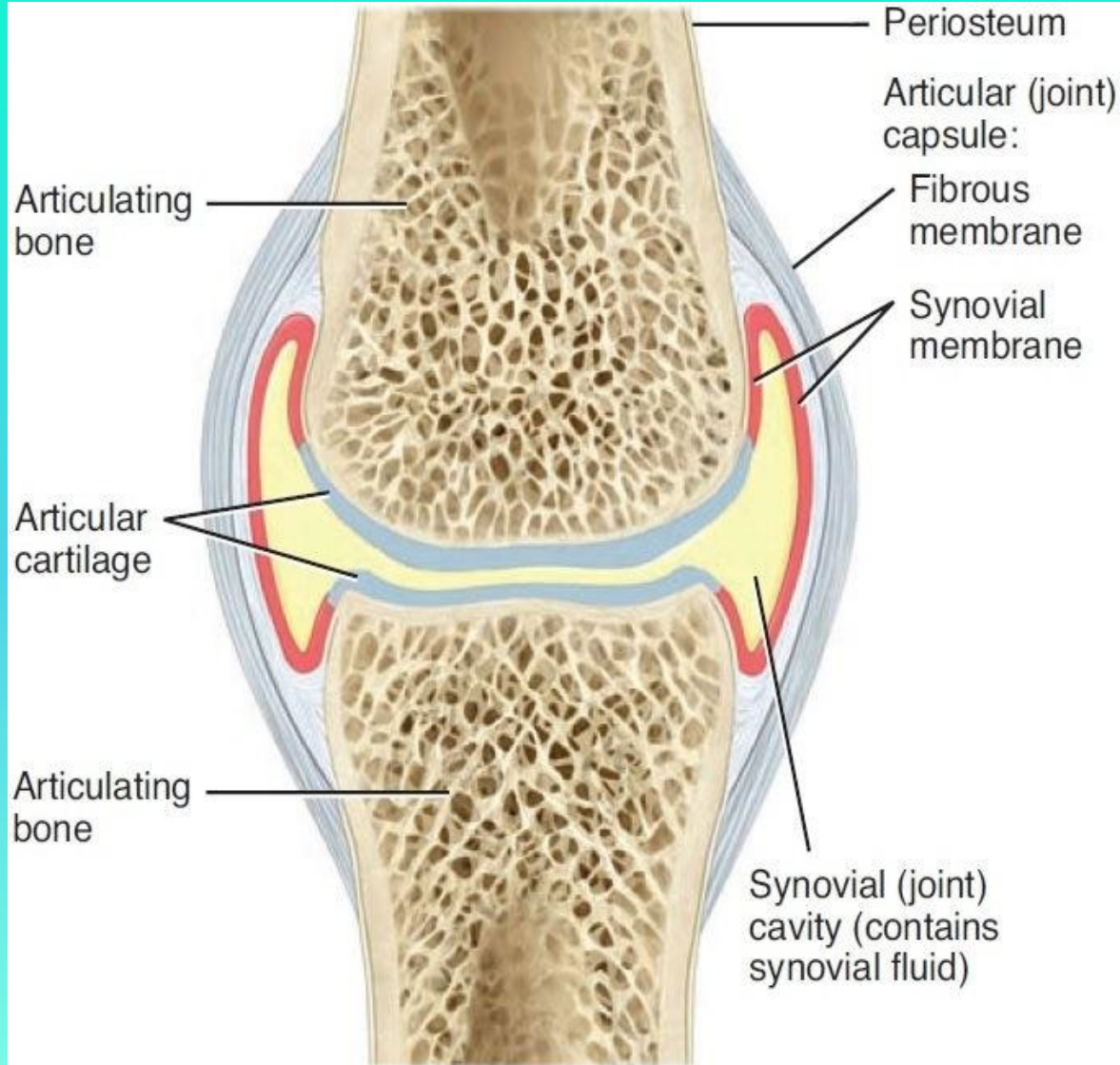
Isevier Ltd. Drake et al: Gray's Anatomy for Students www.studentconsult.com



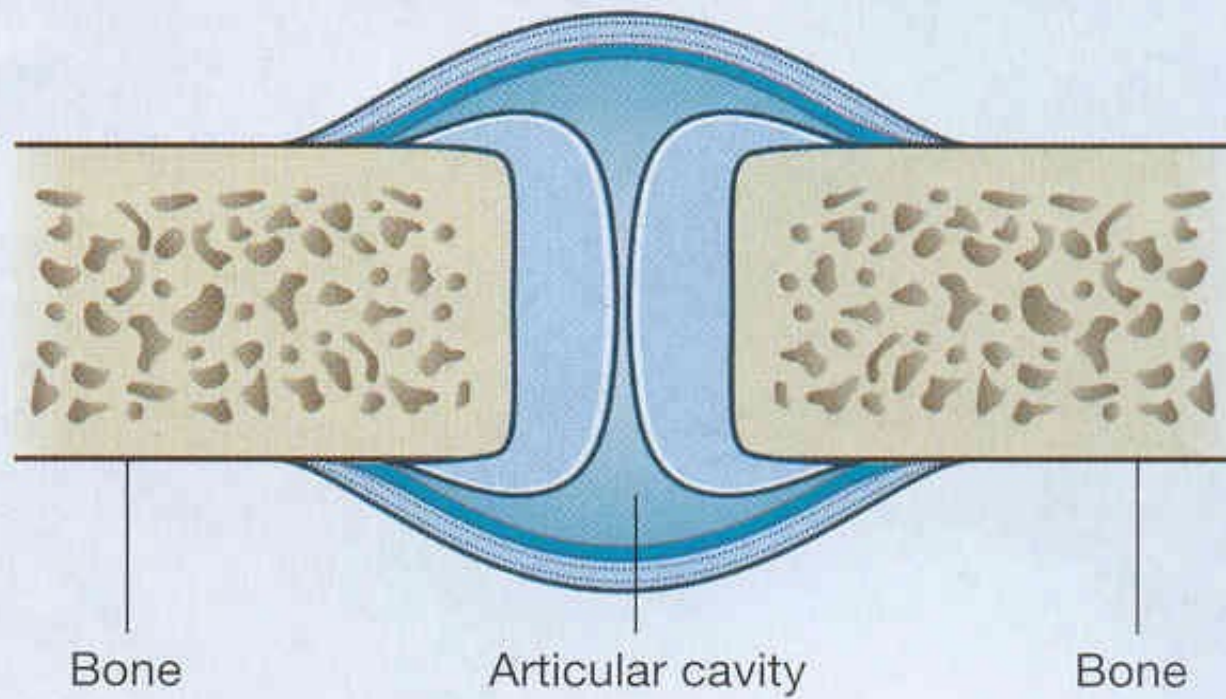




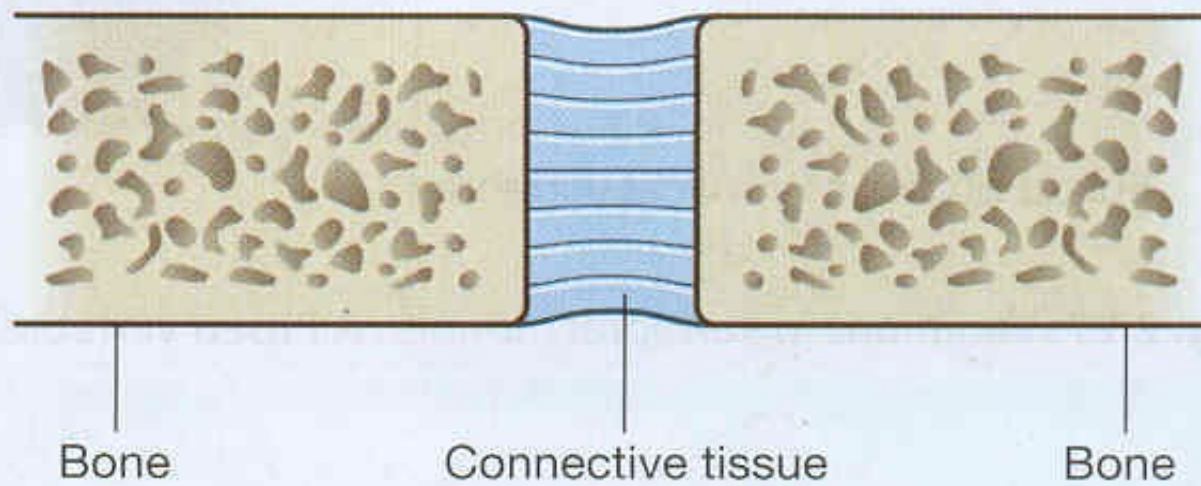
اجزاء مفصل سینوویال



- حفره مفصلی
- کیپسول مفصلی
- سطوح مفصلی
- غشاء سینوویال
- رباط های مفصلی

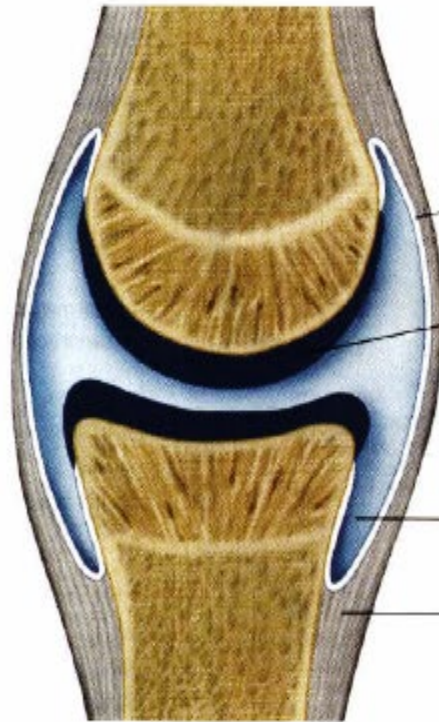


B Solid joint



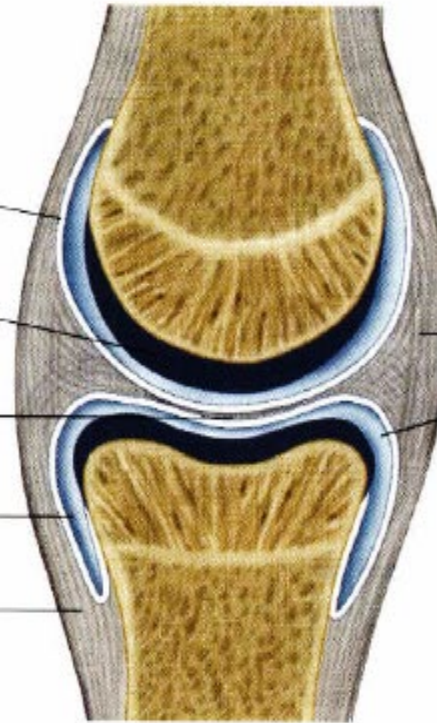
A

Simple



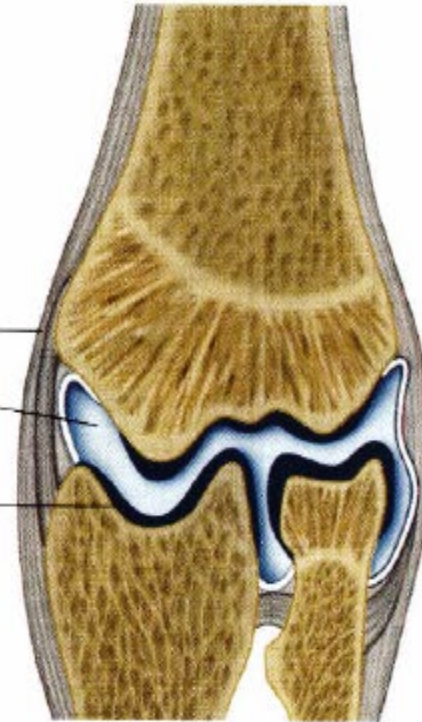
B

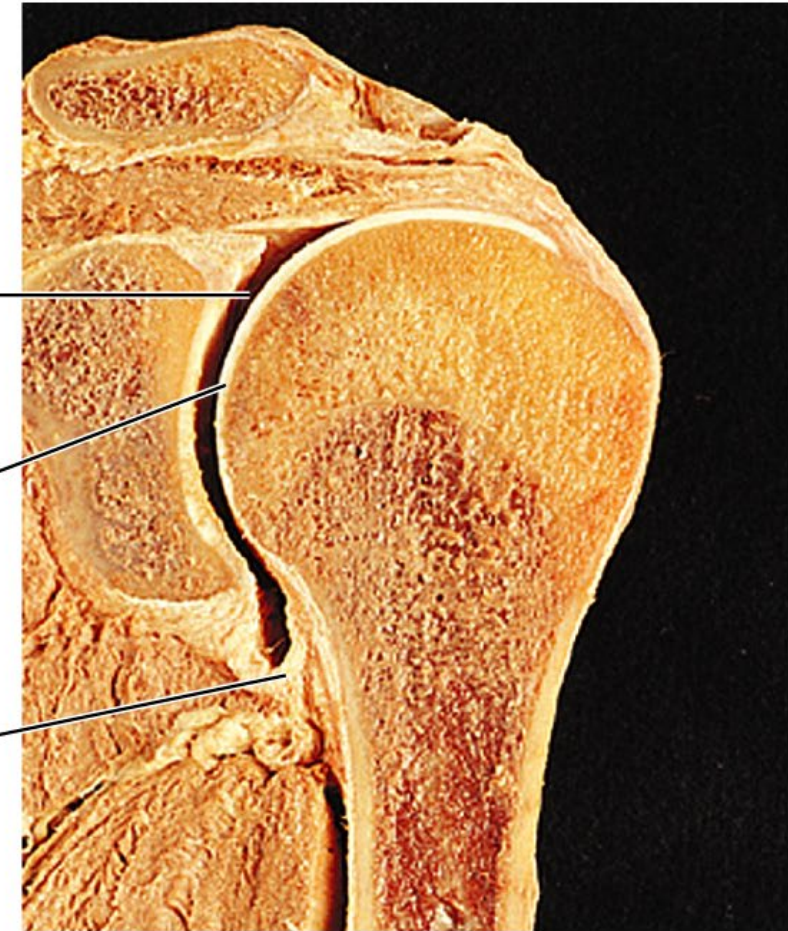
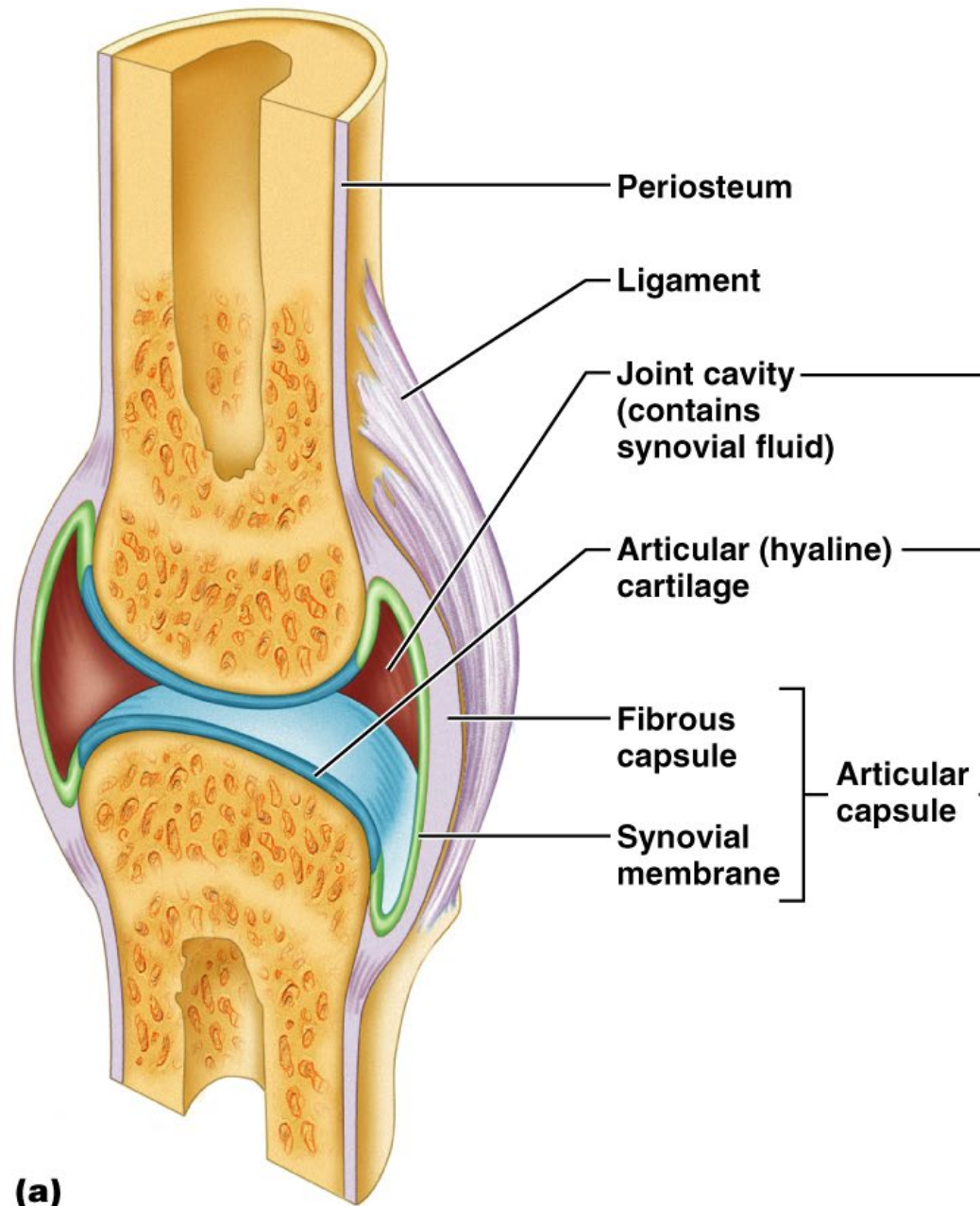
Complex



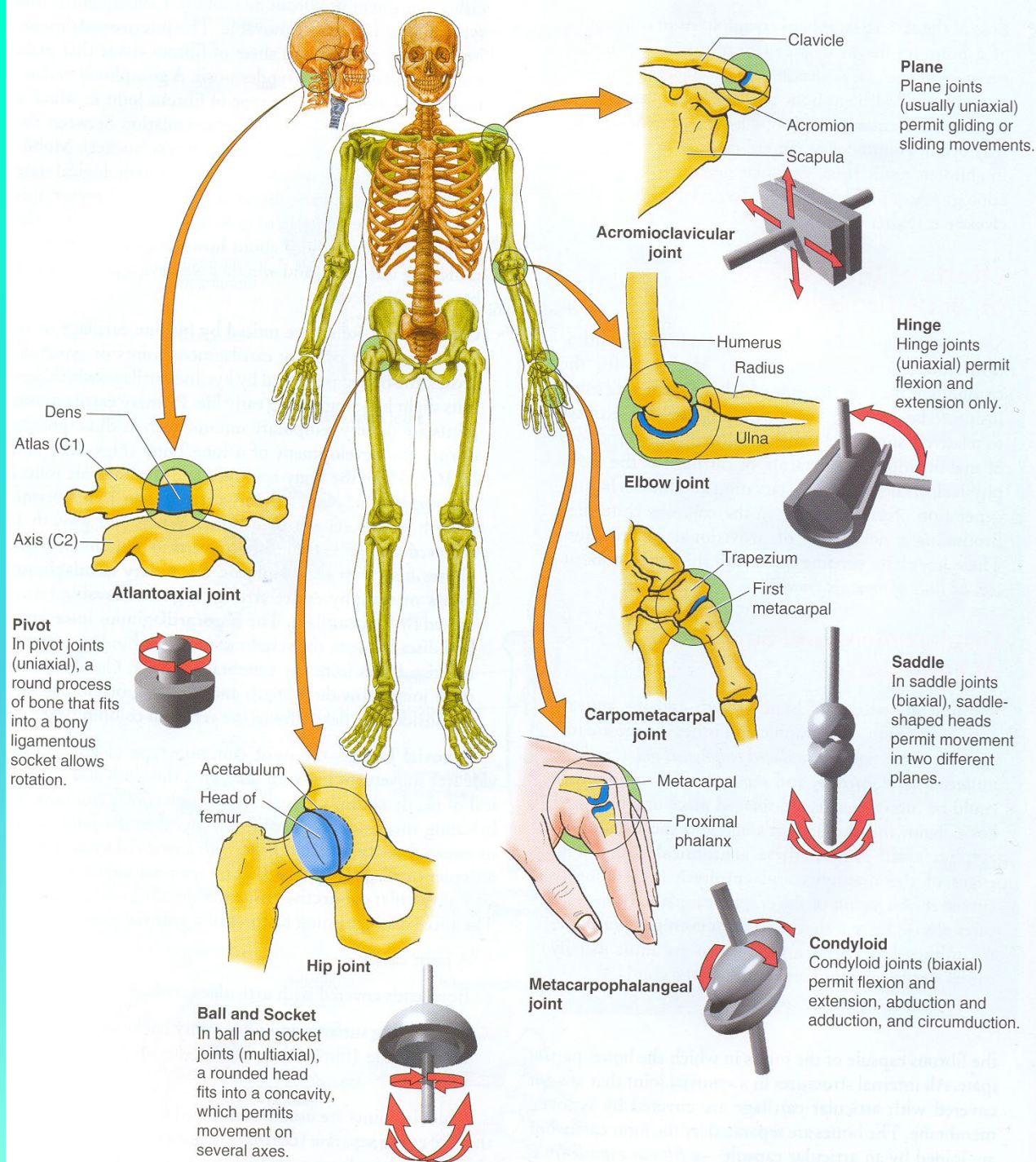
C

Compound



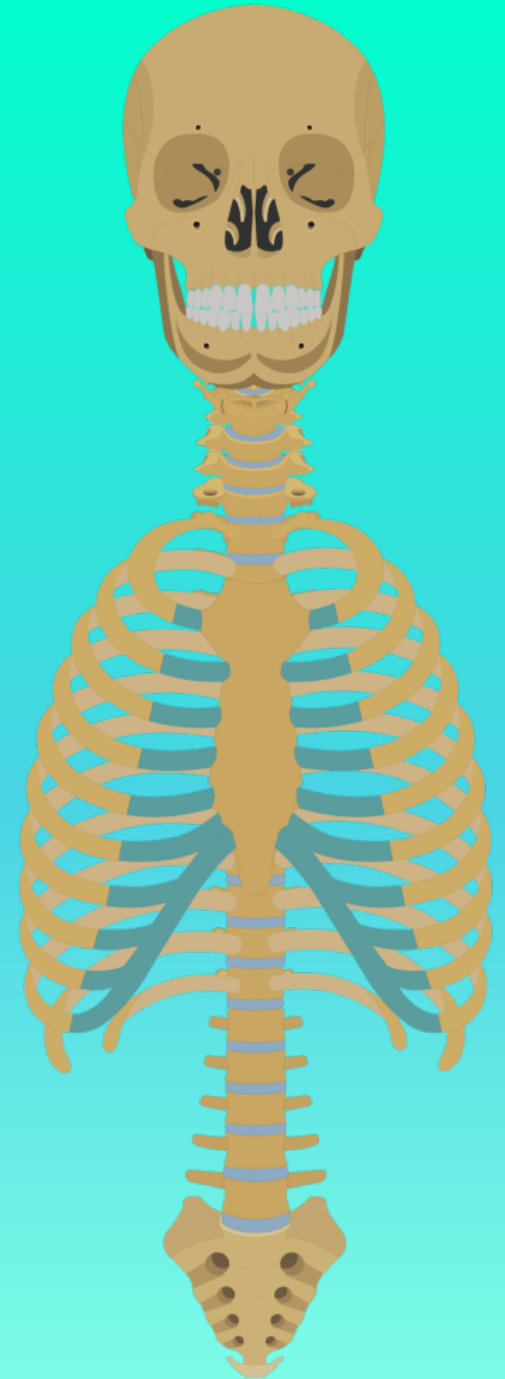


(b)



Axial Skeleton

- **Vertebral column**
- **Ribs**
 - Twelve pairs
 - Bottom two pair floating
- **Sternum**
- **skull**



Axial Skeleton: Vertebral Column

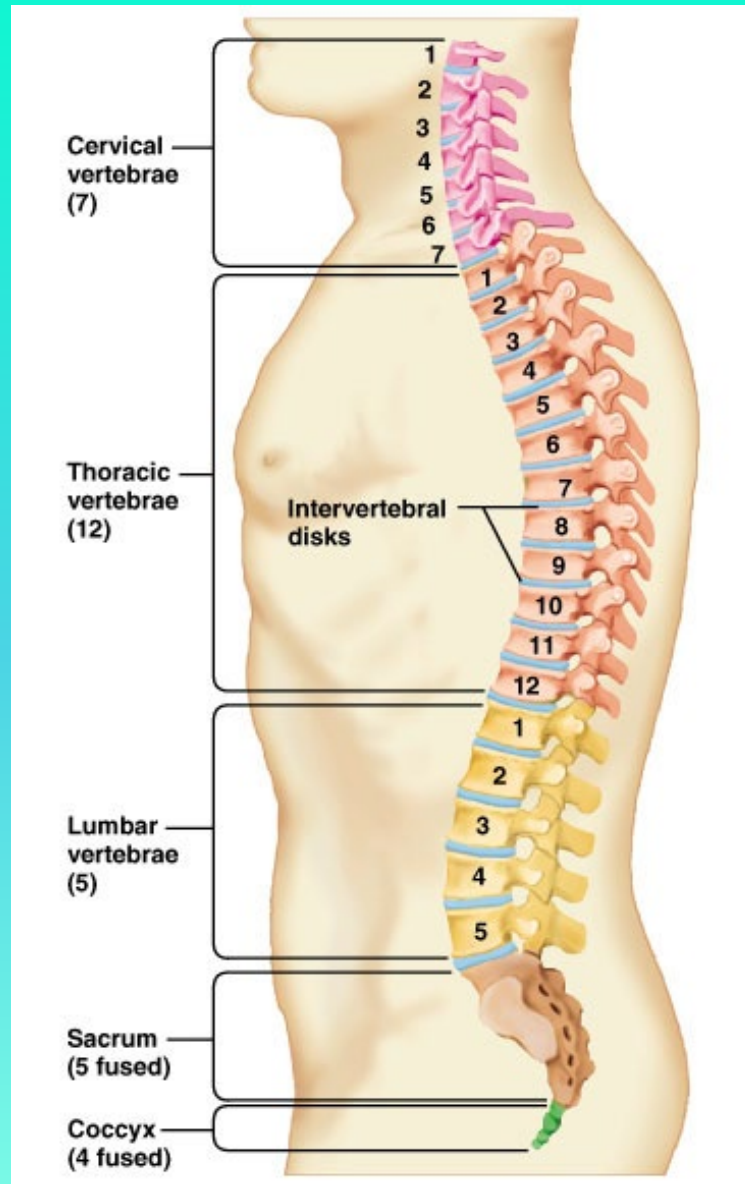


Figure 5.7

Vertebral column

1- Cervical (7)

2- Thoracic (12)

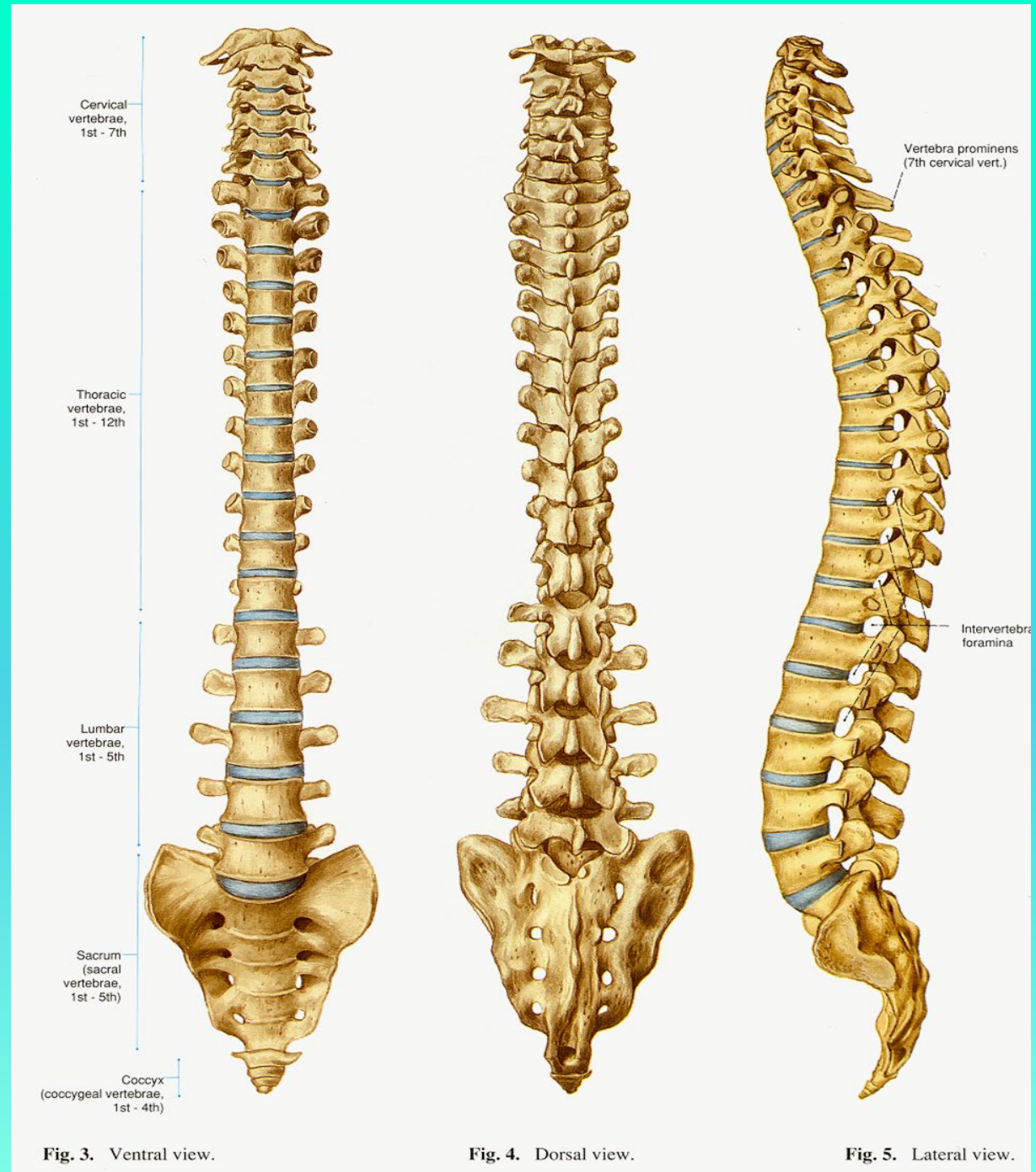
3- Lumbar (5)

4- Sacrum

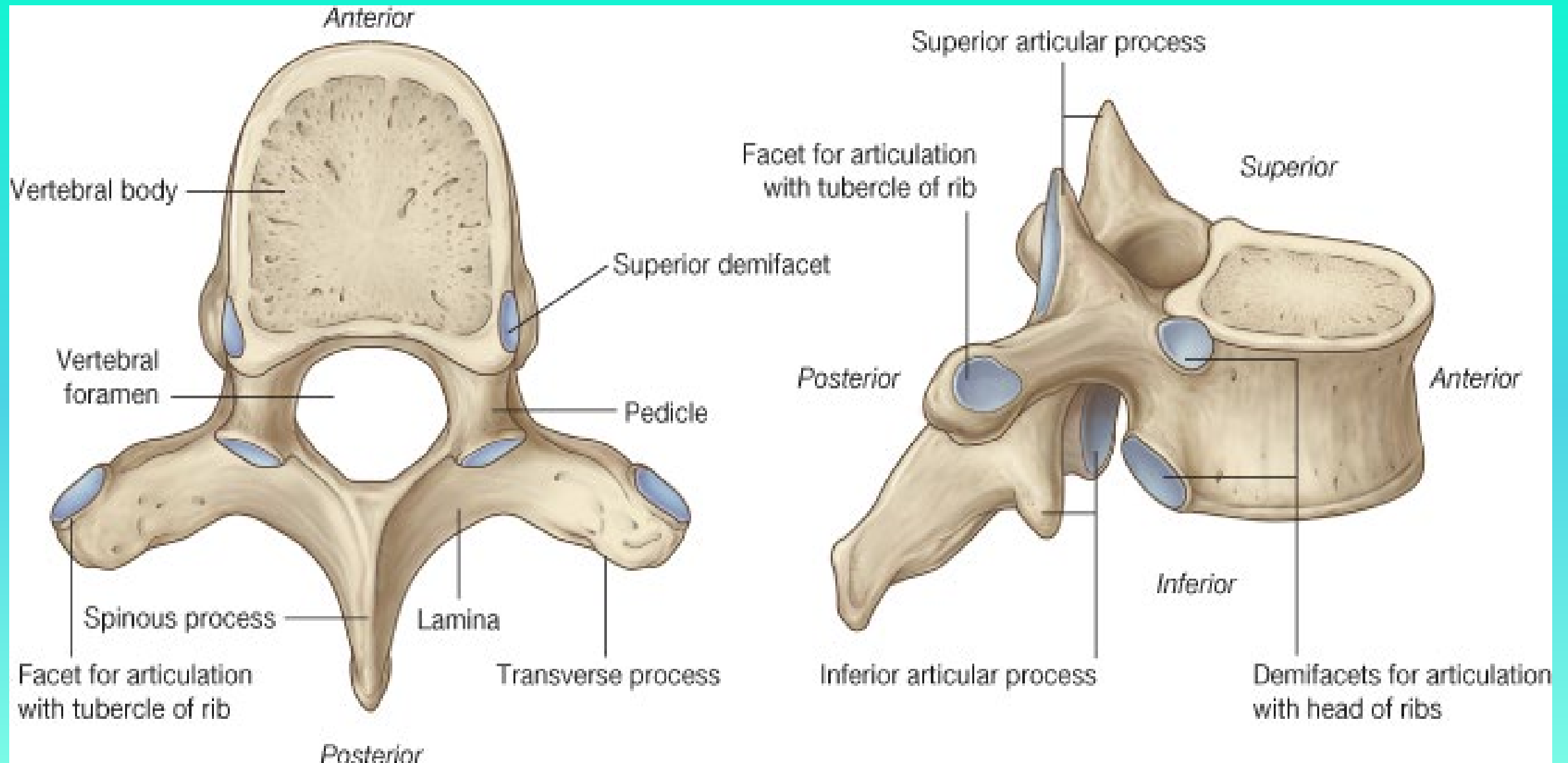
5- Coccyx

Total

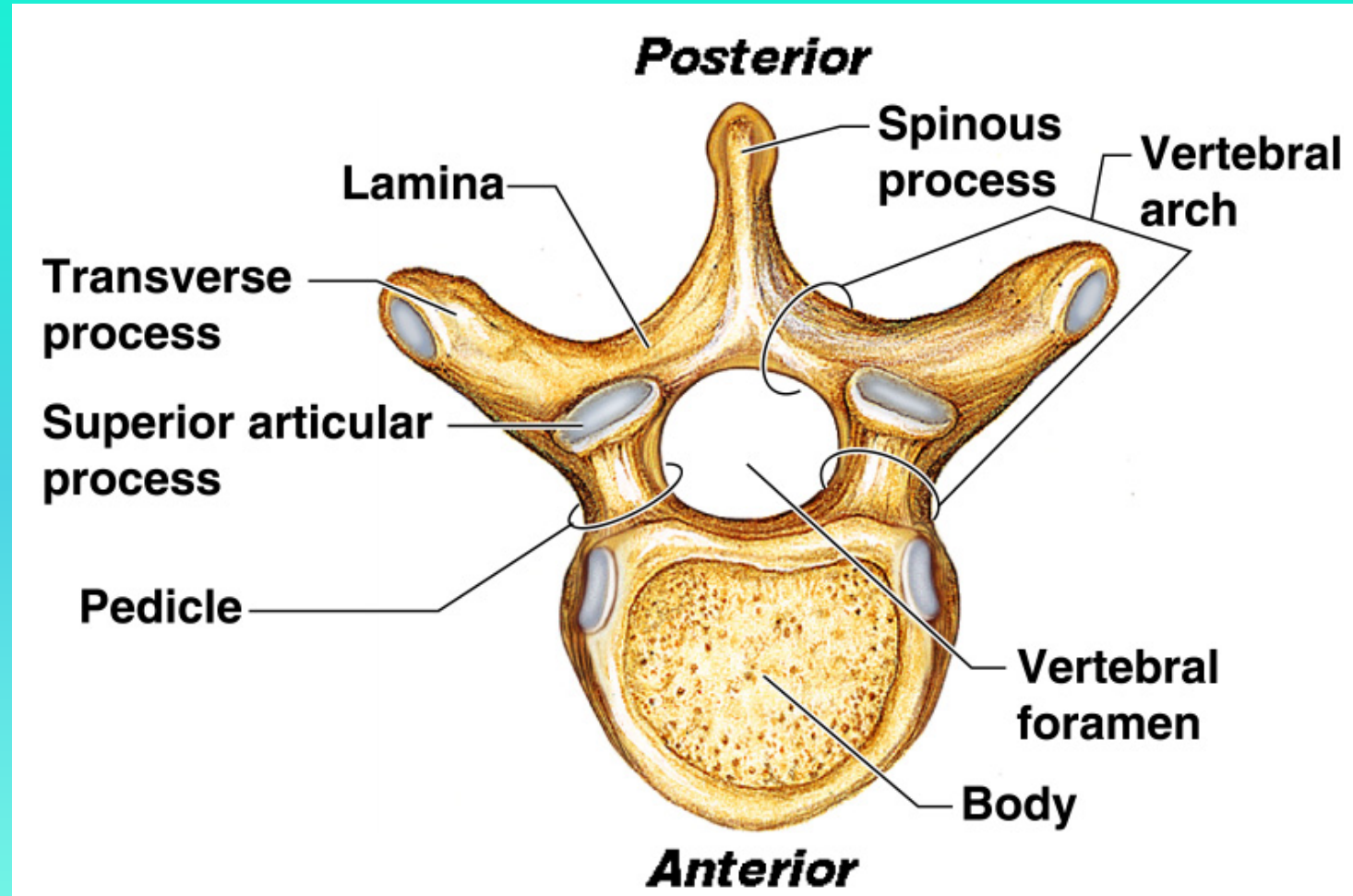
26



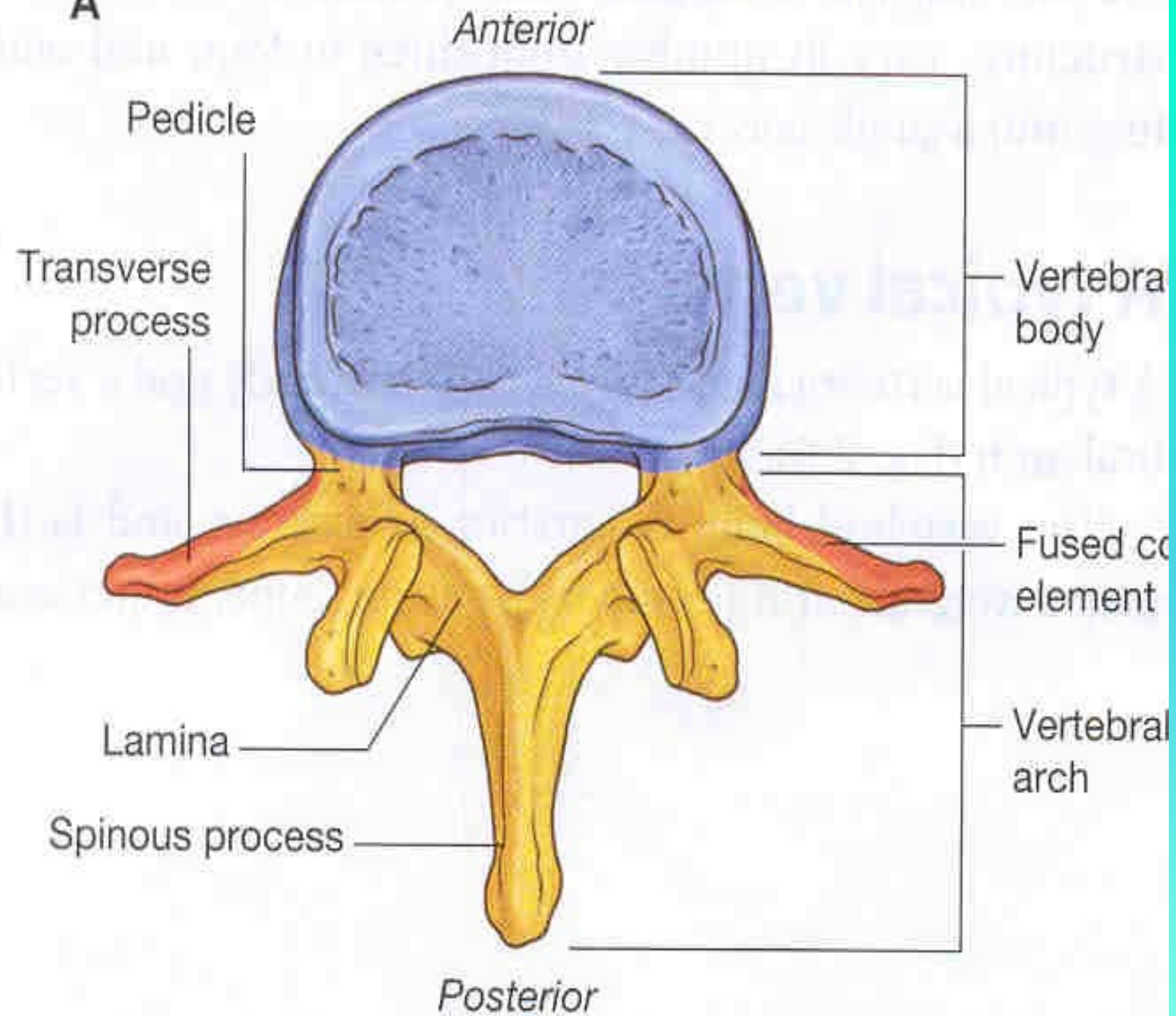
Structure of typical vertebrae

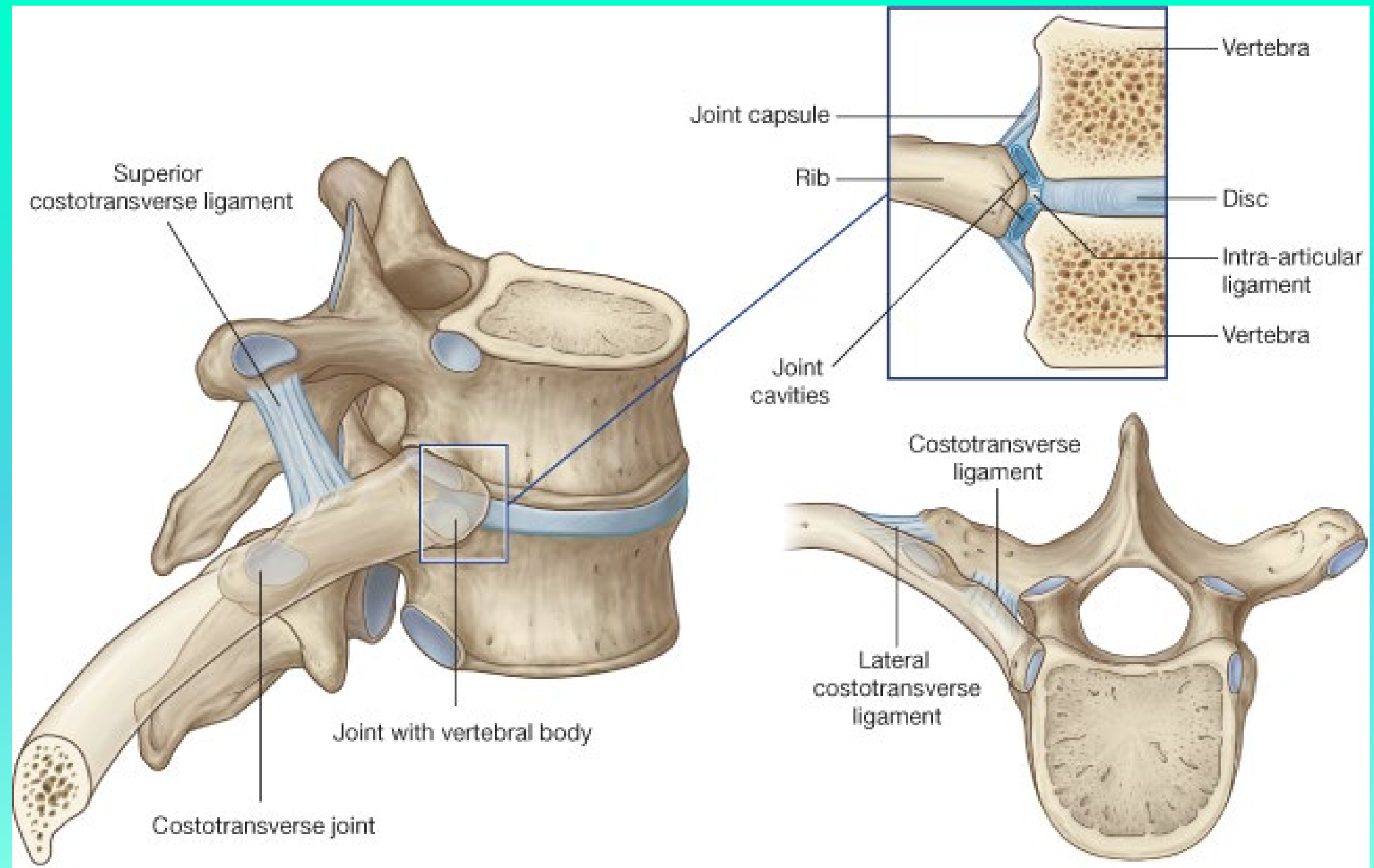


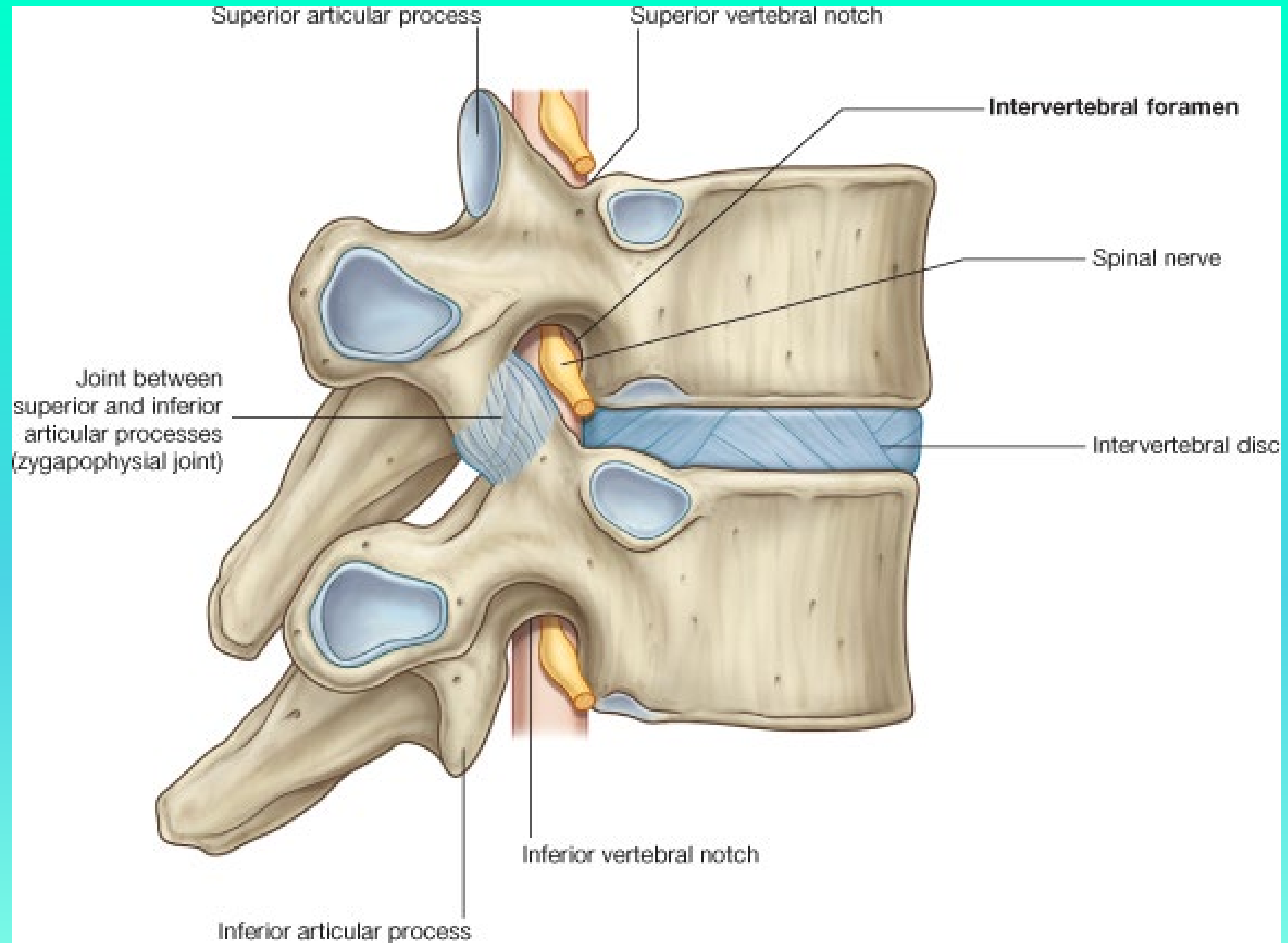
Structure of a Typical Vertebrae

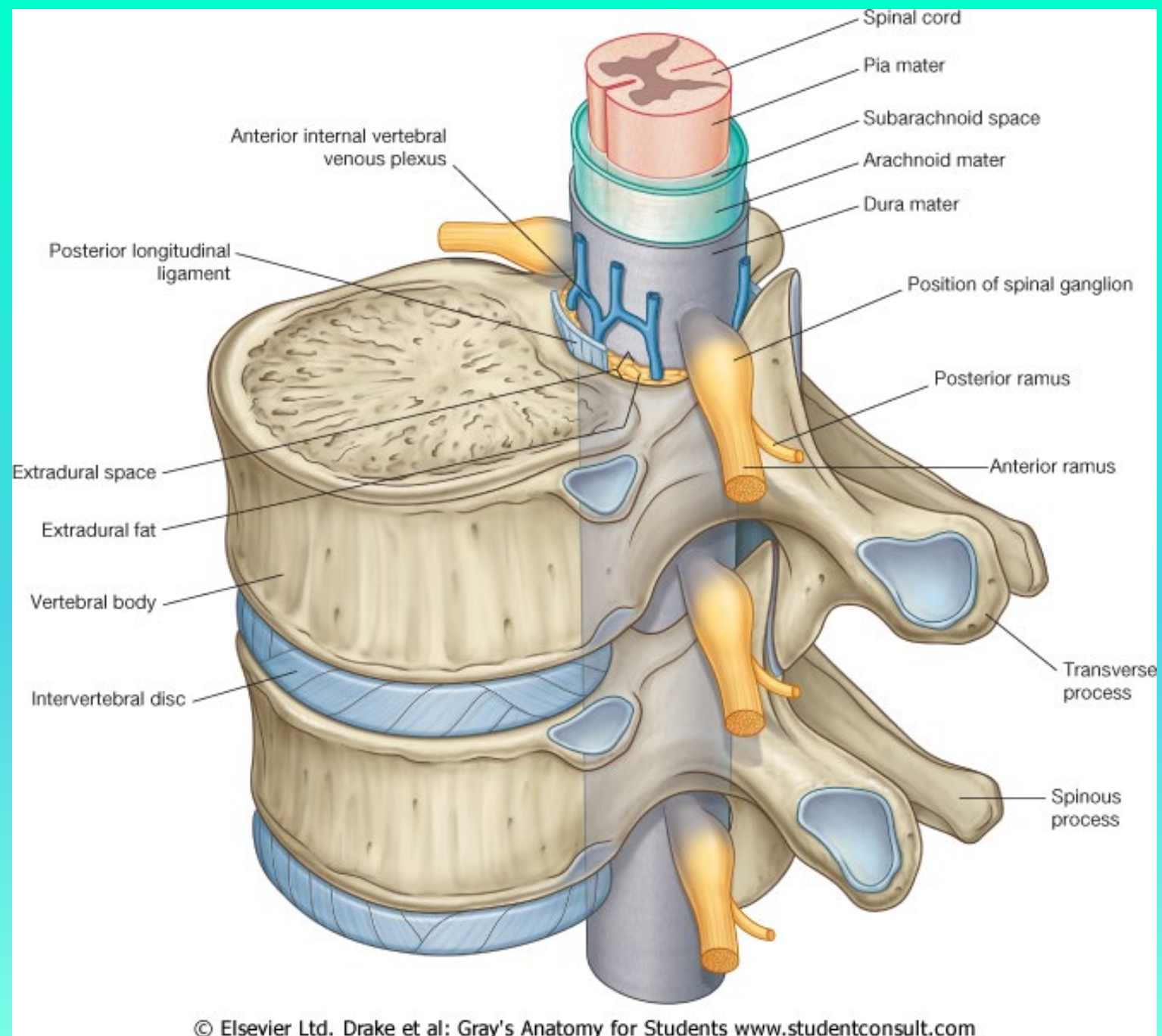


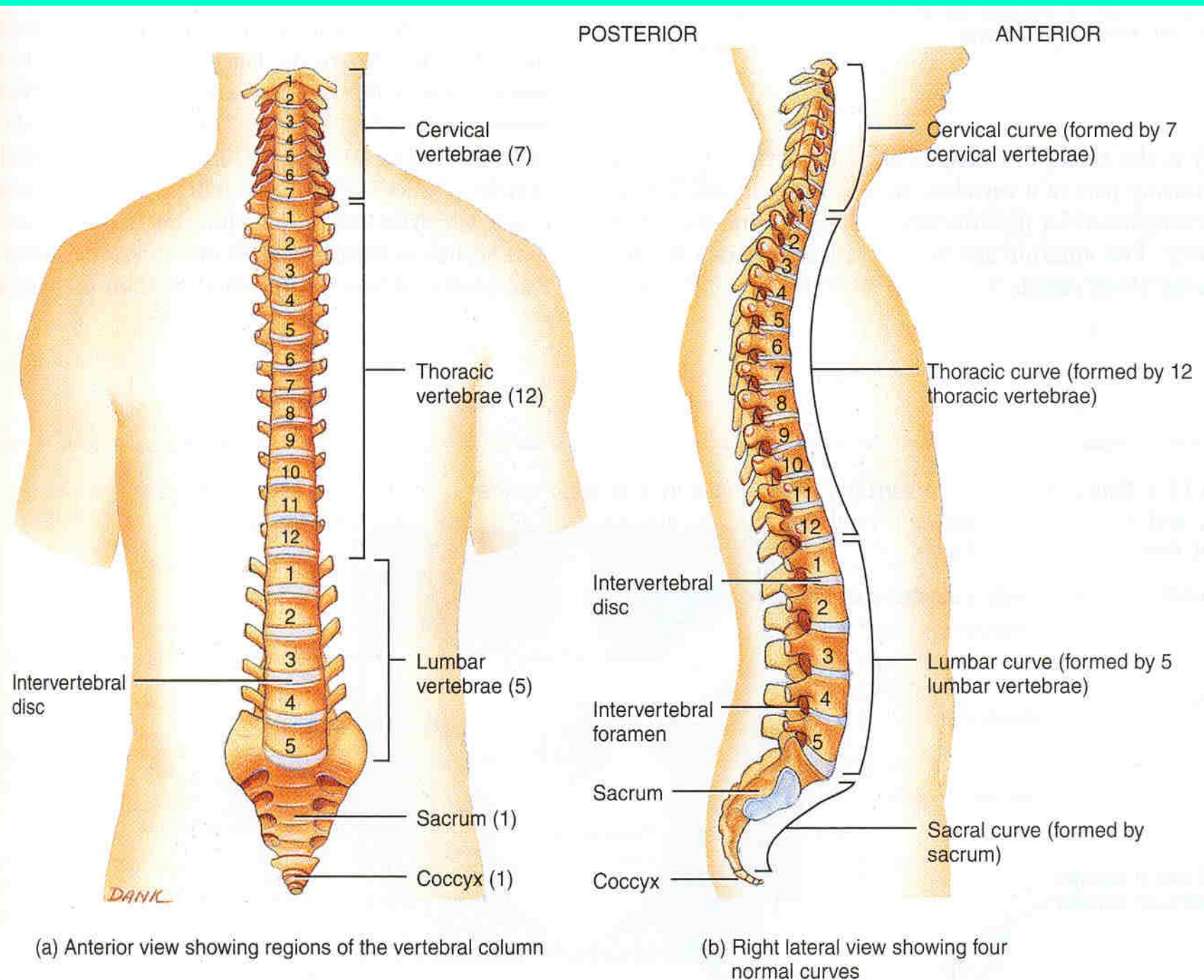
A





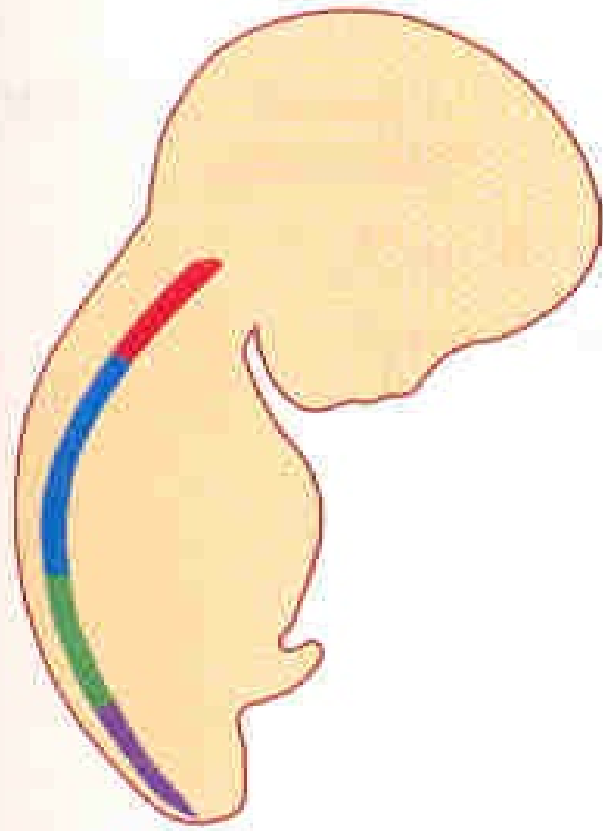




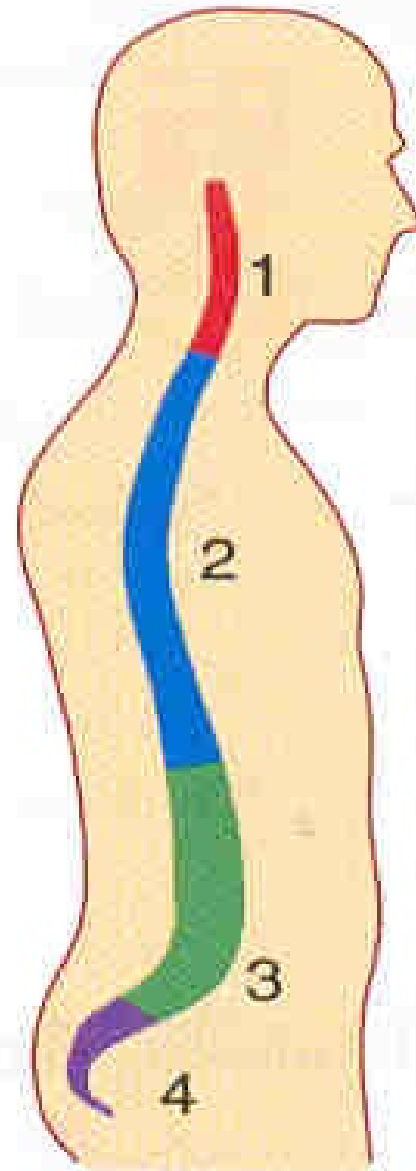


(a) Anterior view showing regions of the vertebral column

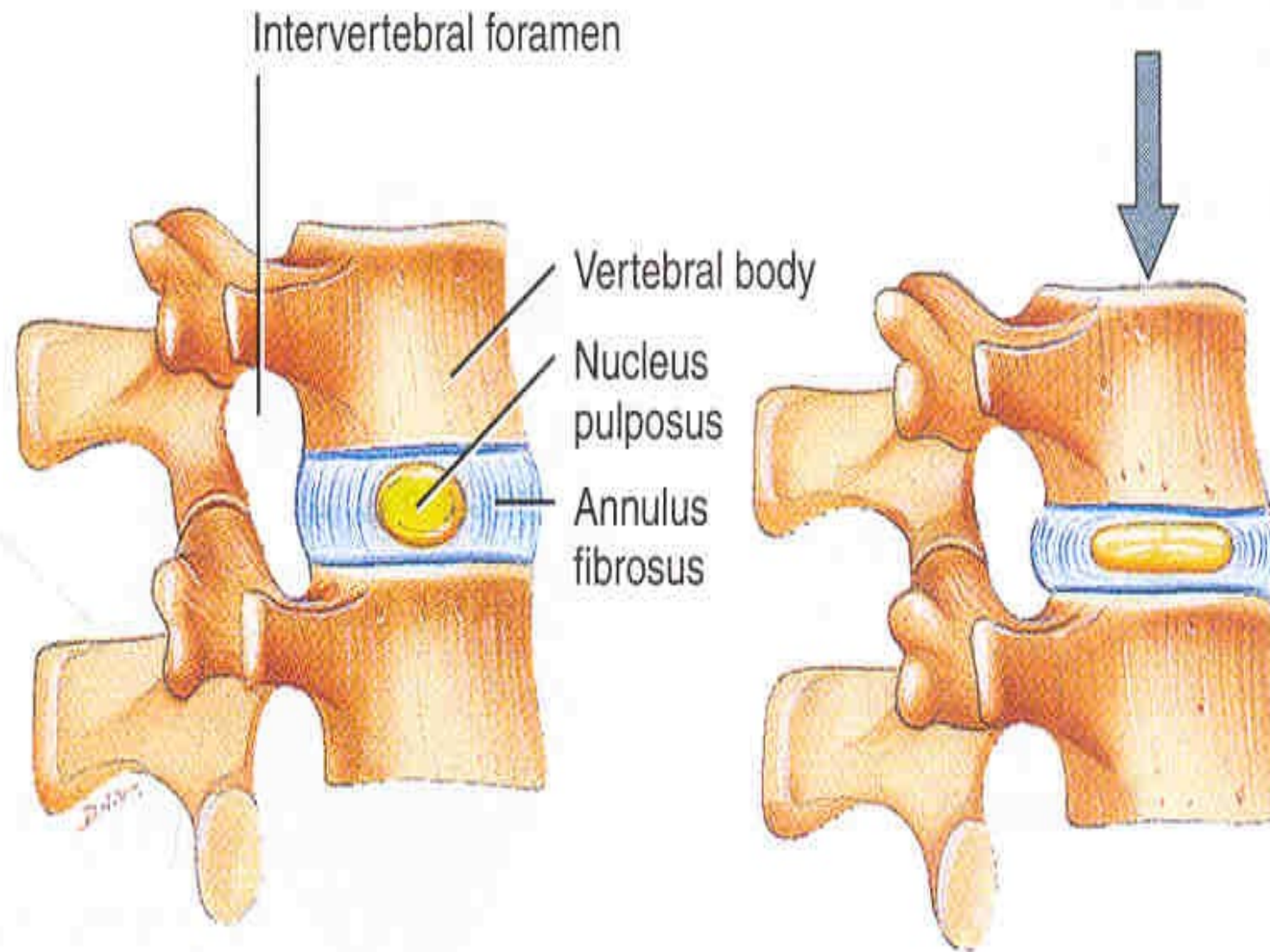
(b) Right lateral view showing four normal curves



Single curve in fetus



Four curves in adult



Normal intervertebral disc

Compressed intervertebral disc
in a weight-bearing situation

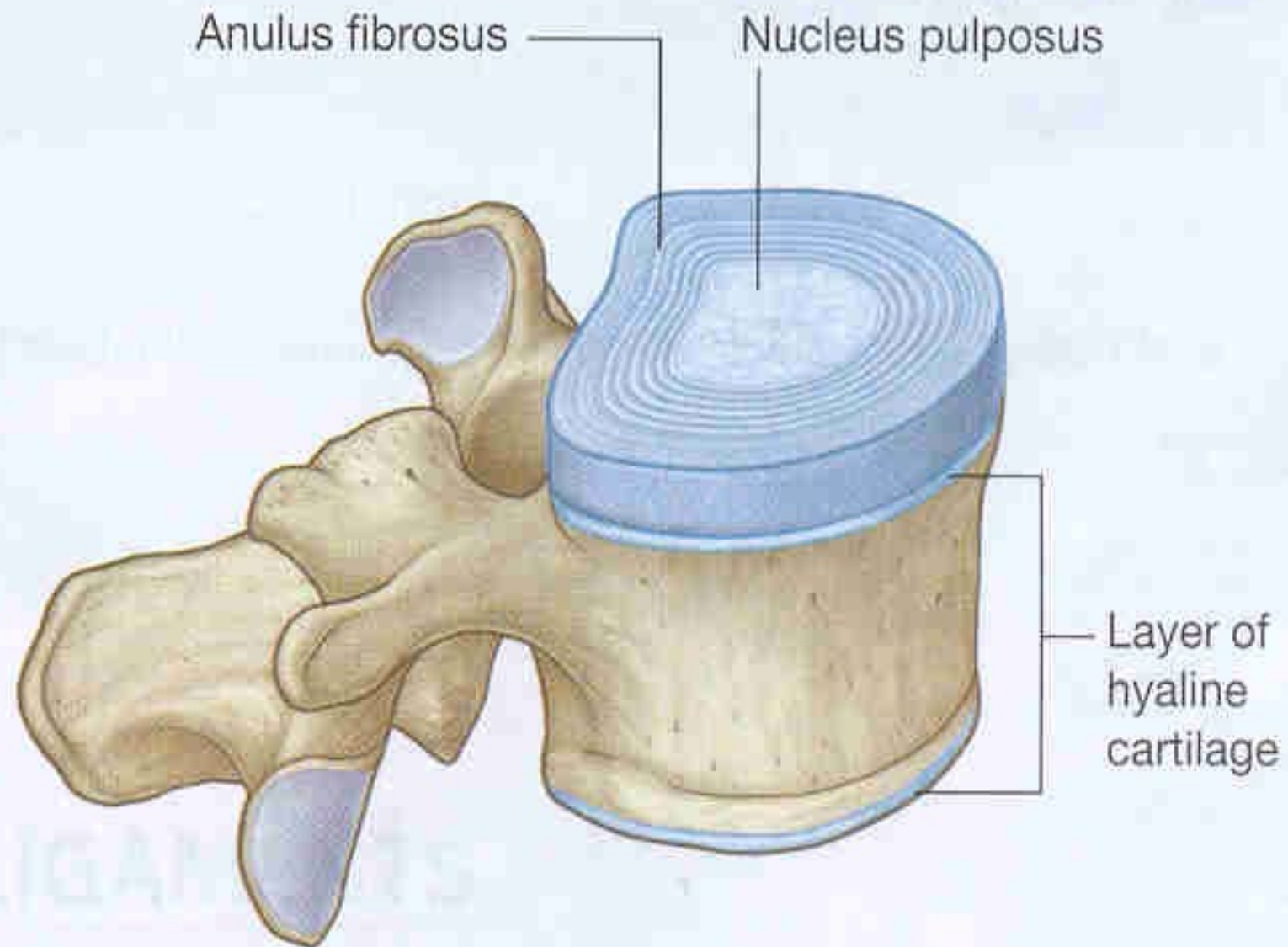
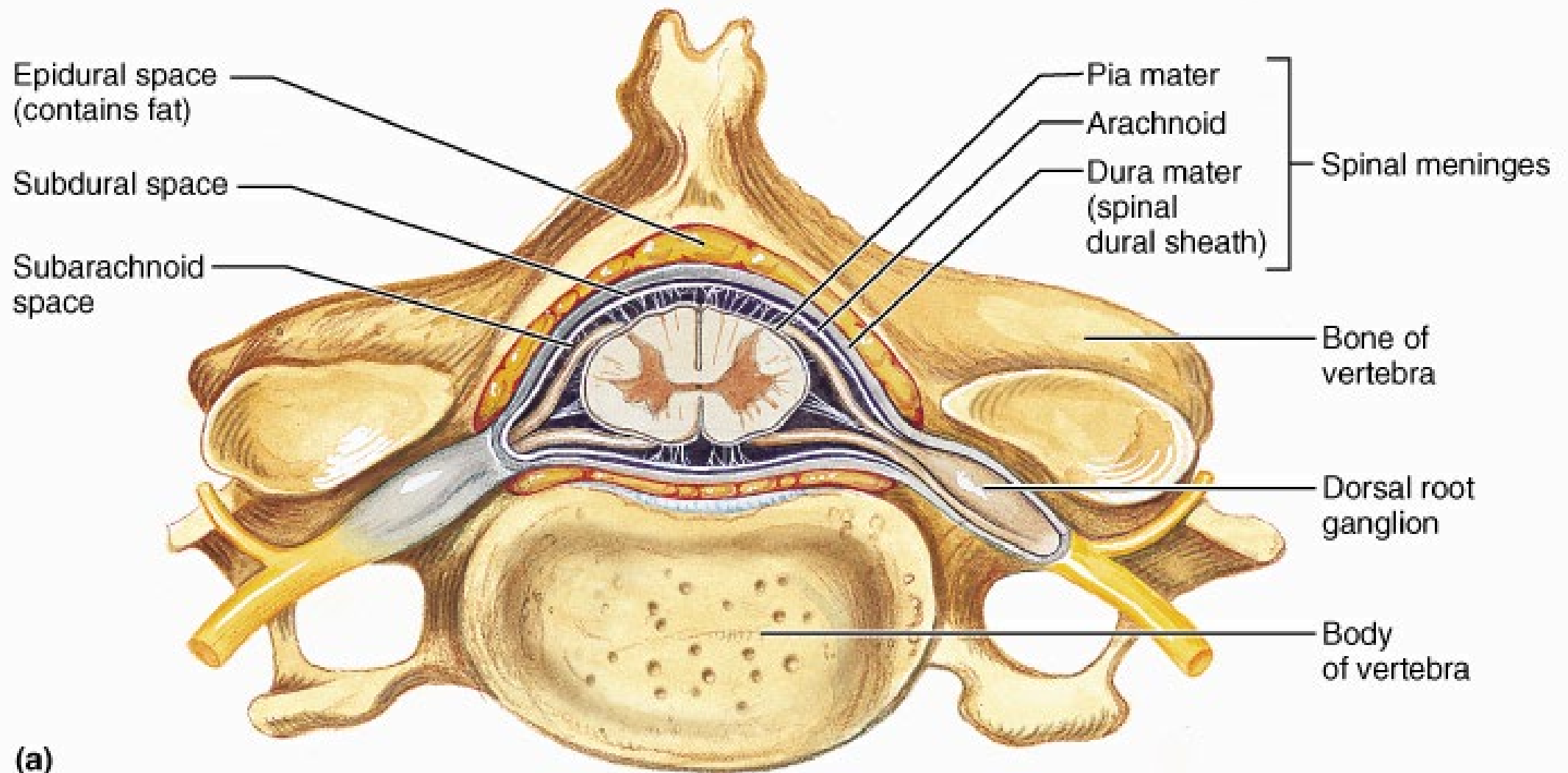
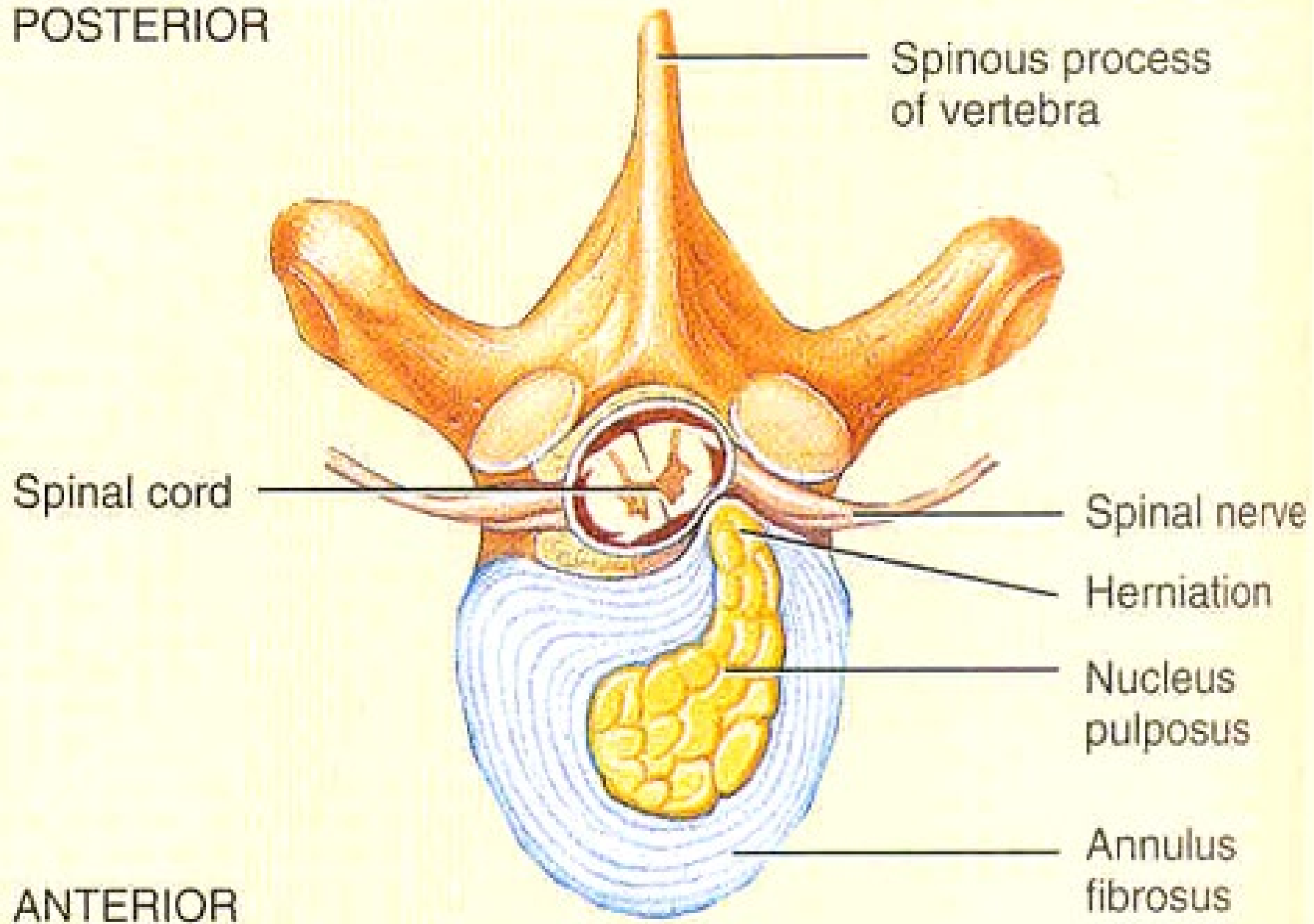


Fig. 2.31 Intervertebral joints.



POSTERIOR



ANTERIOR

Cervical vertebrae

Vertebrae Body

Vertebral foramen

Spinous processes:

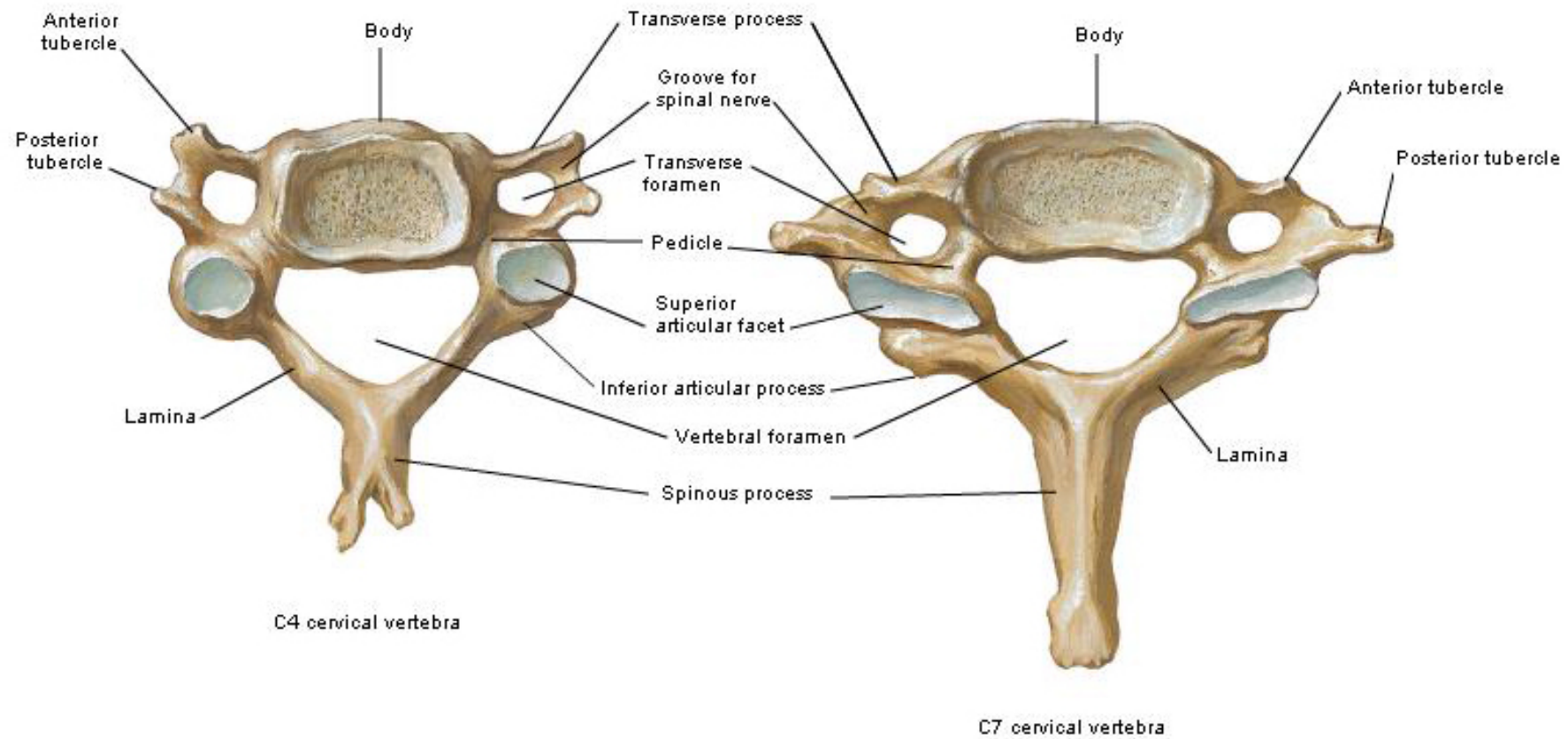
Transverse processes:

Articular processes:



Cervical Vertebrae (C4 and C7)

Superior Views



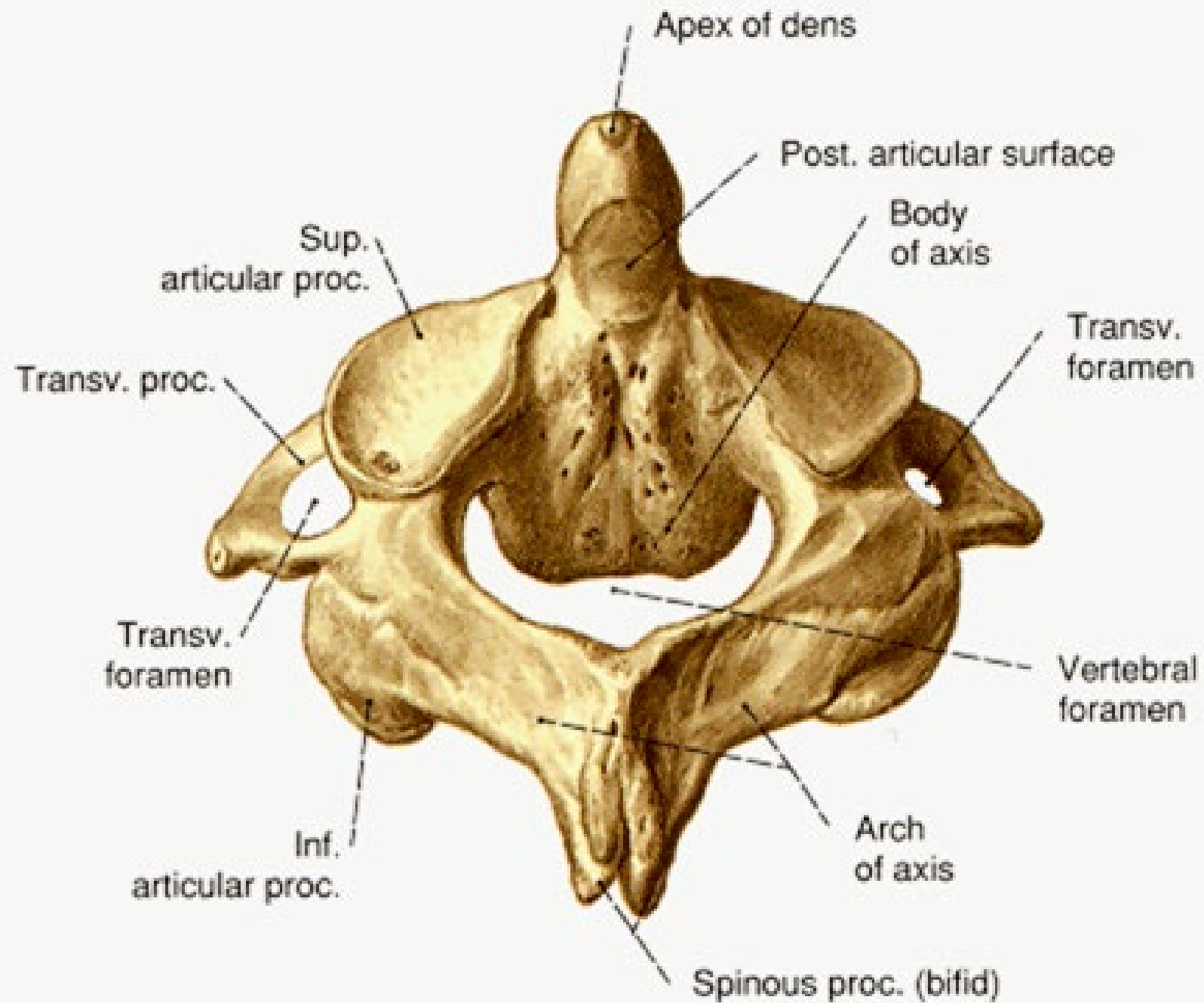
Atypical vertebrae

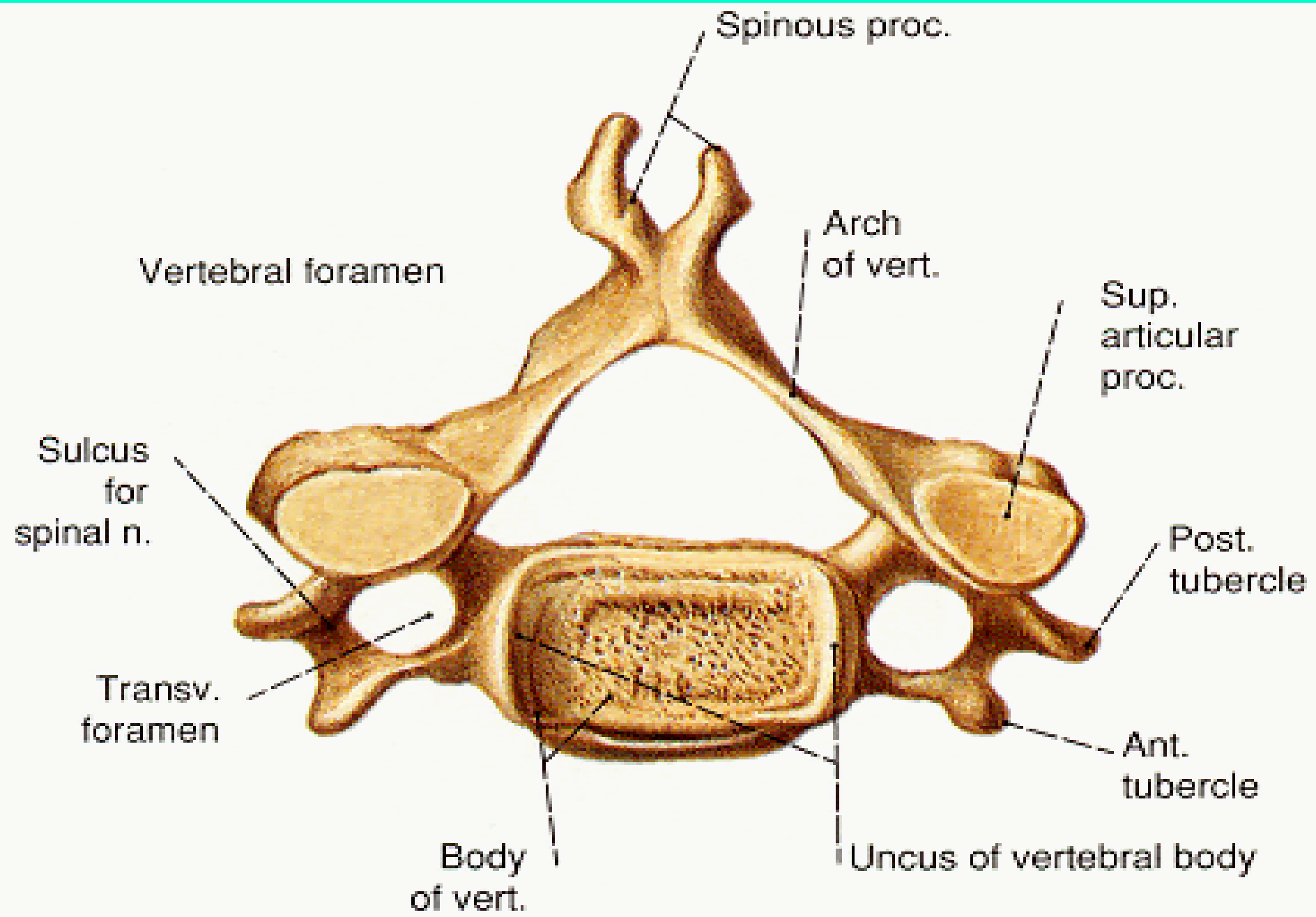
- **Atlas (C1)**

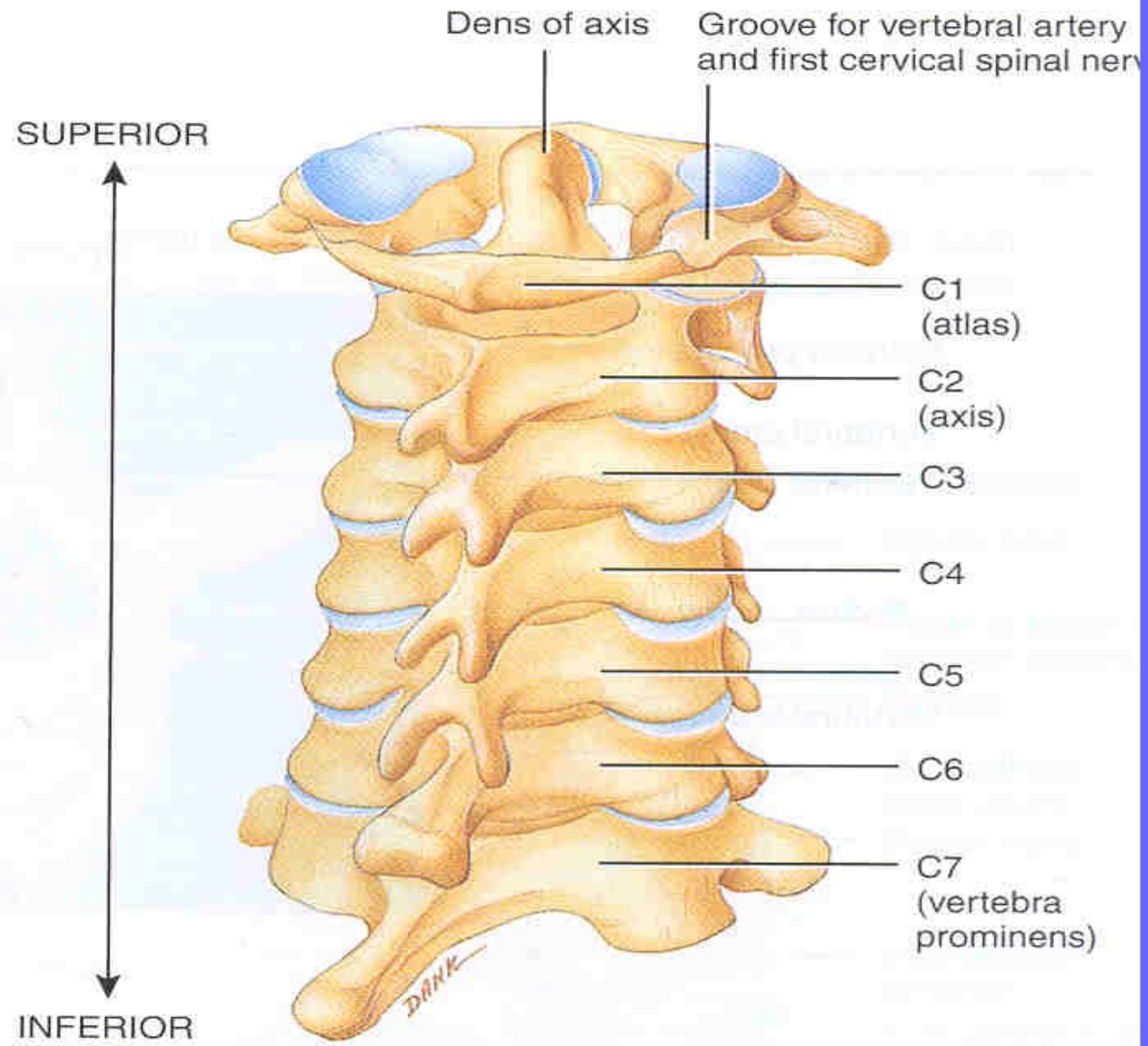


- **Axis (C2):**



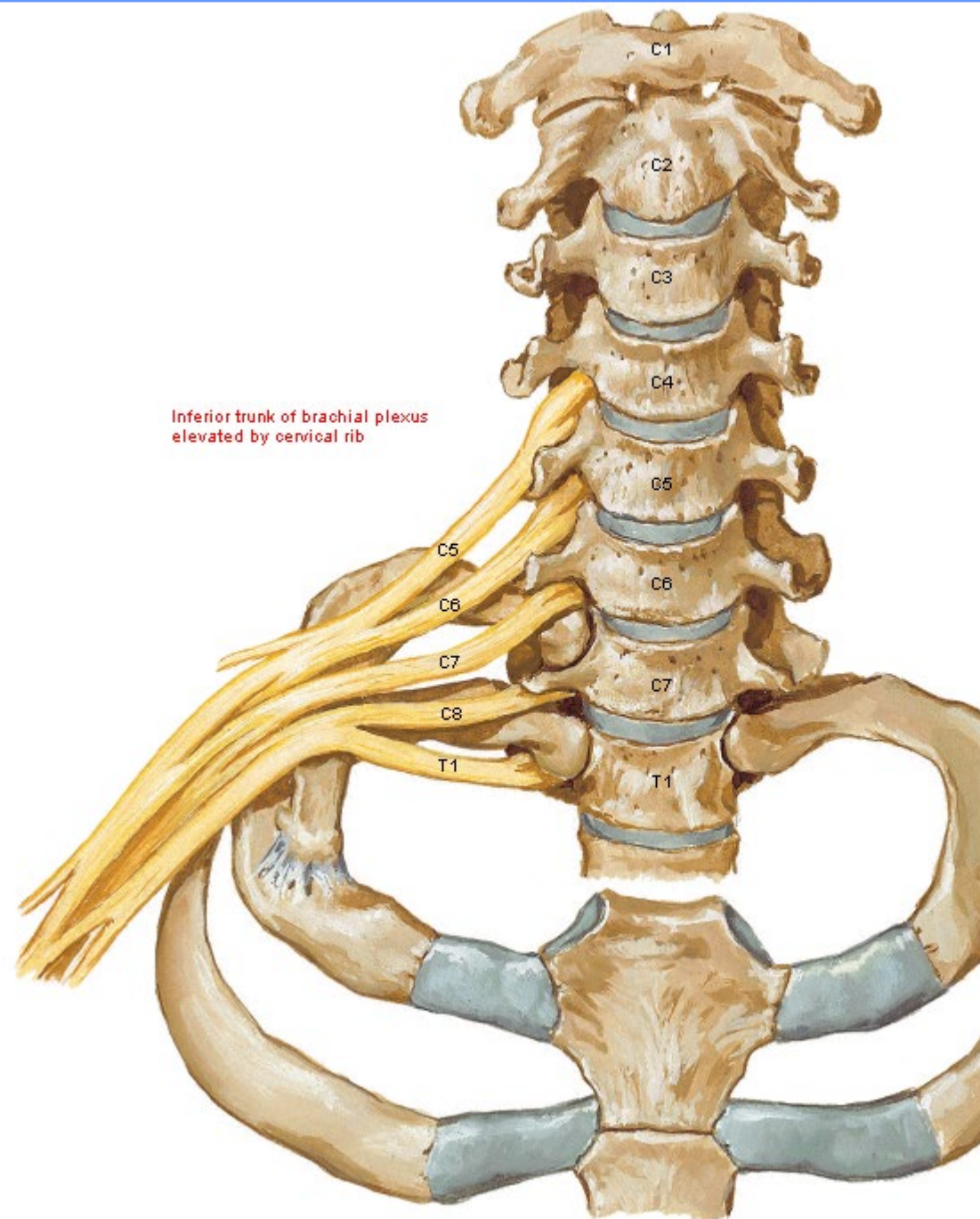




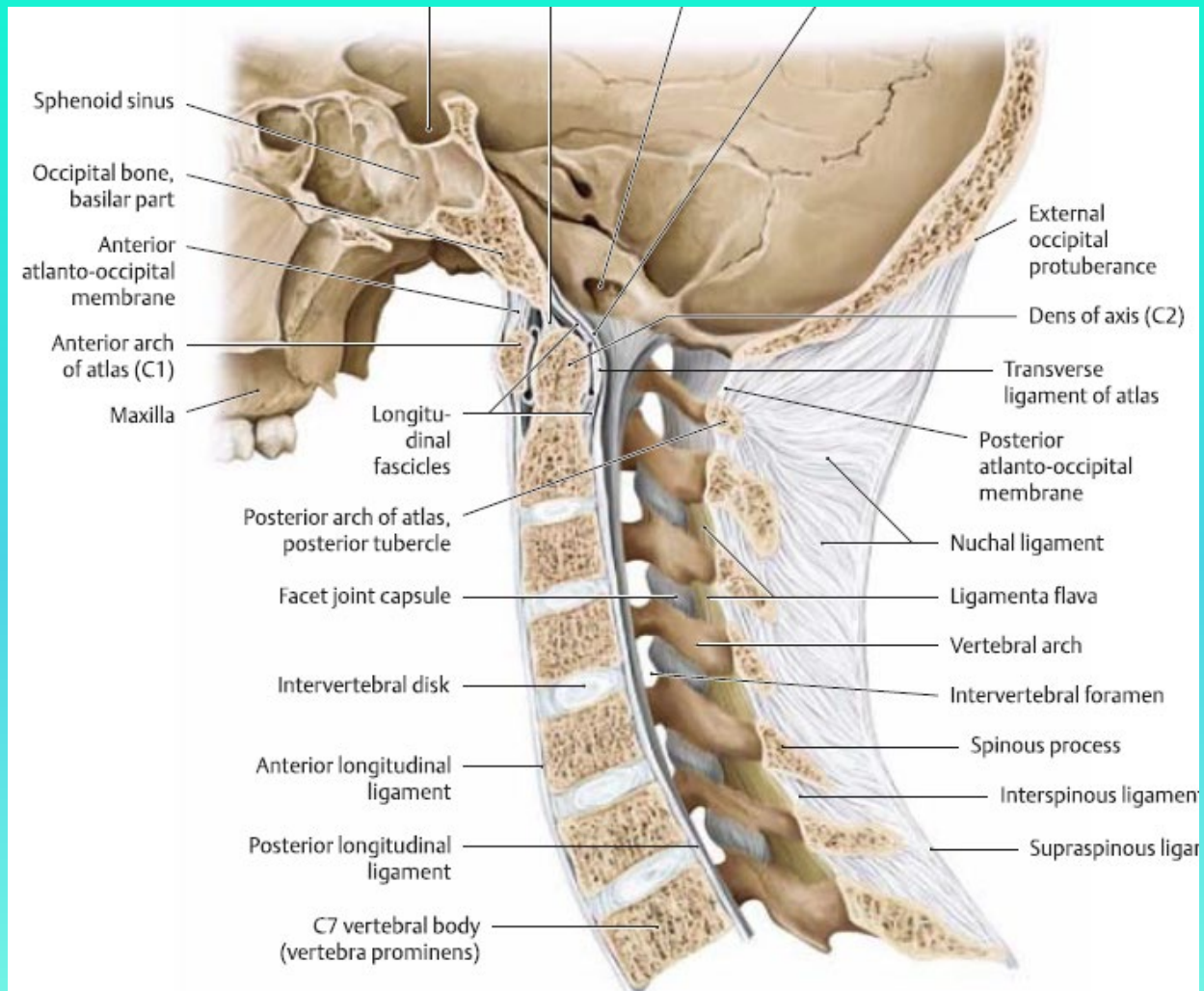
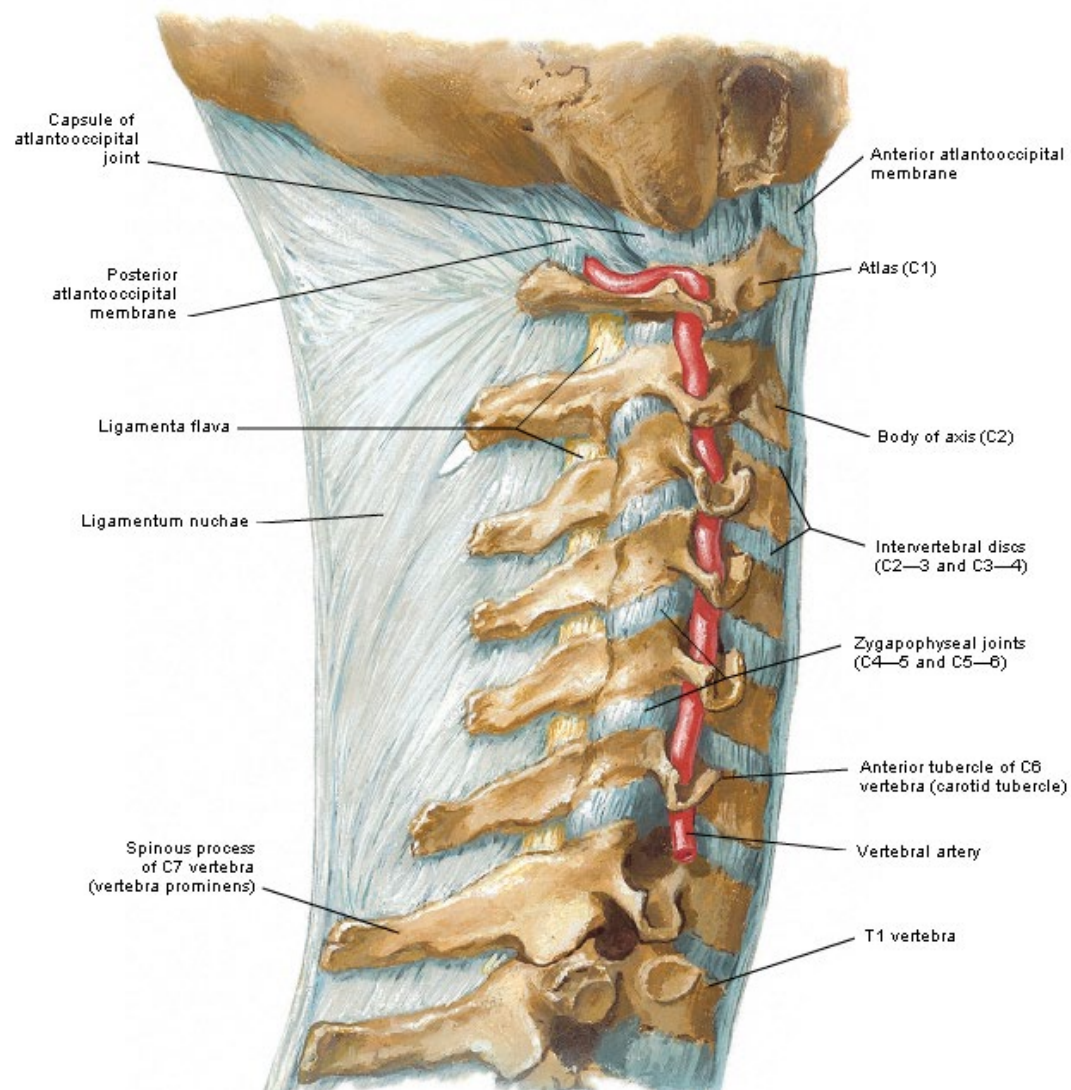


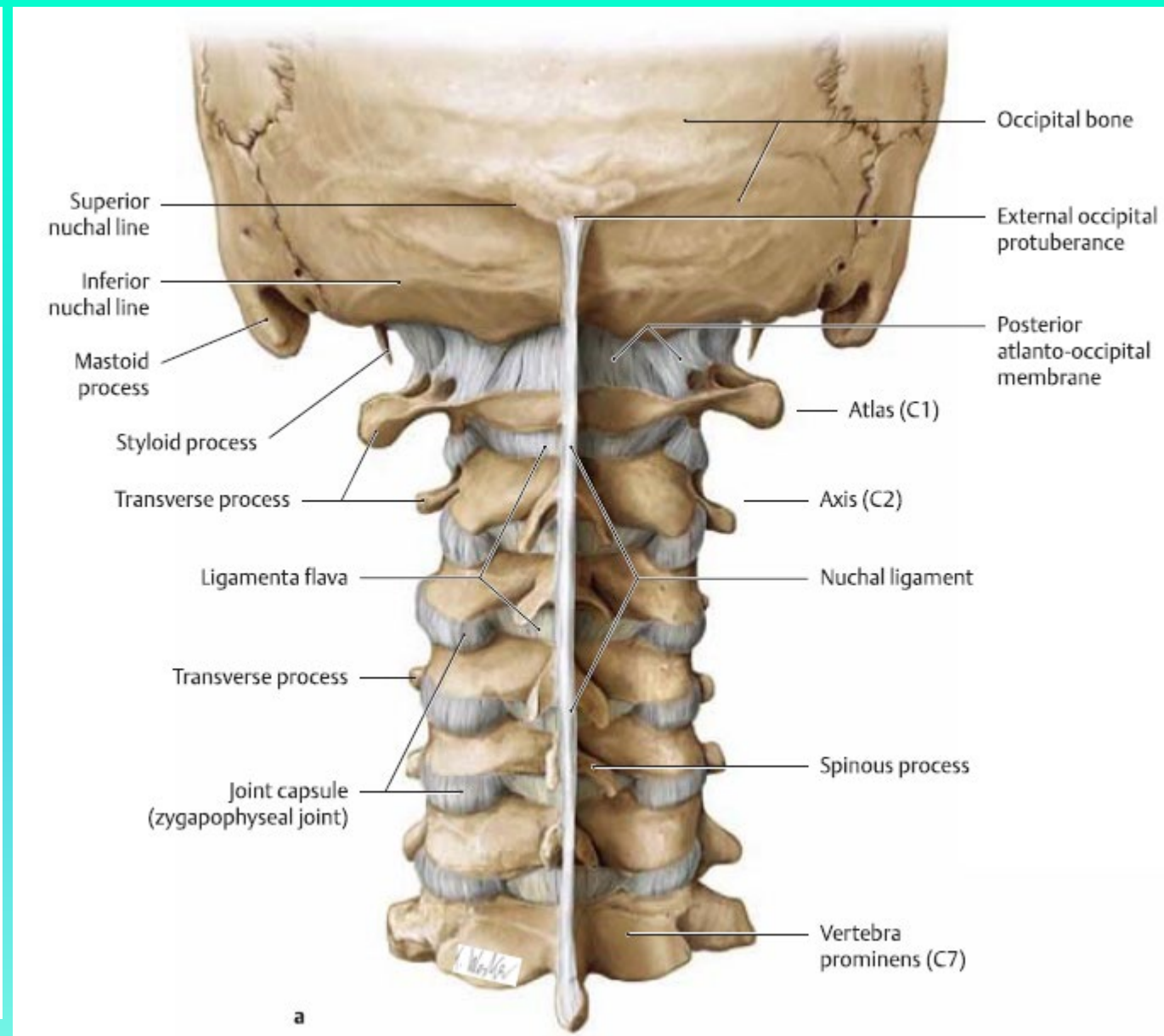
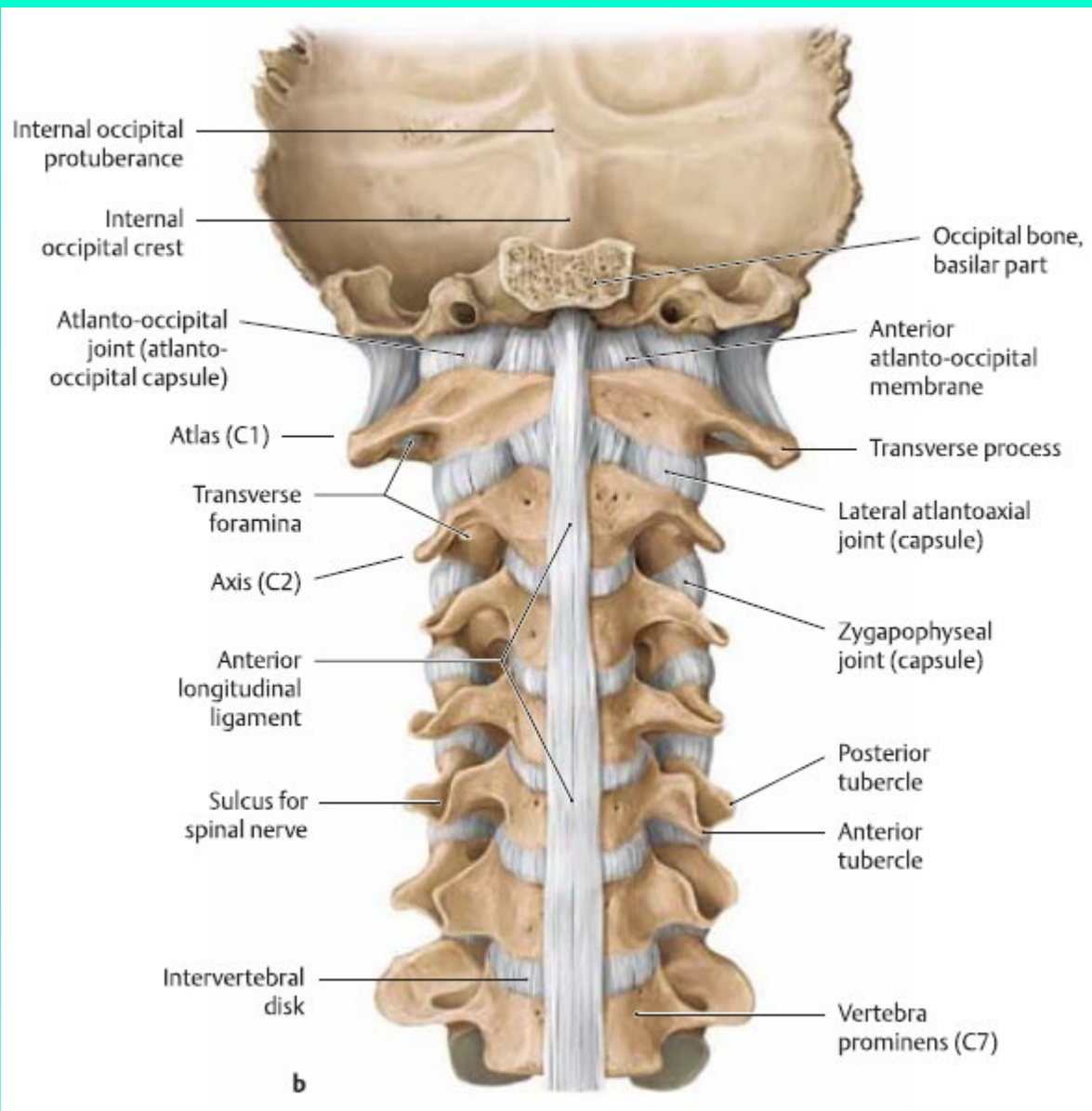
(a) Posterior view of articulated cervical vertebrae

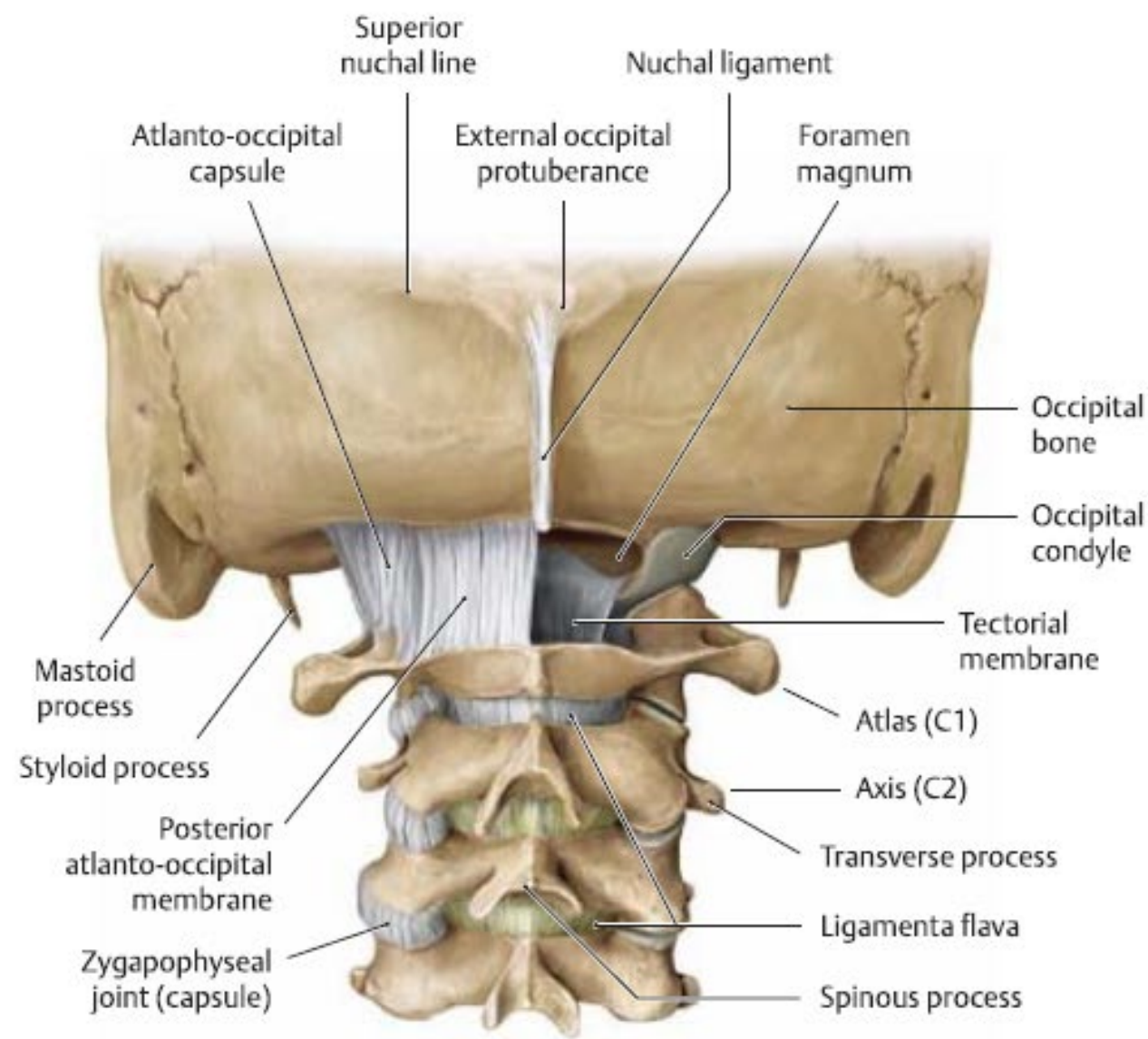




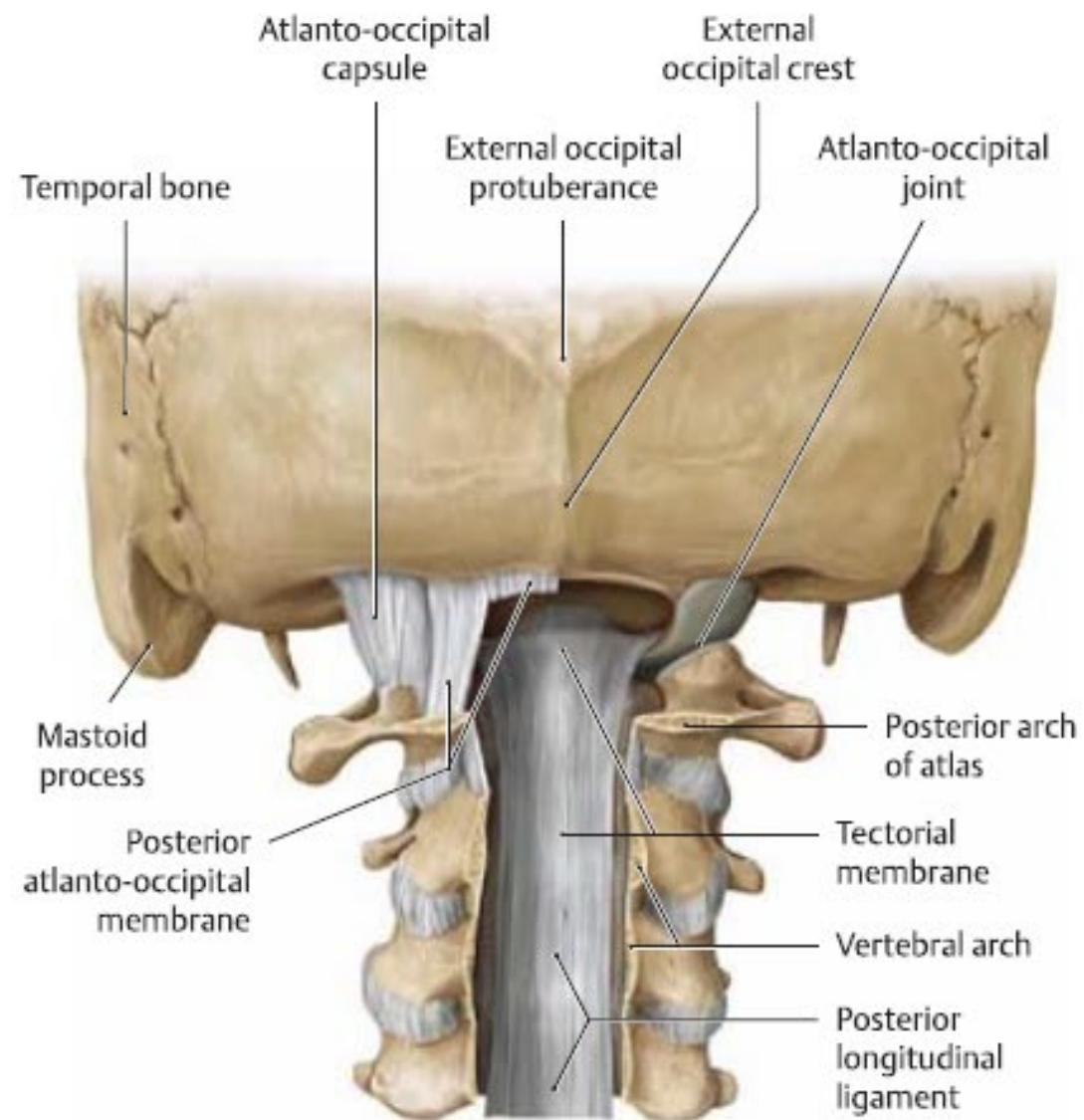
Inferior trunk of brachial plexus
elevated by cervical rib



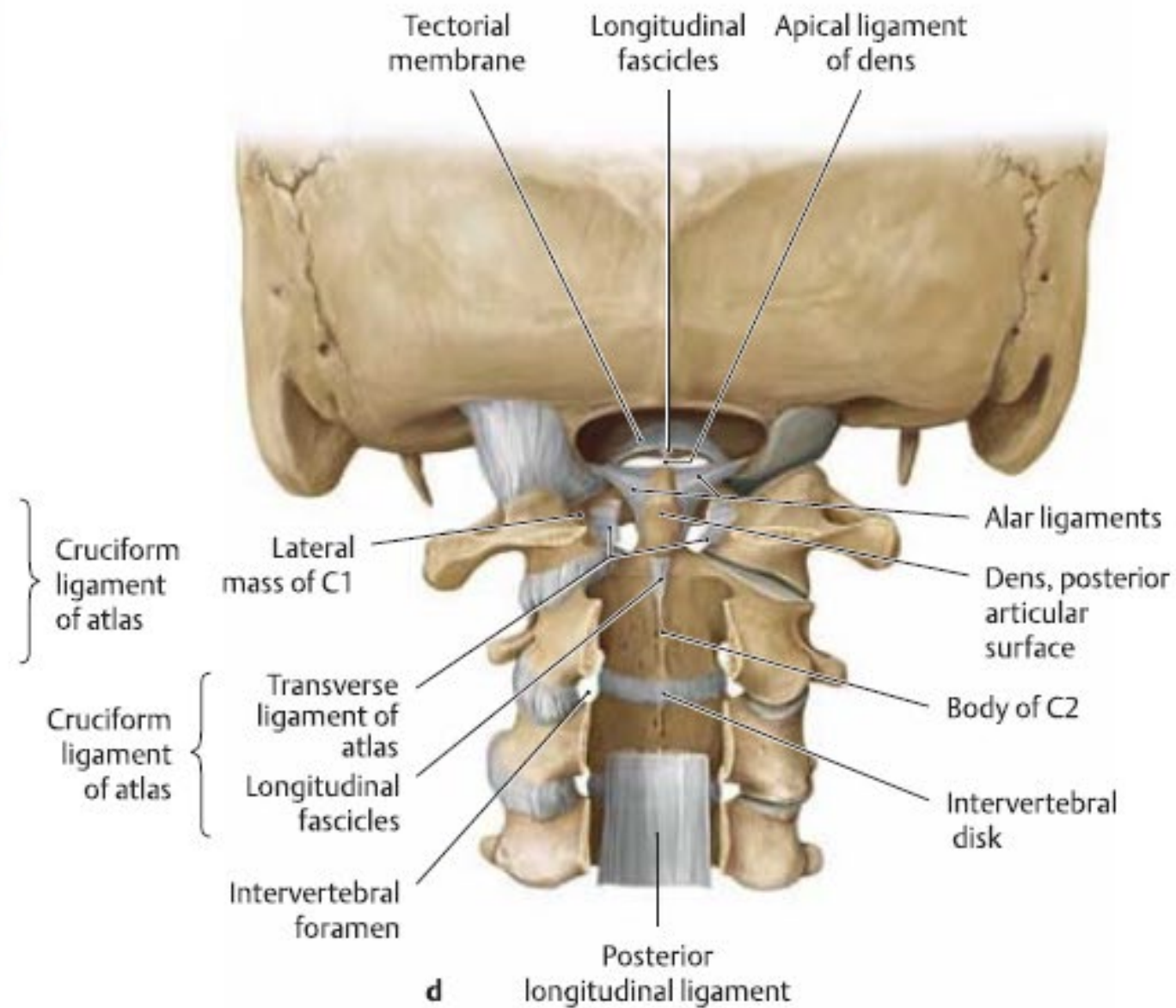
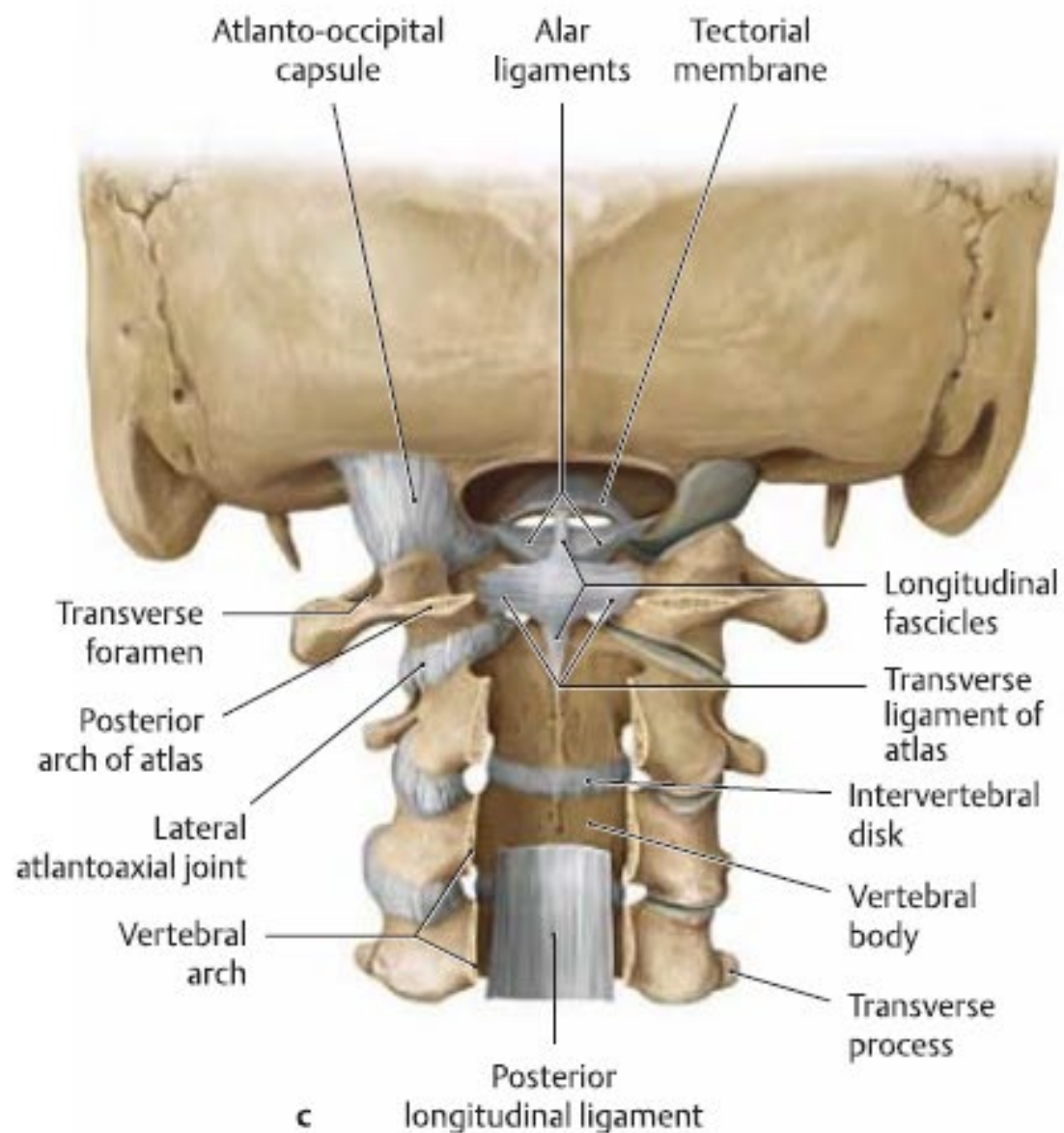


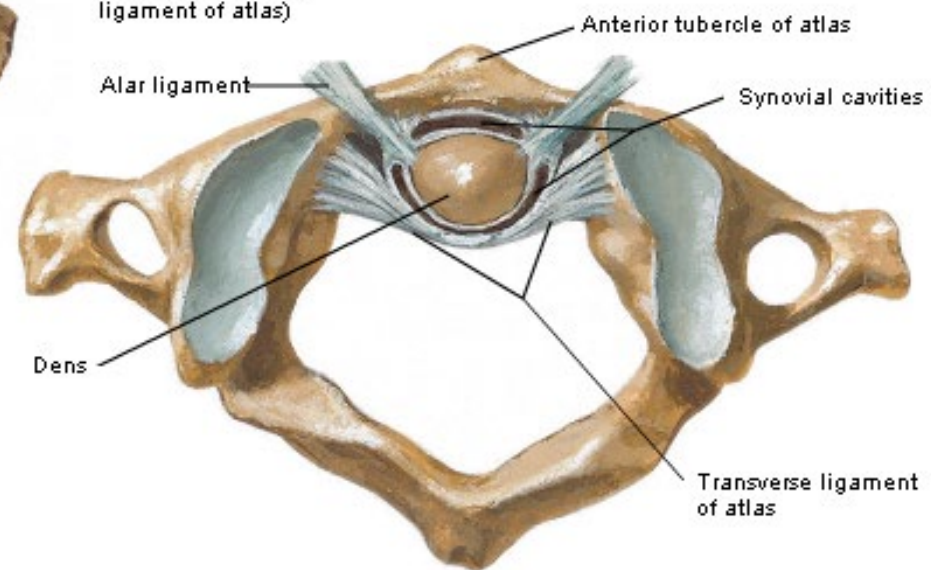
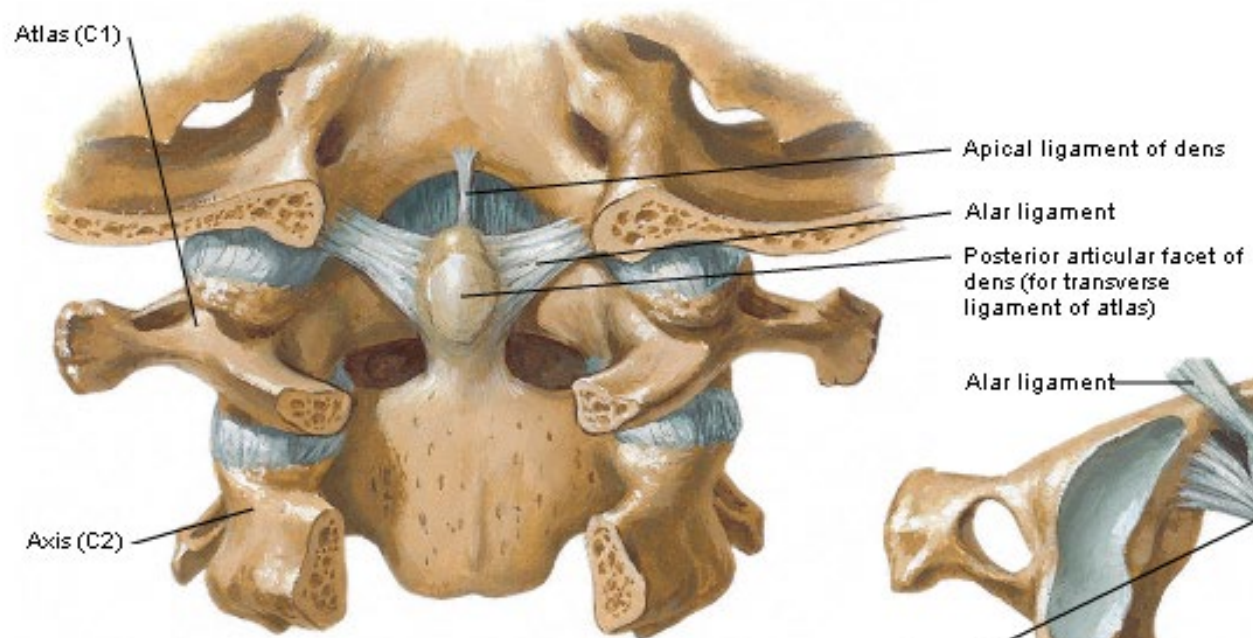


a

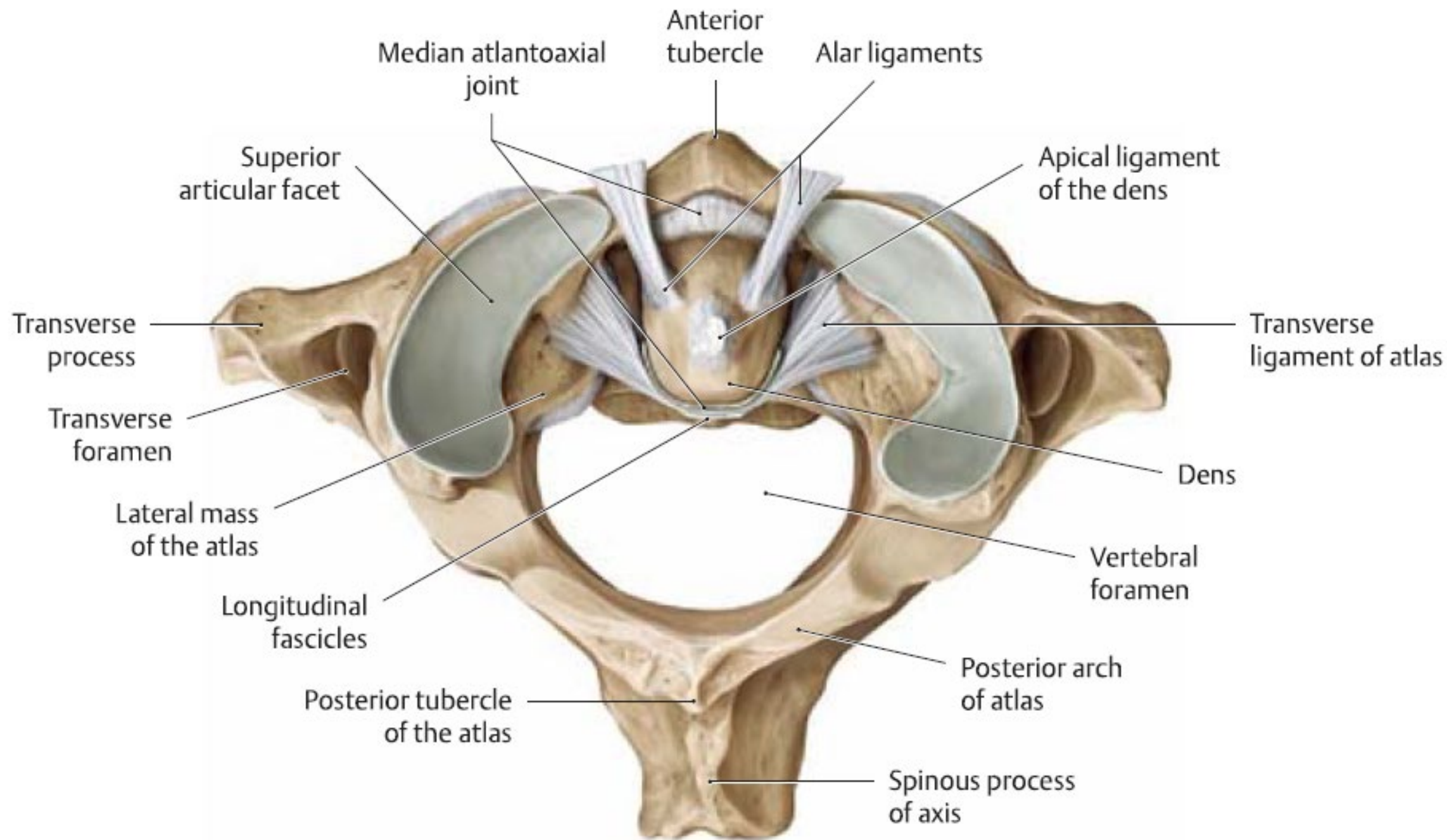


b



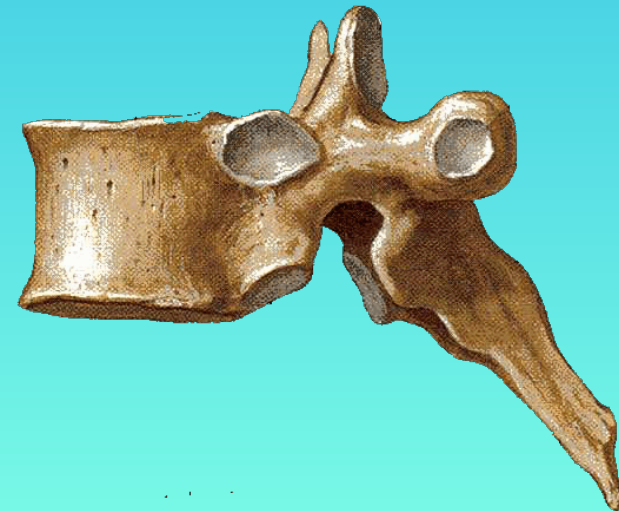


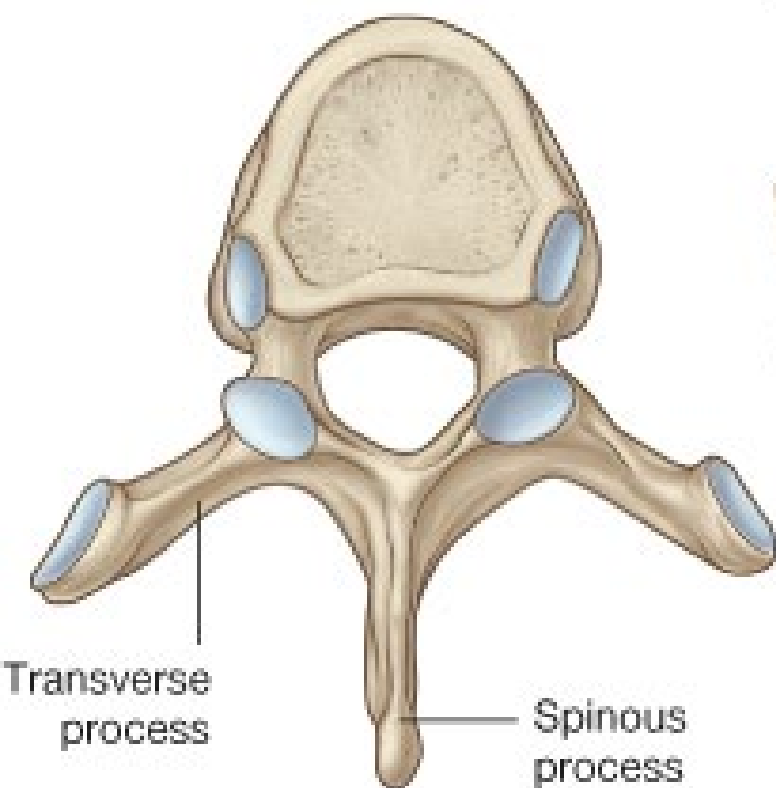
Median atlantoaxial joint: superior view



Thoracic vertebrae

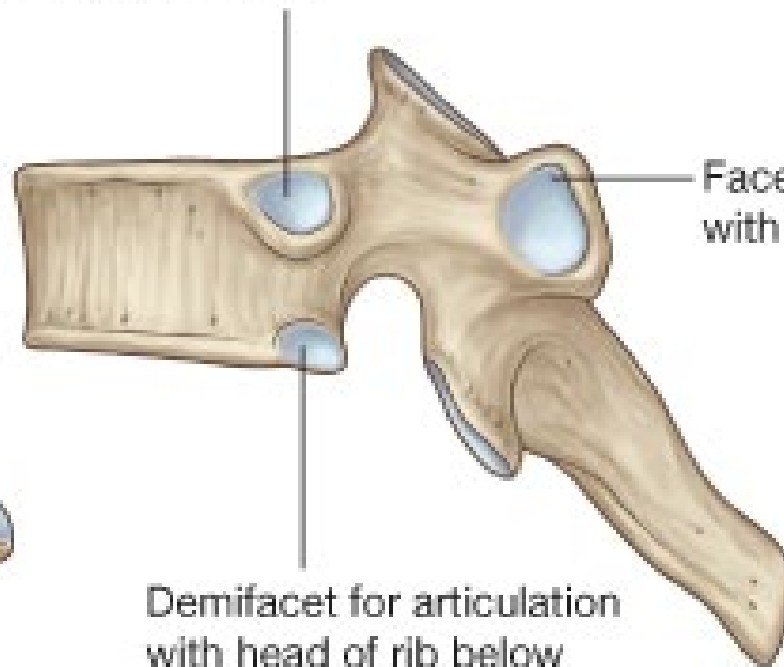
- Vertebrae Body :
- Vertebral foramen:
- Spinous processes:
- Transverse processes:
- Articular processes:



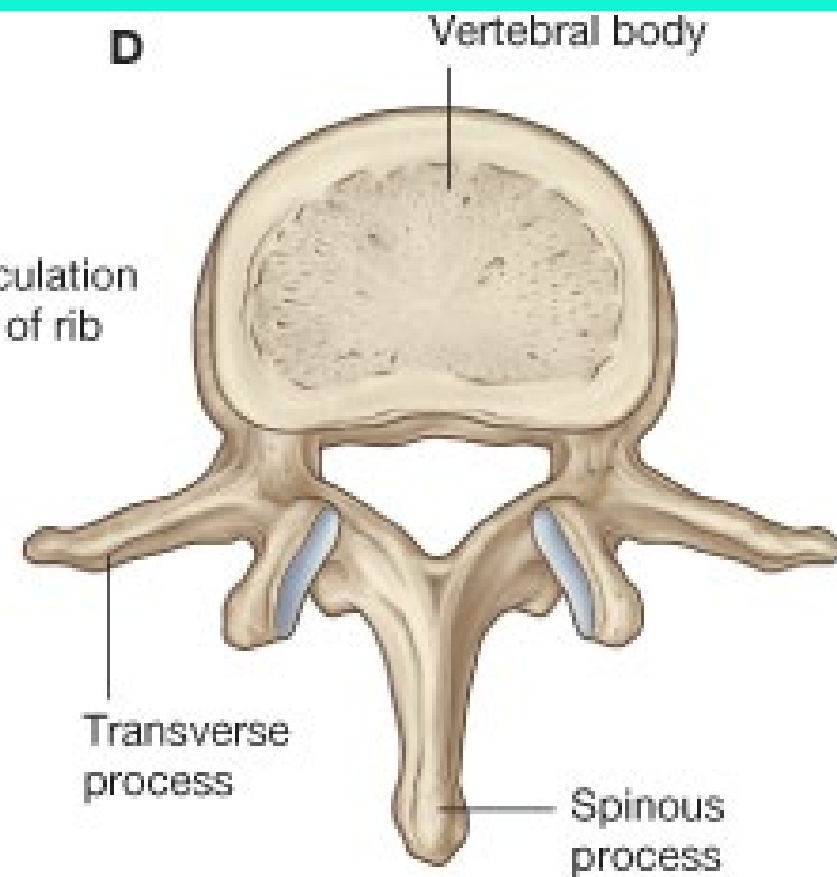
C

Superior view

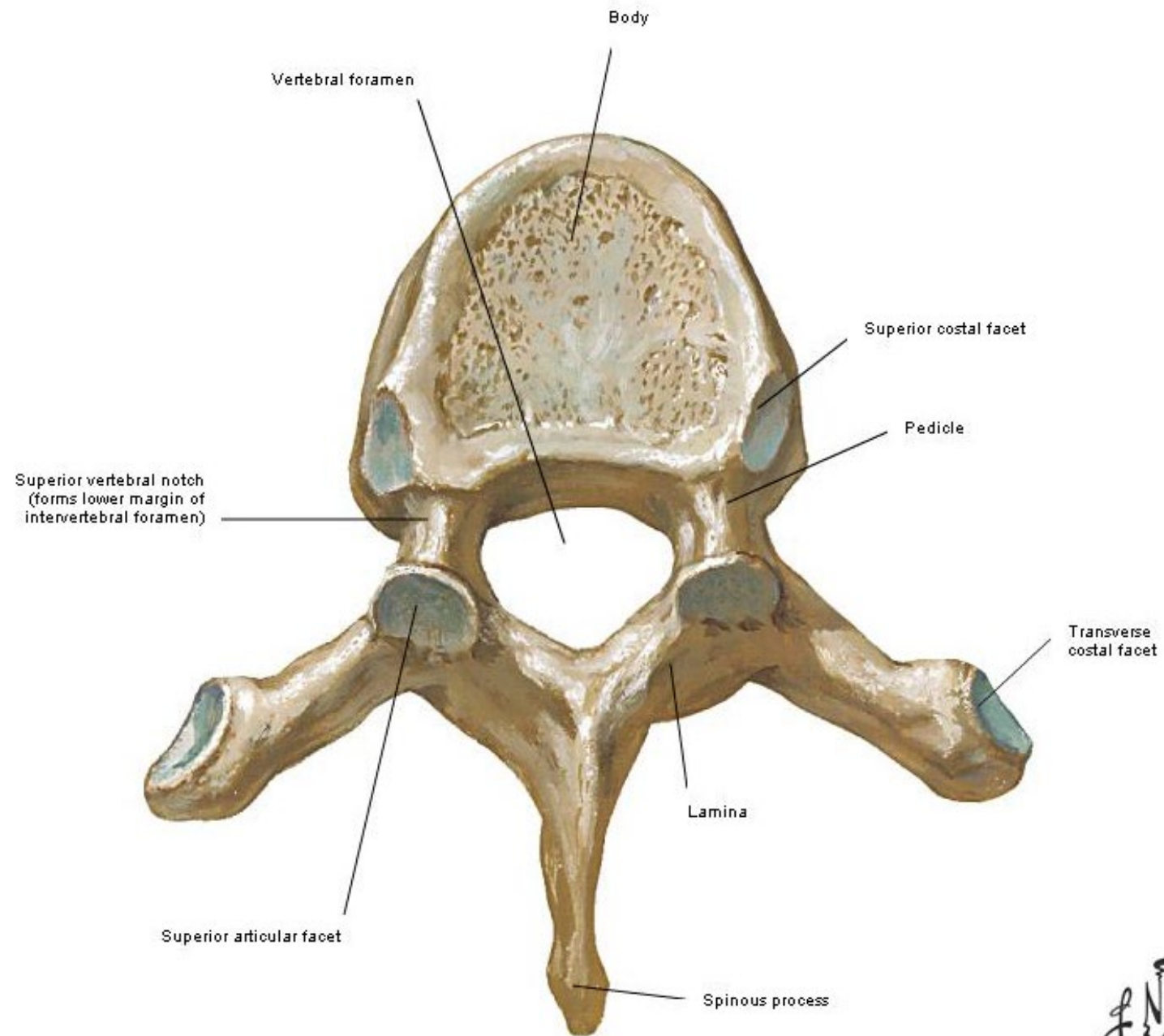
Demifacet for articulation
with head of rib

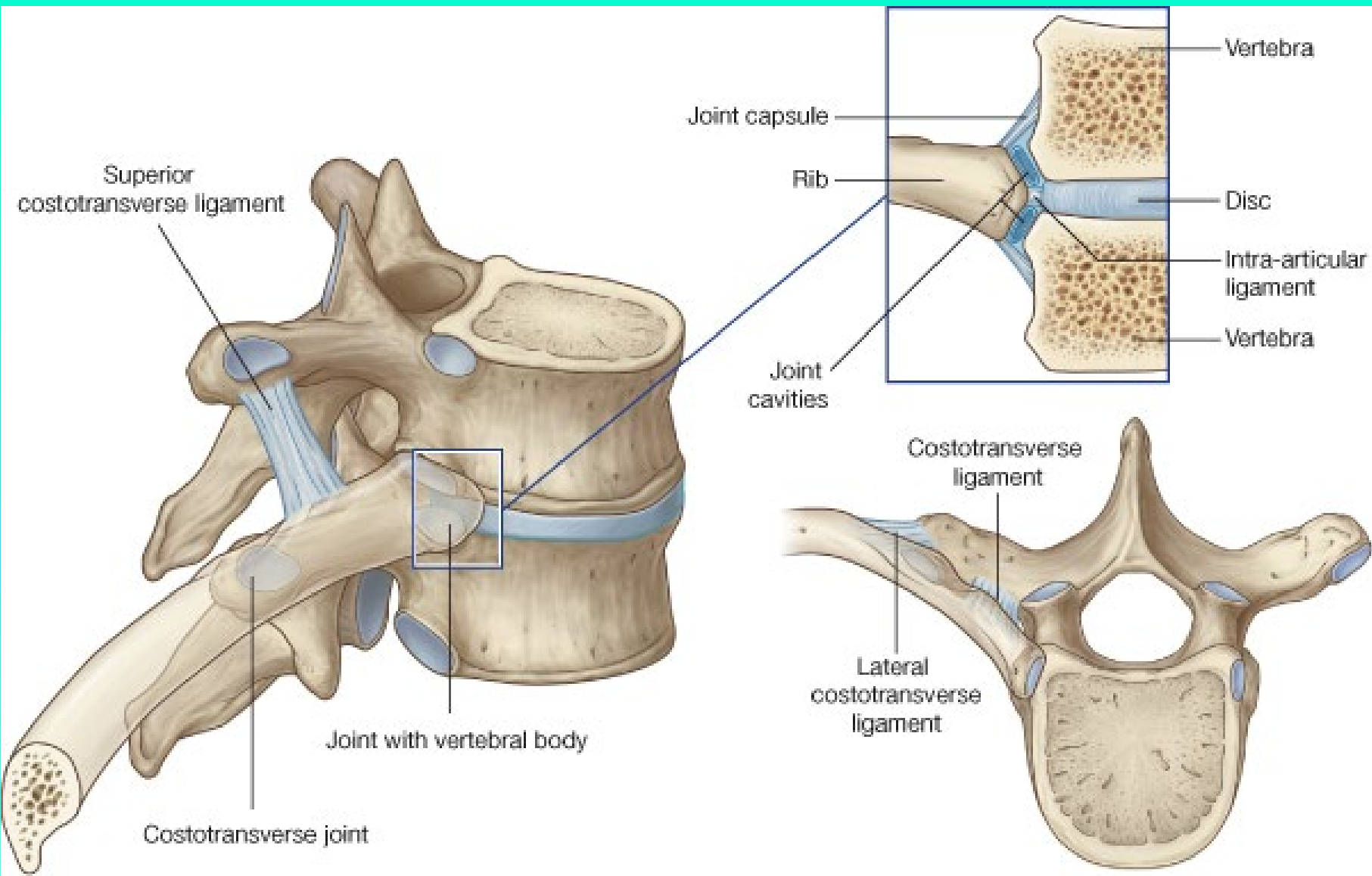


Lateral view

D

Superior view



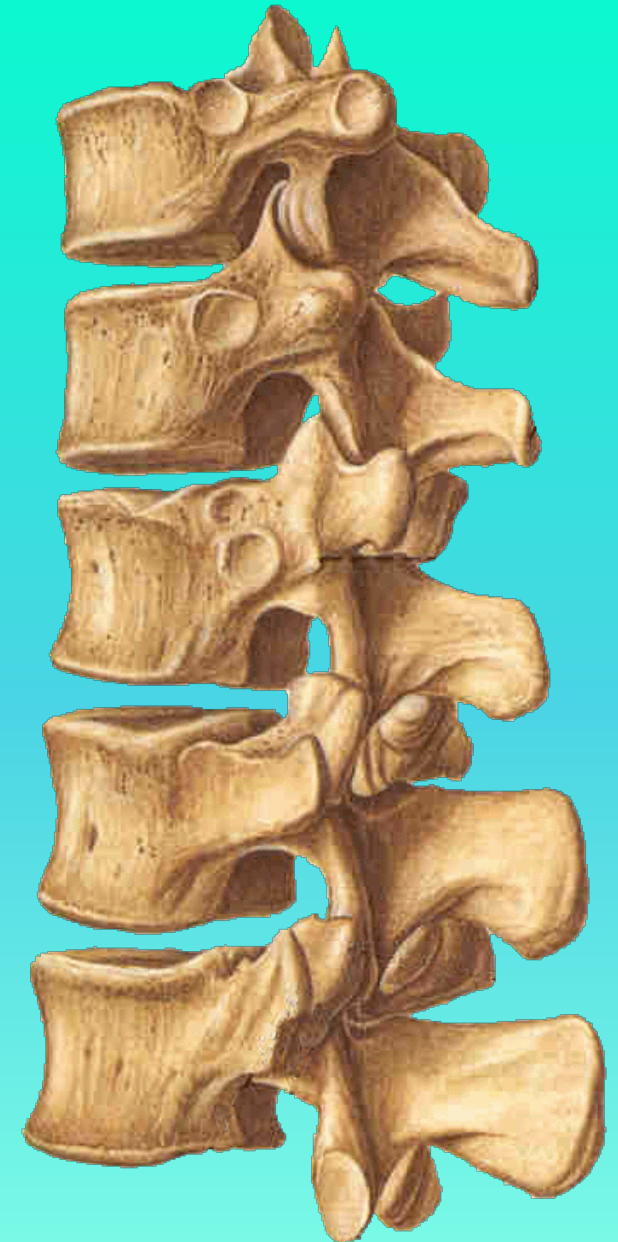
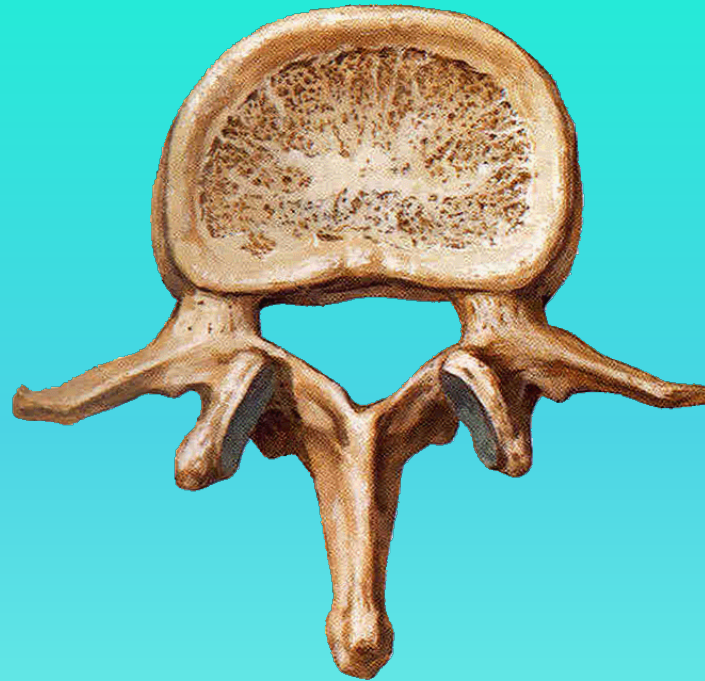


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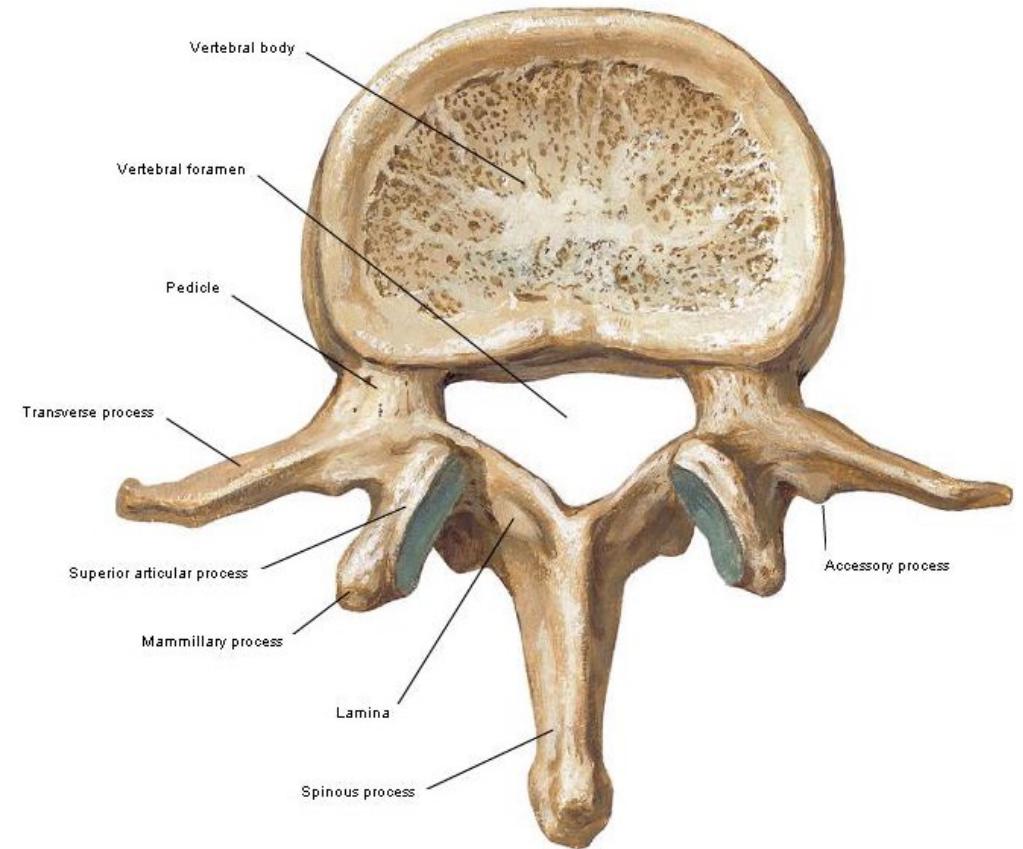
Lumbar vertebrae

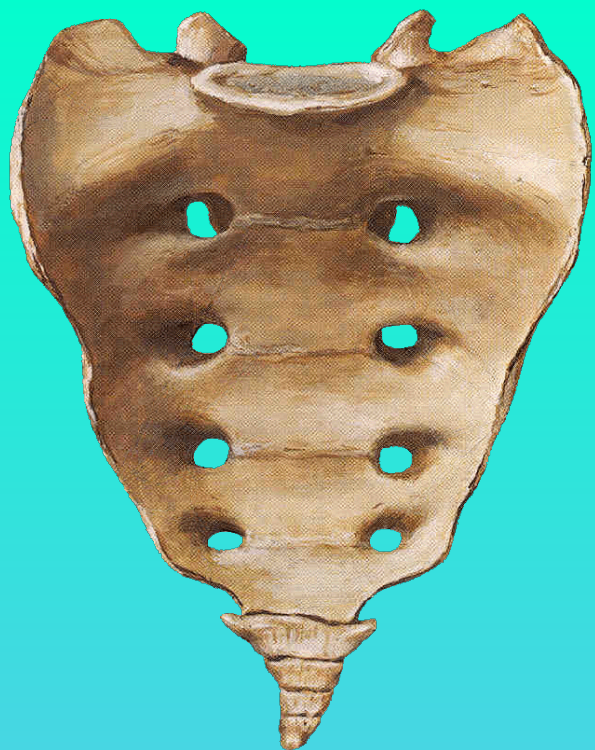
- **Vertebrae Body:**
- **Vertebral foramen:**
- **Spinous processes:**
- **Transverse processes:**
- **Articular rocesses:**

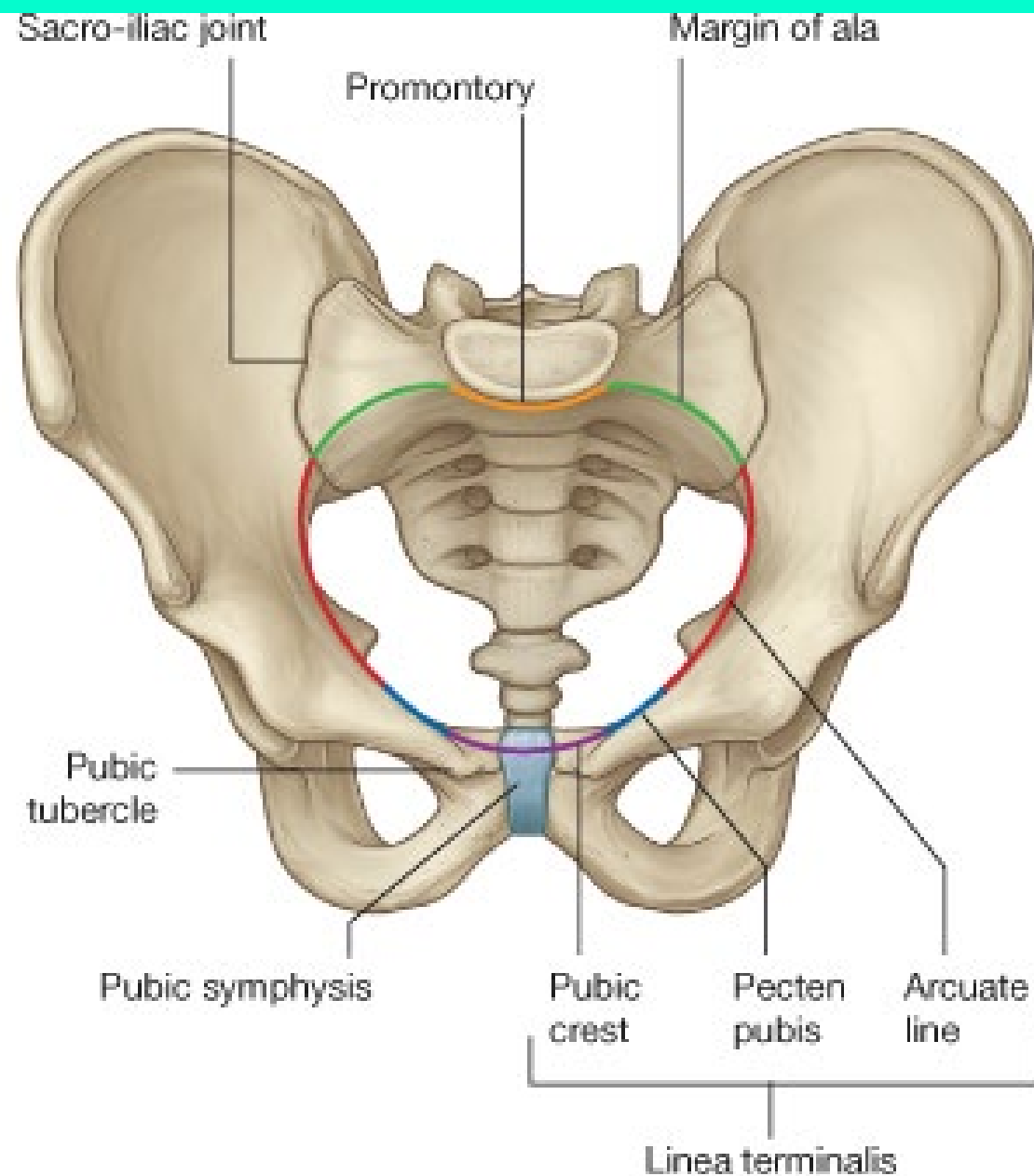


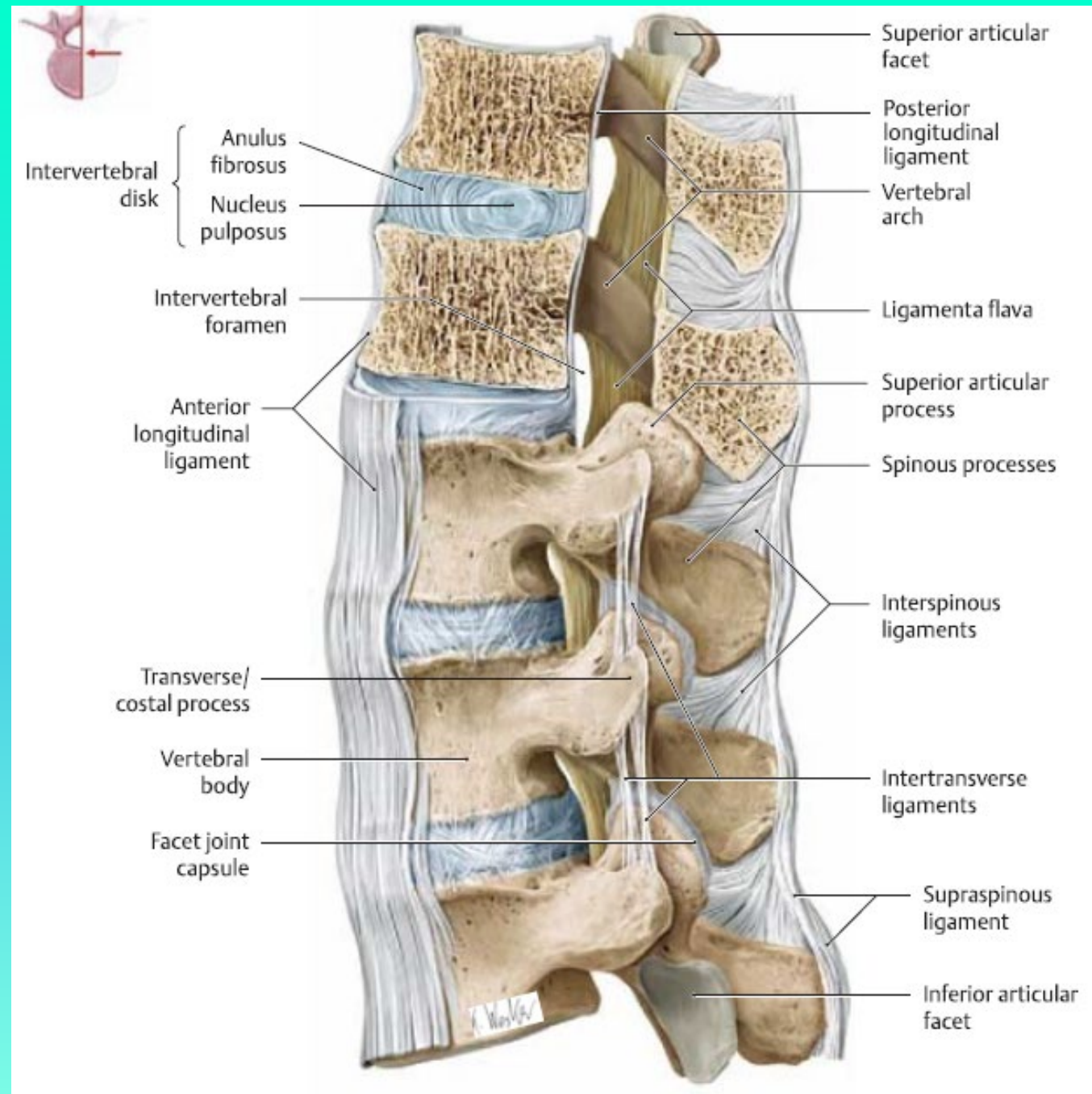
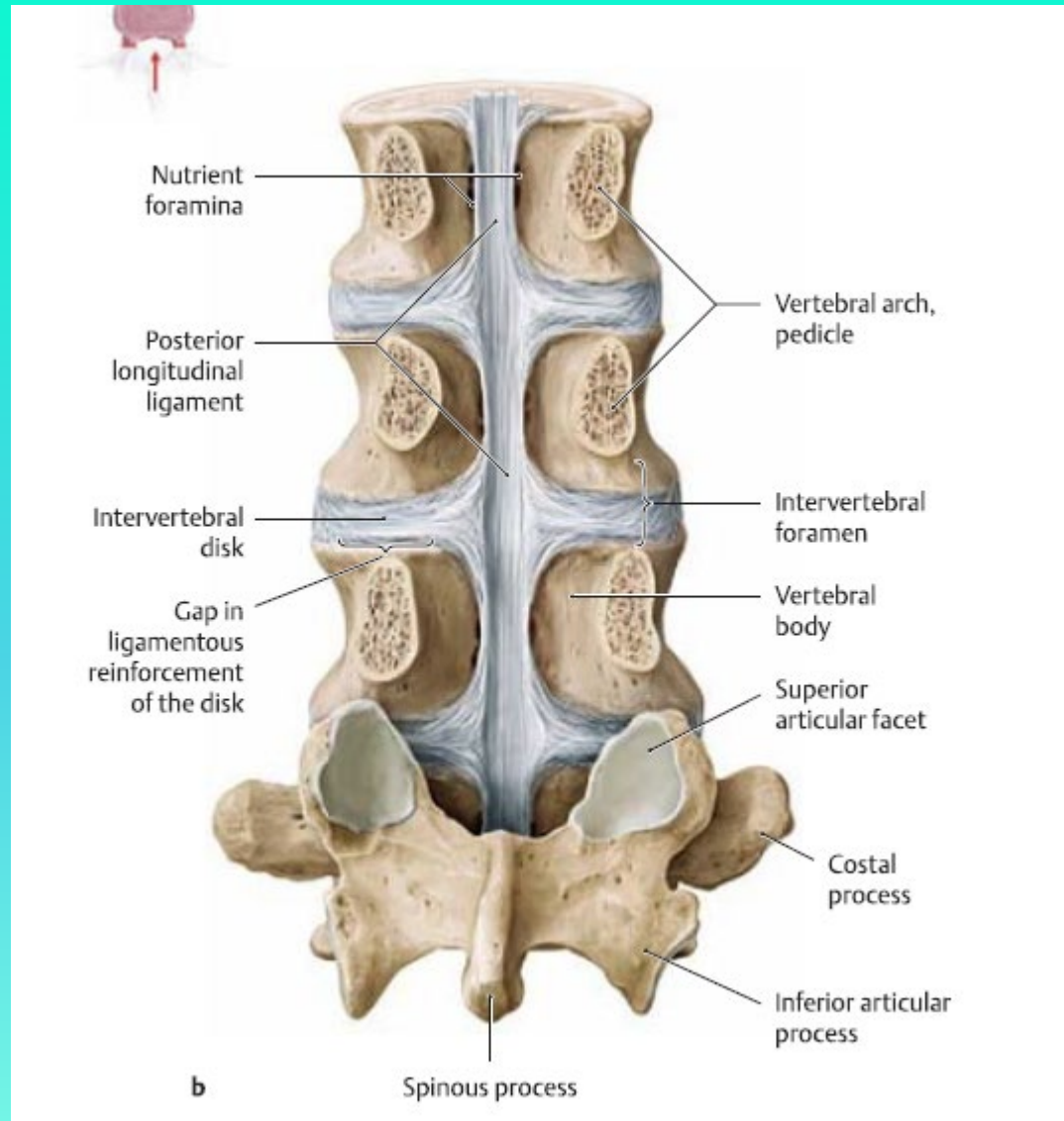


Lumbar Vertebra (L2)
Superior View



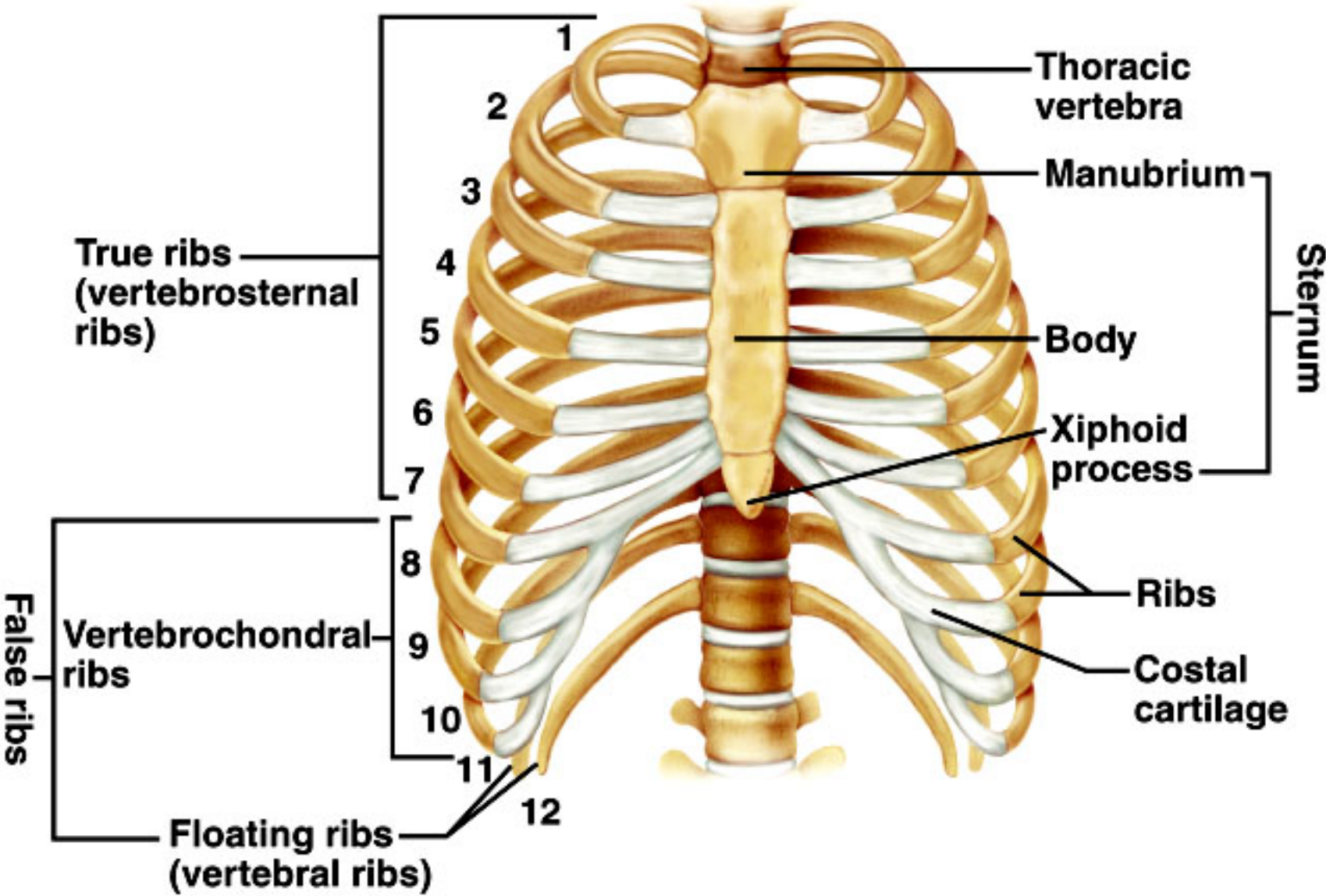


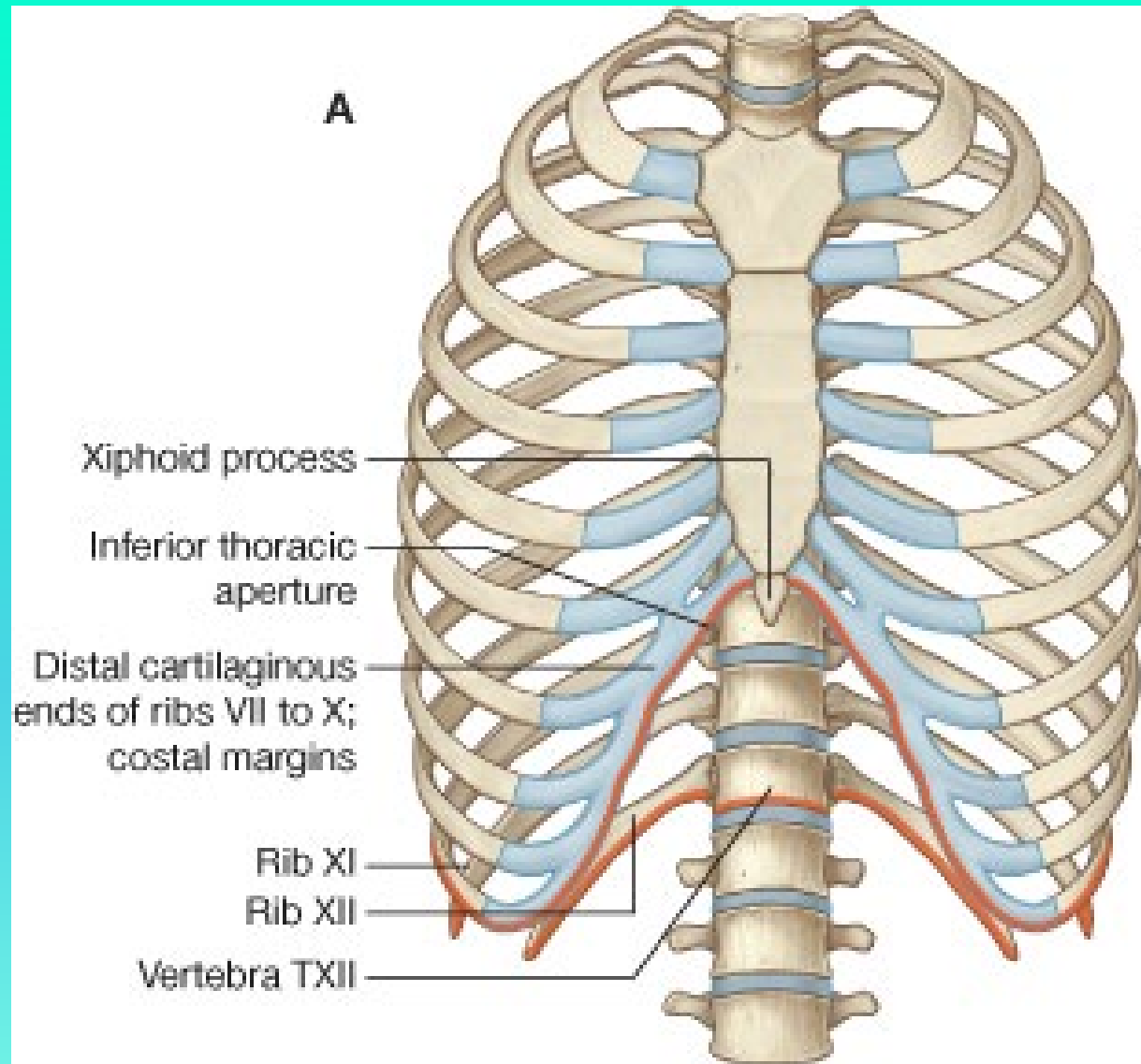
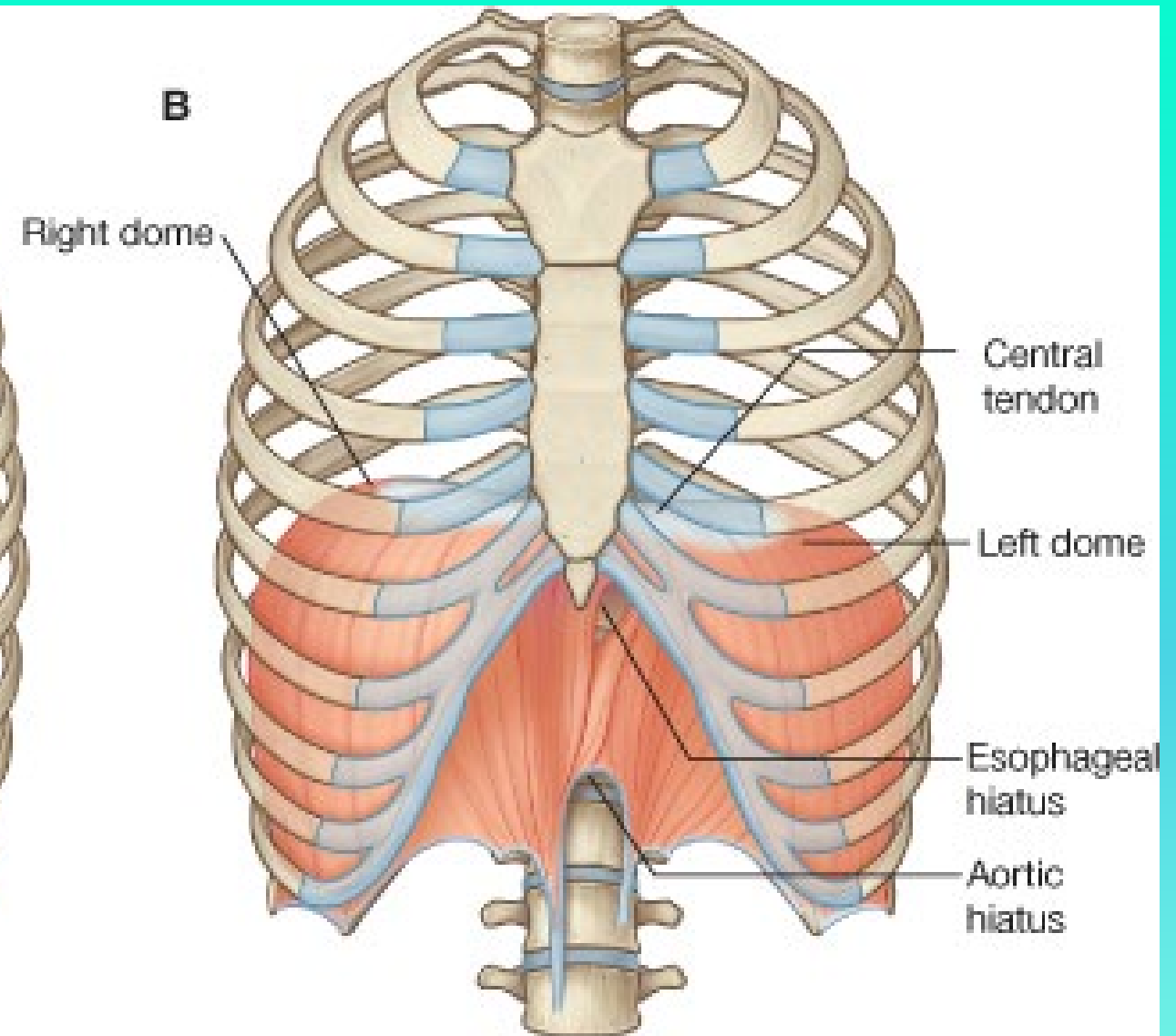




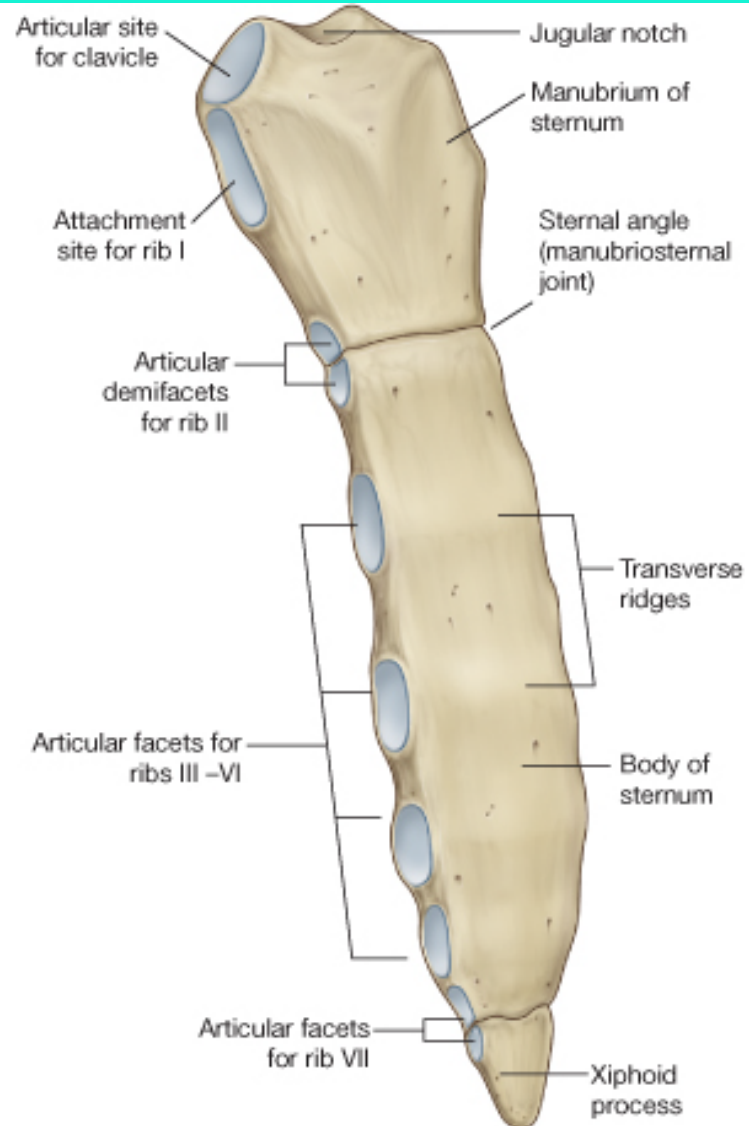
Thoracic cage

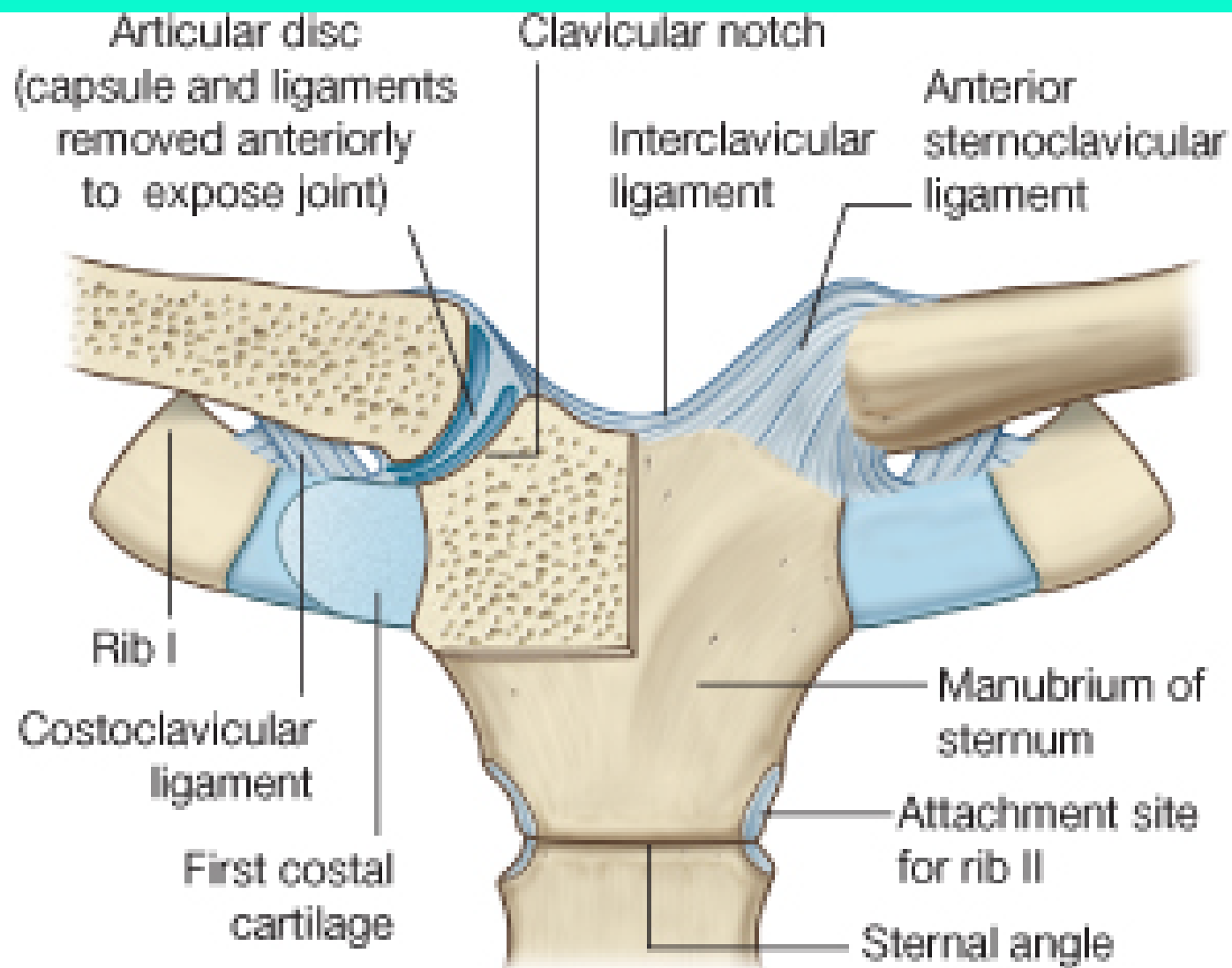
1. ribs
2. thoracic vertebrae
3. sternum
4. costal cartilages



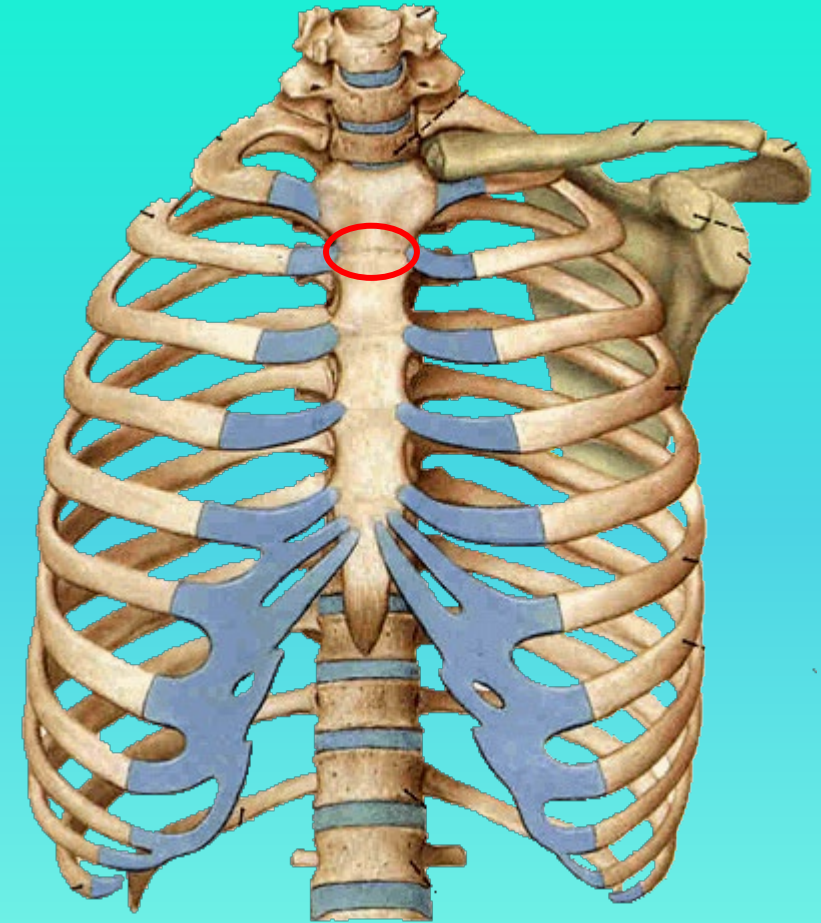
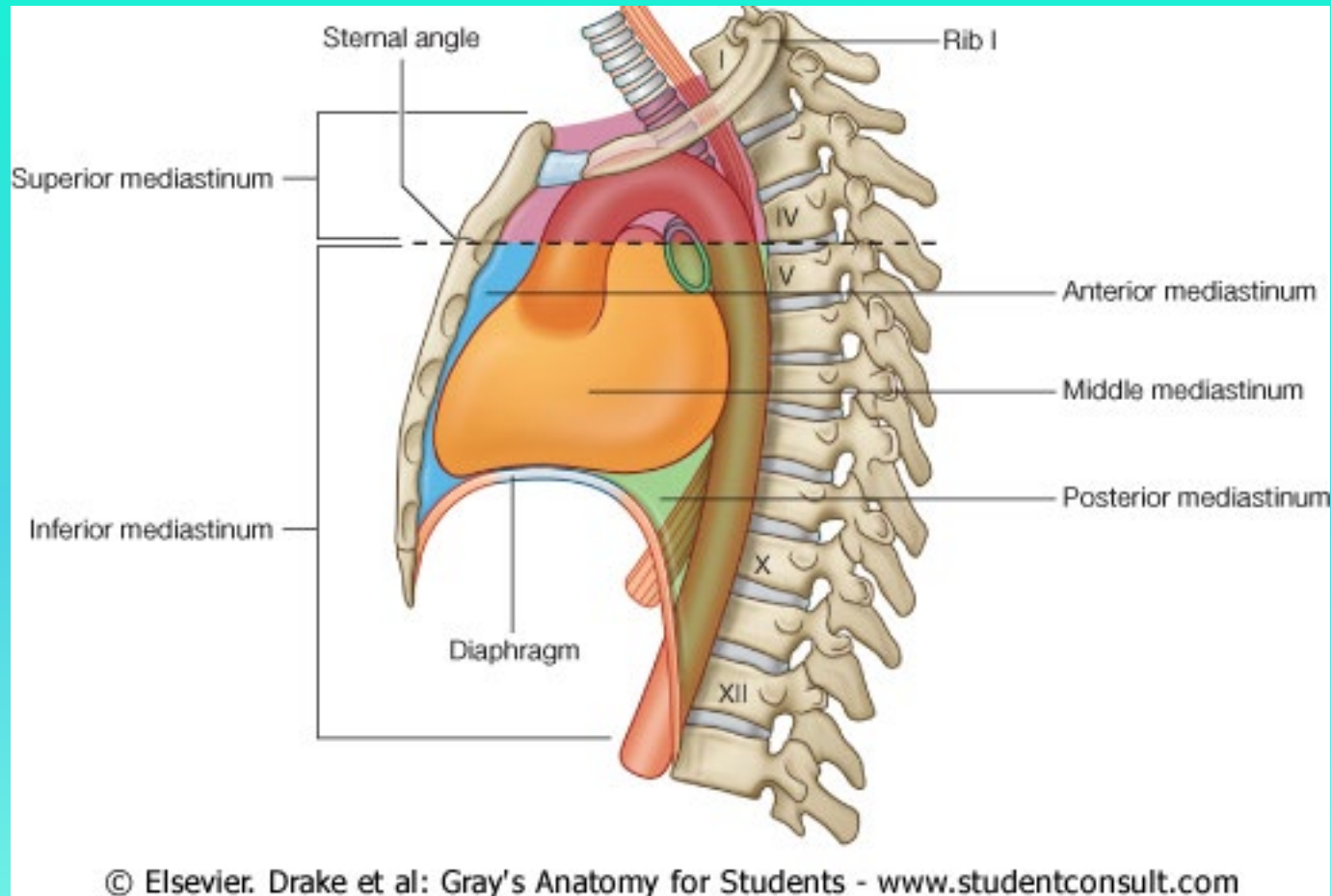
A**B**

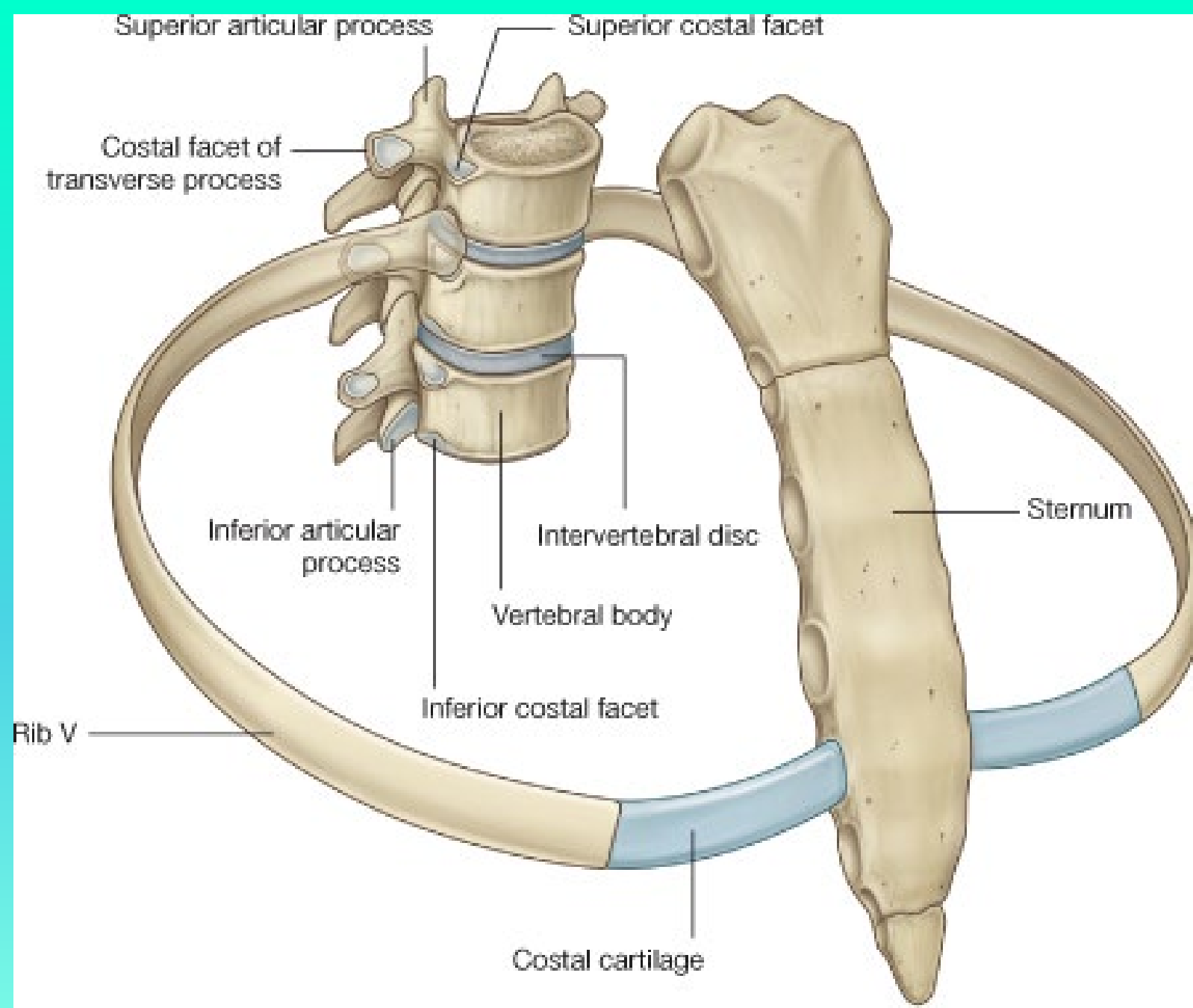
Sternum





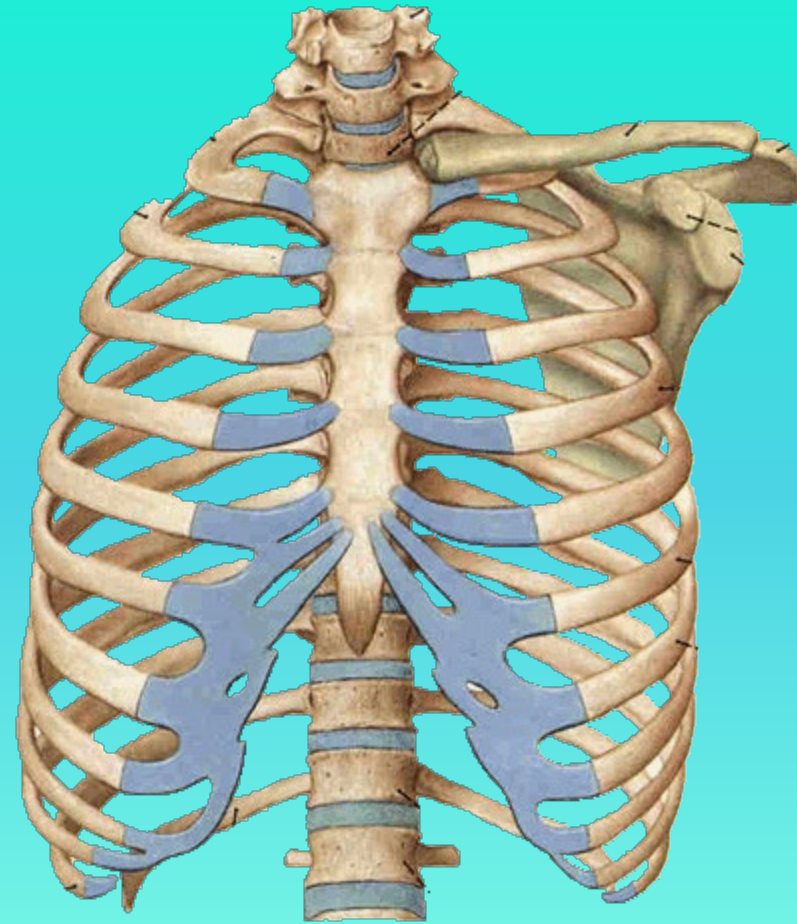
Sternal angle

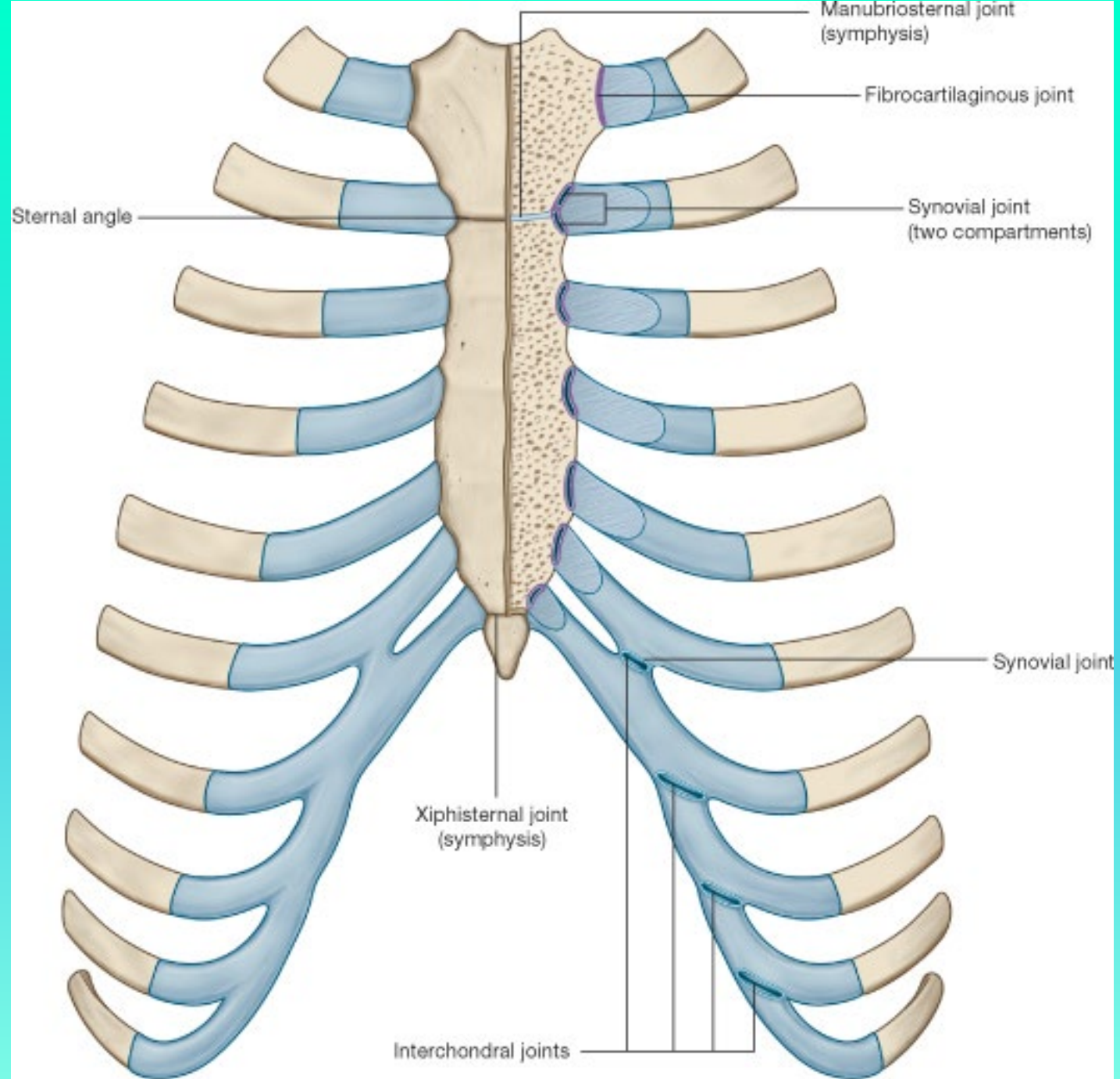




Ribs: 12 pair

- General features
 - Ribs 1~7 called **true ribs**
 - Ribs 8~10 called **false ribs**
 - Ribs 11~12 called **floating ribs**

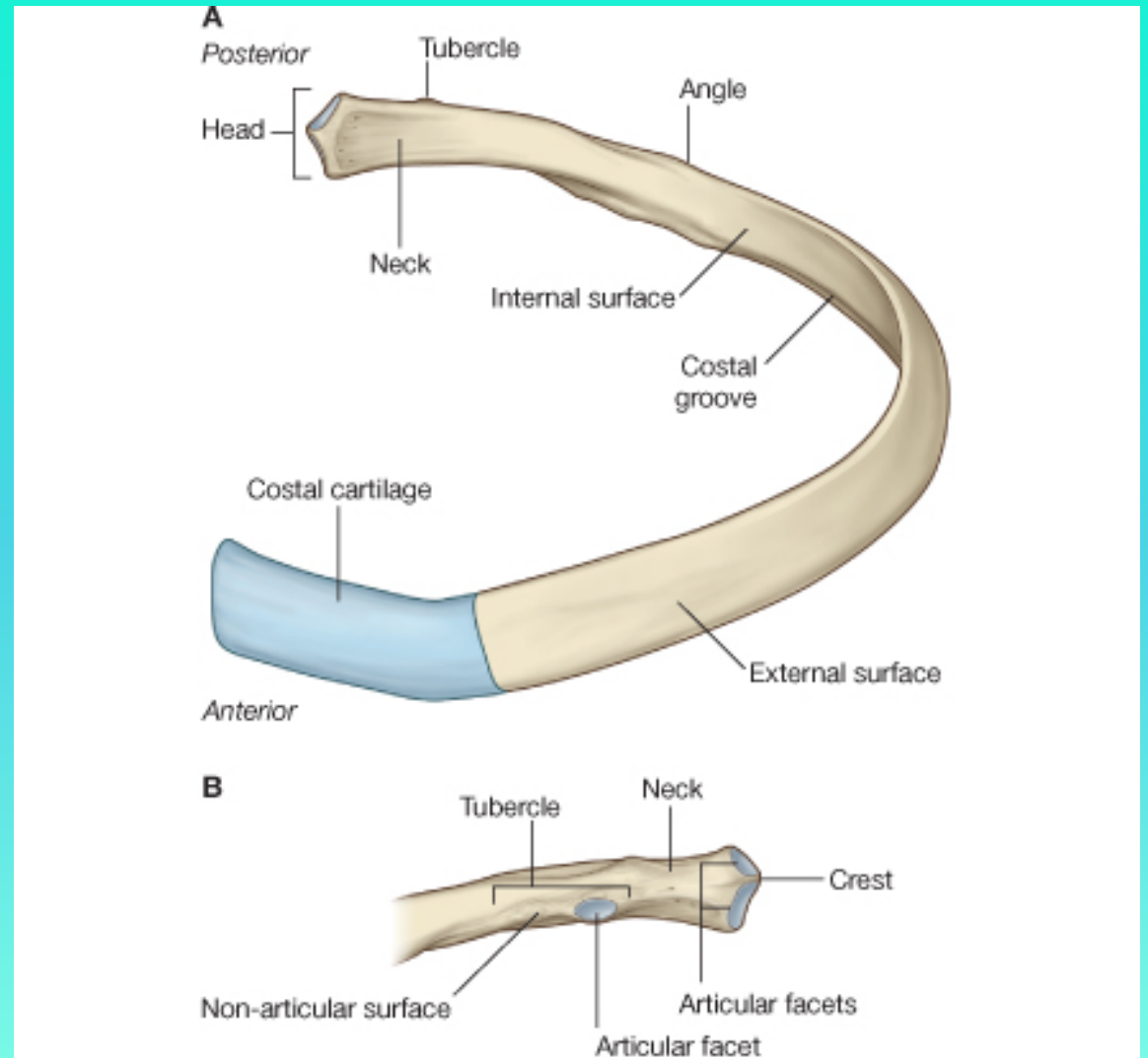




Characteristics of “typical” rib

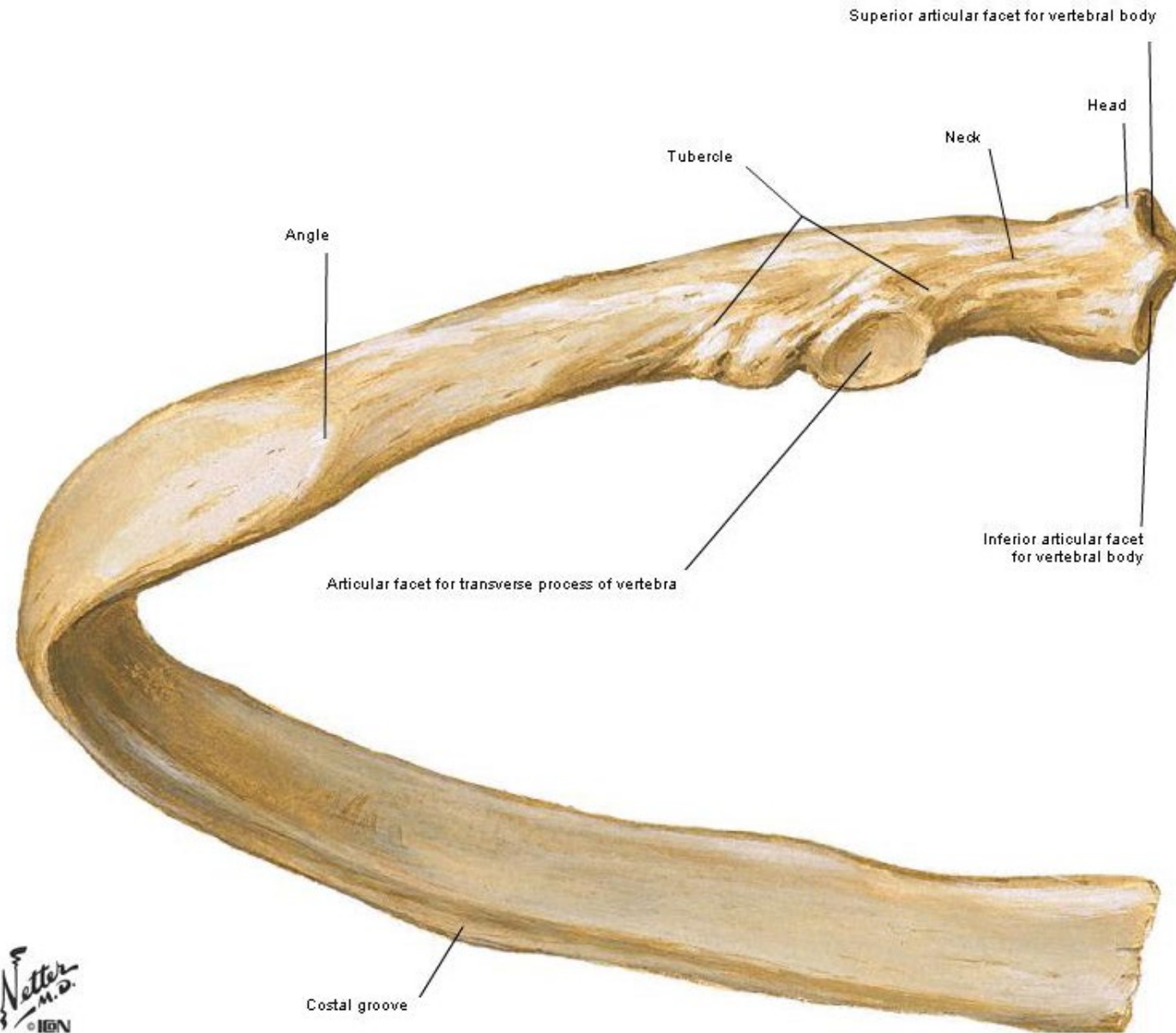
Posterior end:

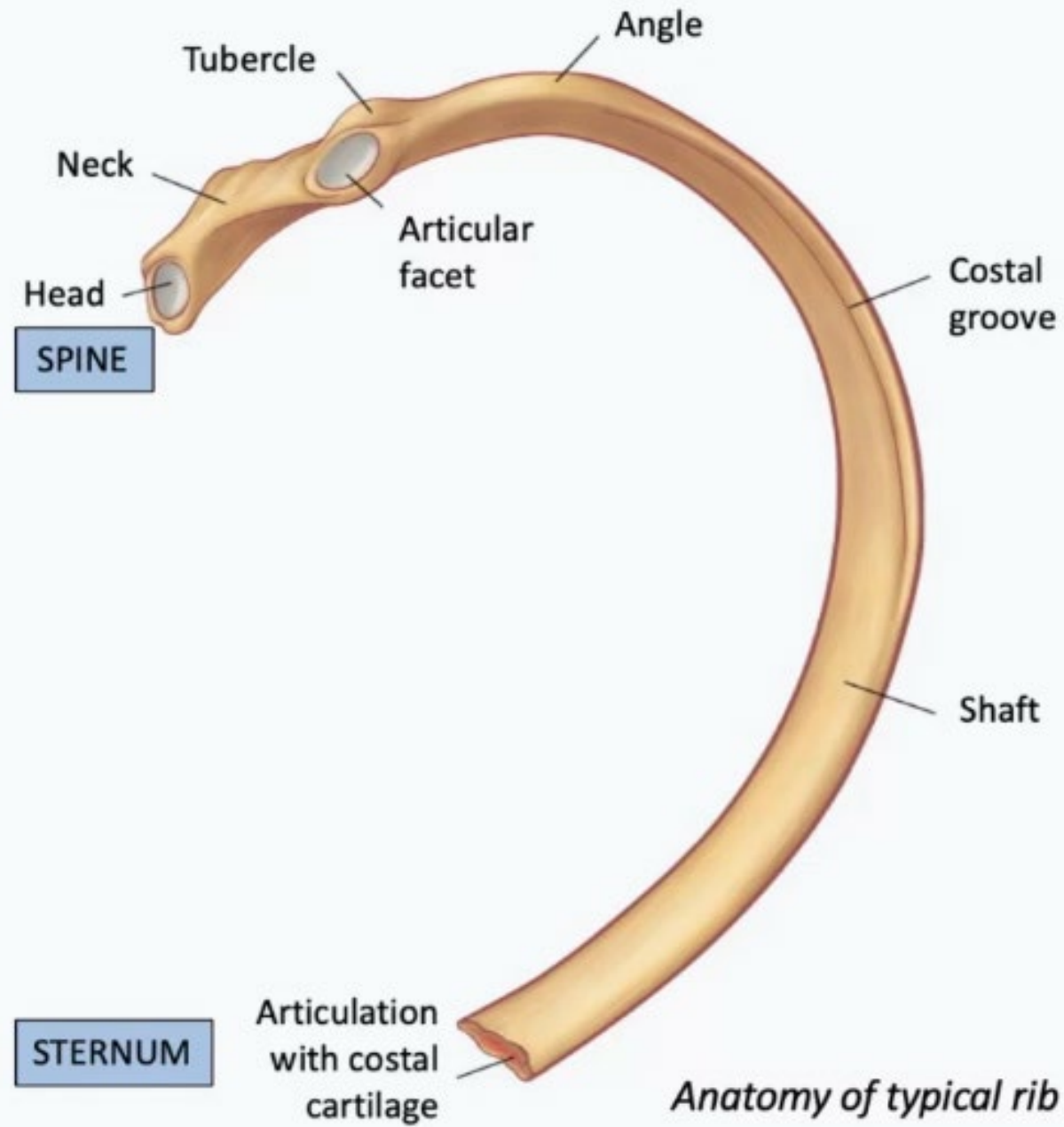
- costal head,
- costal neck
- costal tubercle
- **Shaft:** costal angle
costal groove
- **Anterior end**



Middle Rib

Posterior View





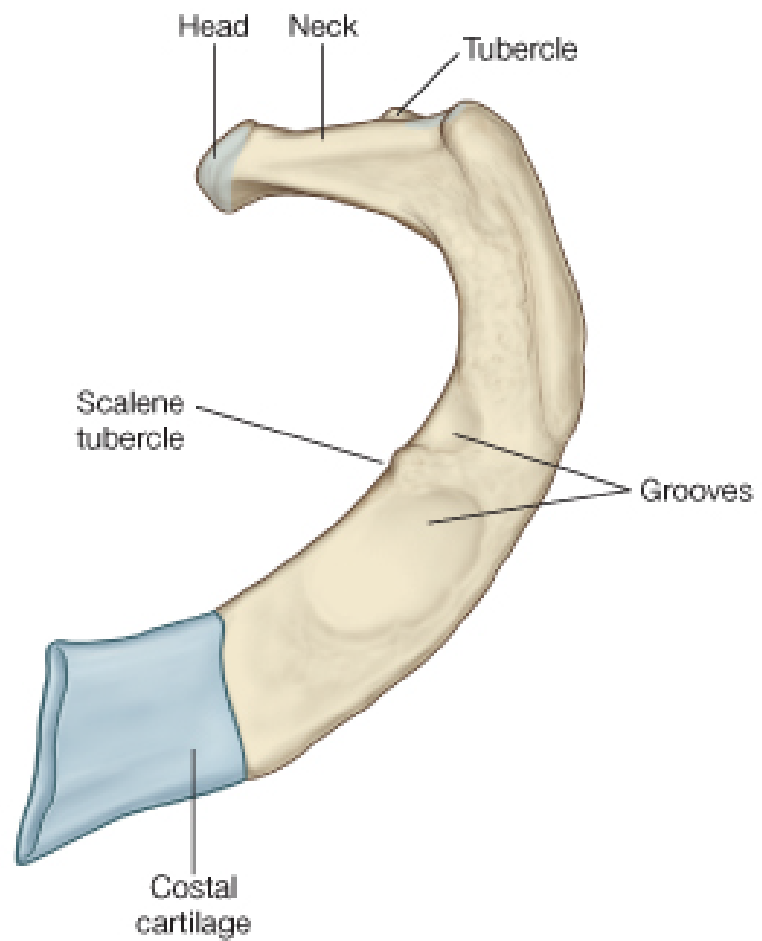
Anatomy of typical rib

Atypical rib

- **First rib:**
- **11th**
- **12th ribs:**



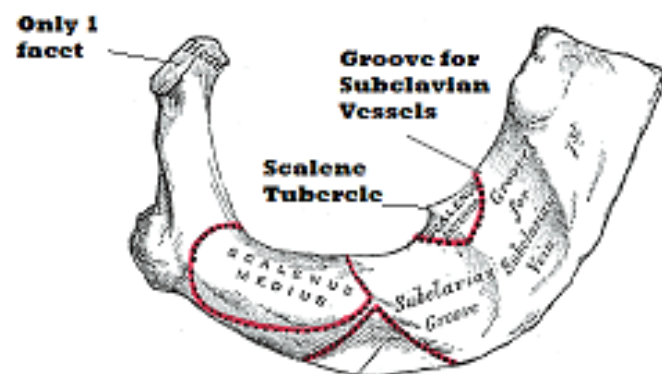
Rib I



Rib XII

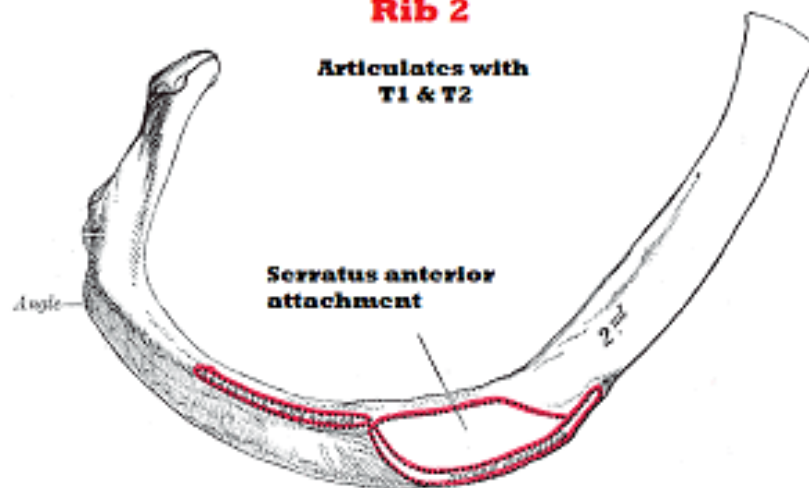


Rib 1:
Shortest & Widest (usually)

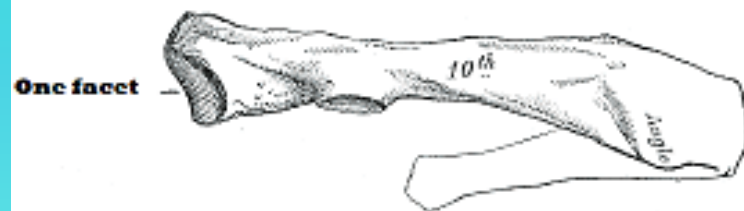


Rib 2

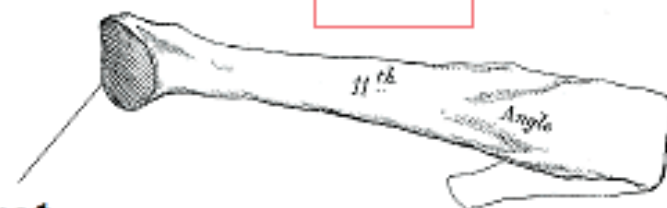
Articulates with
T1 & T2



Rib 10



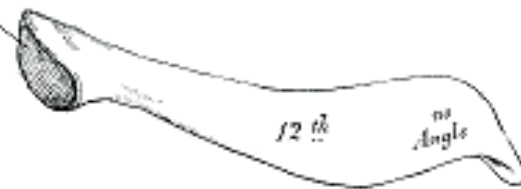
Rib 11

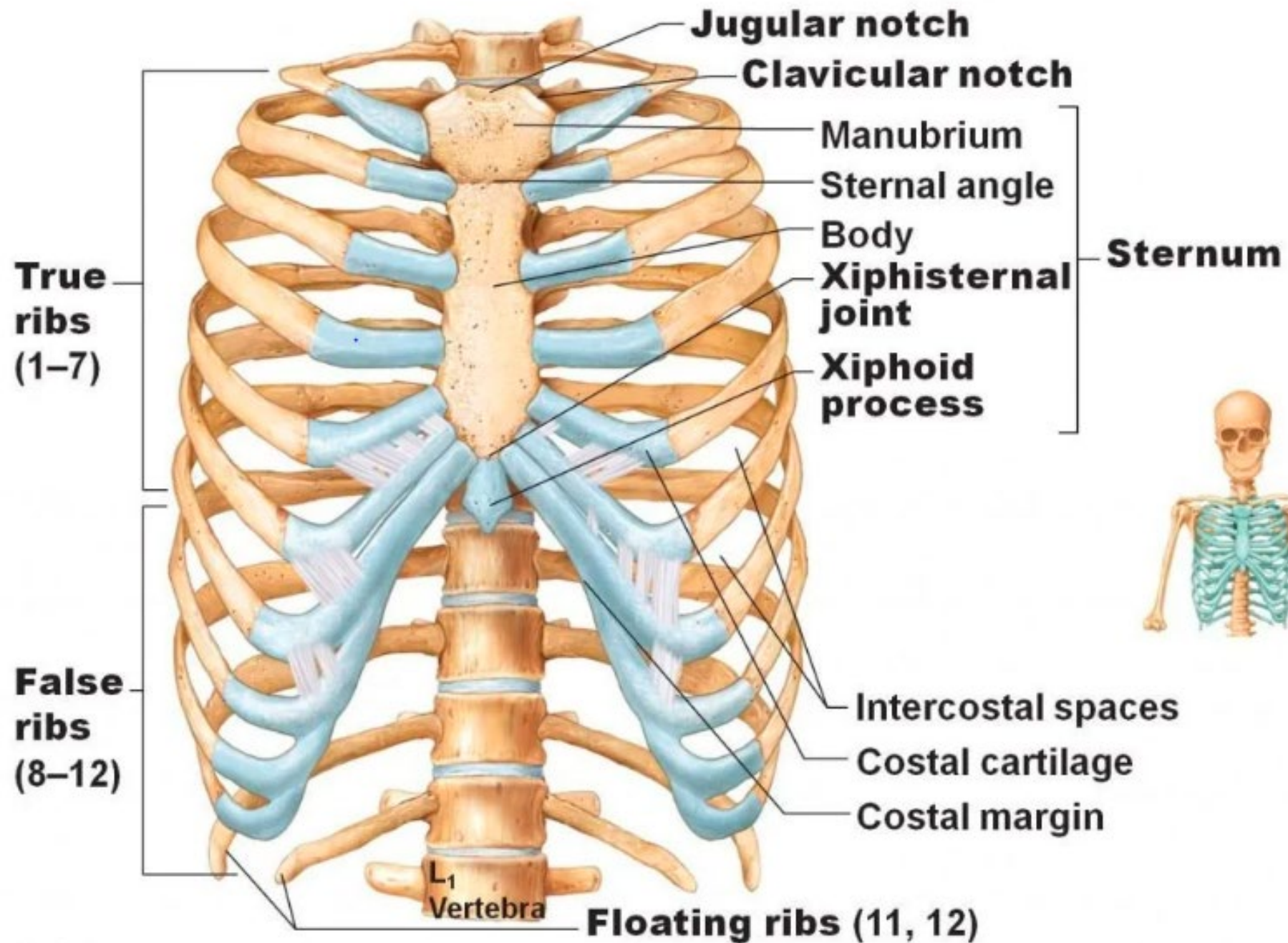


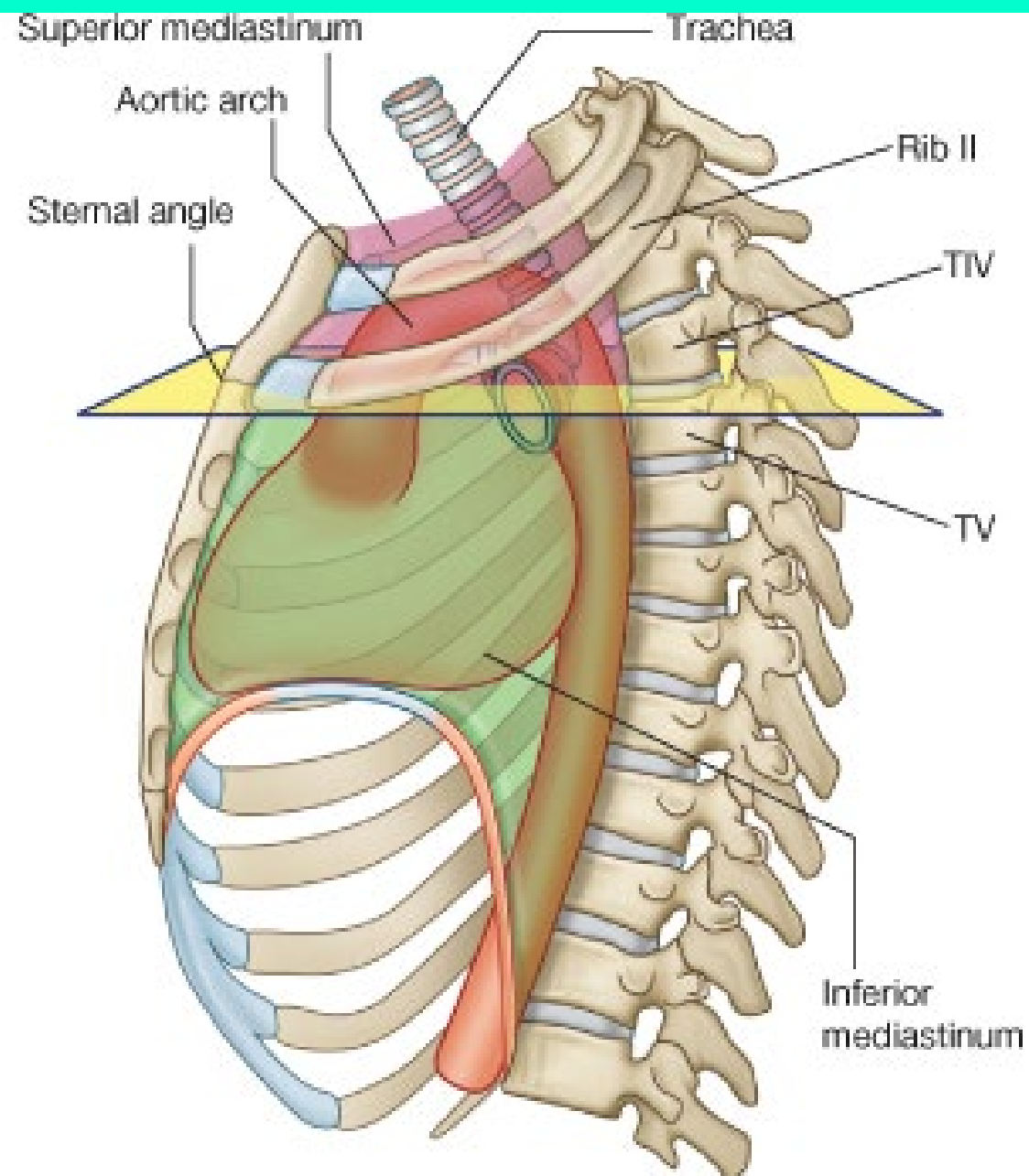
**One Articular Facet
on the Head**

Rib 12

**(No Neck or
Tubercle)**

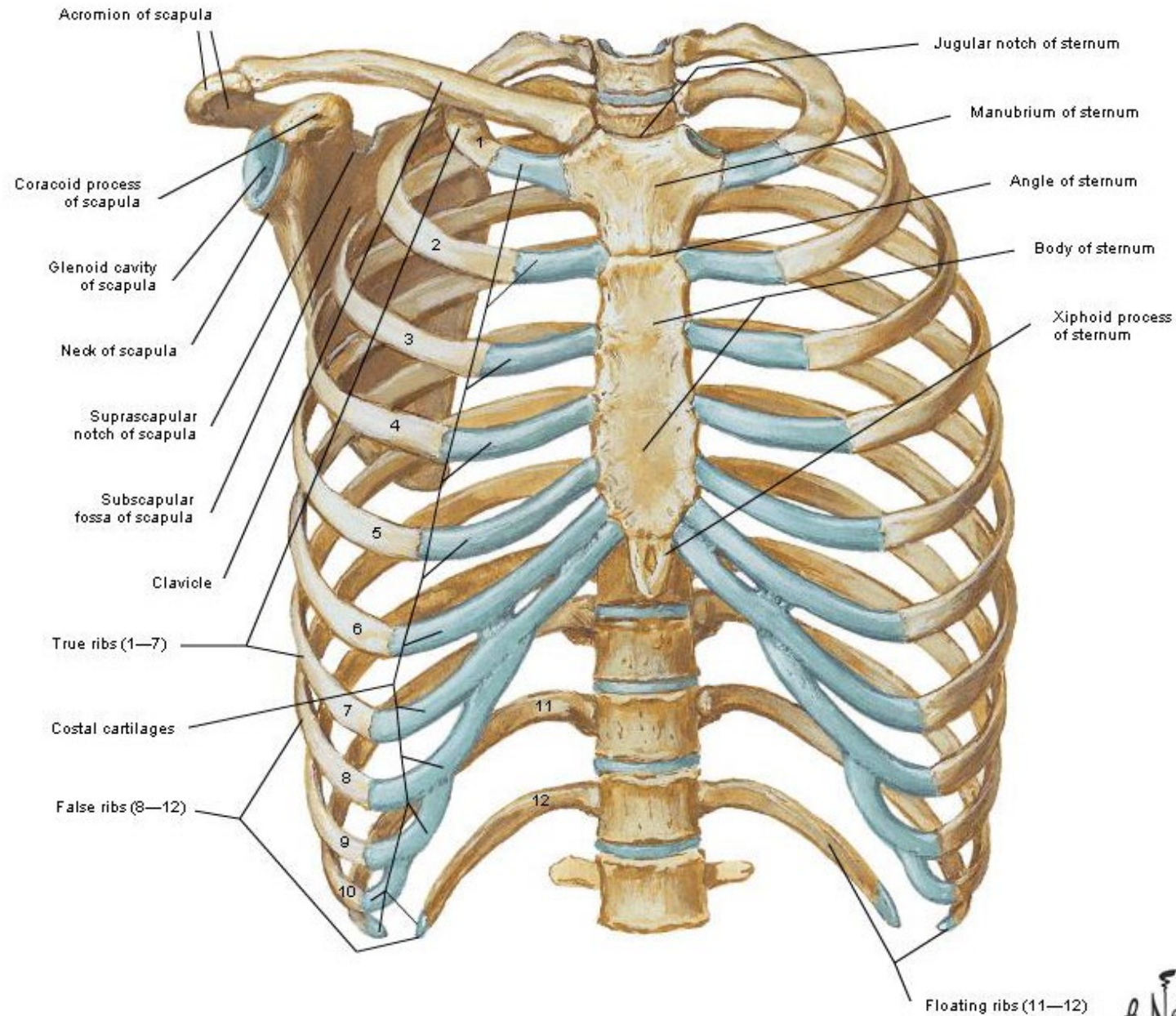


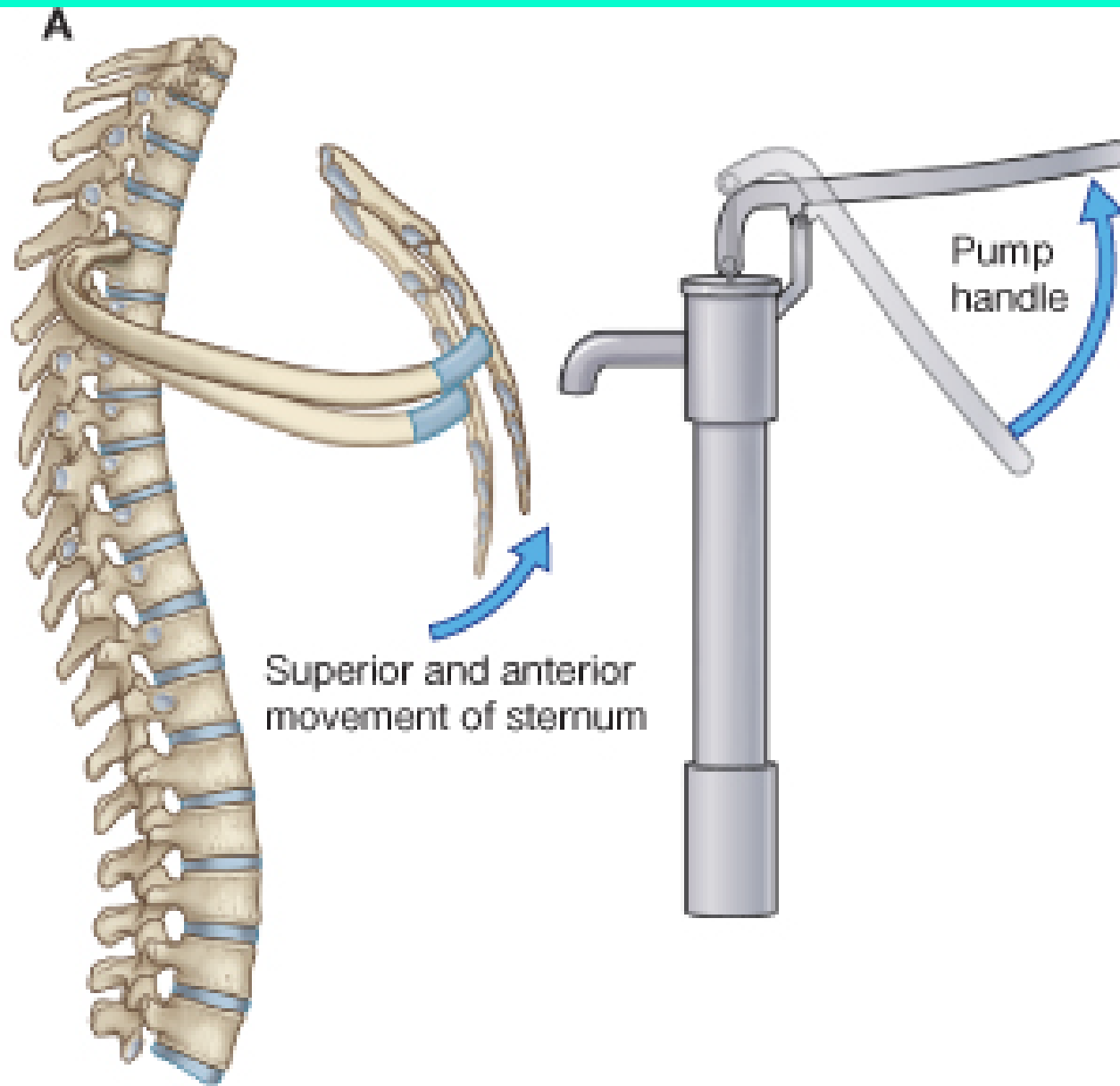




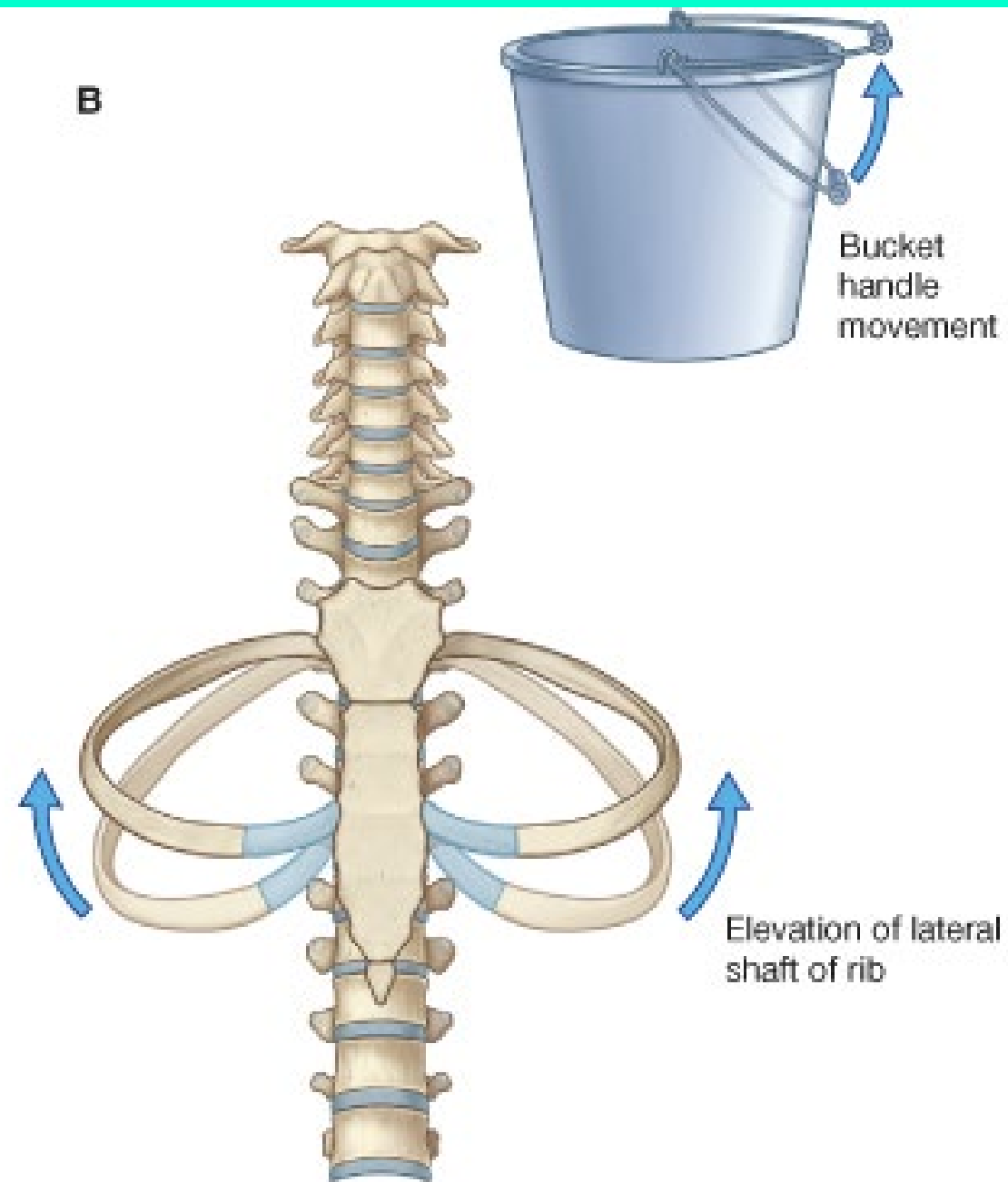
Bony Framework of Thorax

Anterior view





B

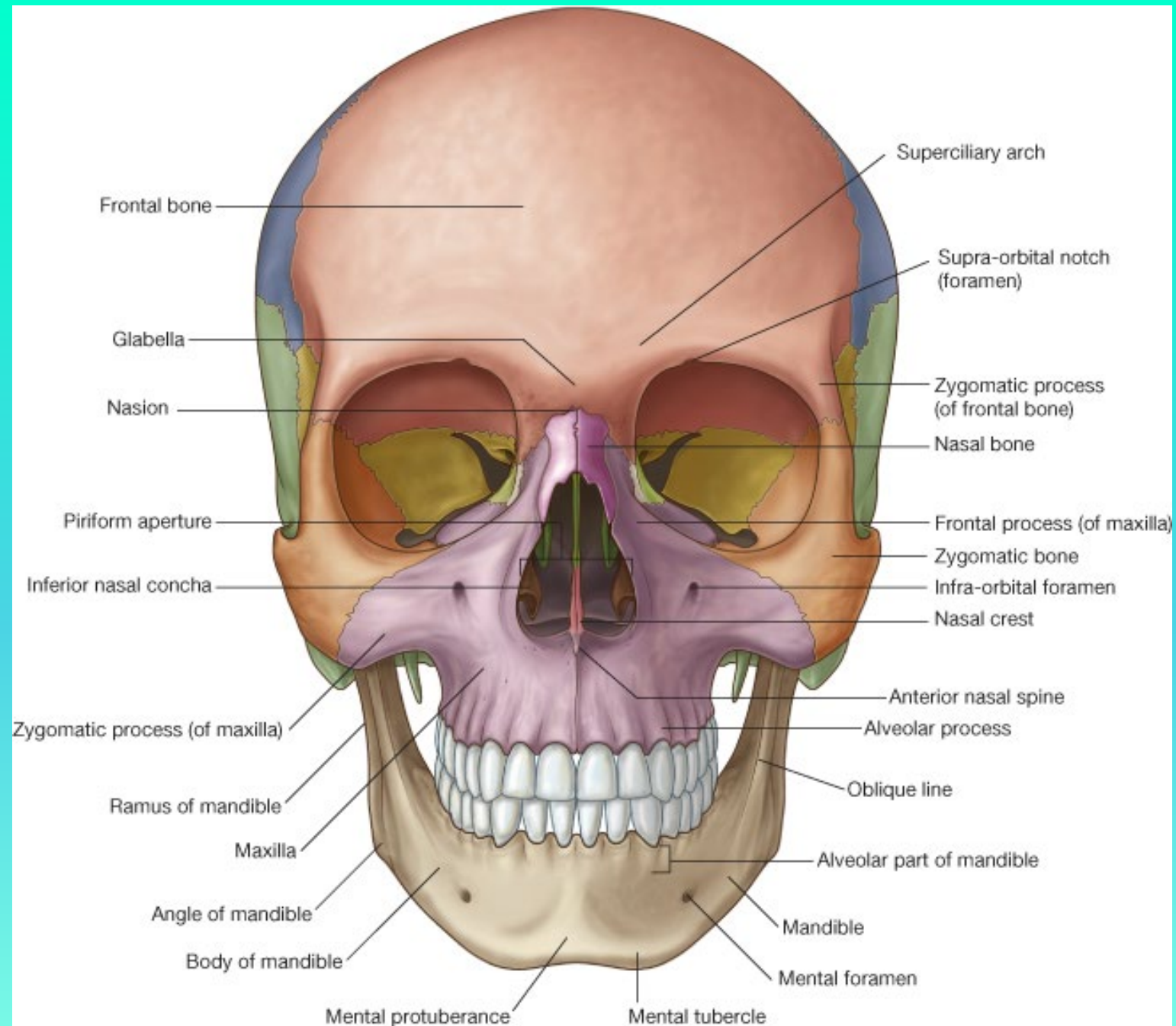
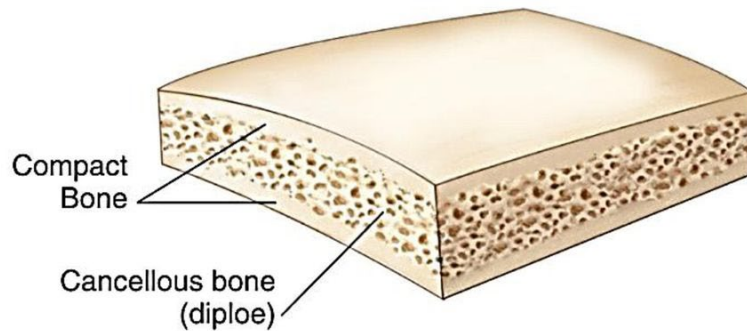


Skull

1- Calvaria (8)

2- Facial skeleton (14)

Flat Bone



Calvaria

Single

1- Frontal

2- Ethmoid

3- Sphenoid

4- Occipital

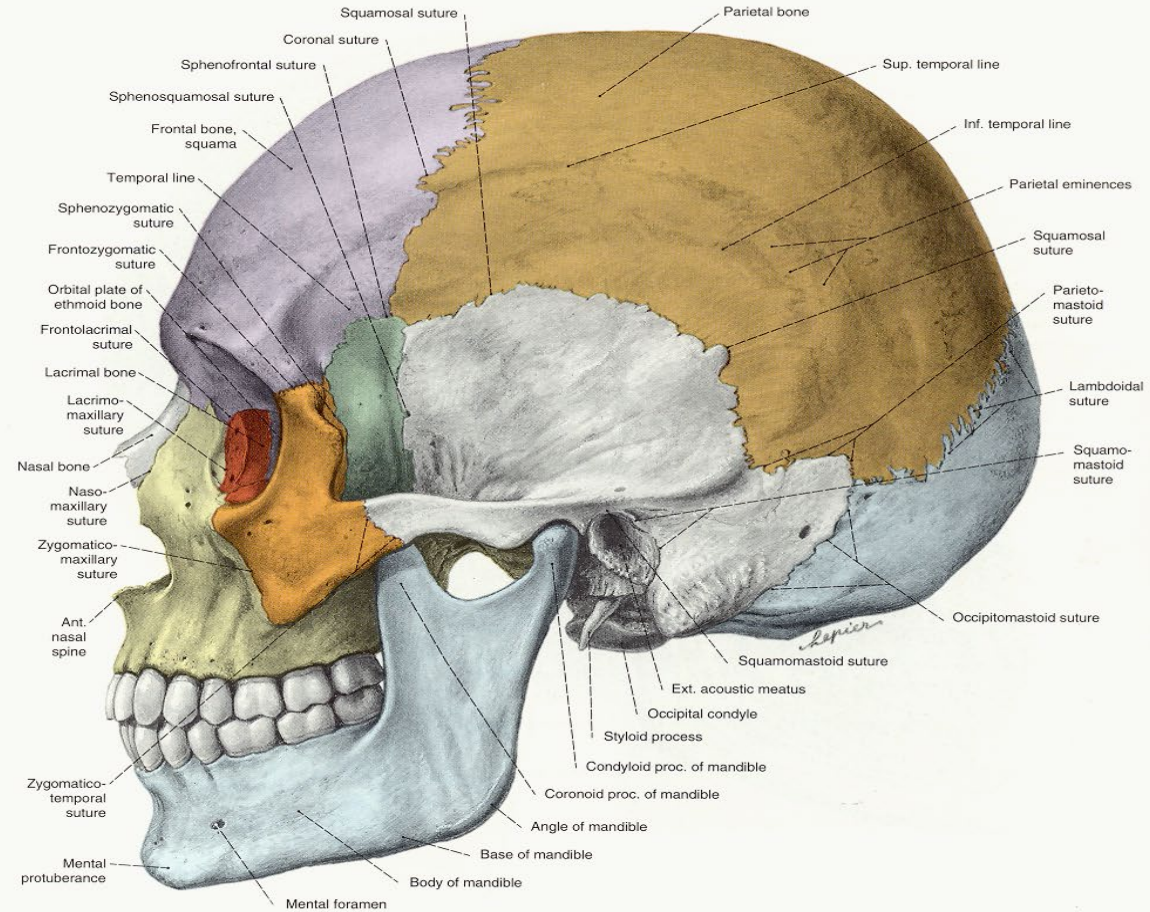
Pair

1- Parietal

2- Temporal

Total

8



Frontal bone – lavender
Parietal bone – brown
Occipital bone – light blue
Nasal bone – light gray
Lacrimal bone – red
Zygomatic bone – orange
Sphenoid bone – green
Temporal bone – light gray
Maxilla – yellow
Mandible – light blue

Fig. 6. The skull. Lateral aspect. The cranial and facial bones of the head are depicted by different colors.

Facial skeleton

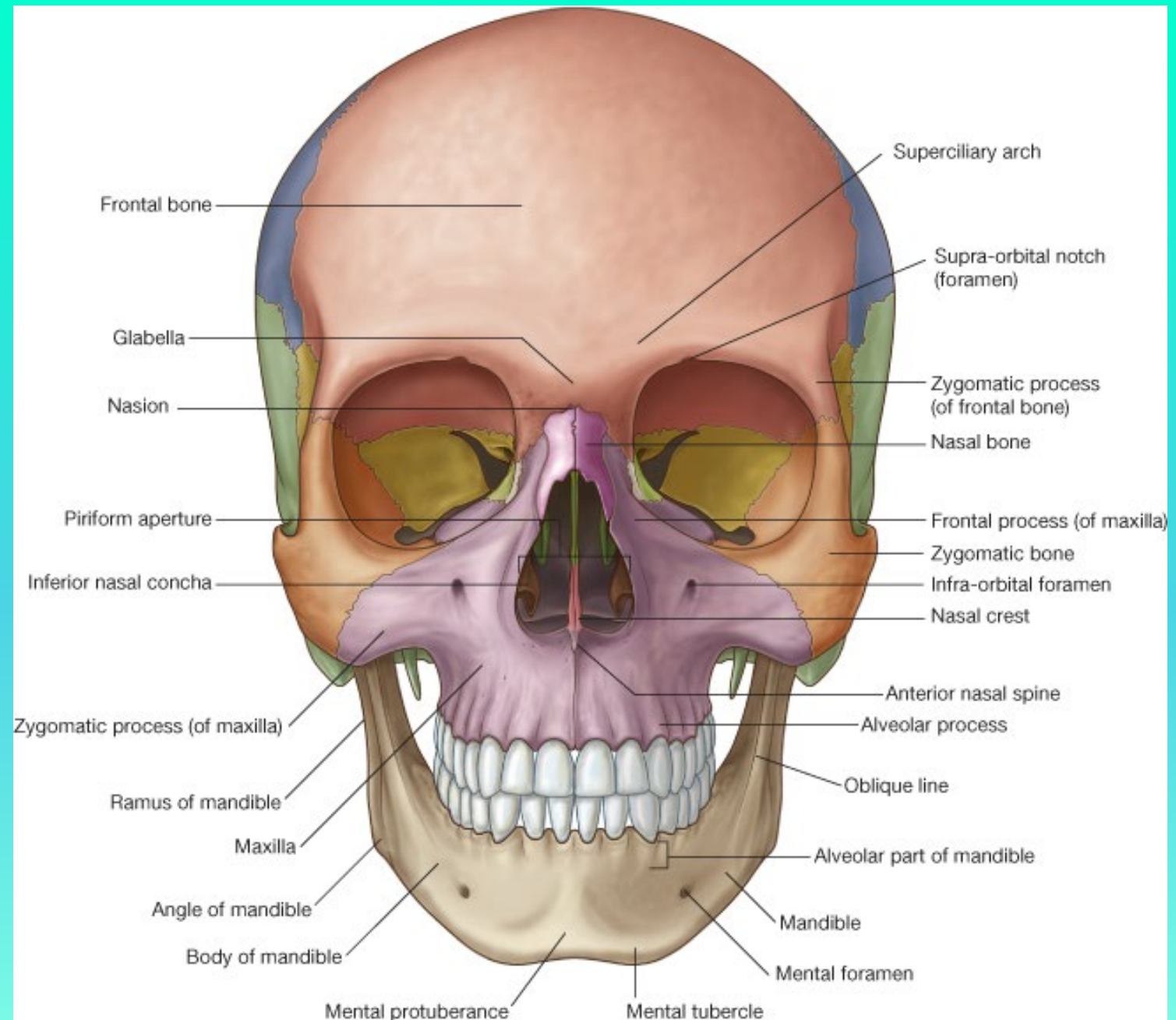
Pair

- 1- Maxilla
- 2- Zygomatic
- 3- Nasal
- 4- Lacrimal
- 5- Palatine
- 6- Inf. nasal concha

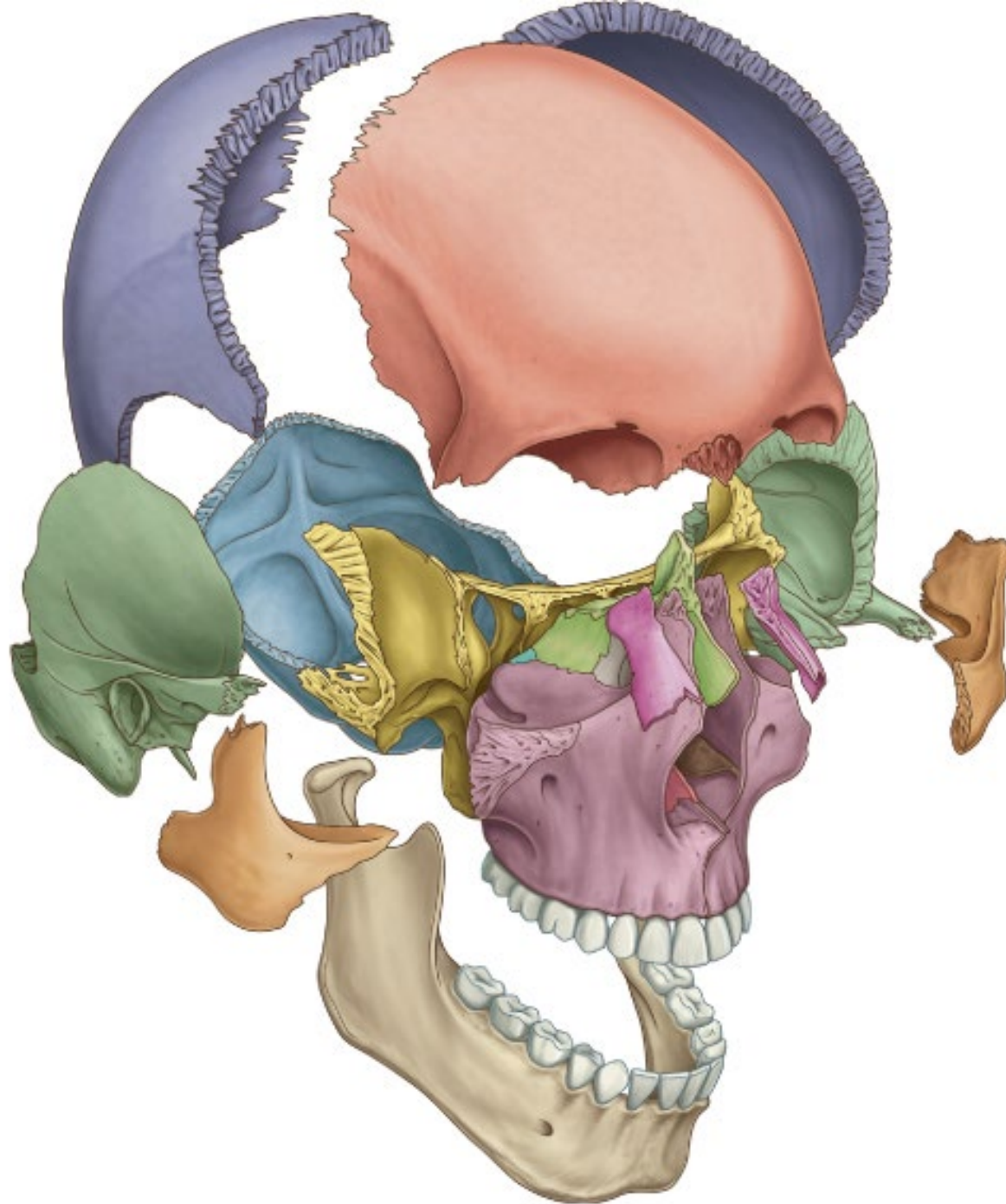
Single

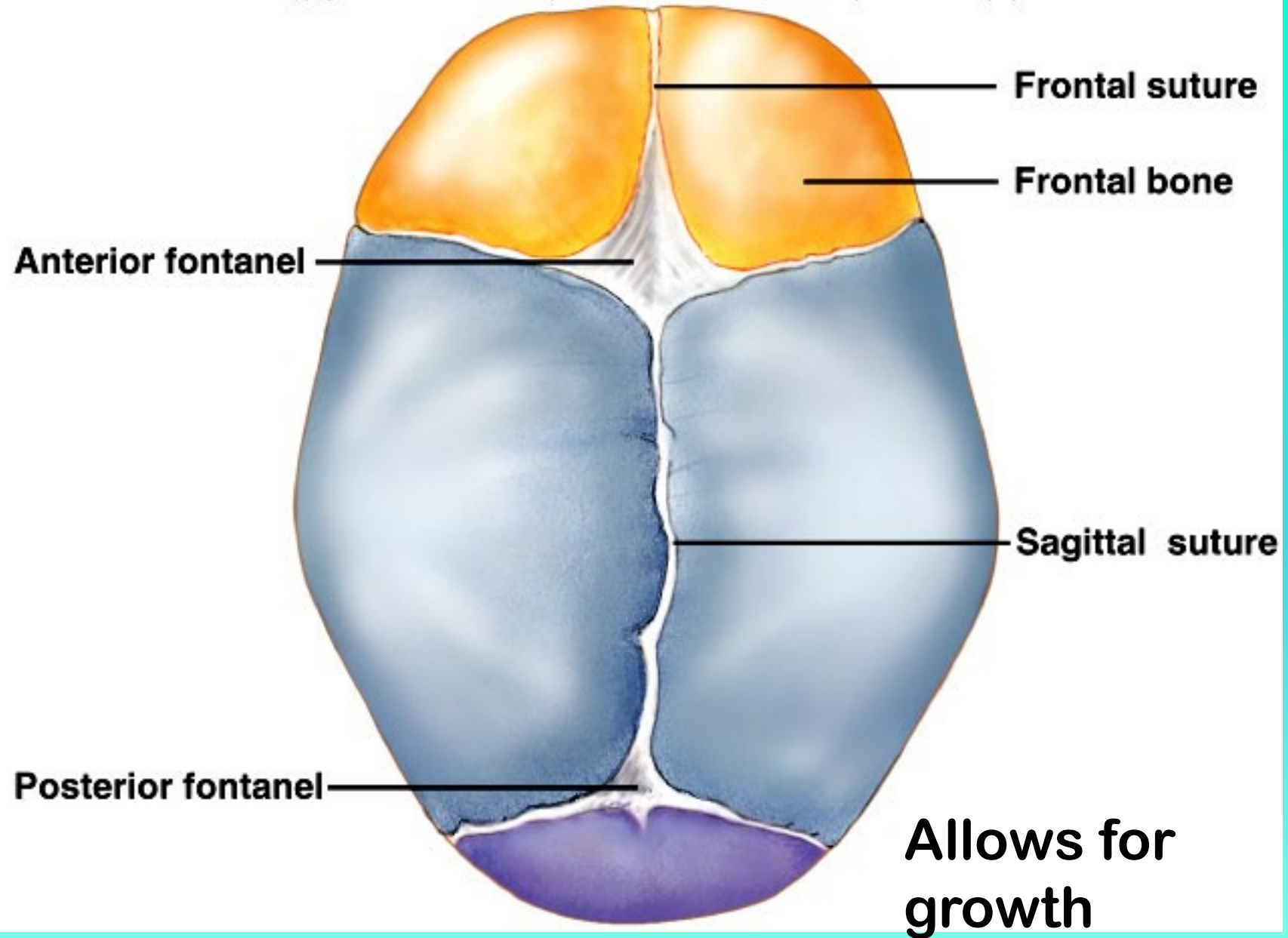
- 1- Vomer
- 2- Mandible

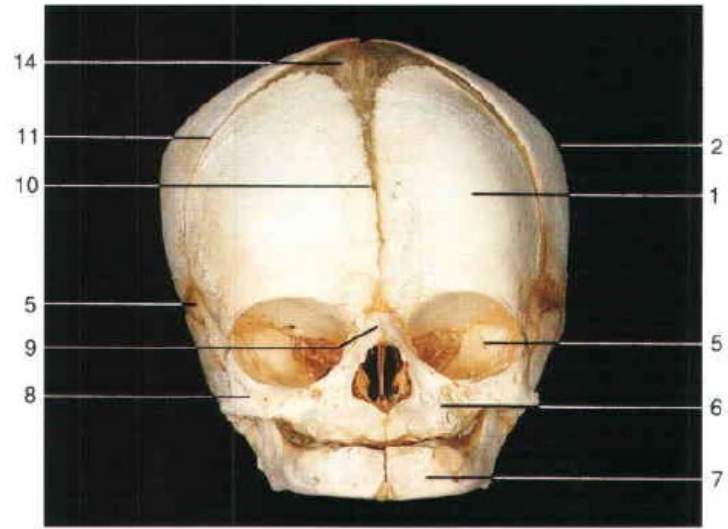
Total 14



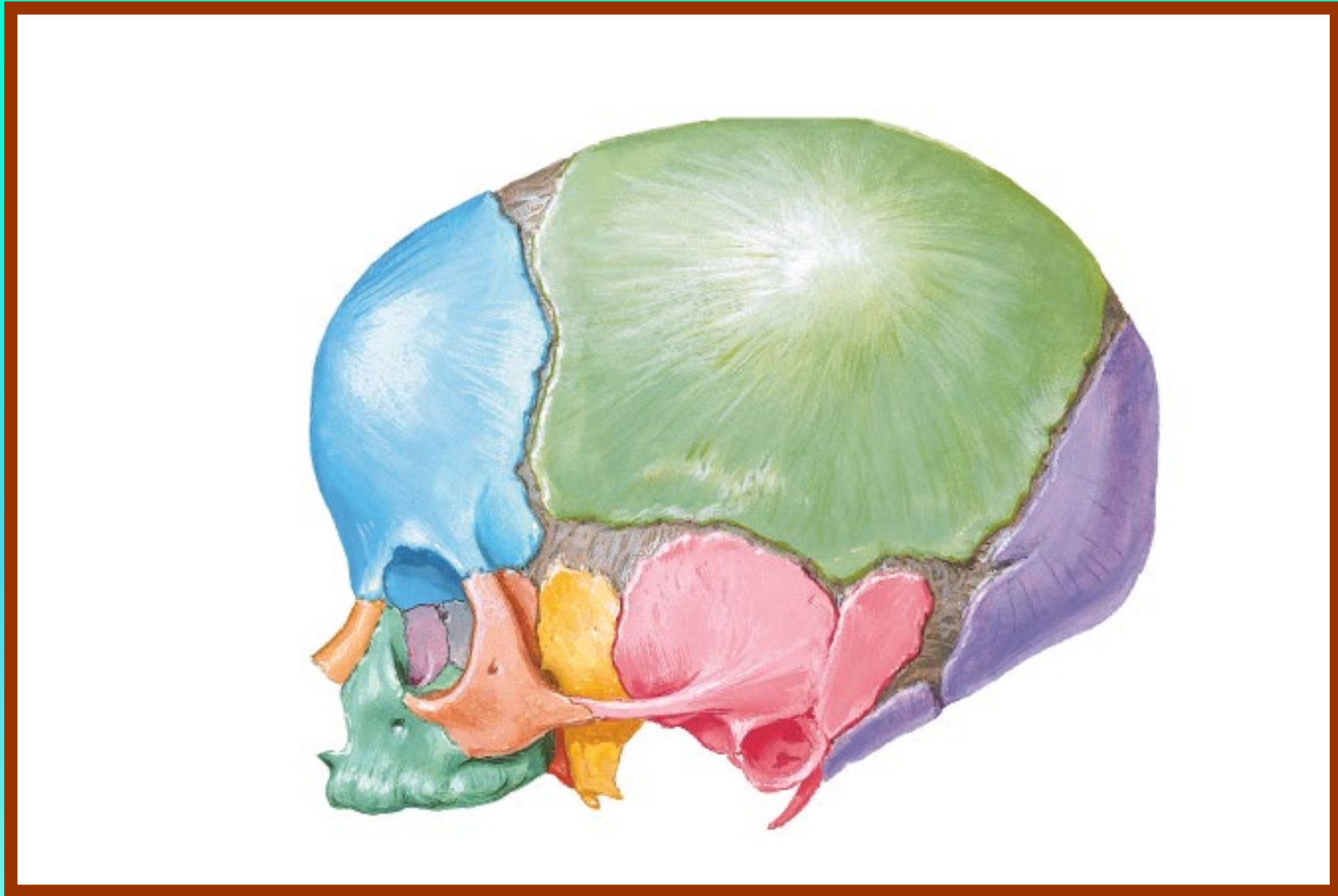
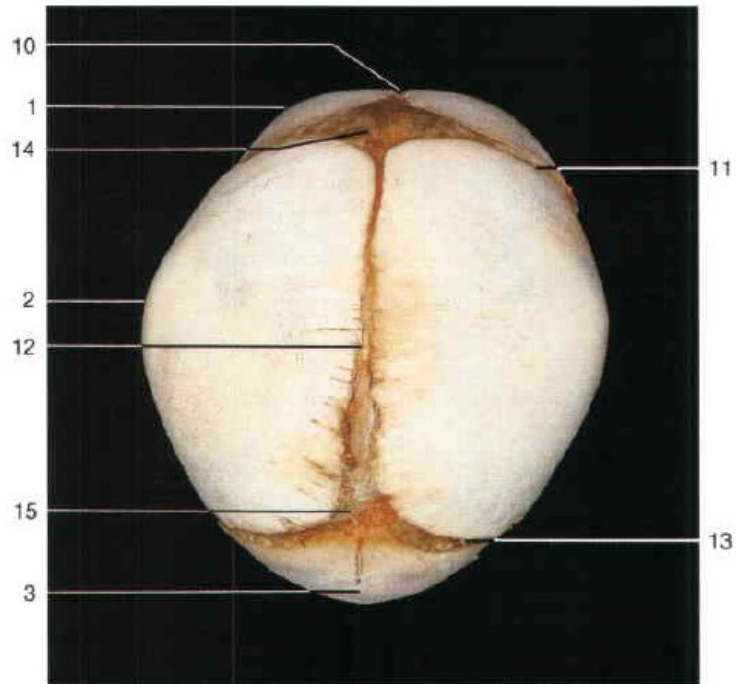
A



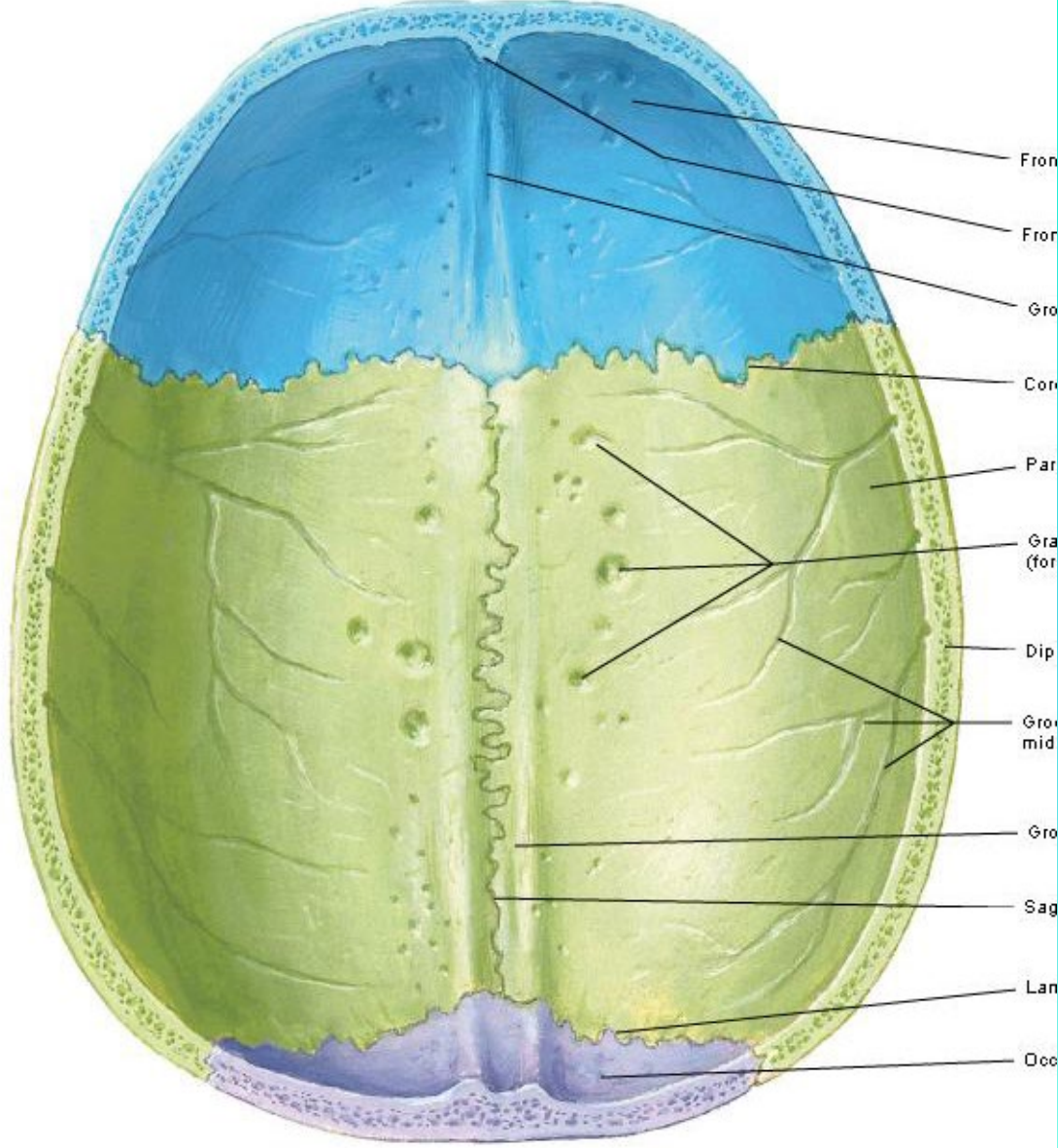




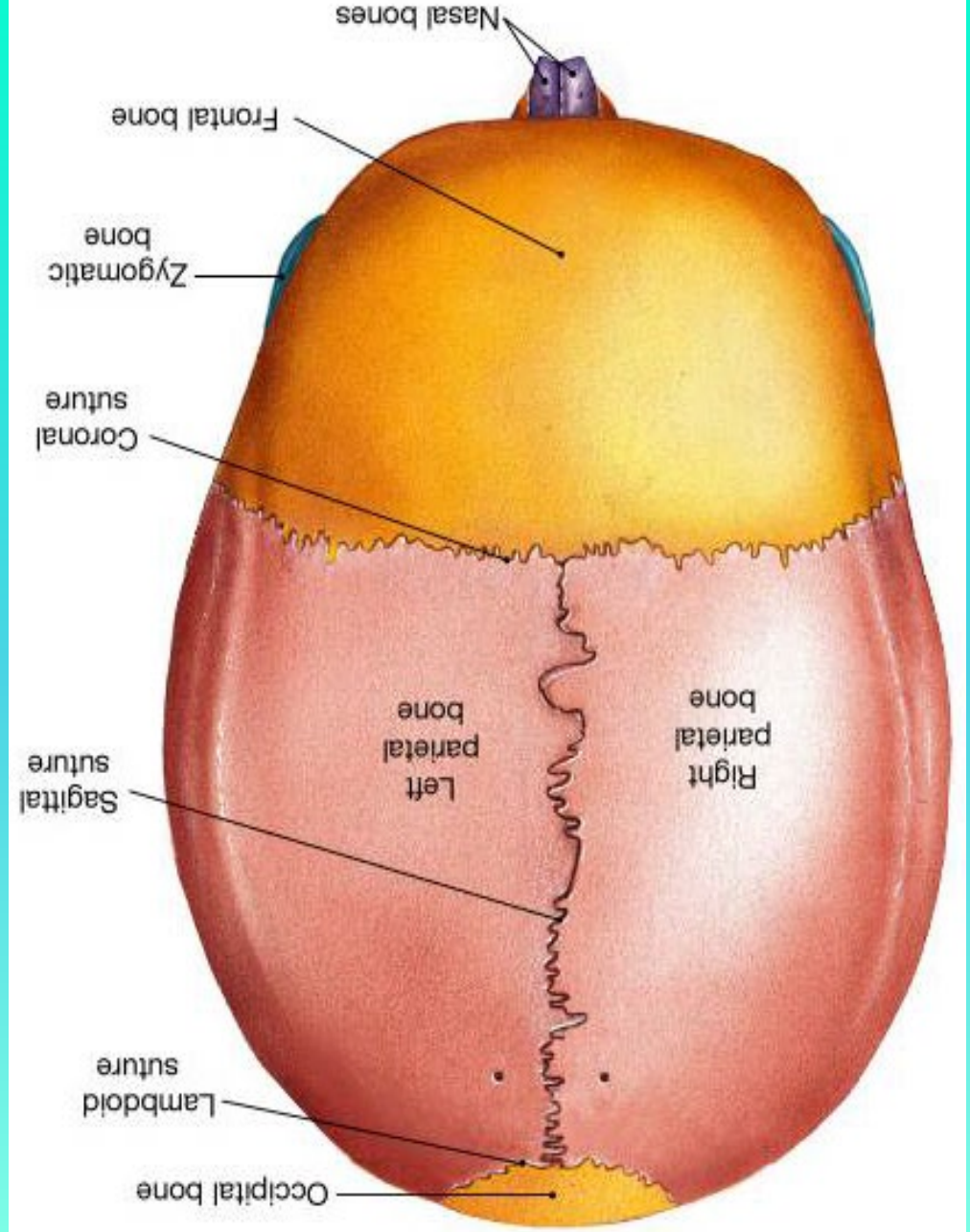
Skull of the newborn (anterior aspect).

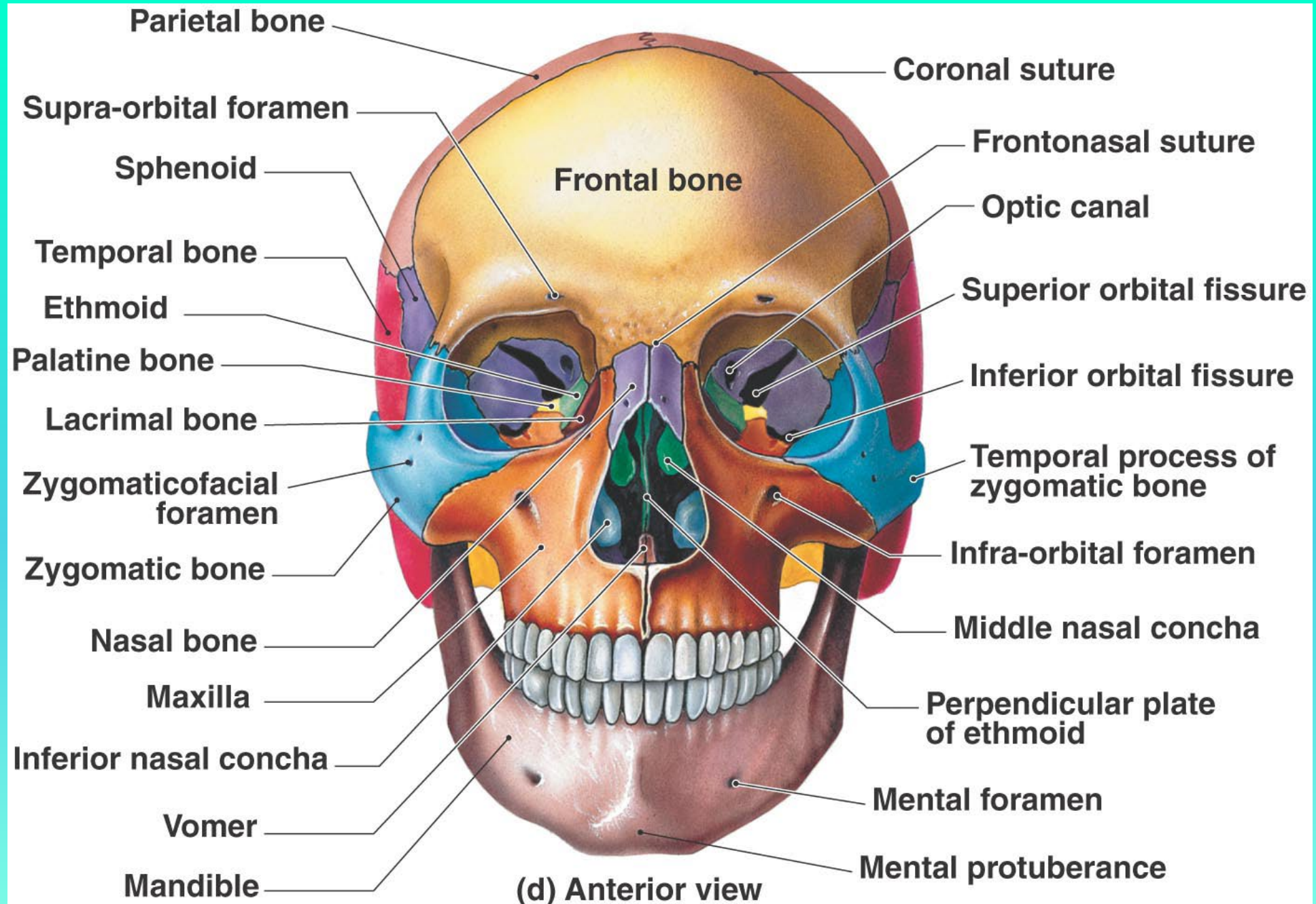


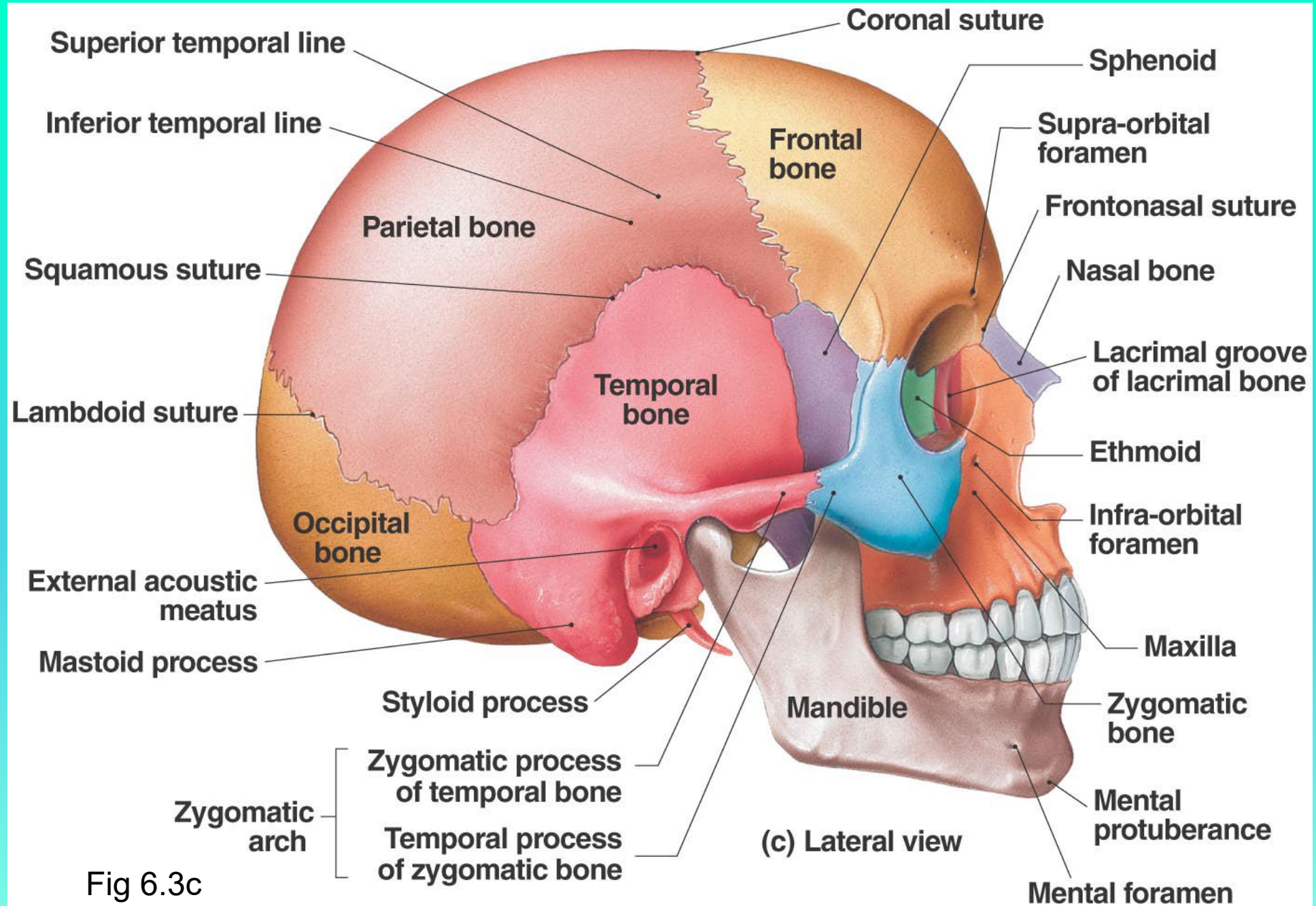
Calvaria
Inferior view

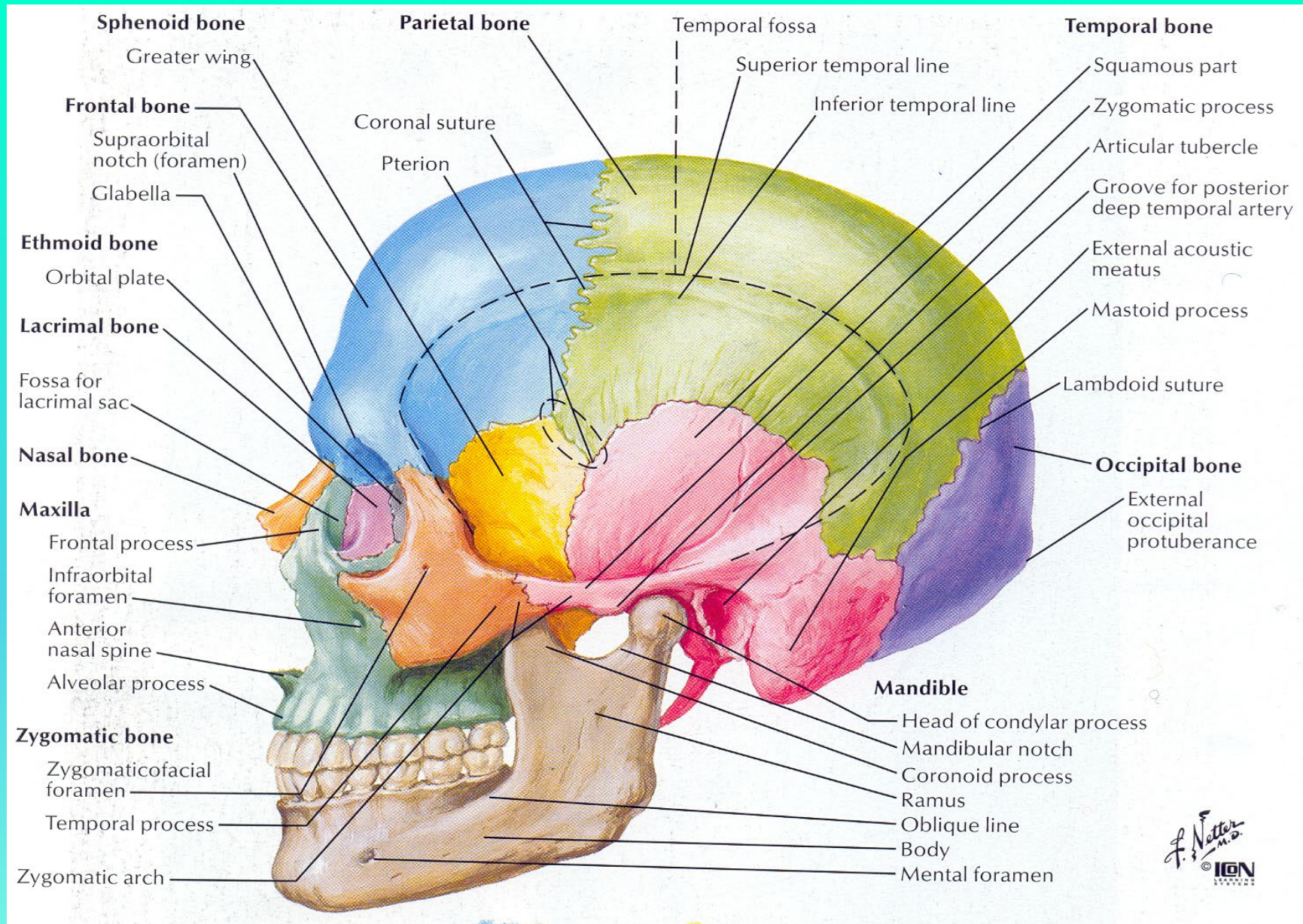


(b) Superior view

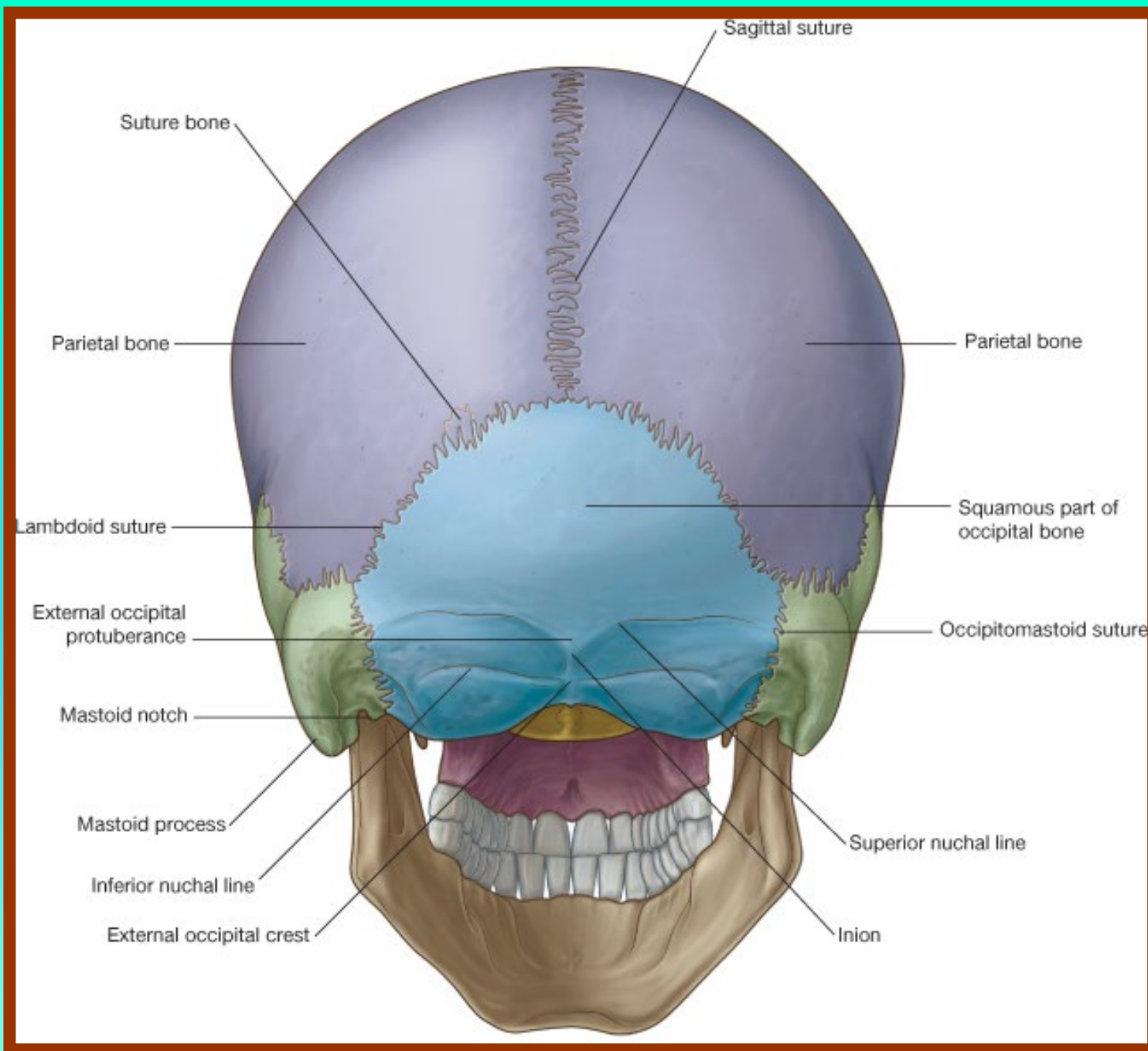












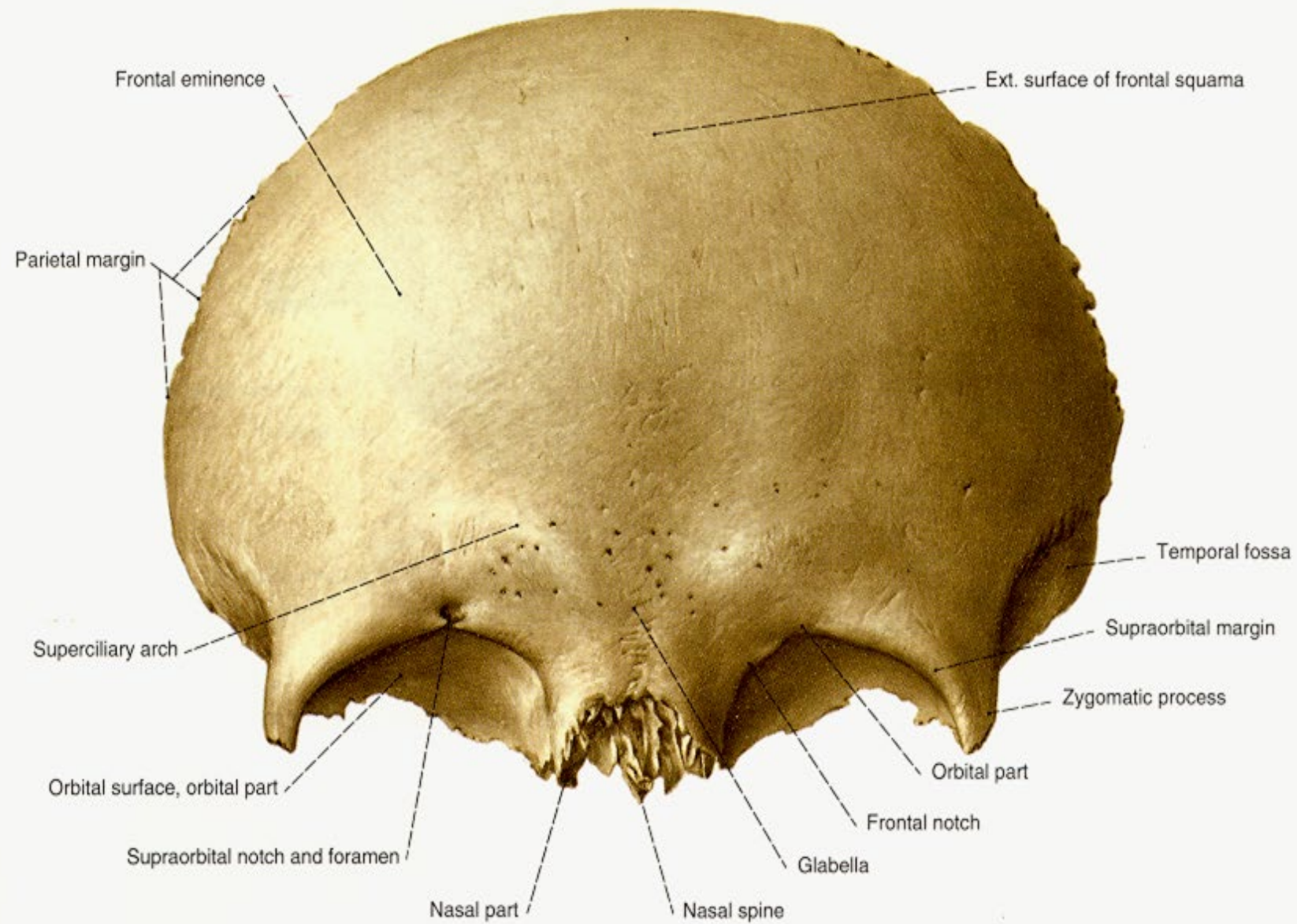


Fig. 35. Frontal bone. External surface.

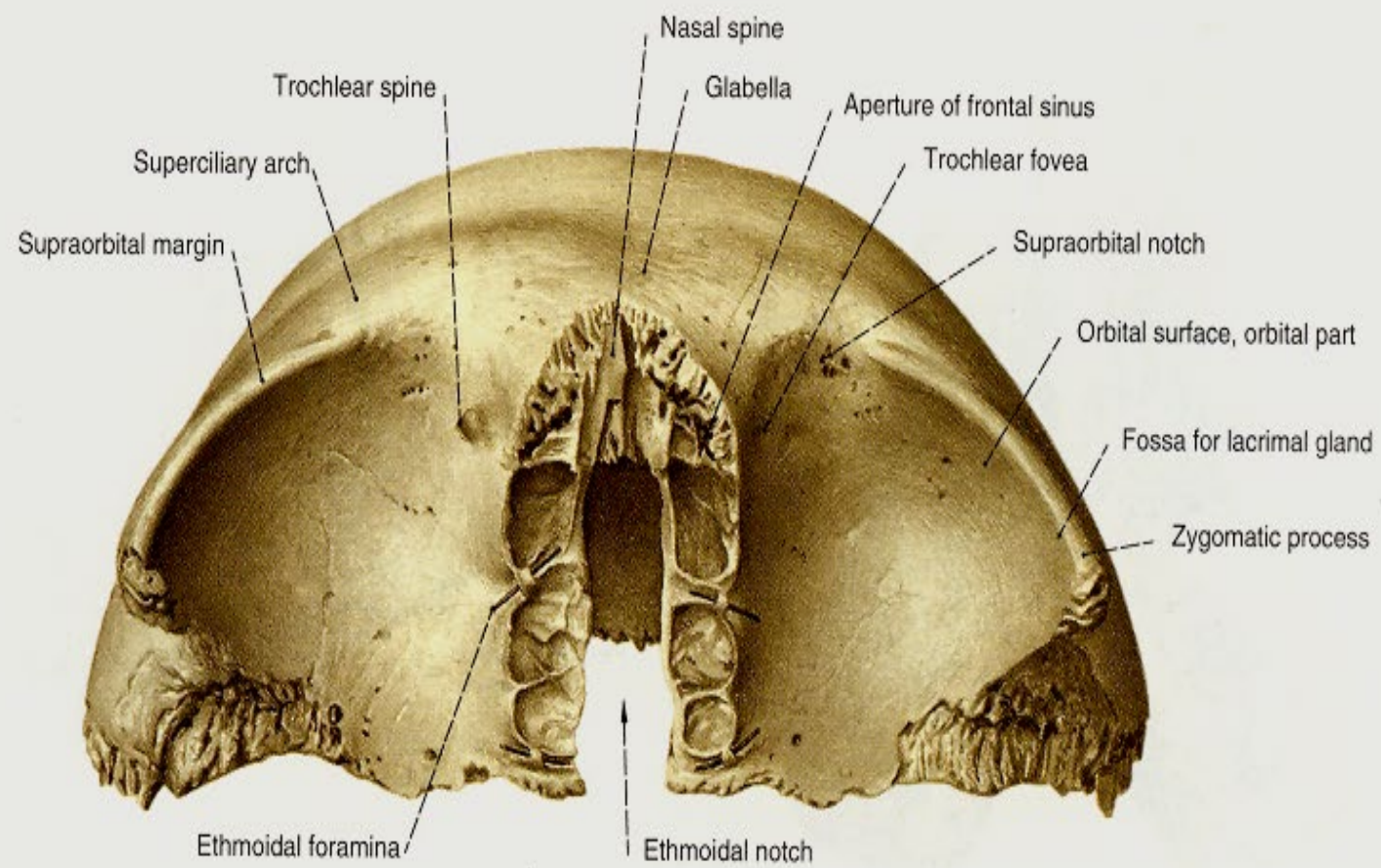
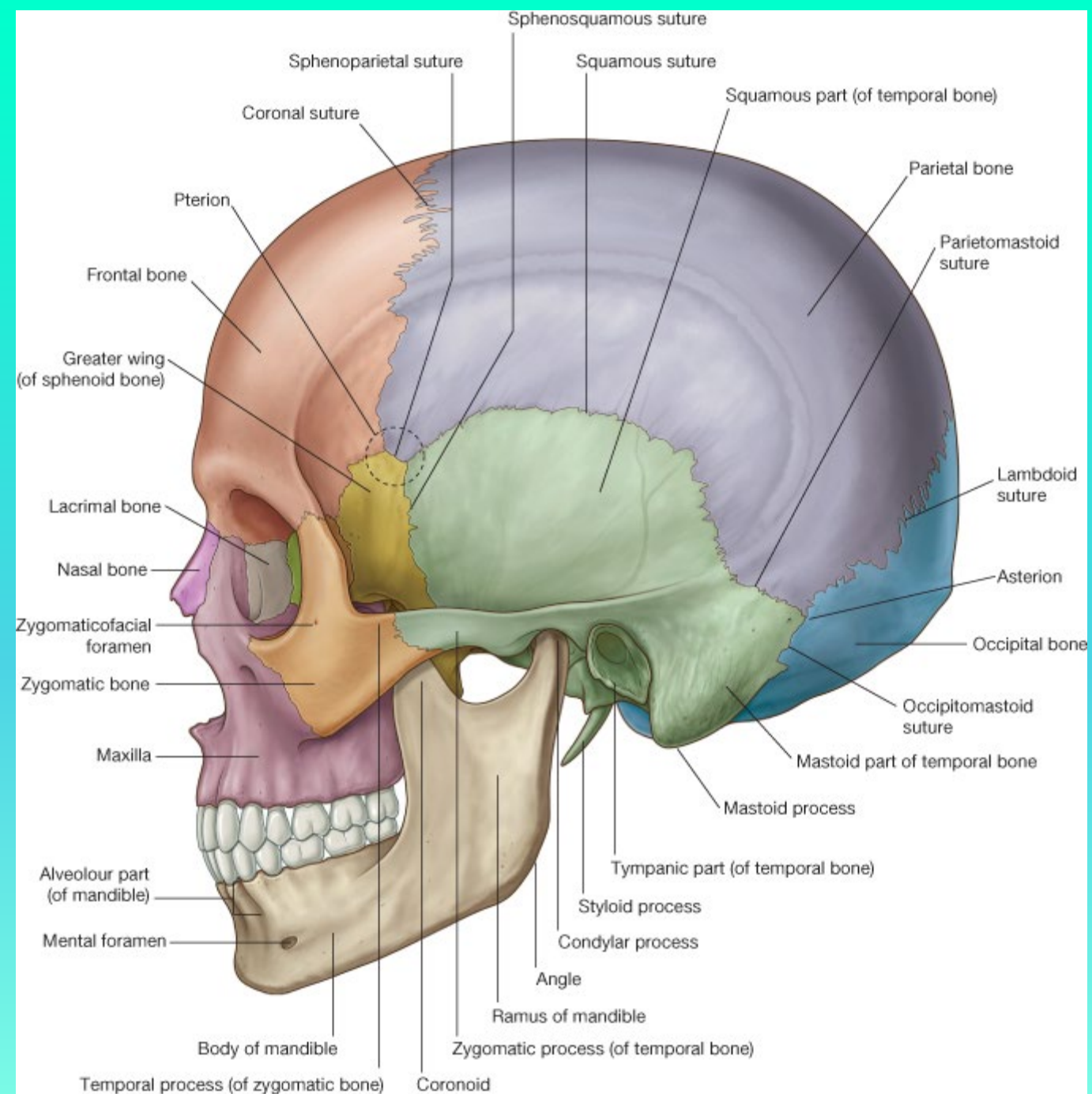
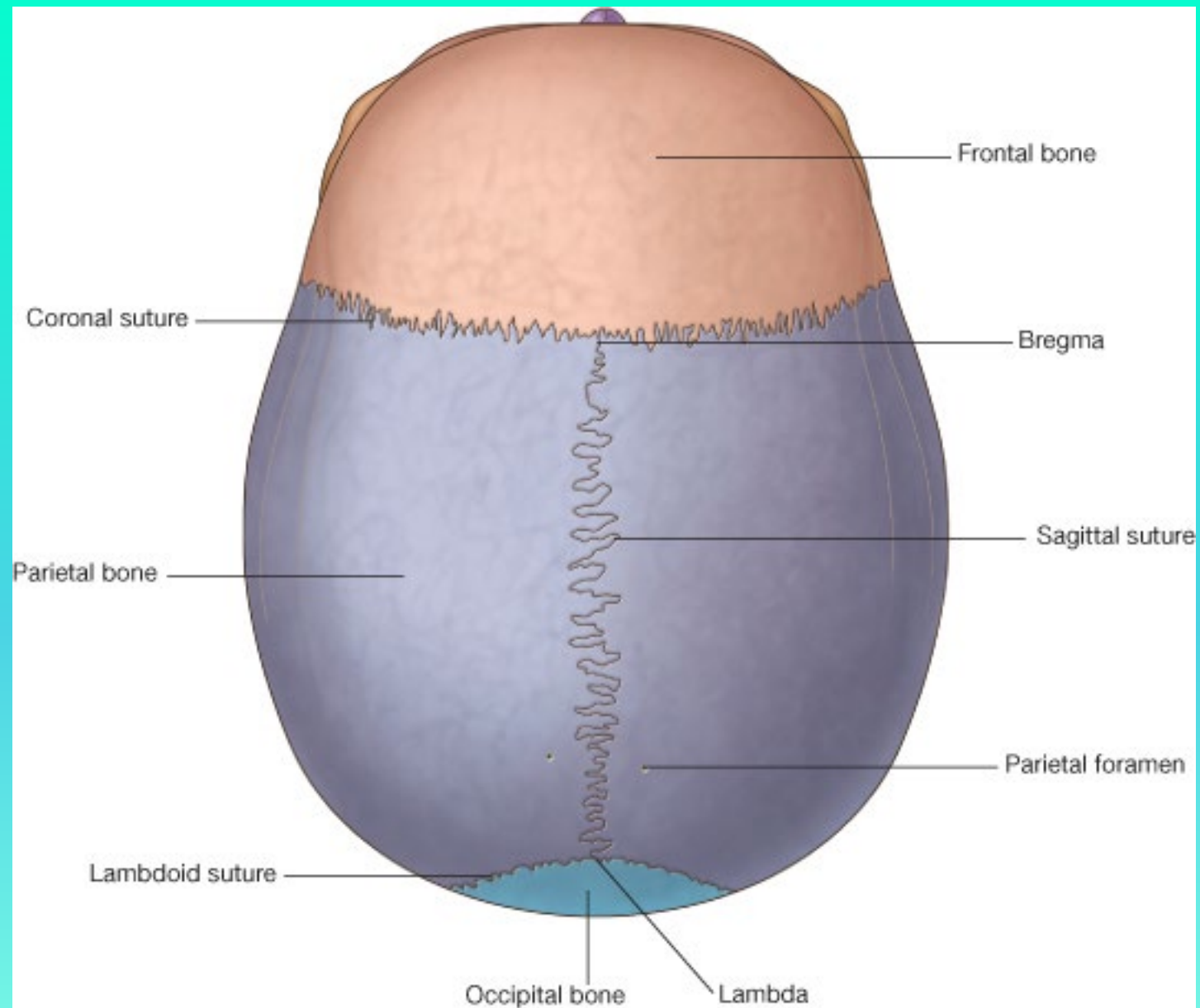
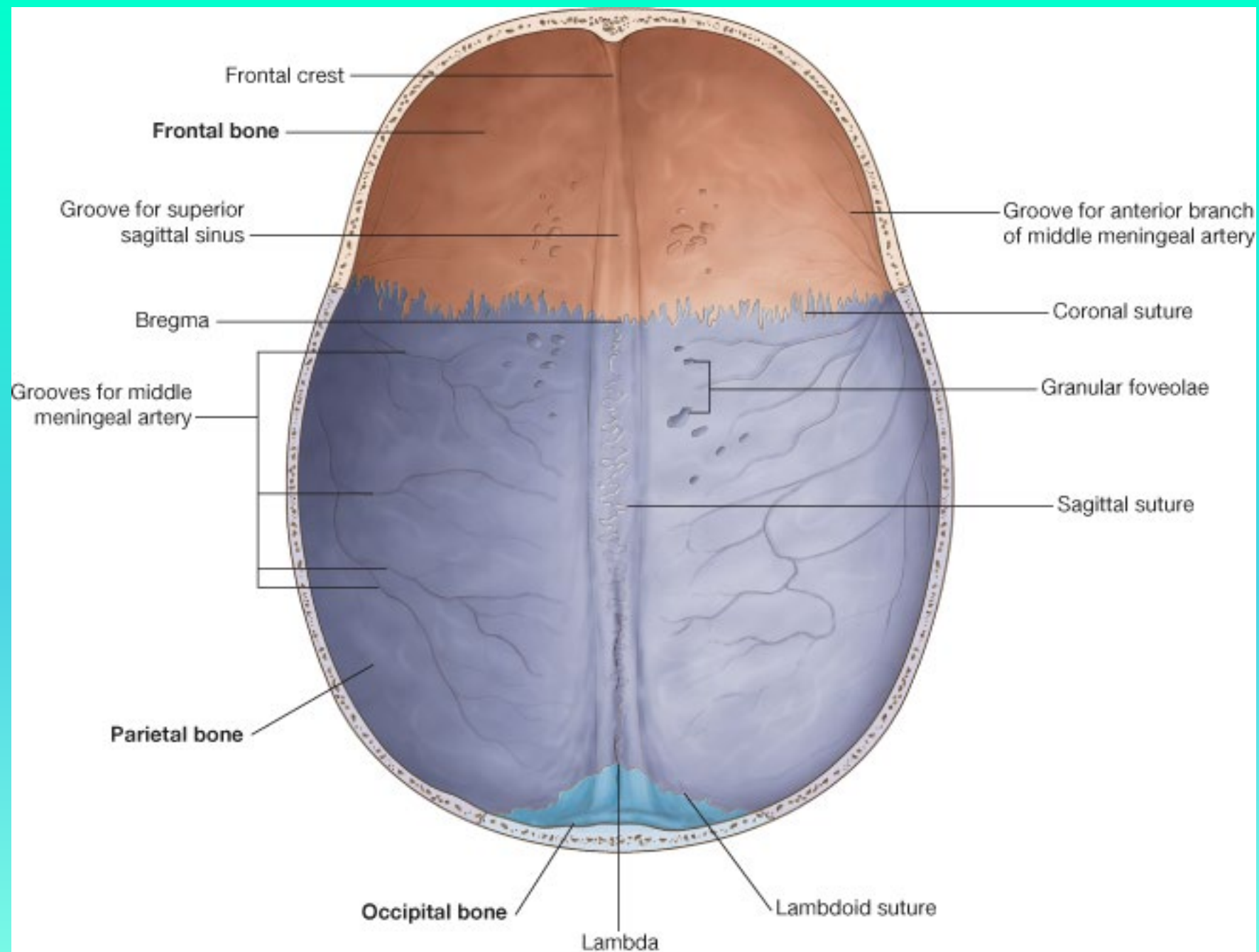


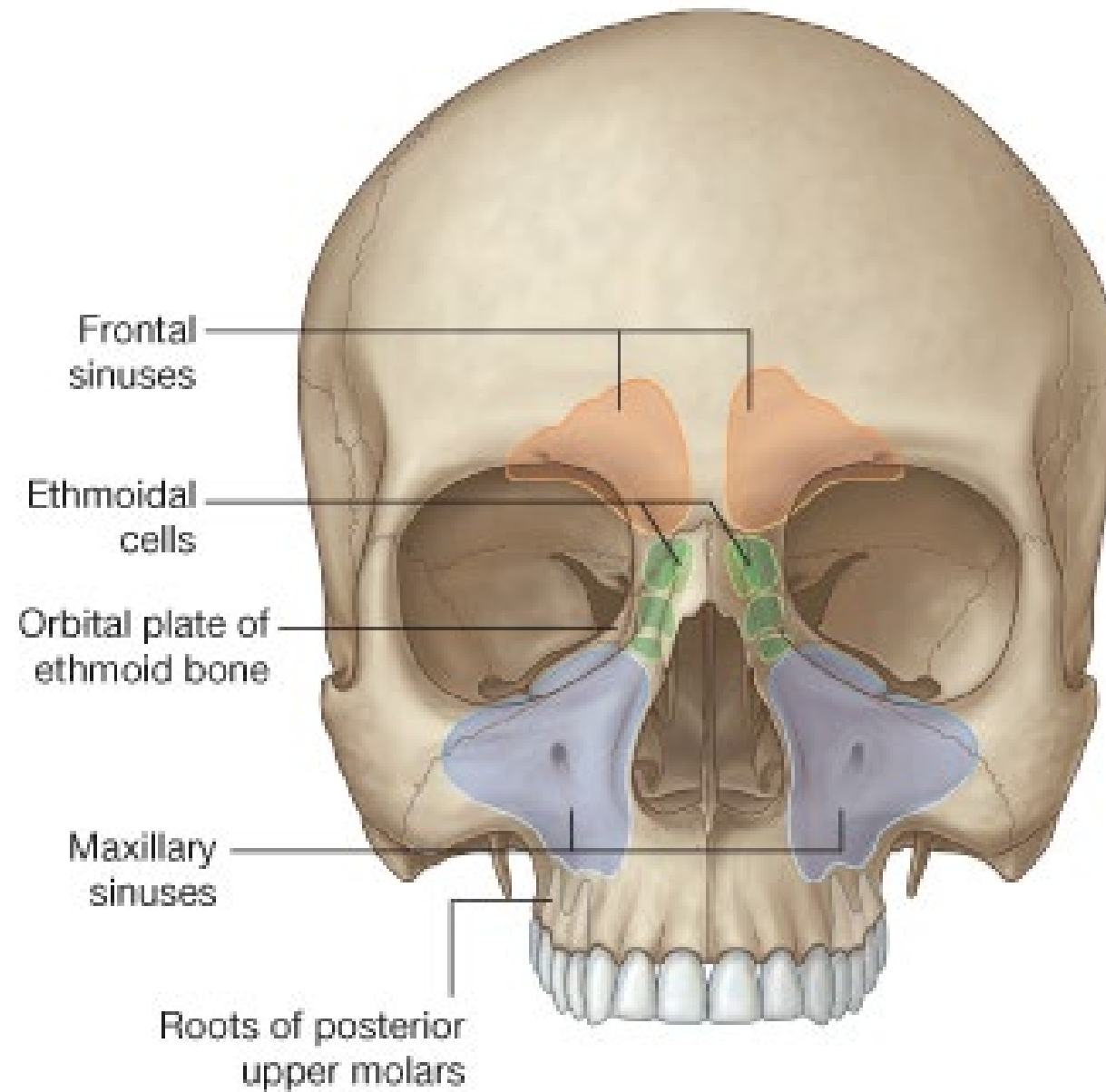
Fig. 37. Frontal bone, viewed from below. Probes are in the ethmoid foramina.

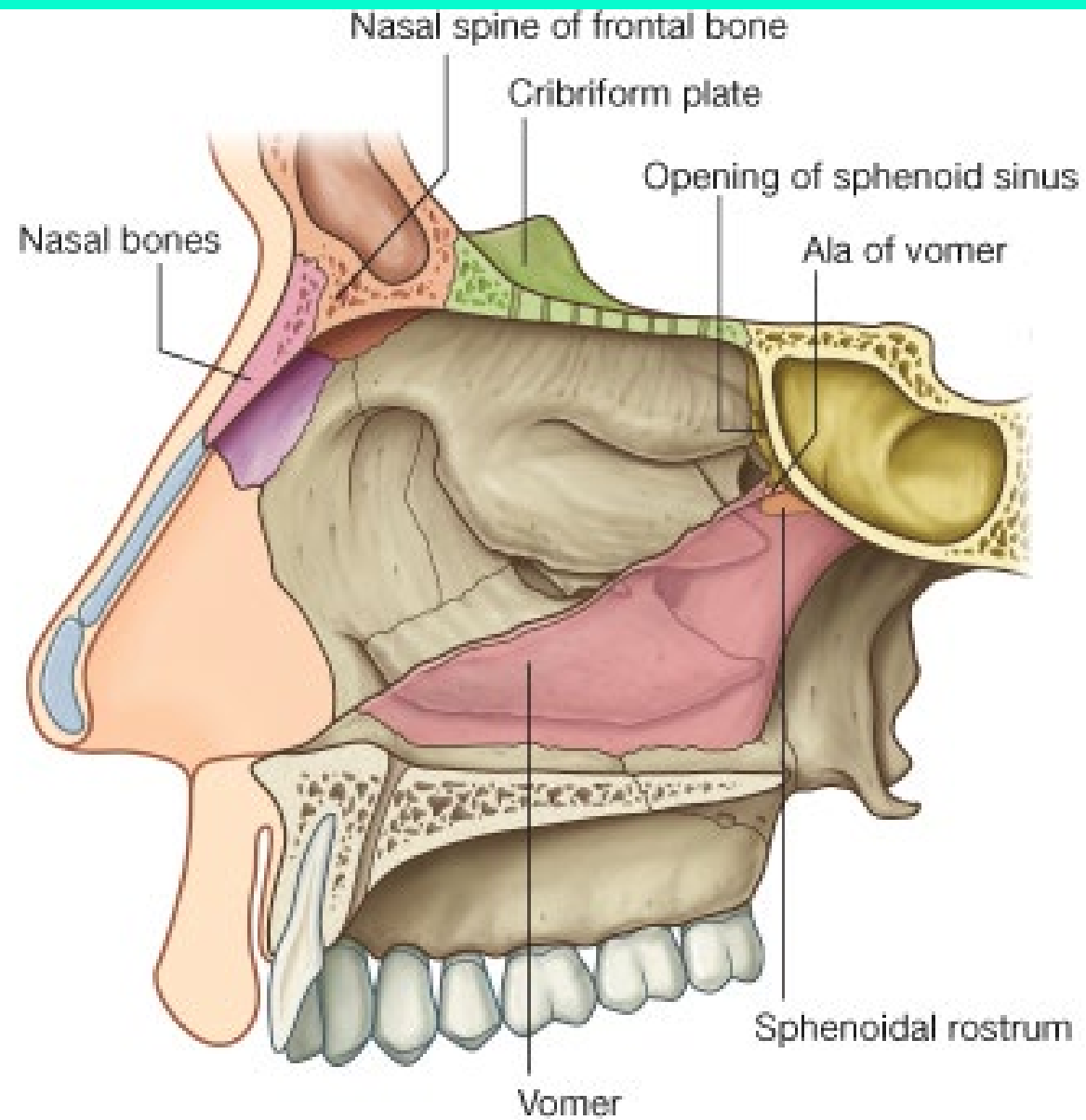


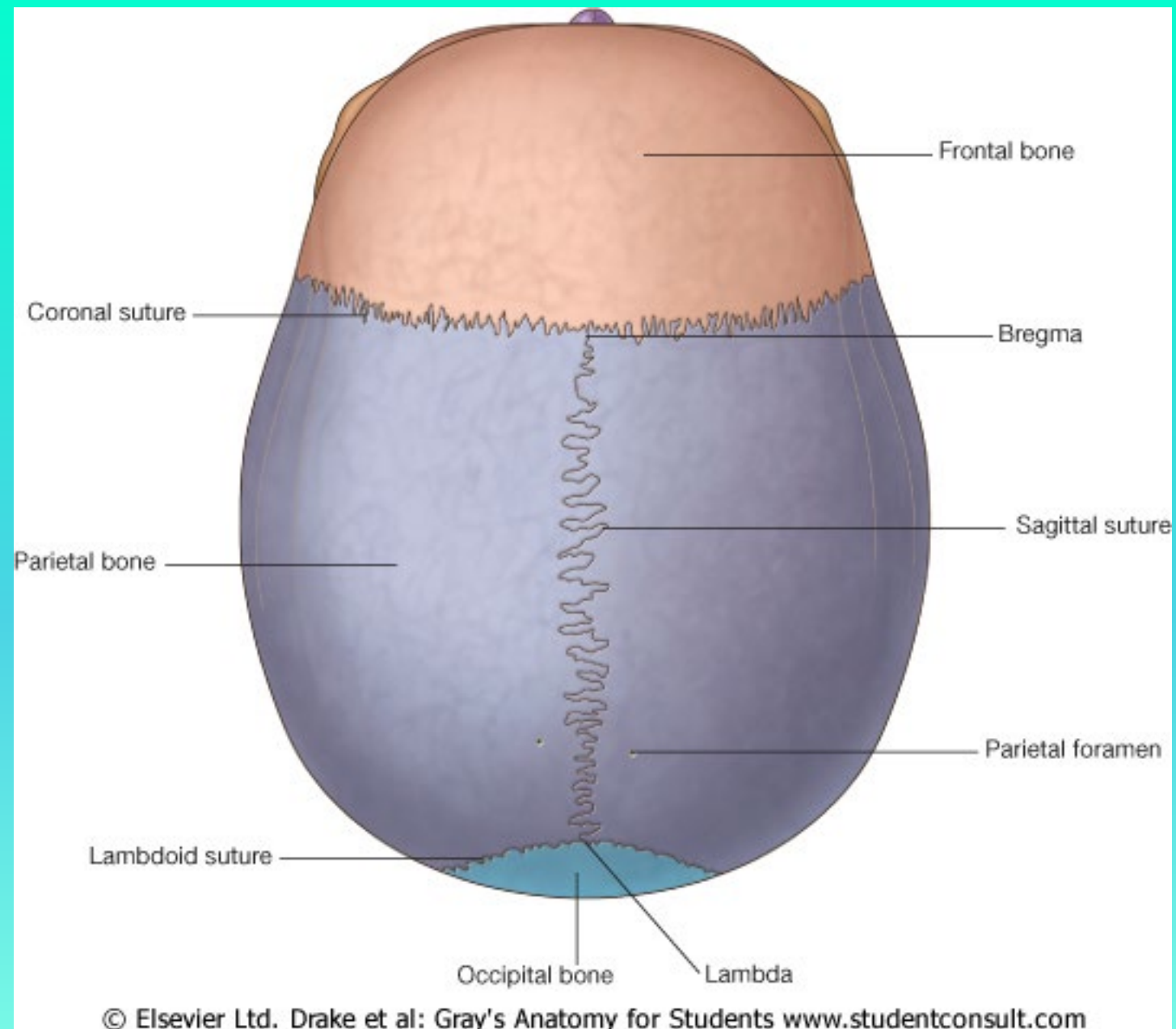


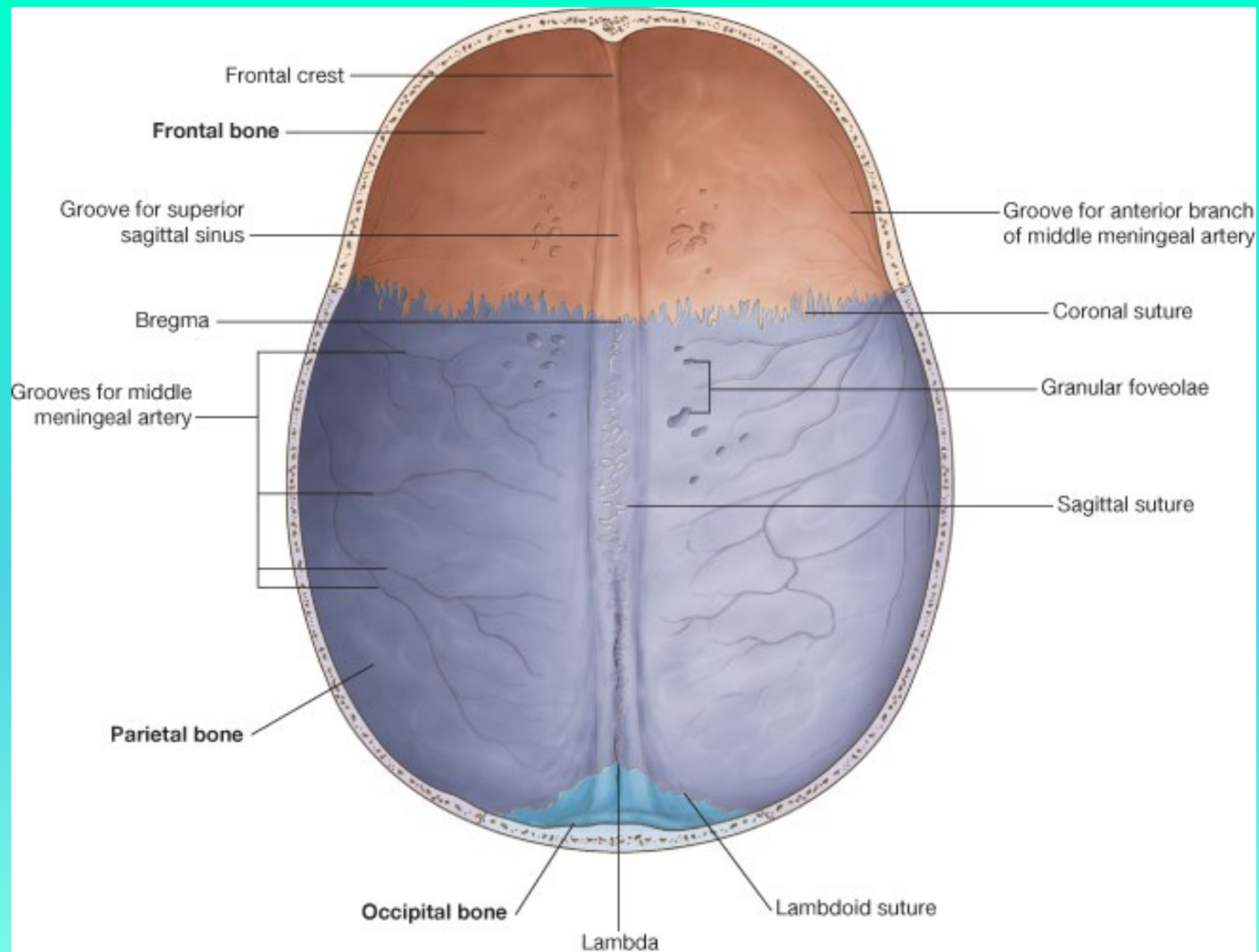


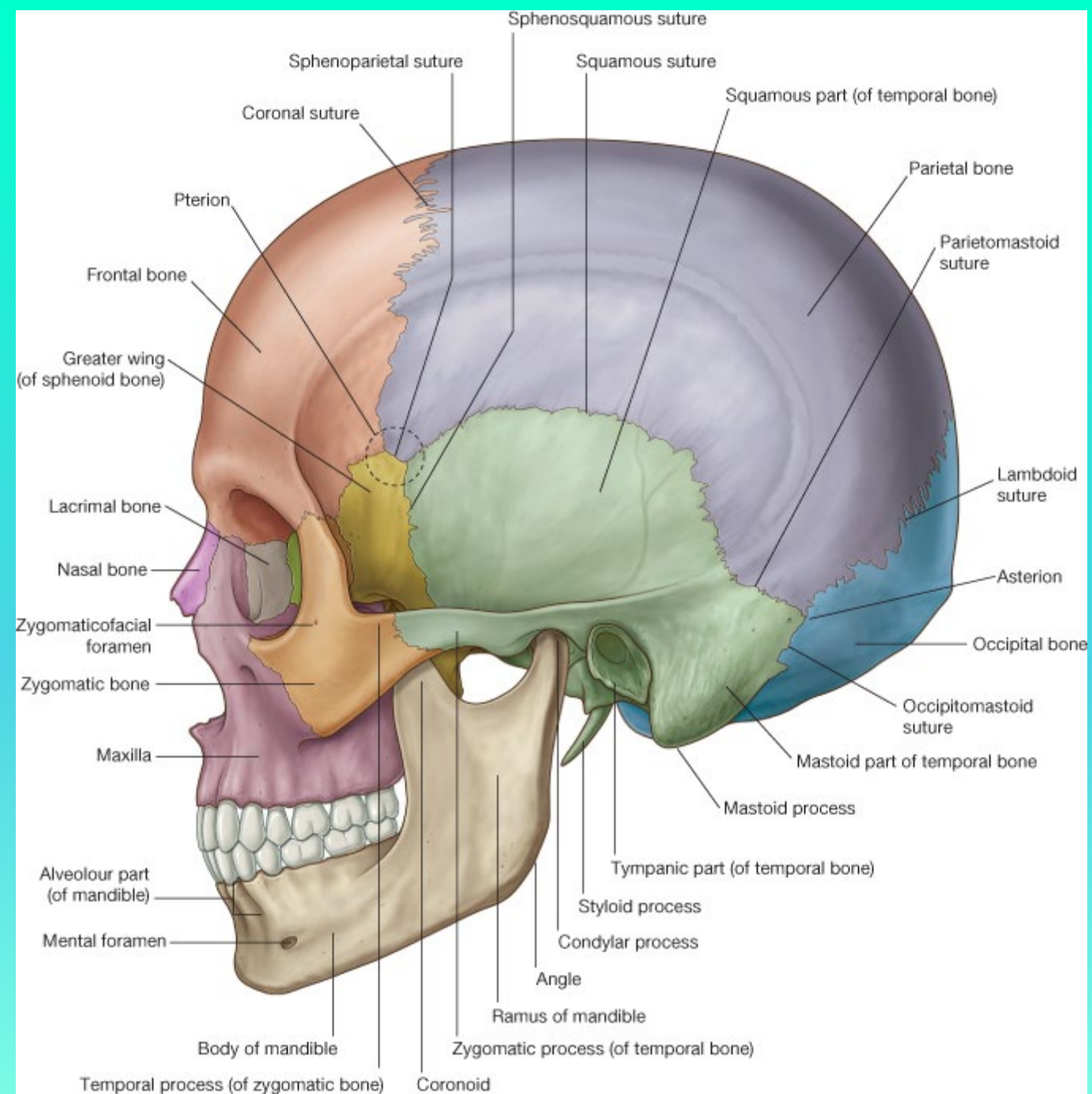
A

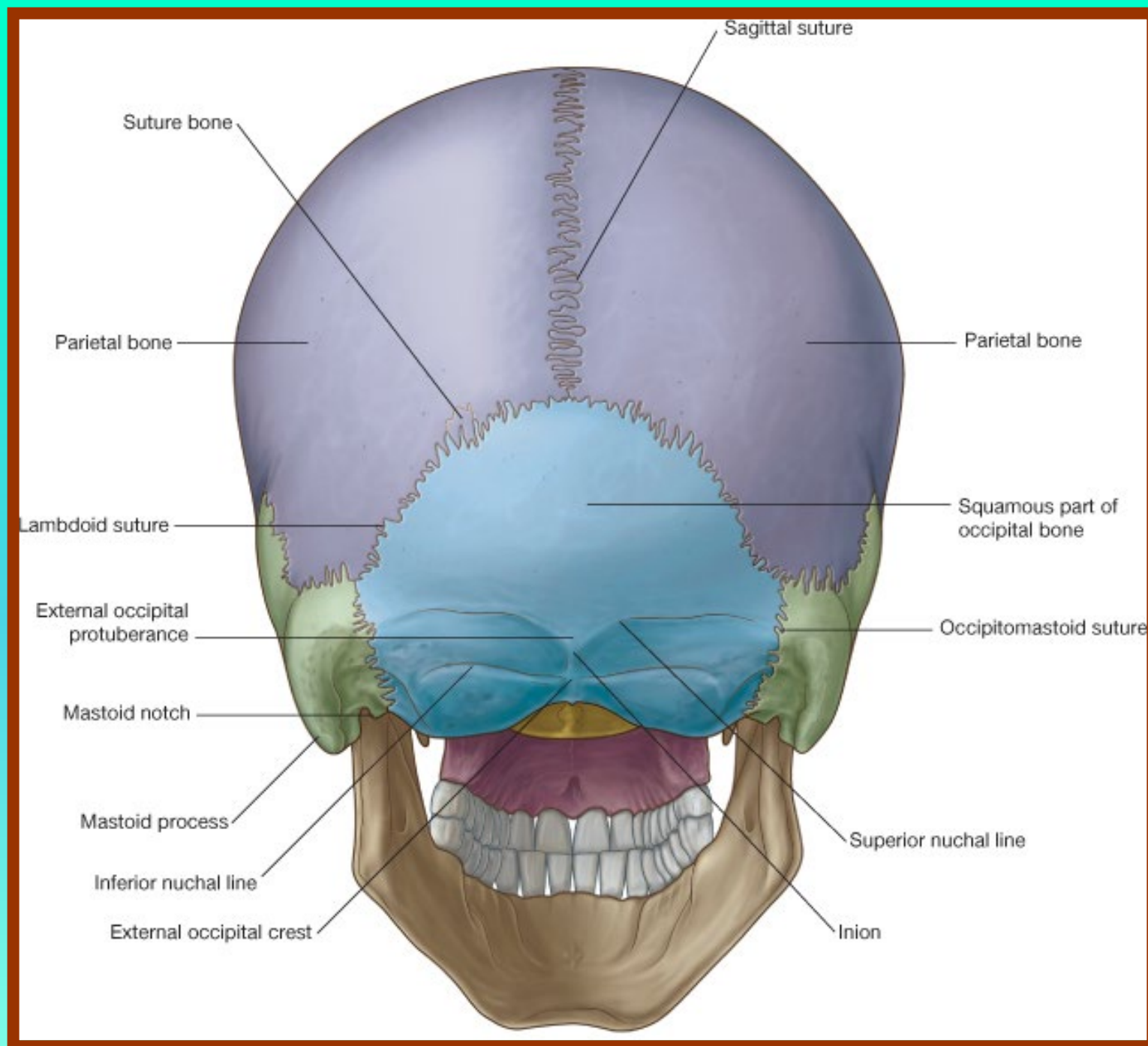


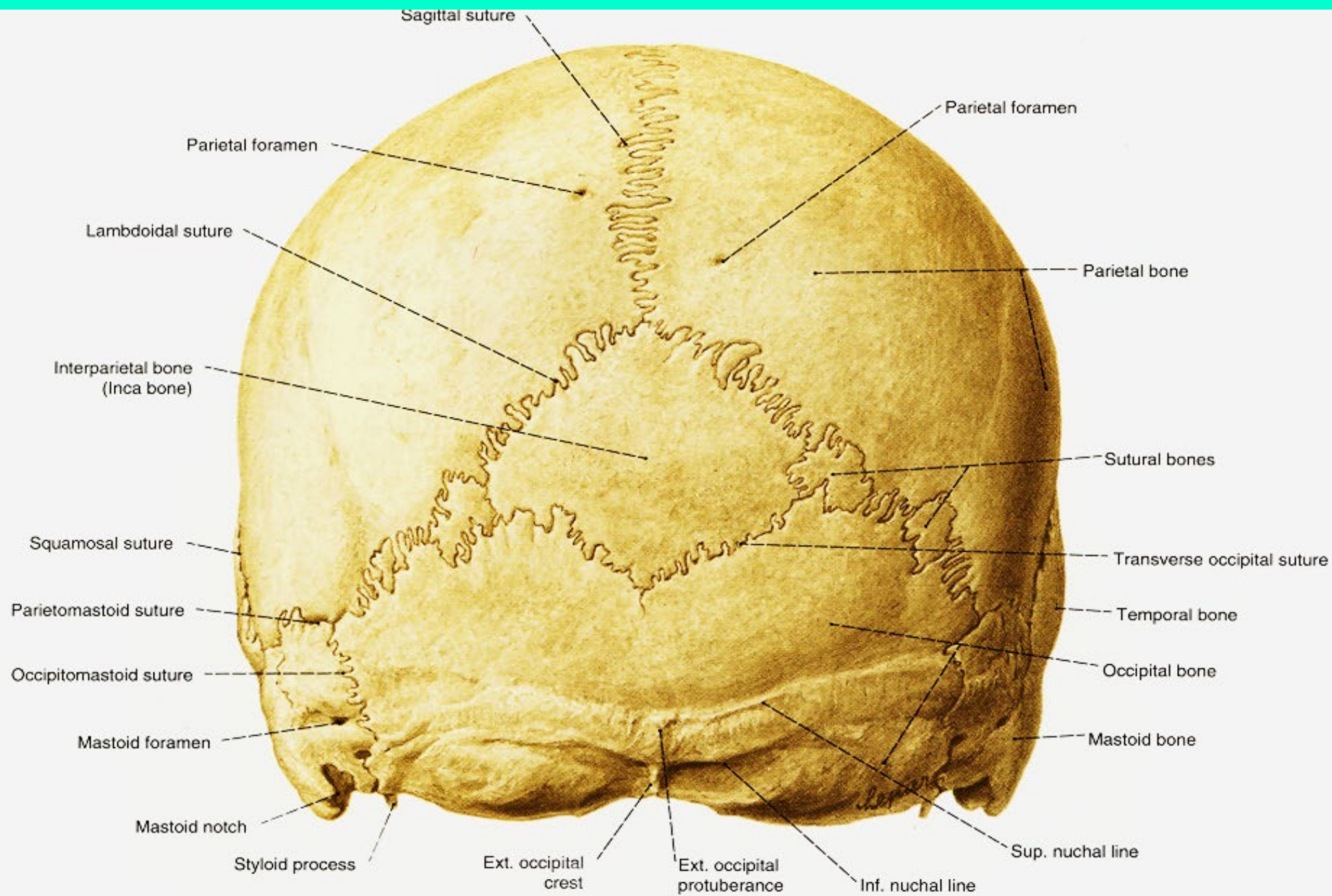












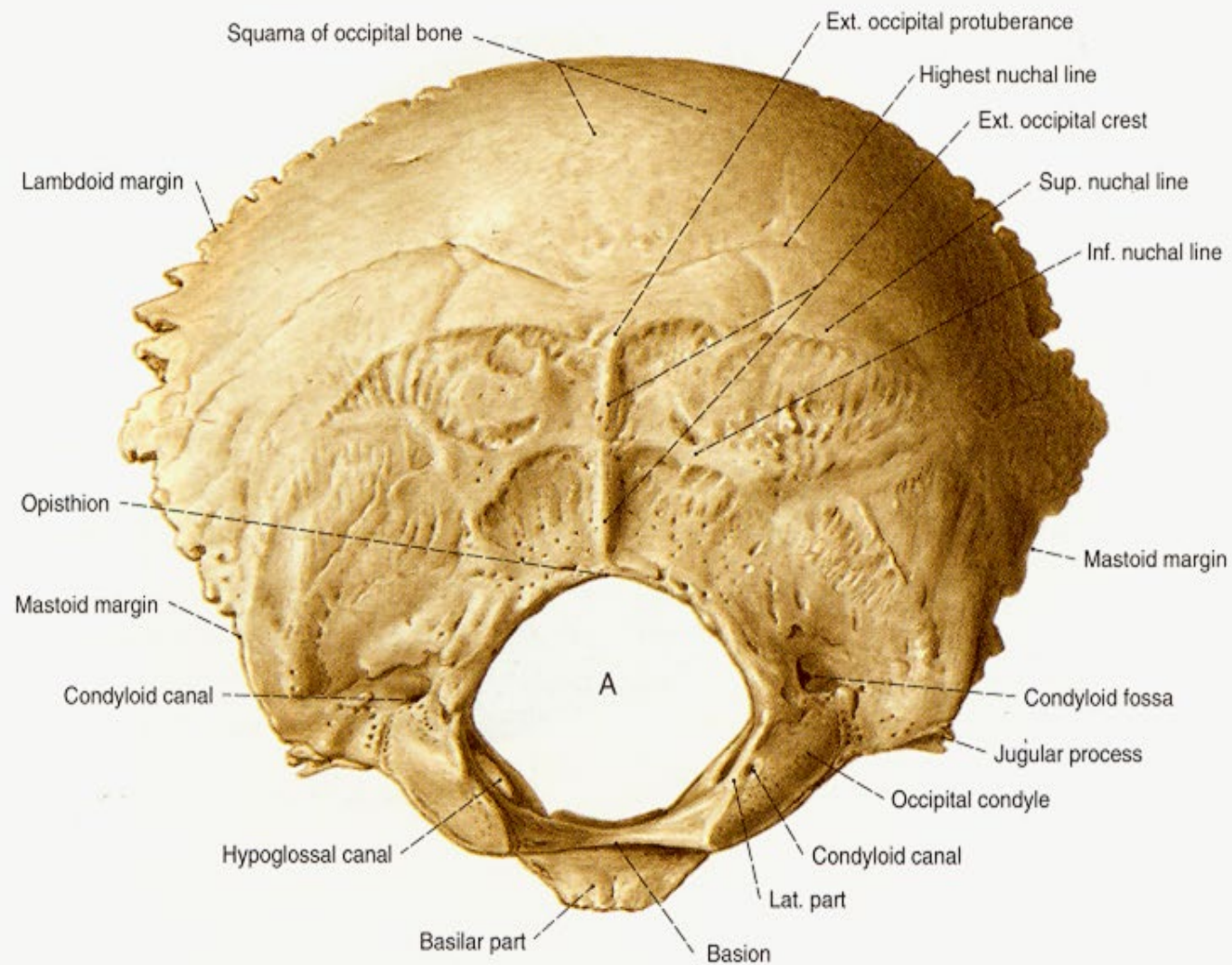


Fig. 23. Occipital bone. Outer, posterior surface.

A = Foramen magnum

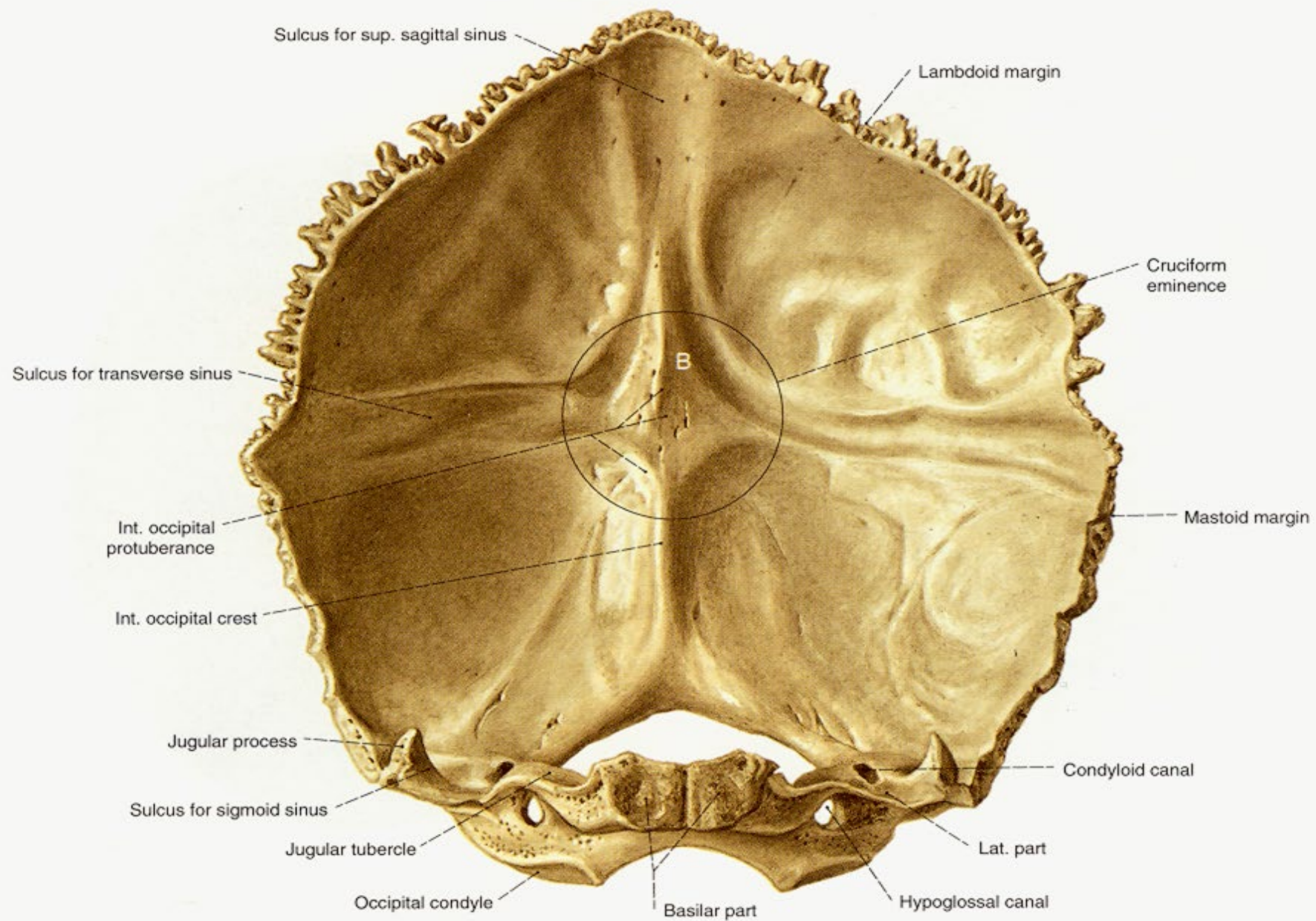
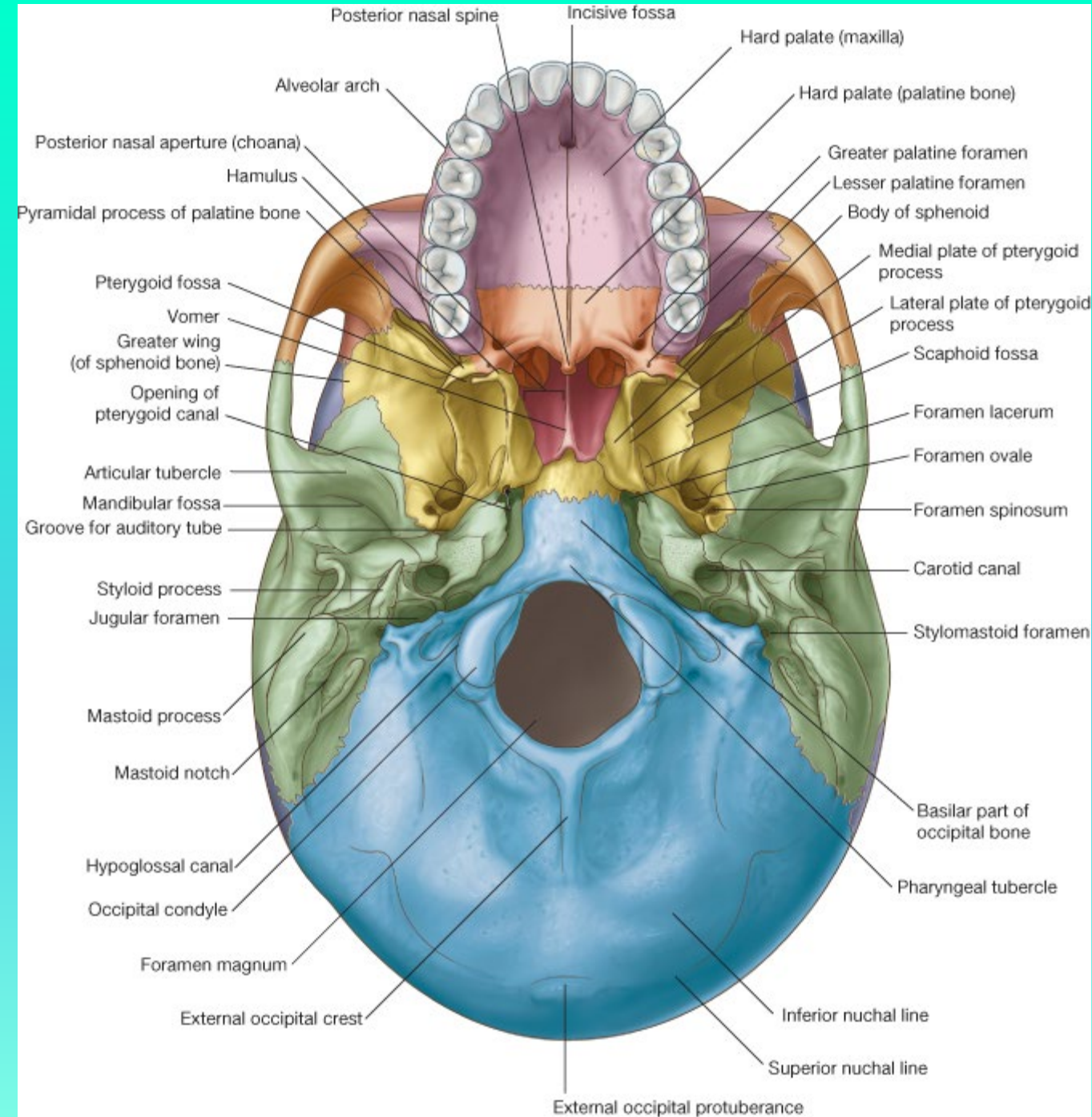
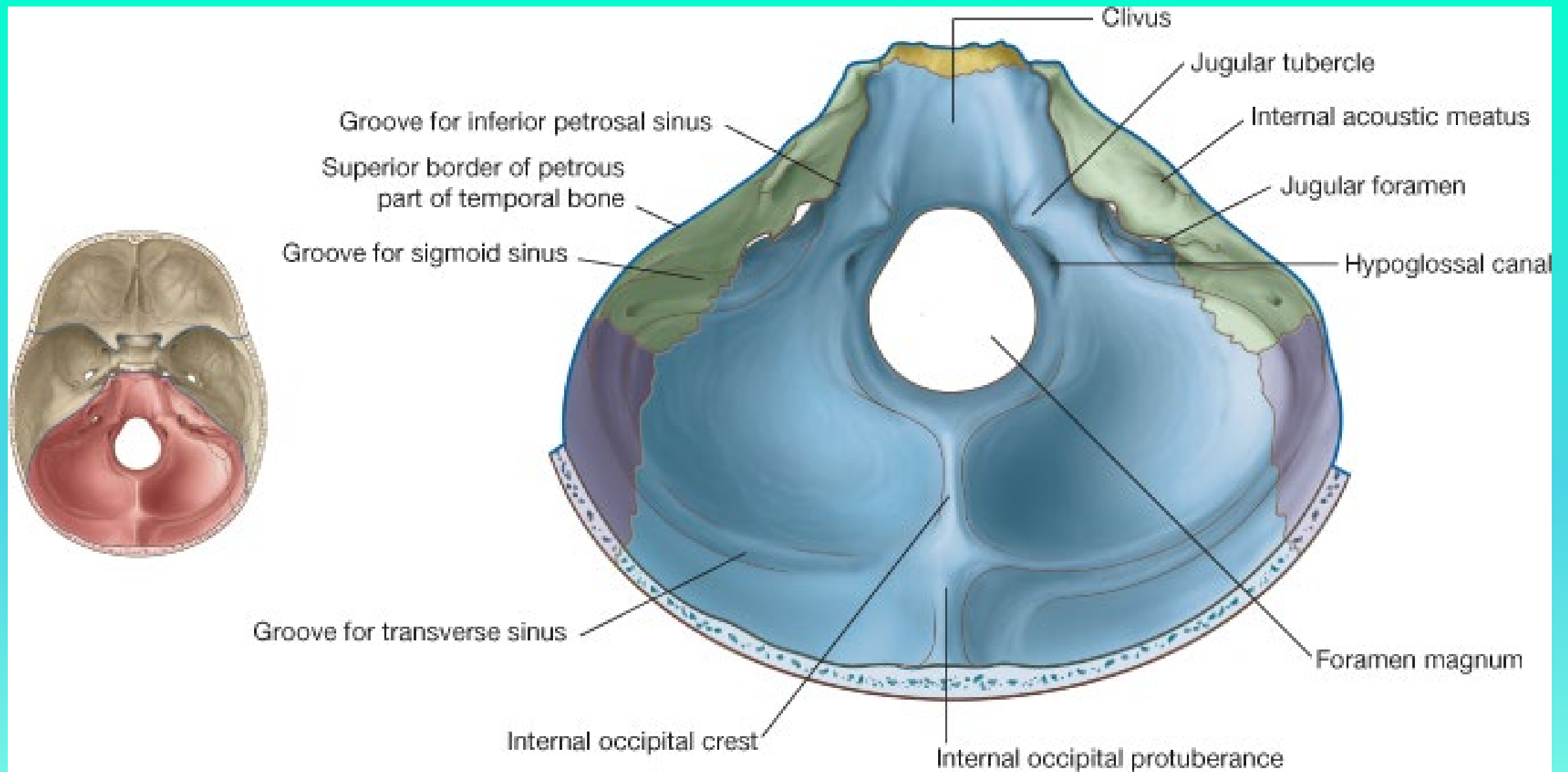
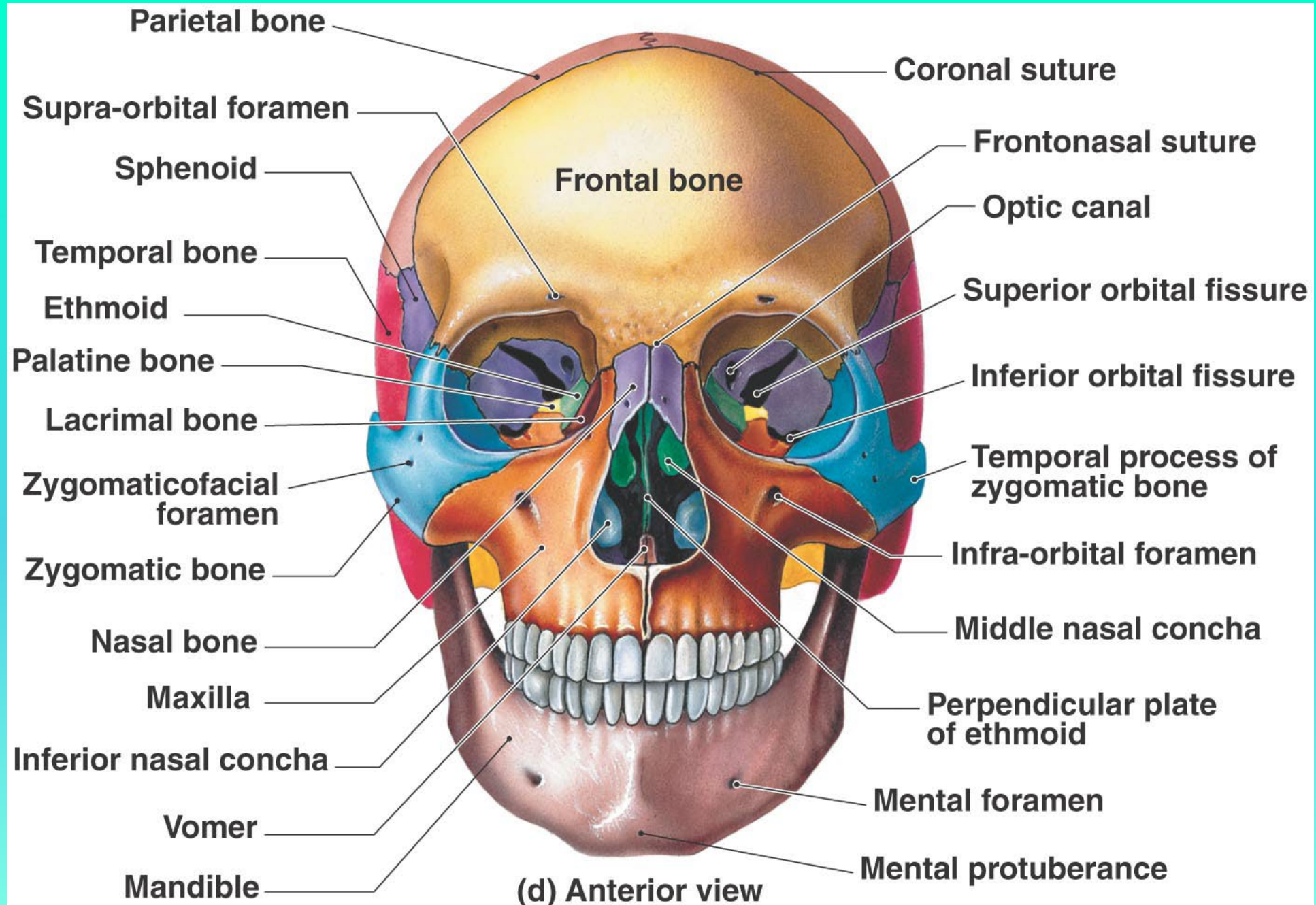


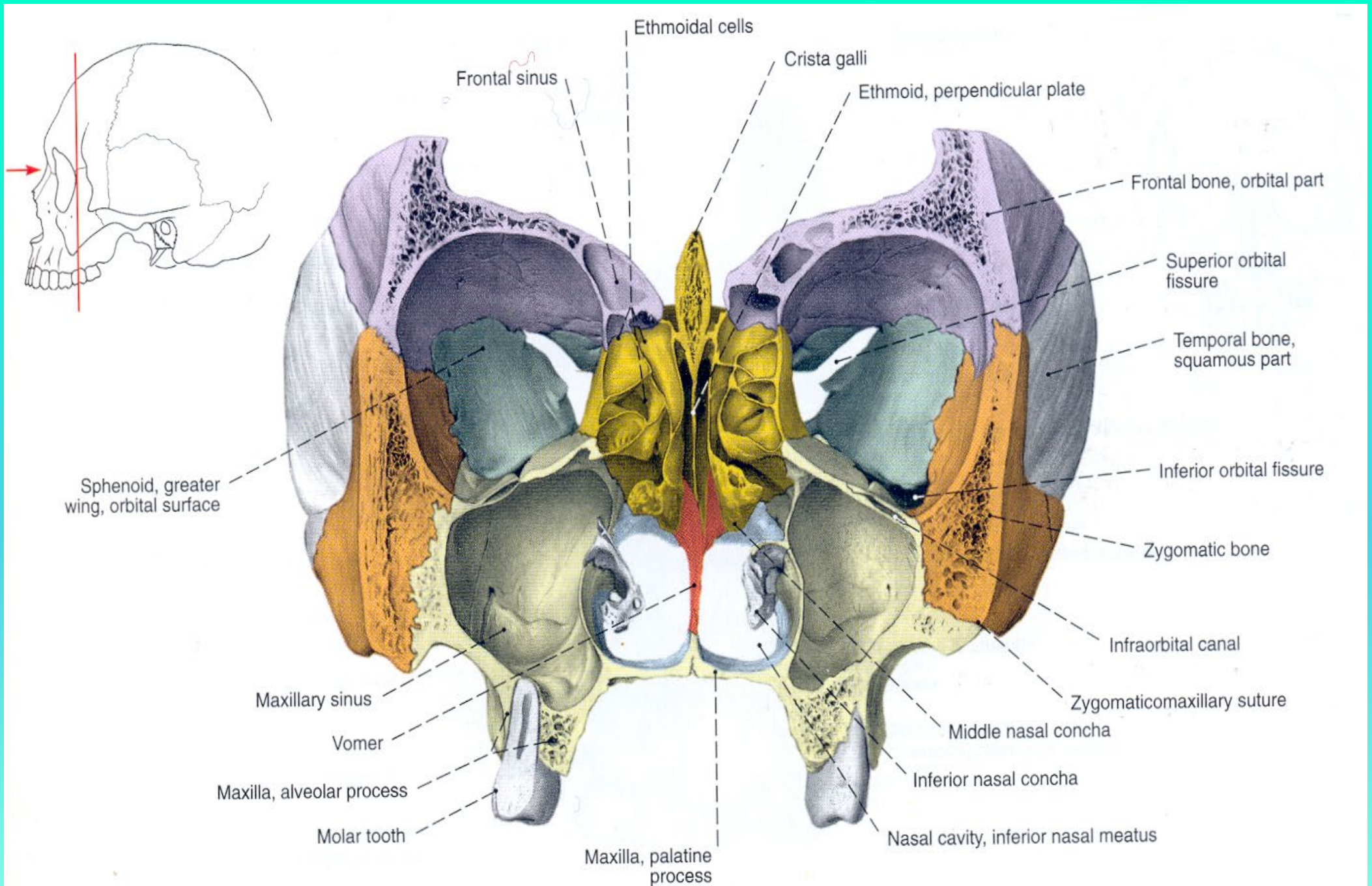
Fig. 24. Occipital bone. Inner, anterior surface.

B = Squama of occipital bone

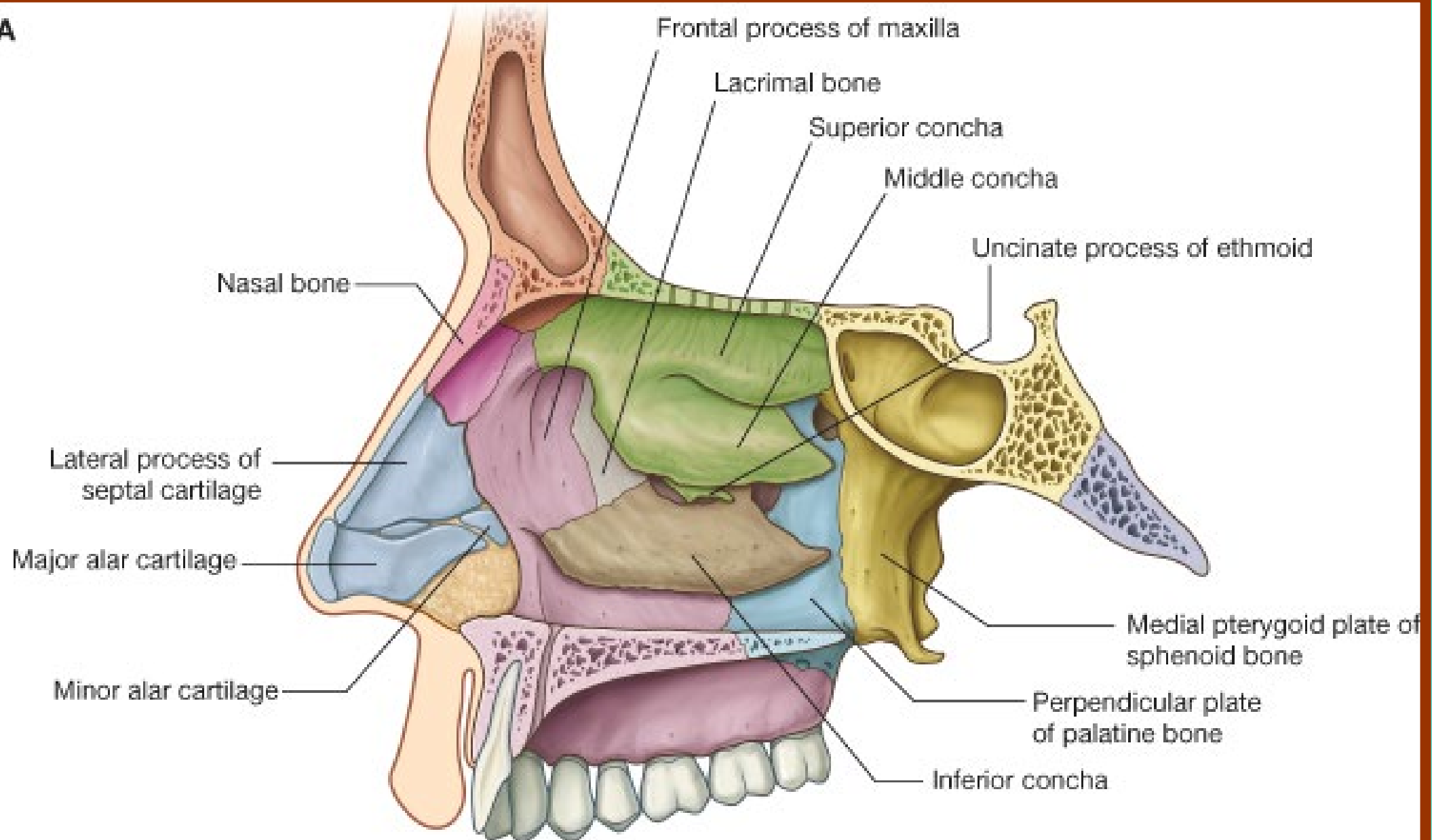








A



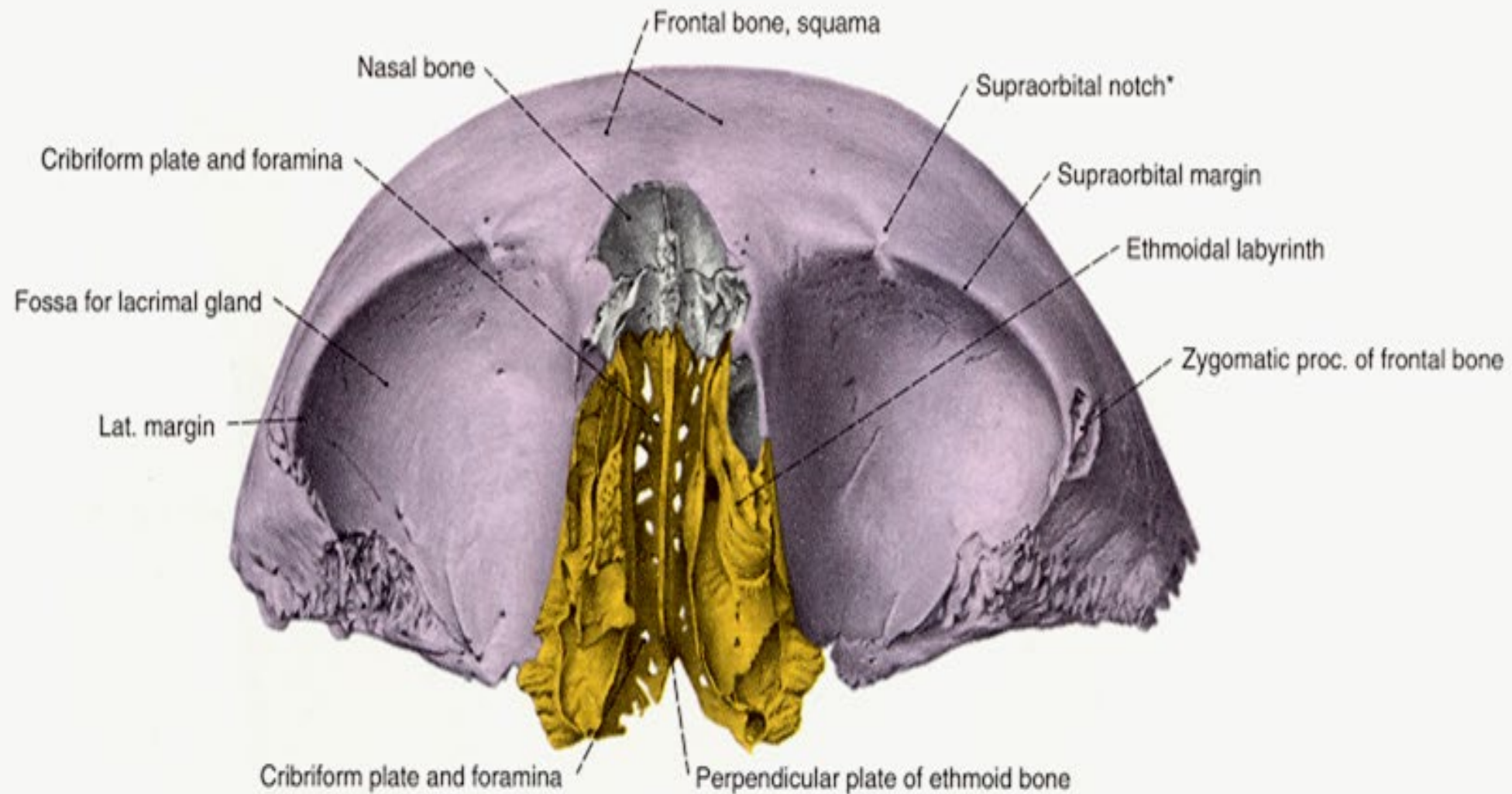
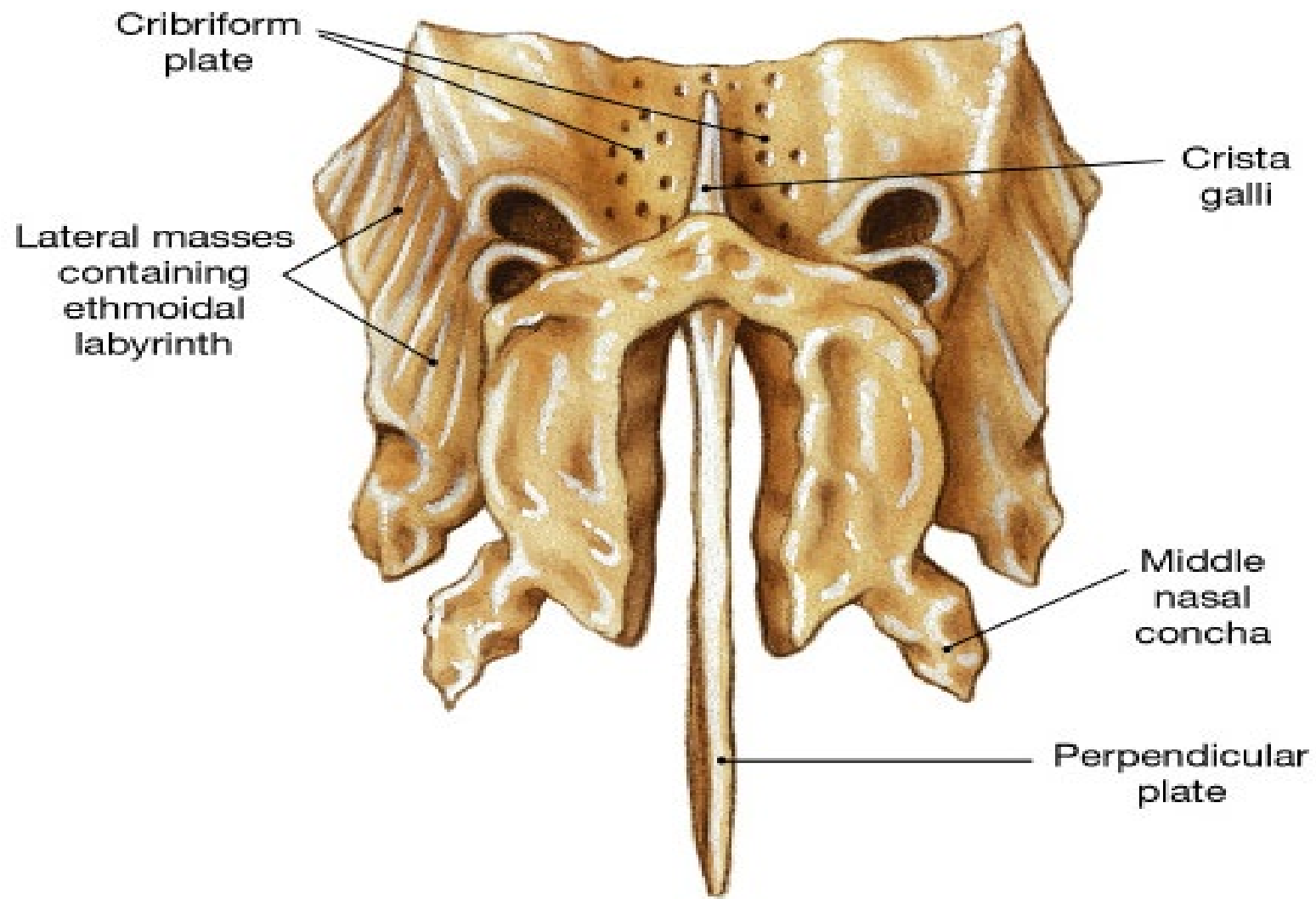
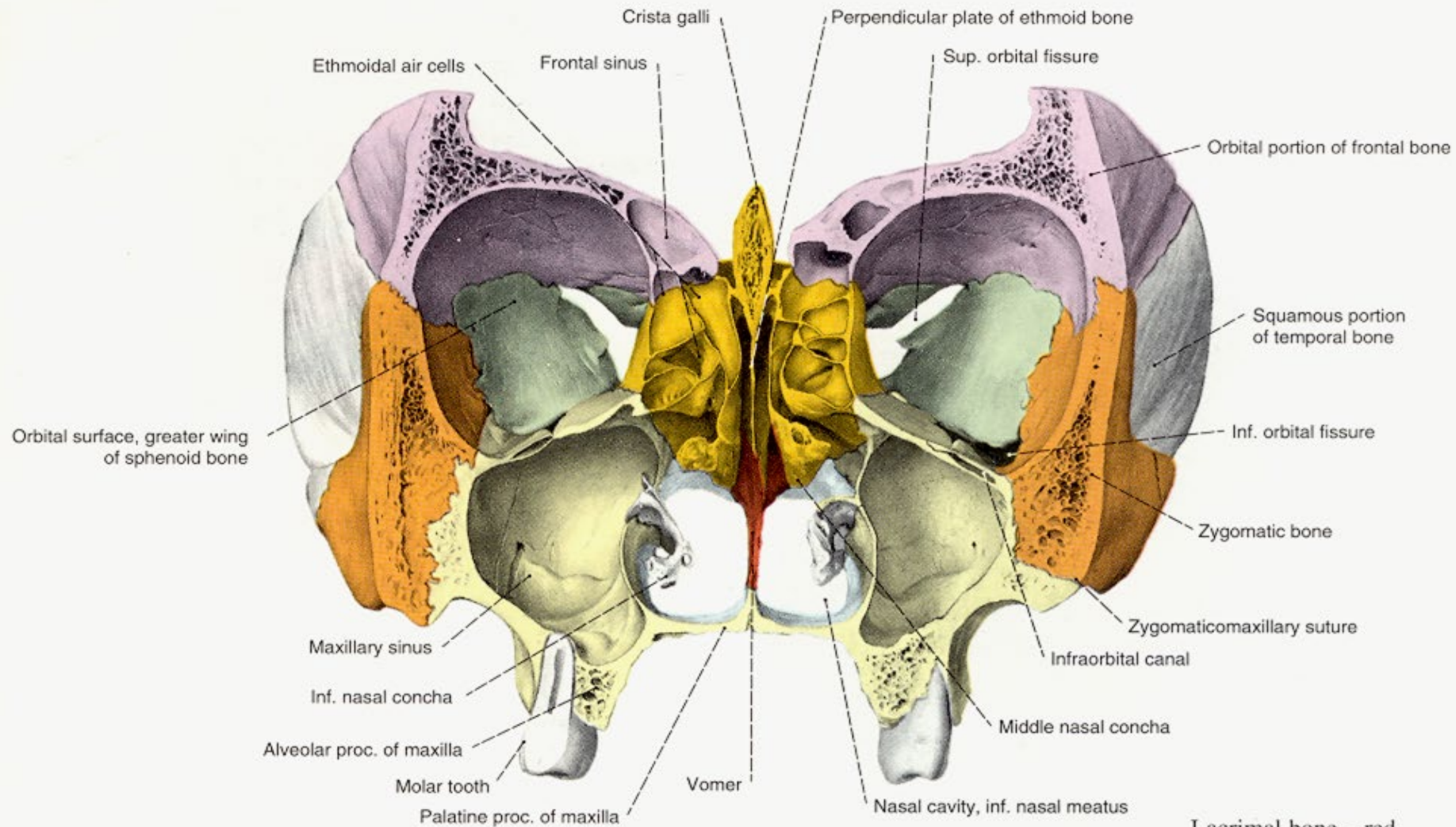


Fig. 62. Frontal bone, ethmoid bone, and nasal bones. Viewed from below (cf. Figs. 40–42).

* May exist as a supraorbital foramen

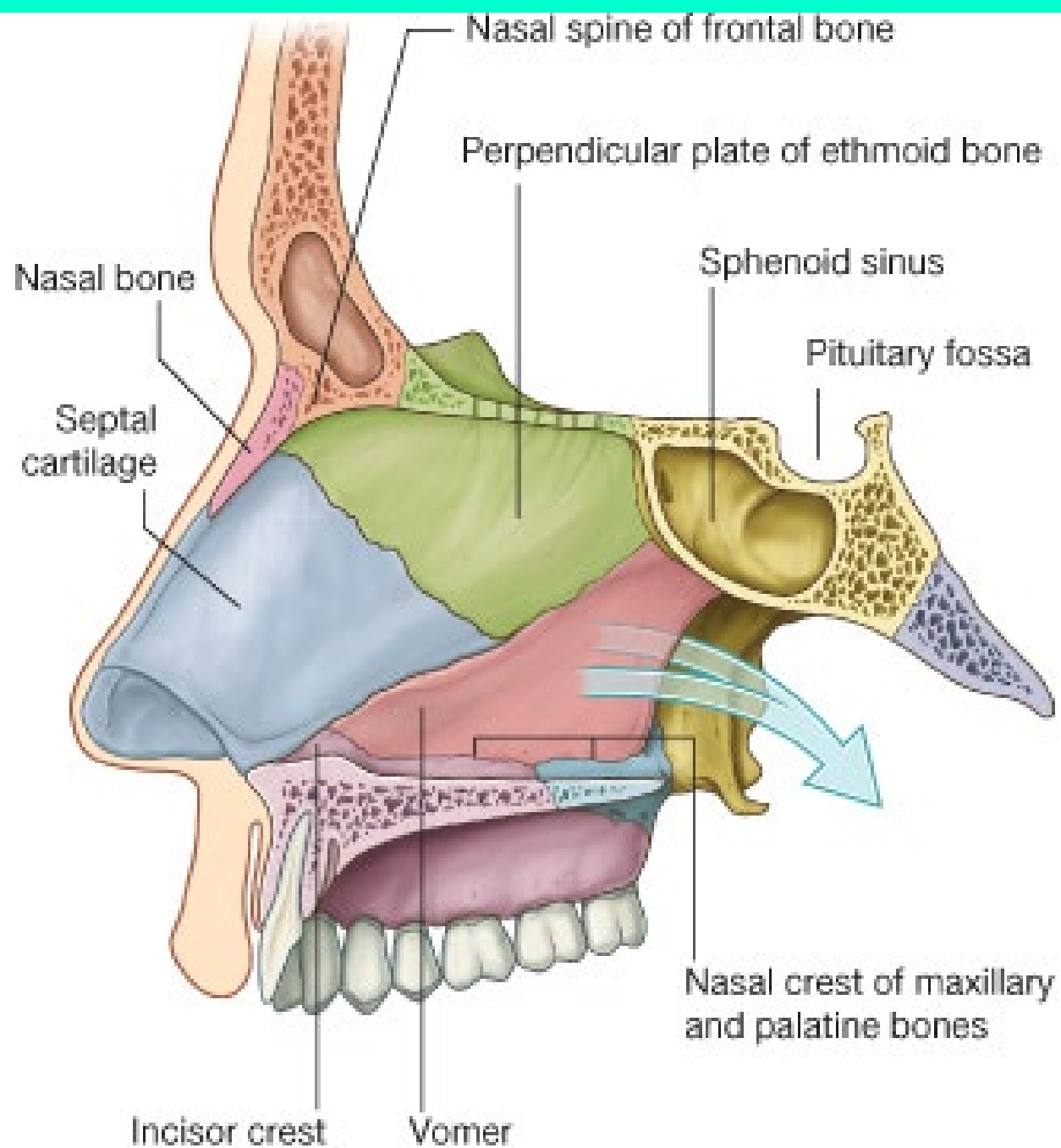


(b) Anterior view

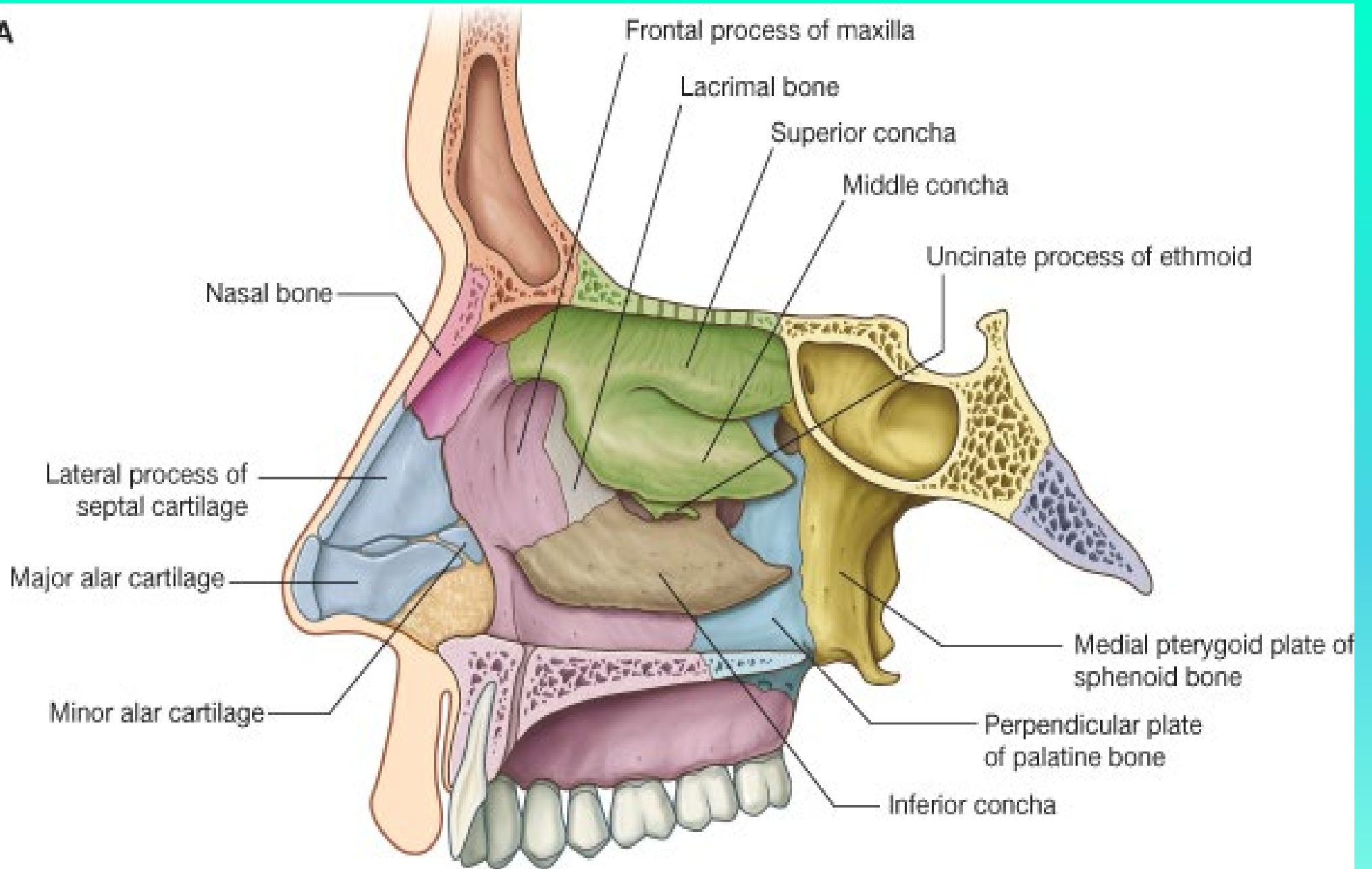


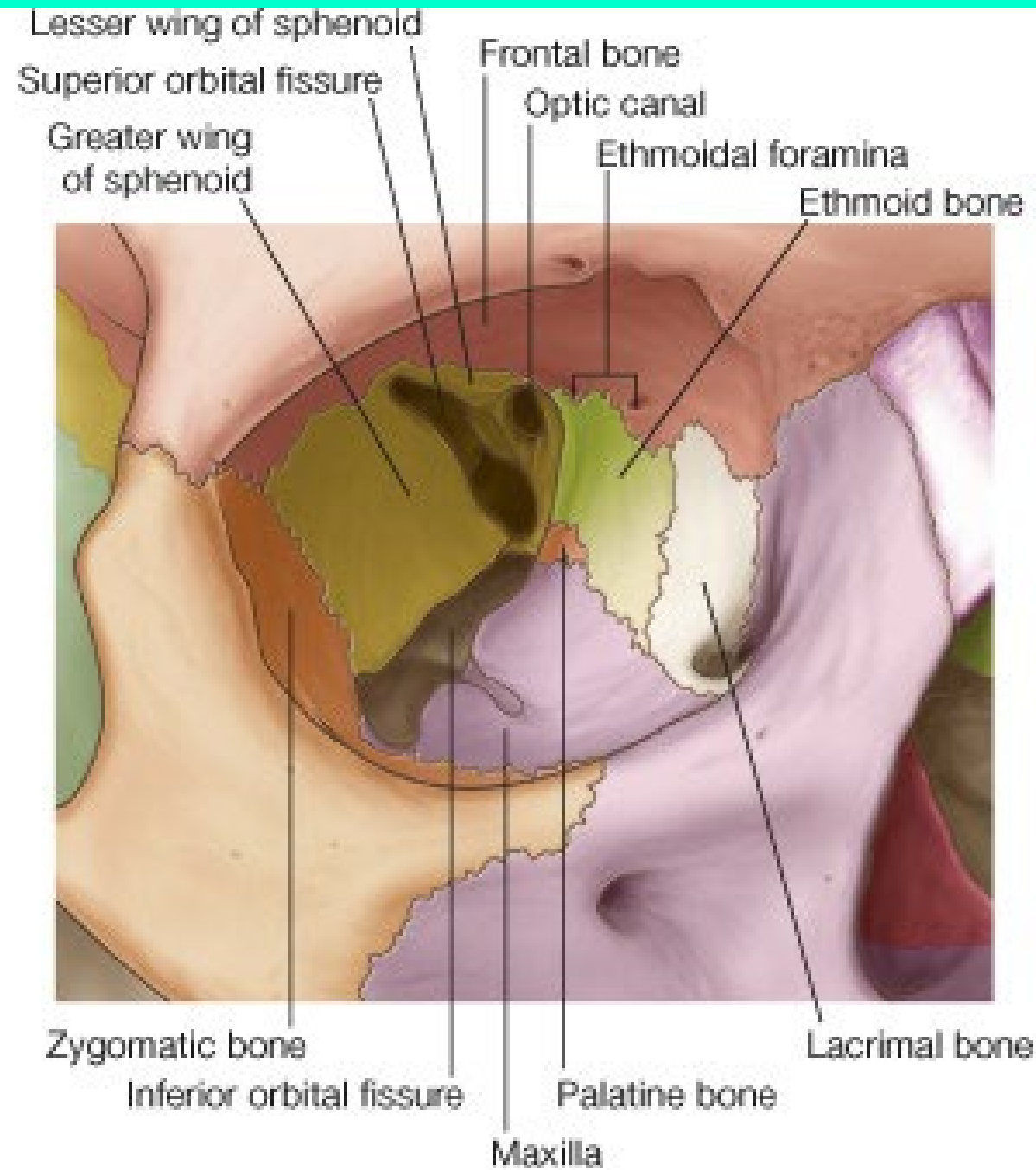
Lacrimal bone – red
 Nasal bone – gray
 Frontal bone – lavender
 Palatine bone – light blue
 Ethmoid bone – yellow
 Vomer – red
 Zygomatic bone – orange
 Maxilla – light yellow
 Inferior nasal concha,
 temporal bone – gray
 Sphenoid bone – green

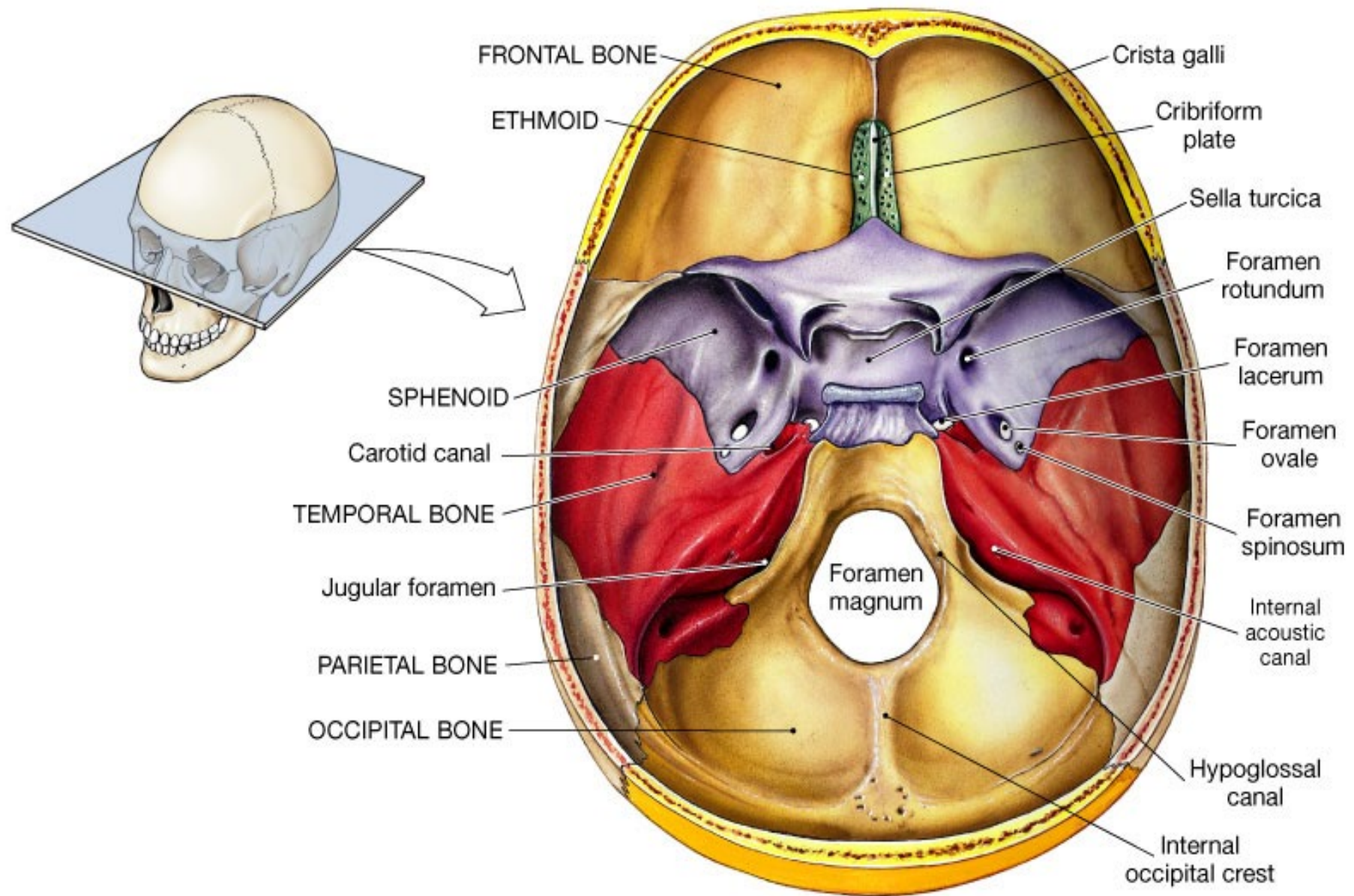
Fig. 68. Coronal section through the anterior part of the facial skeleton: Orbital cavities, nasal cavities, maxillary sinus, ethmoid air cells. The component bones are depicted by different colors.



A

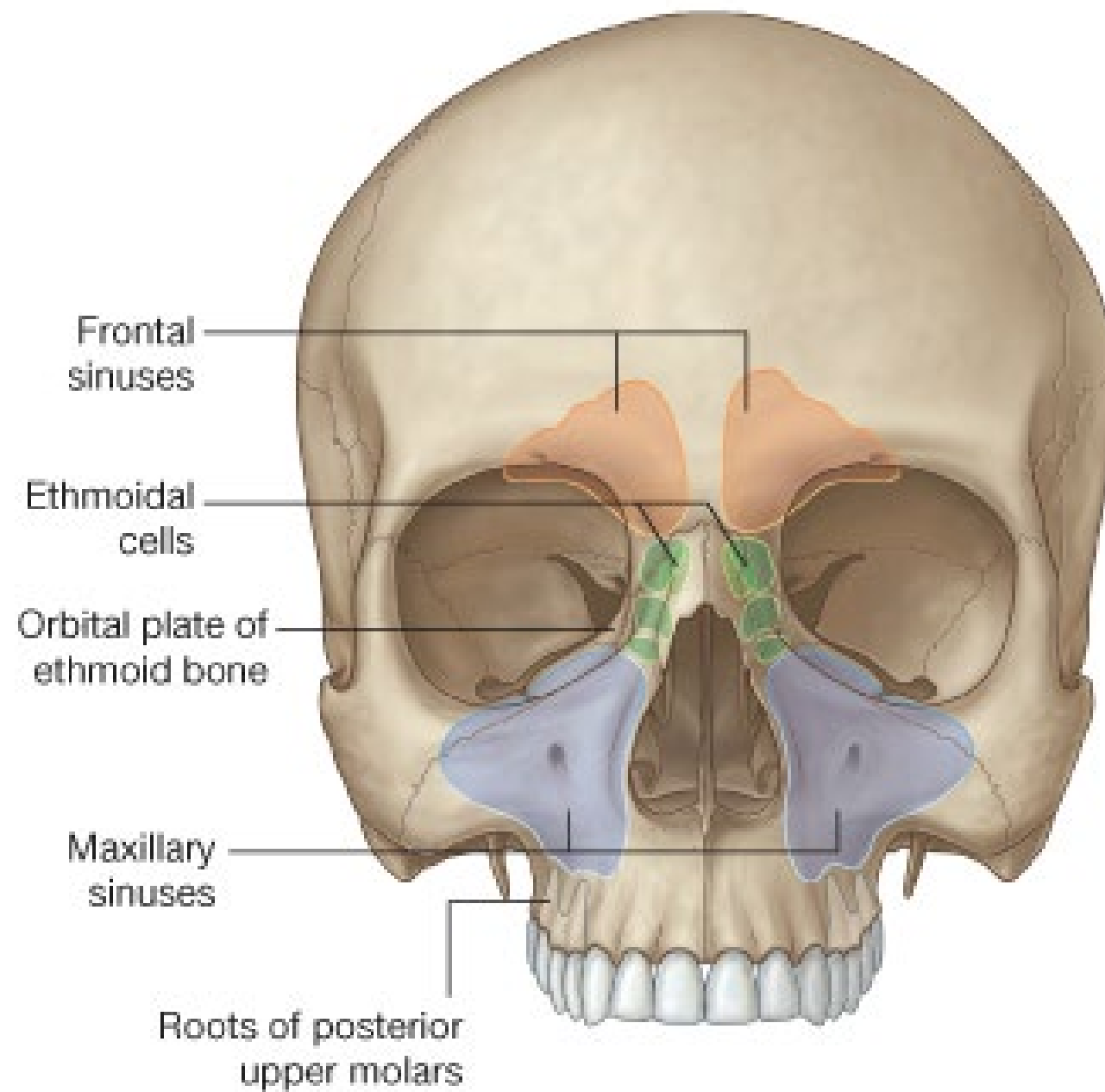




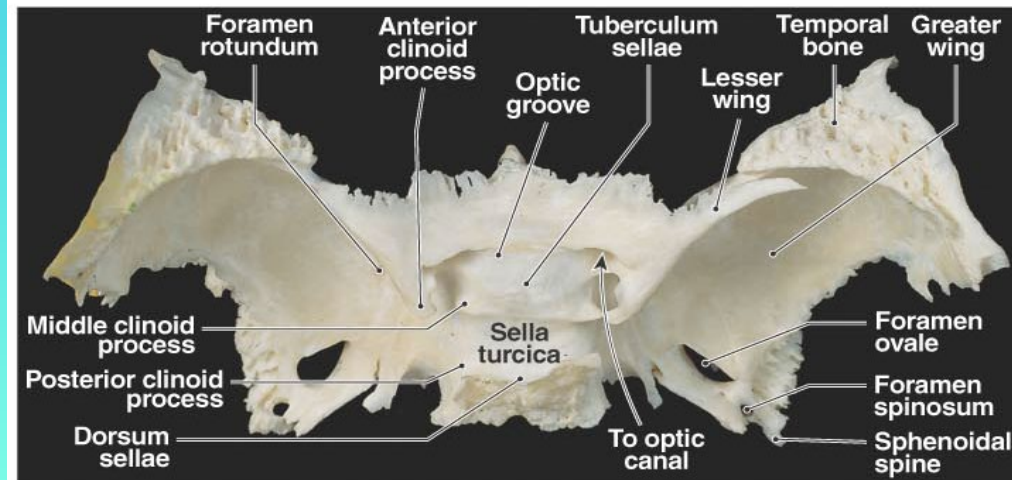
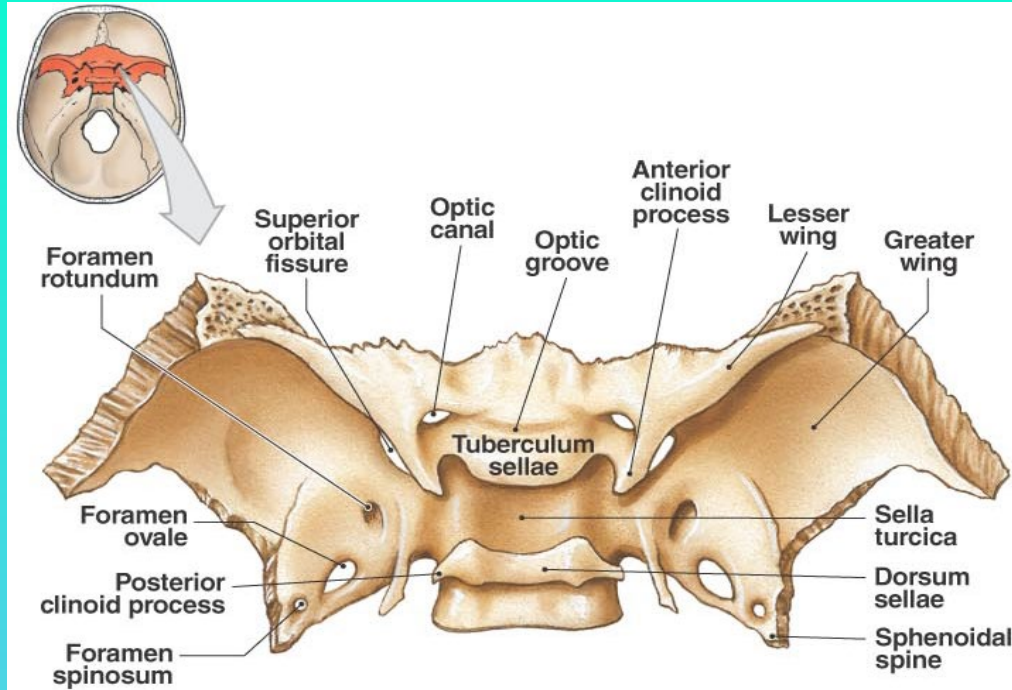


(b) Horizontal section

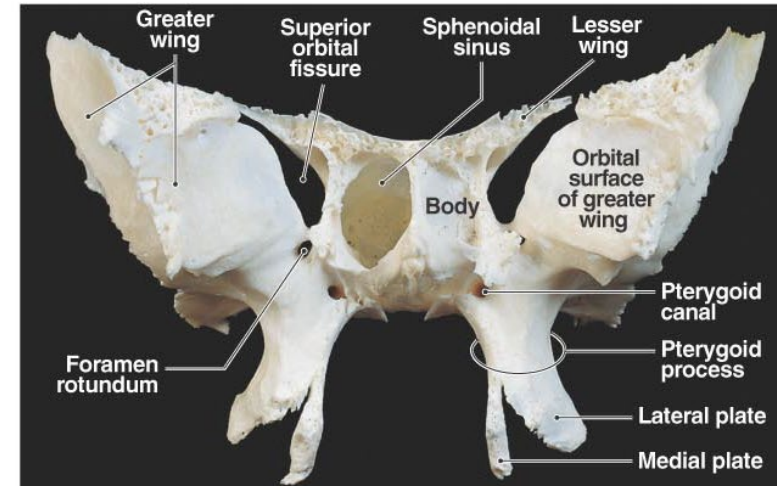
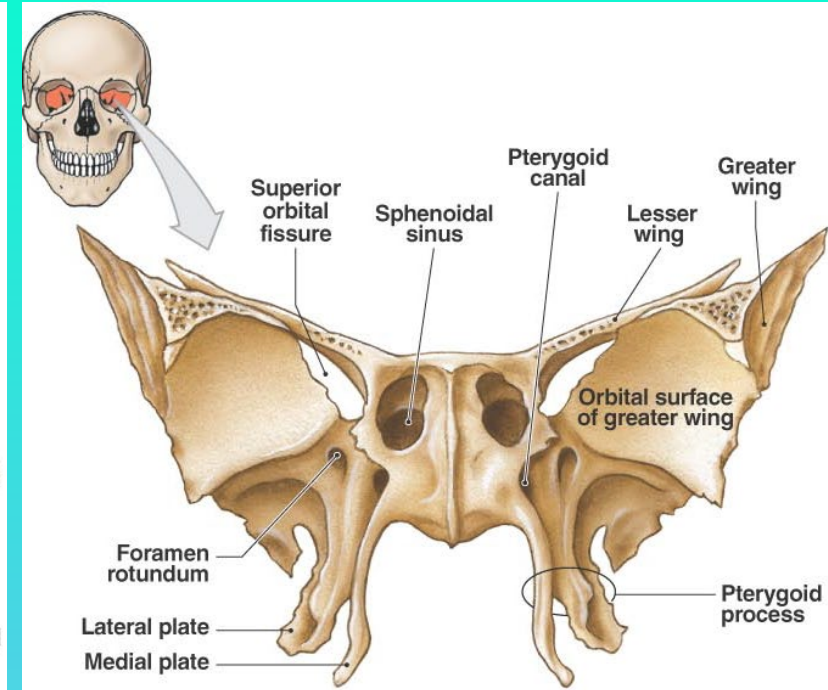
A



Sphenoid Bone

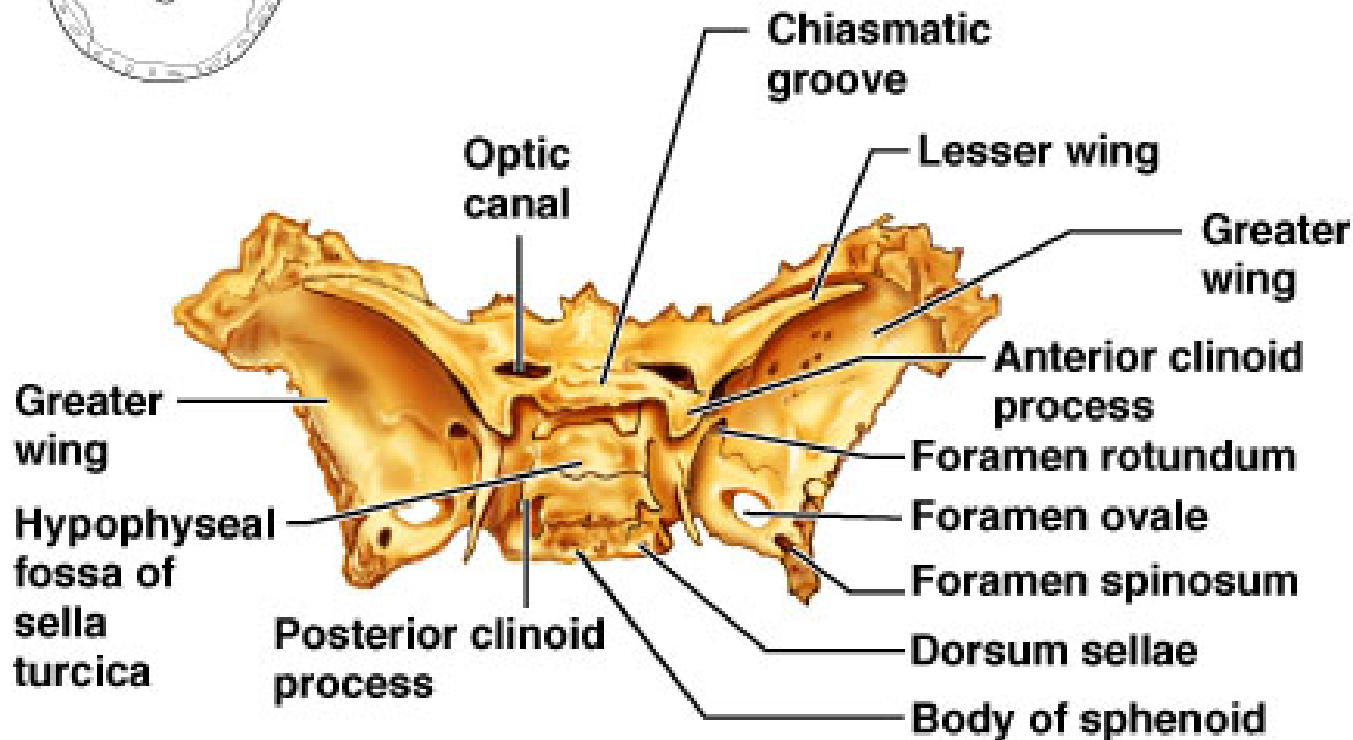
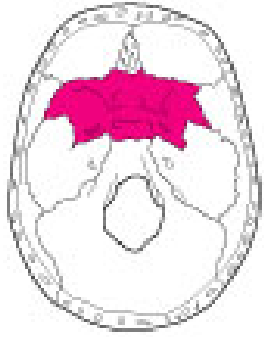


(a) Superior surface

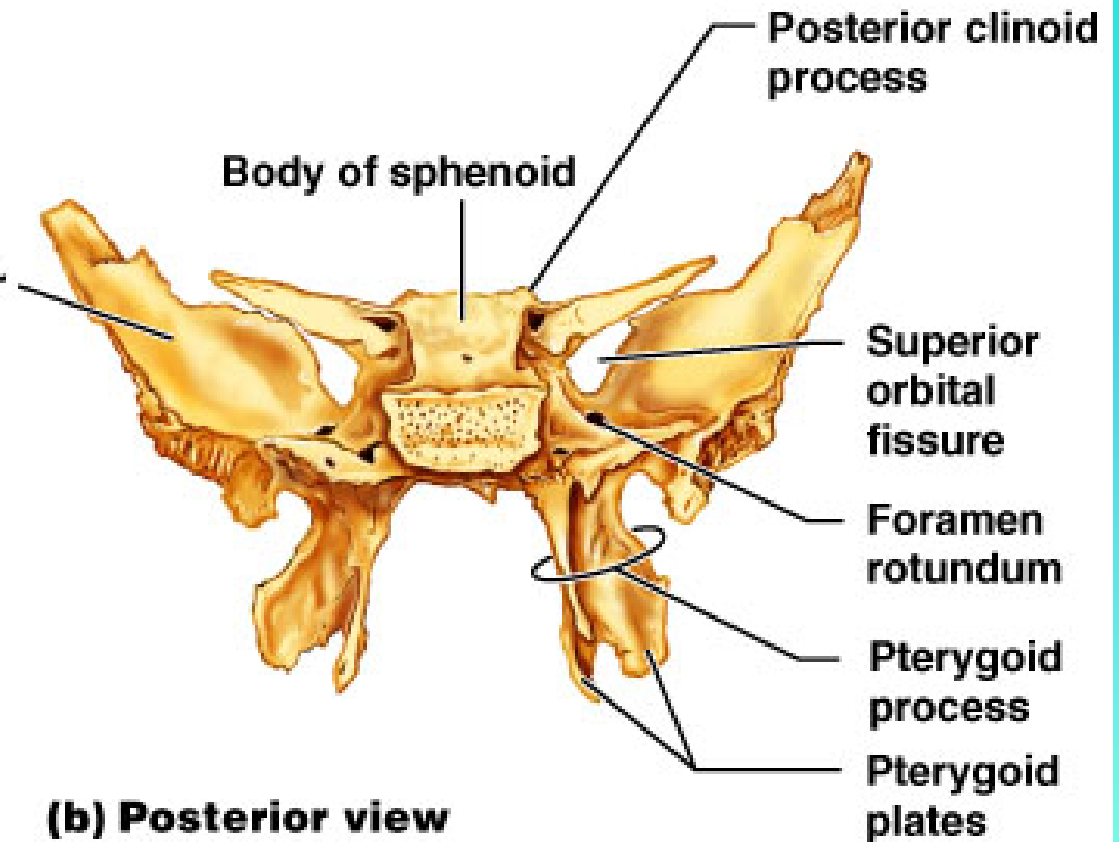


(b) Anterior surface

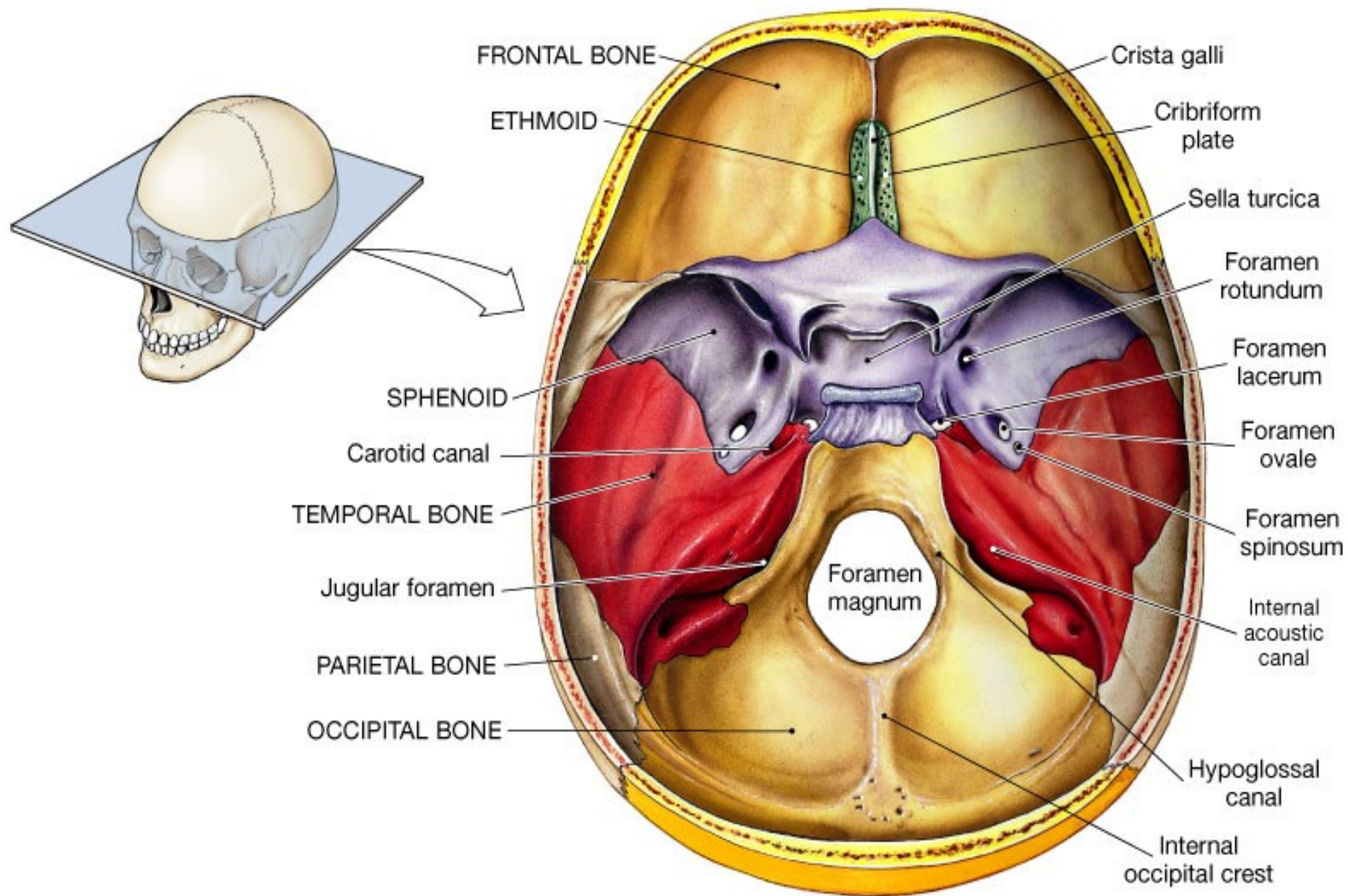
Sphenoid Bone



(a) Superior view

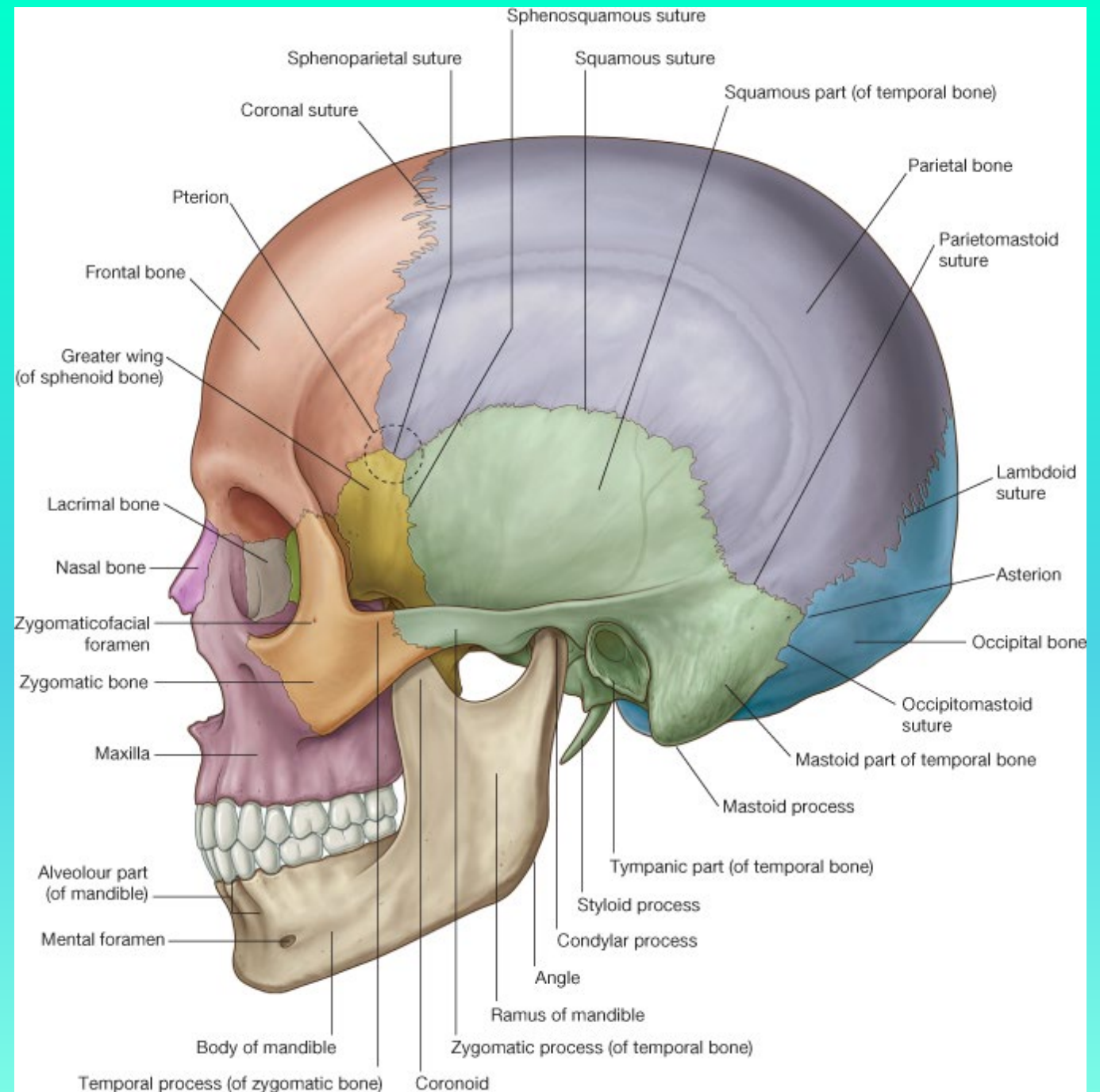


(b) Posterior view



(b) Horizontal section

- 1- Squamous part**
- 2- Petromastoid part**
- 3- Tympanic part**
- 4- Styloid process**



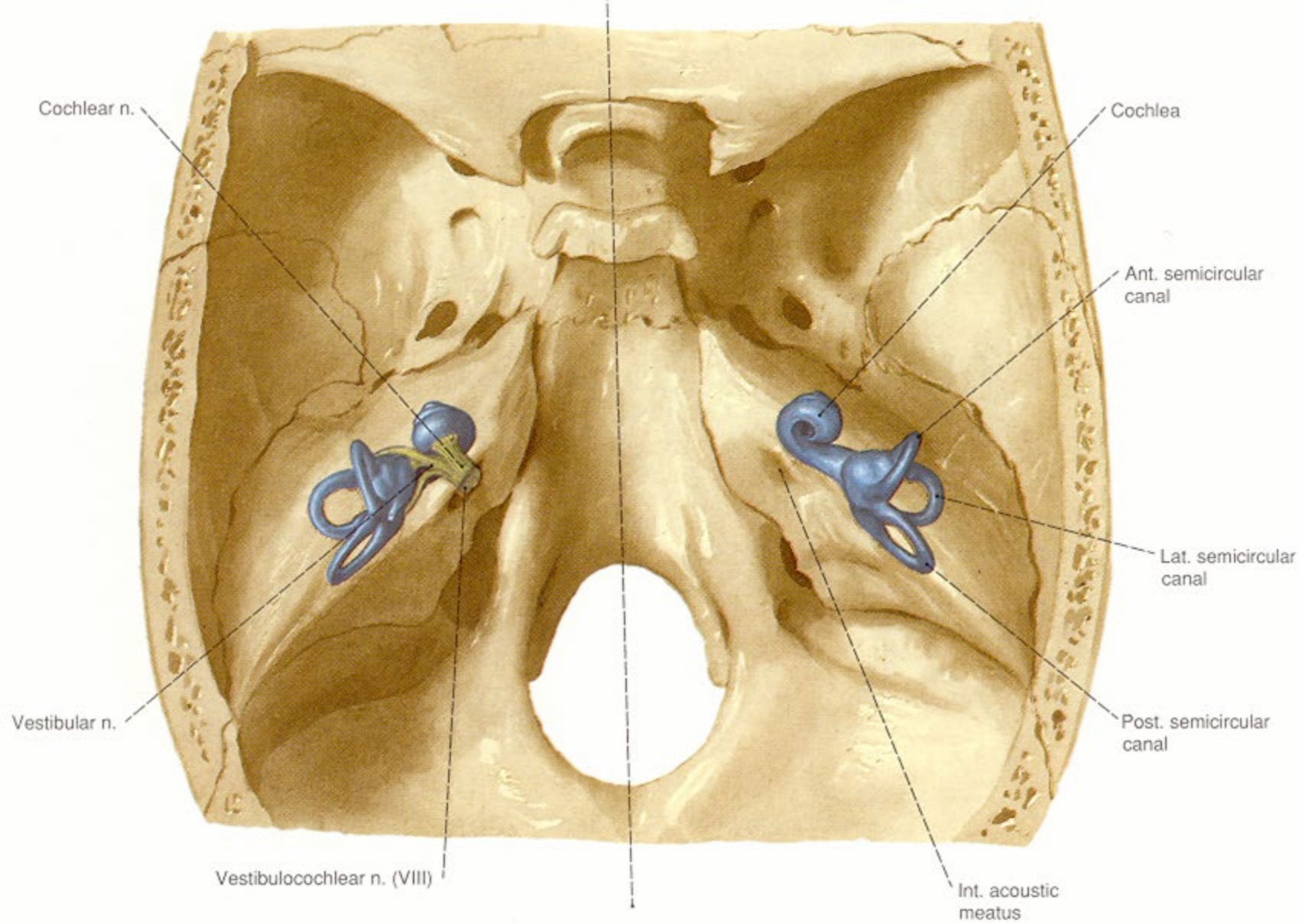


Fig. 241. Phantom projection of the osseous labyrinths of both sides onto the internal aspect of the base of the skull with the semicircular canals and the cochlea in their natural position. On the left the nerves are also depicted. Note the oblique

orientation of the cochlear axis from posteromedially above to anterolaterally below. Its apex (cupula) is directed anterolaterally and inferiorly.

* Median line

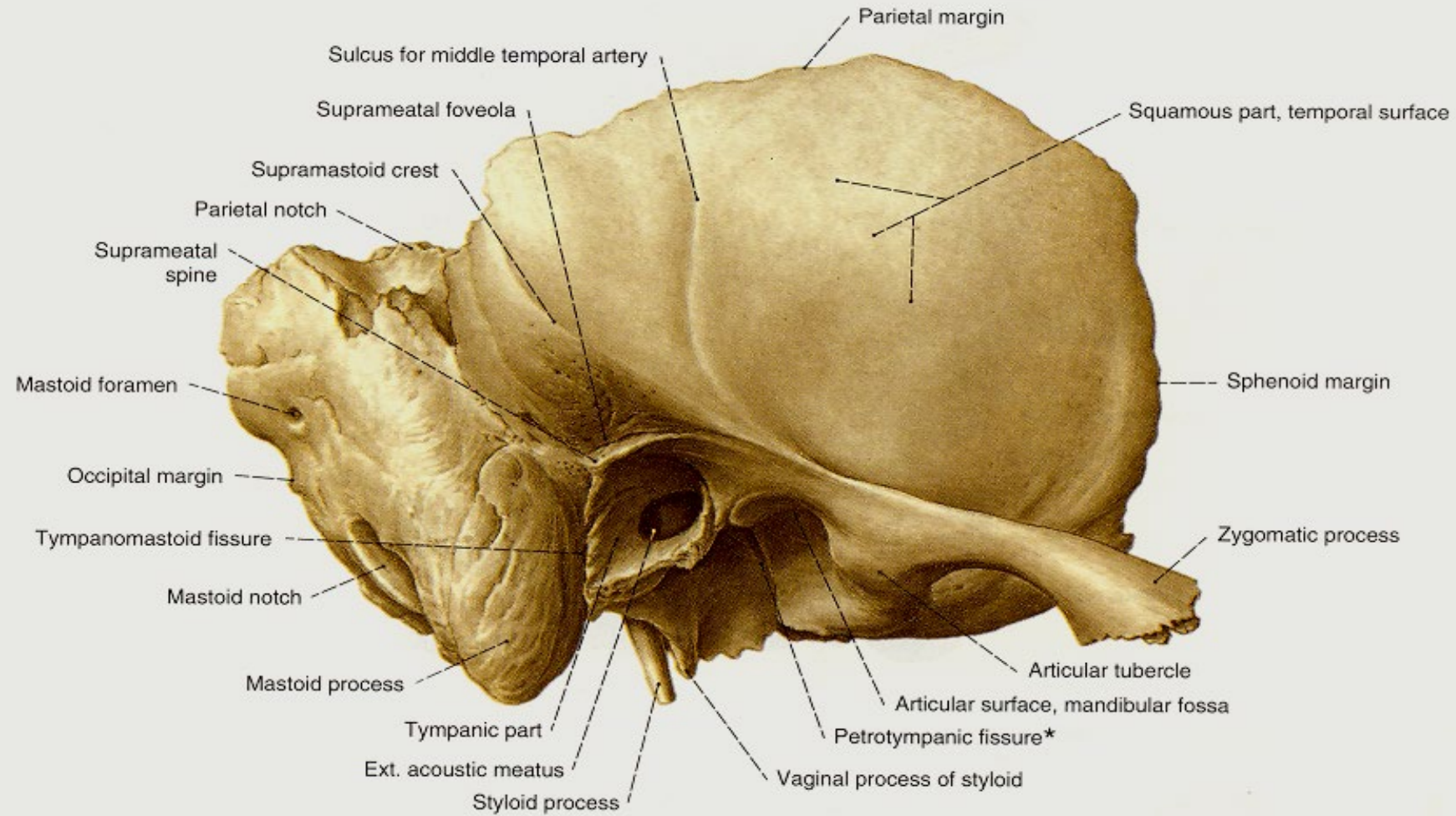


Fig. 28. Right temporal bone. External aspect.

* GLASERIAN fissure

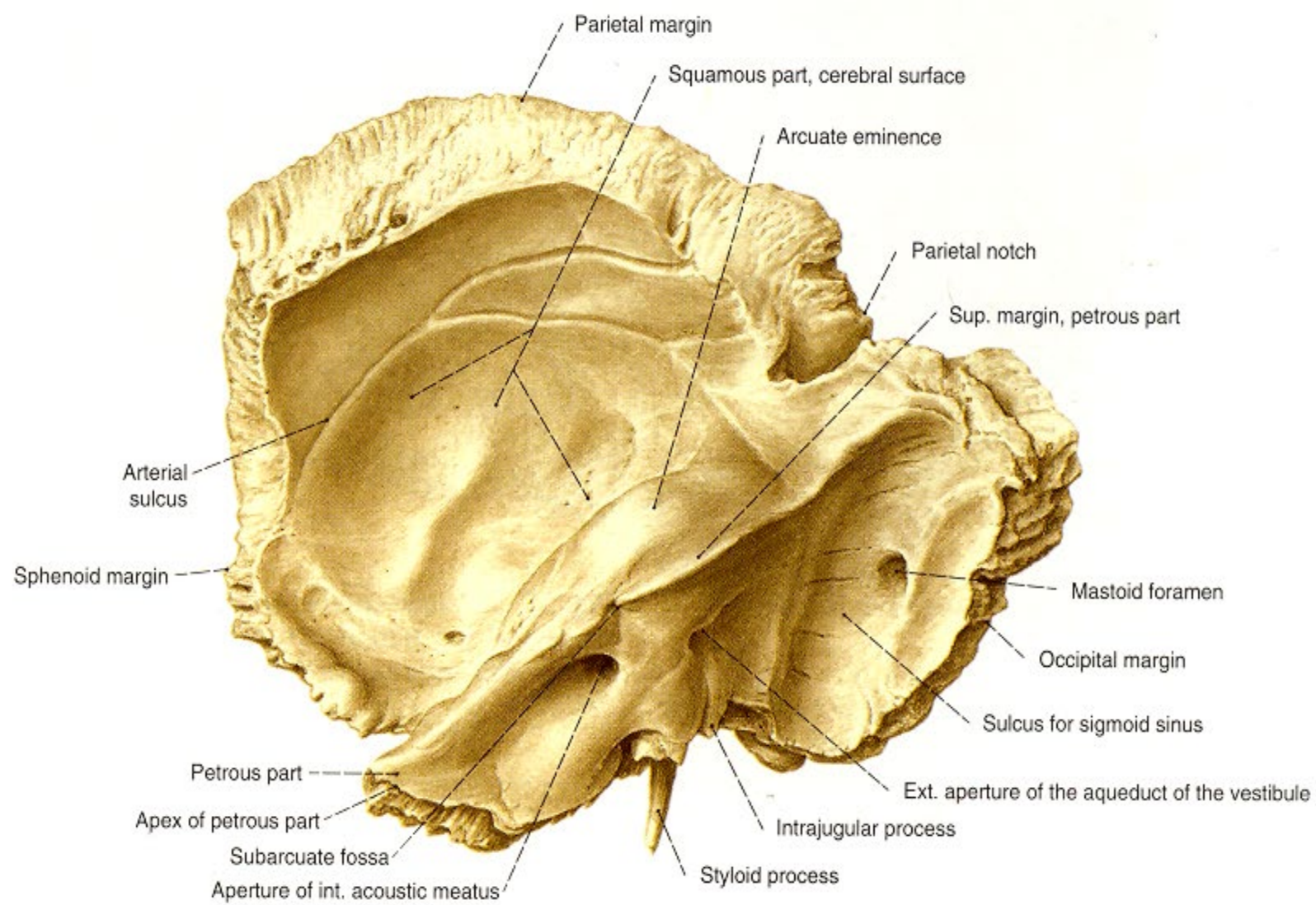
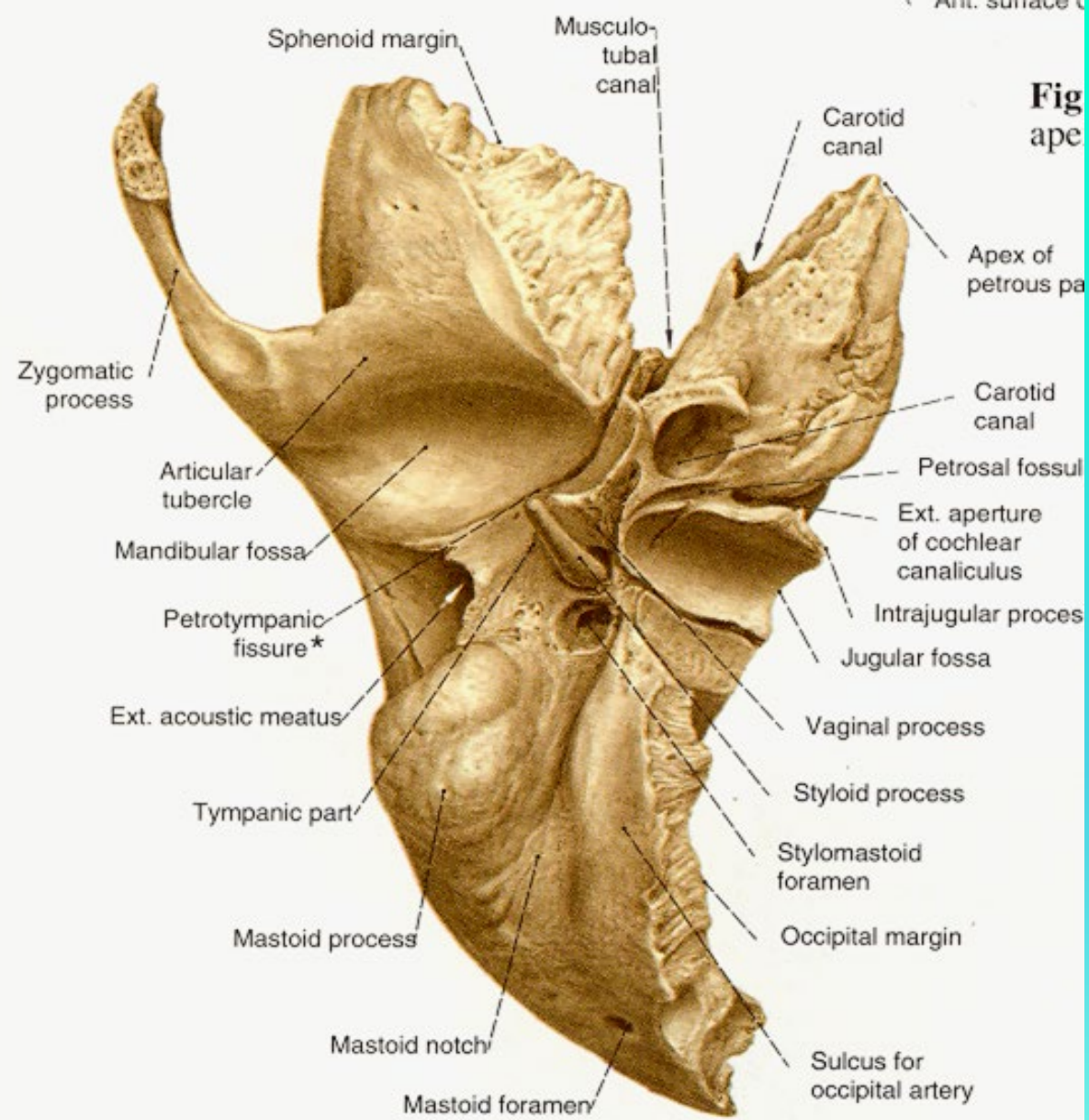
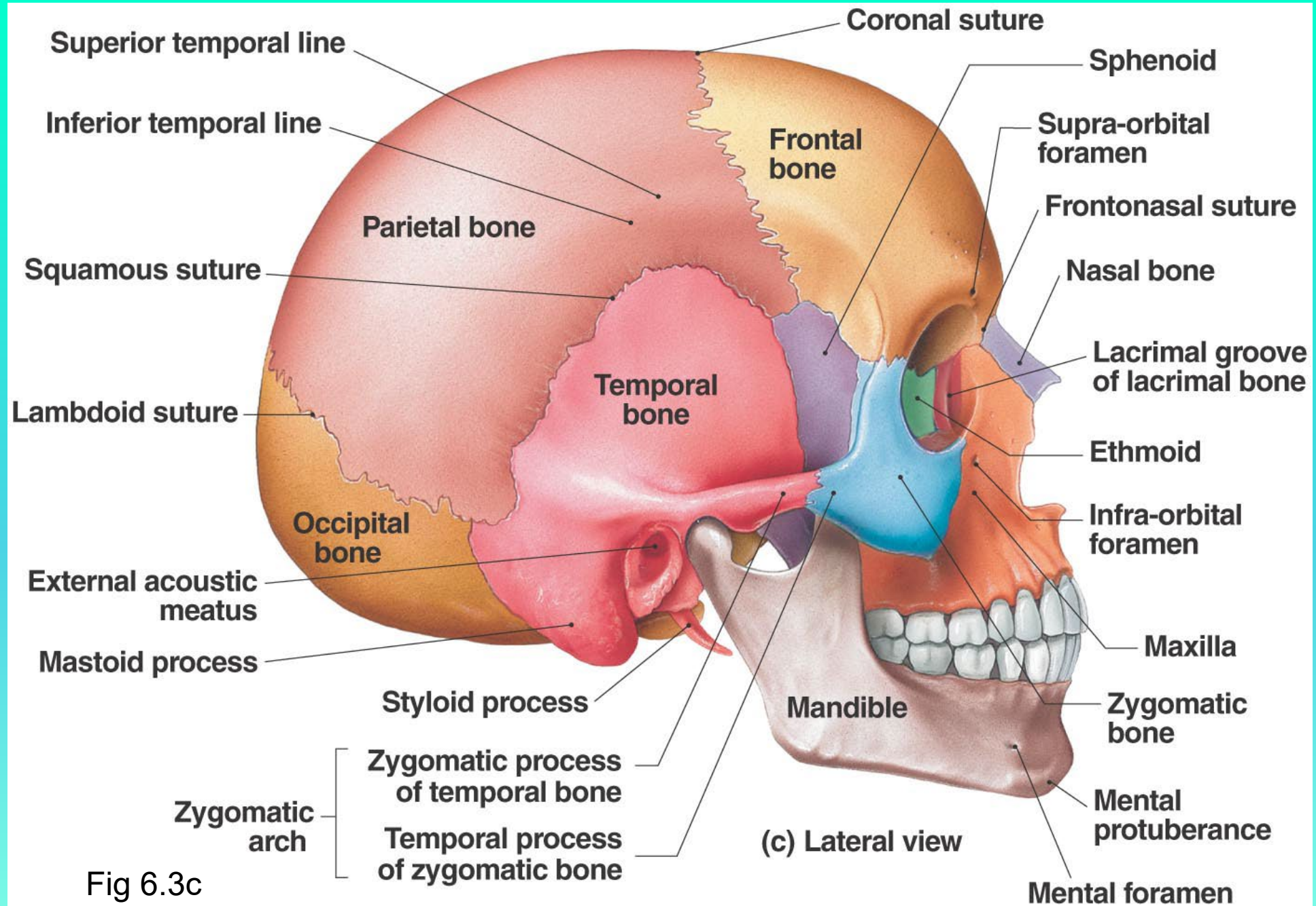


Fig. 29. Right temporal bone. Internal aspect.

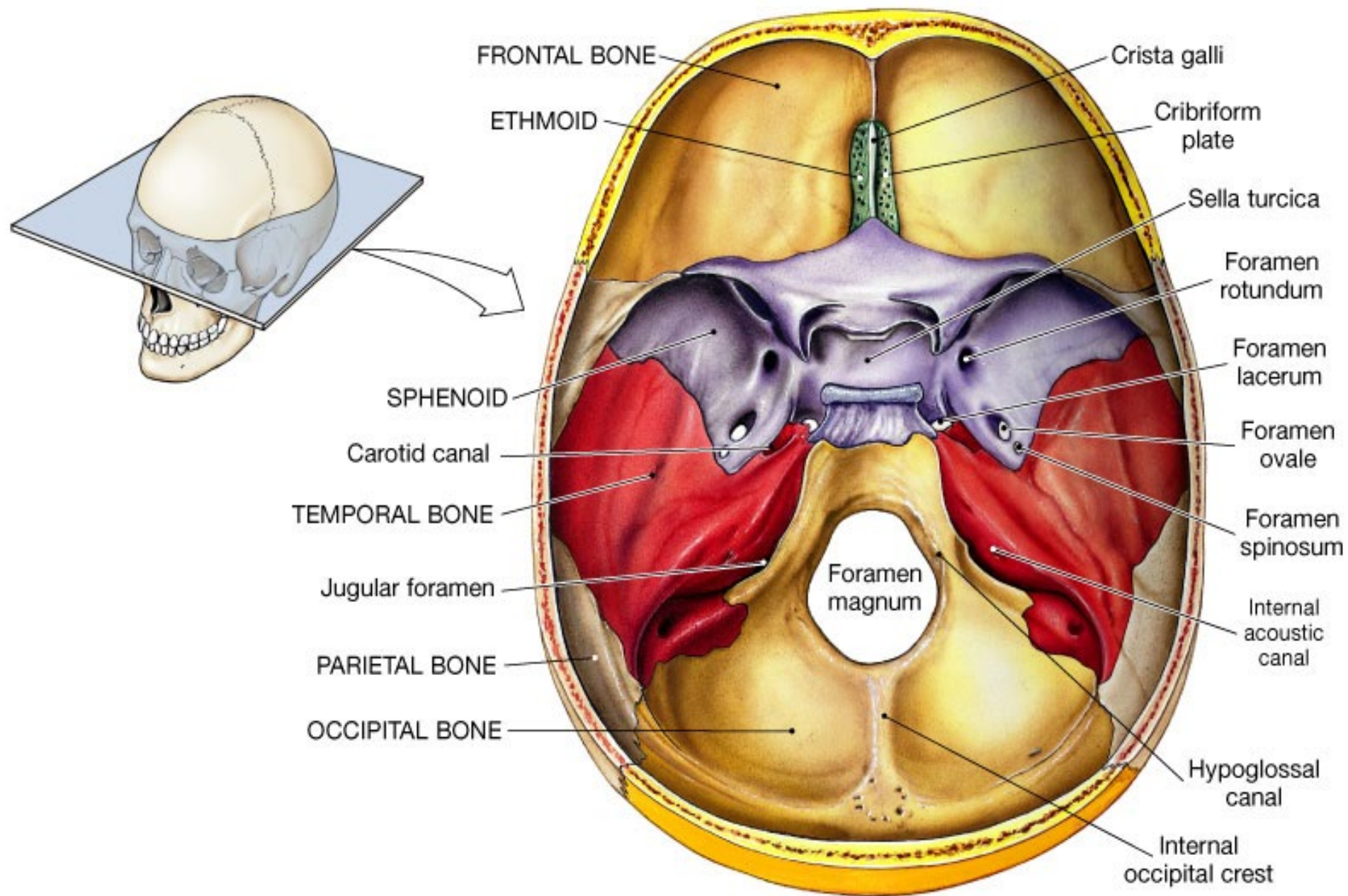


* GLASERIAN fissure

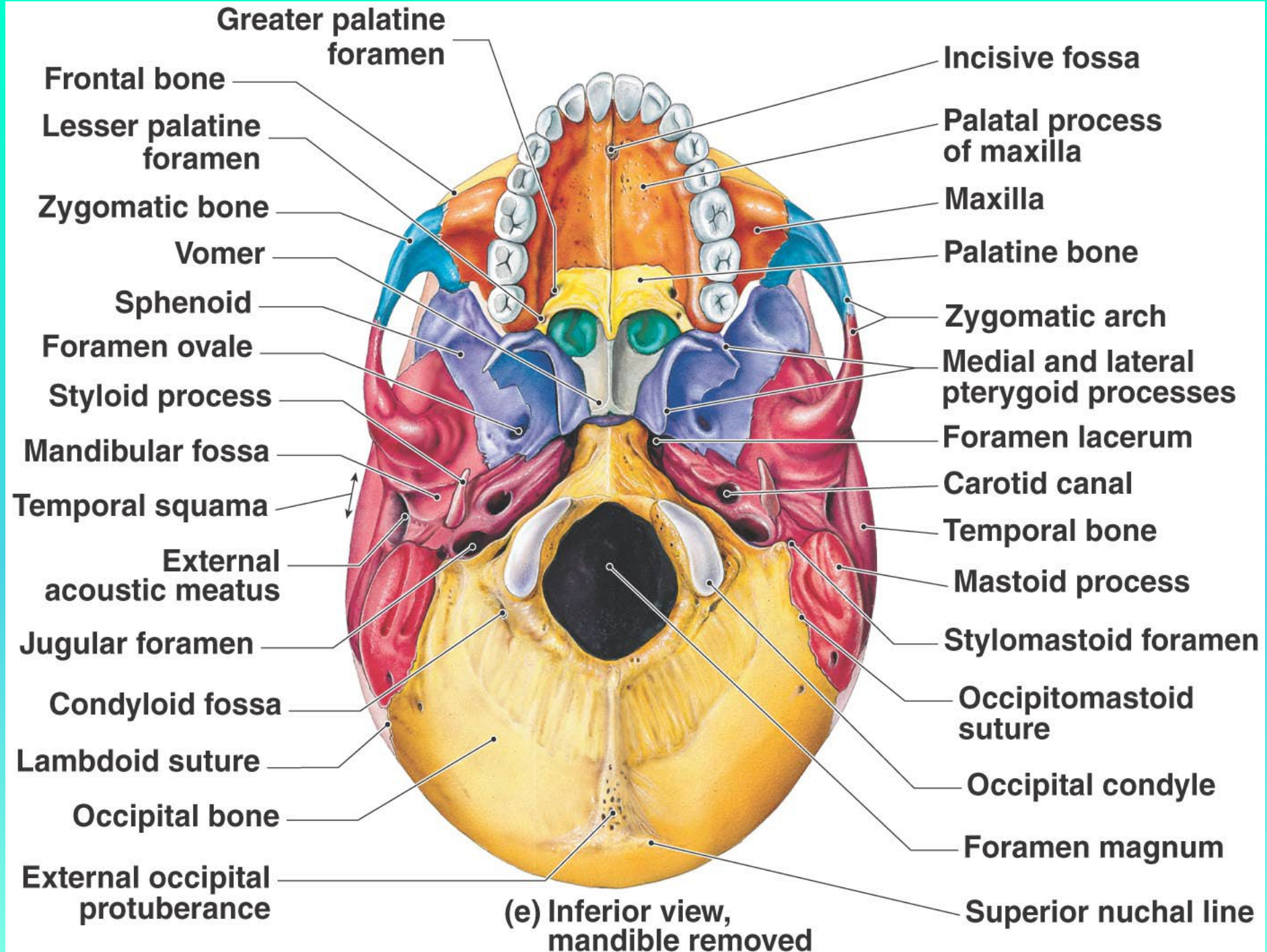
Fig.
proc
exte

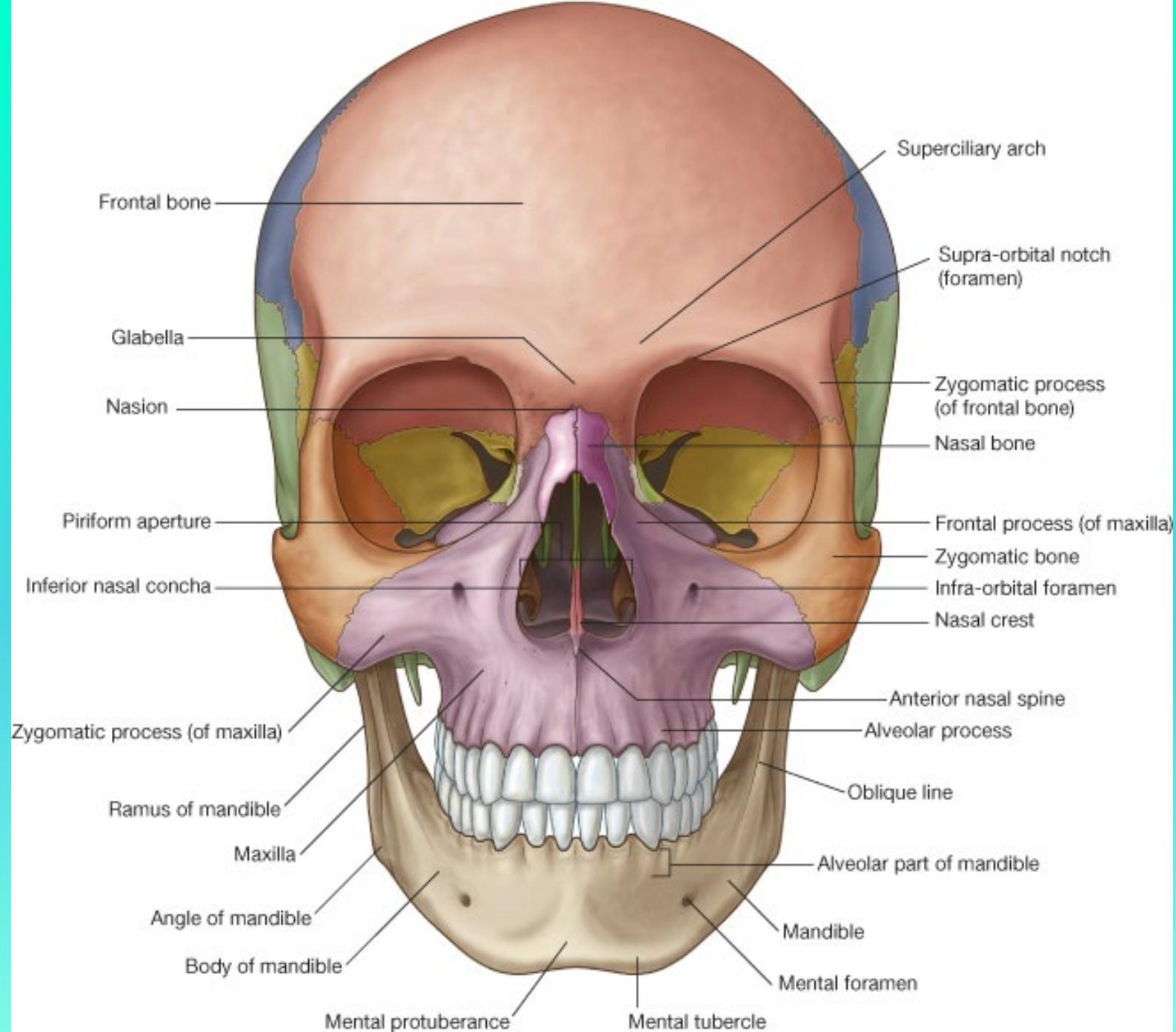






(b) Horizontal section





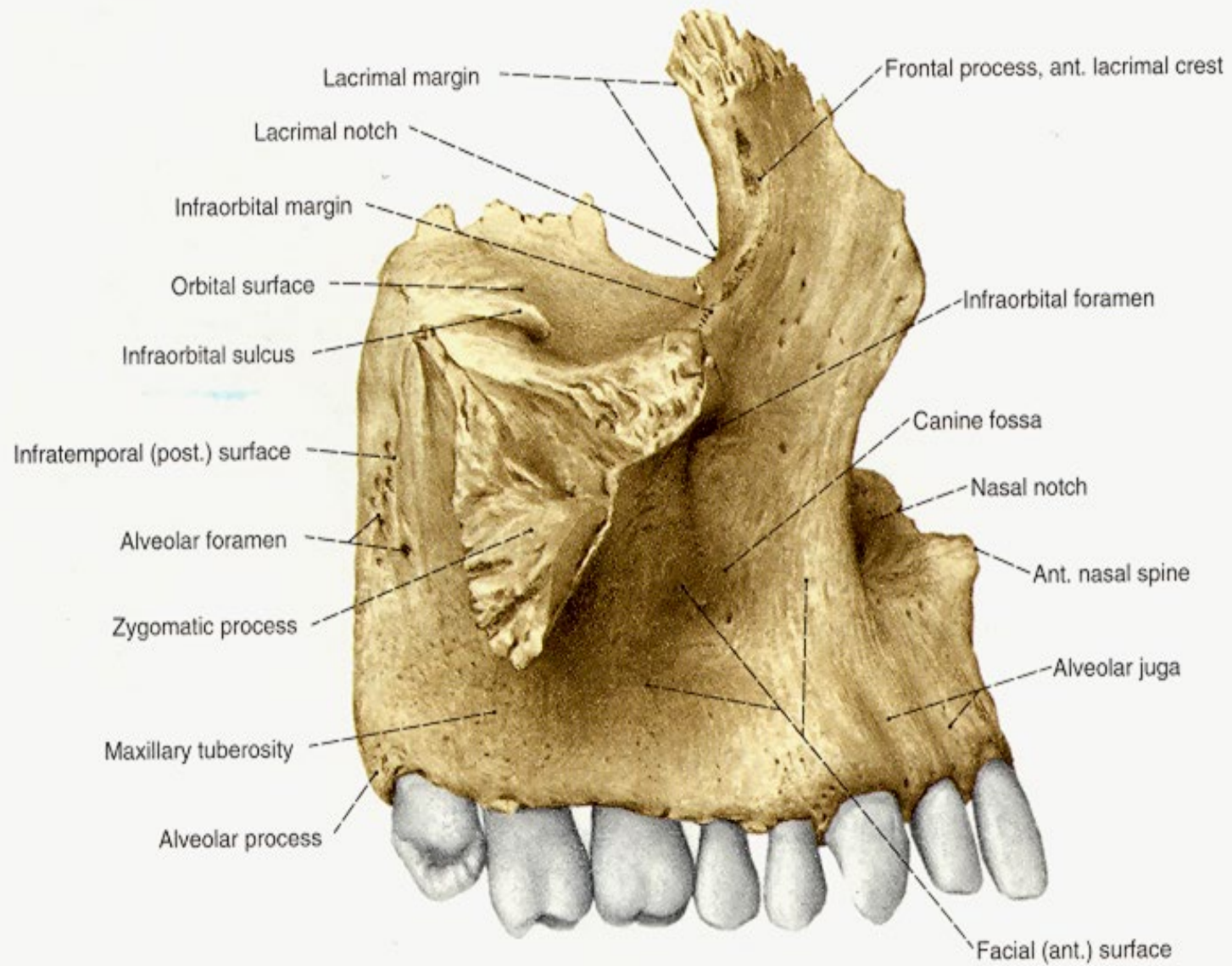


Fig. 50. Right maxilla. Lateral aspect.

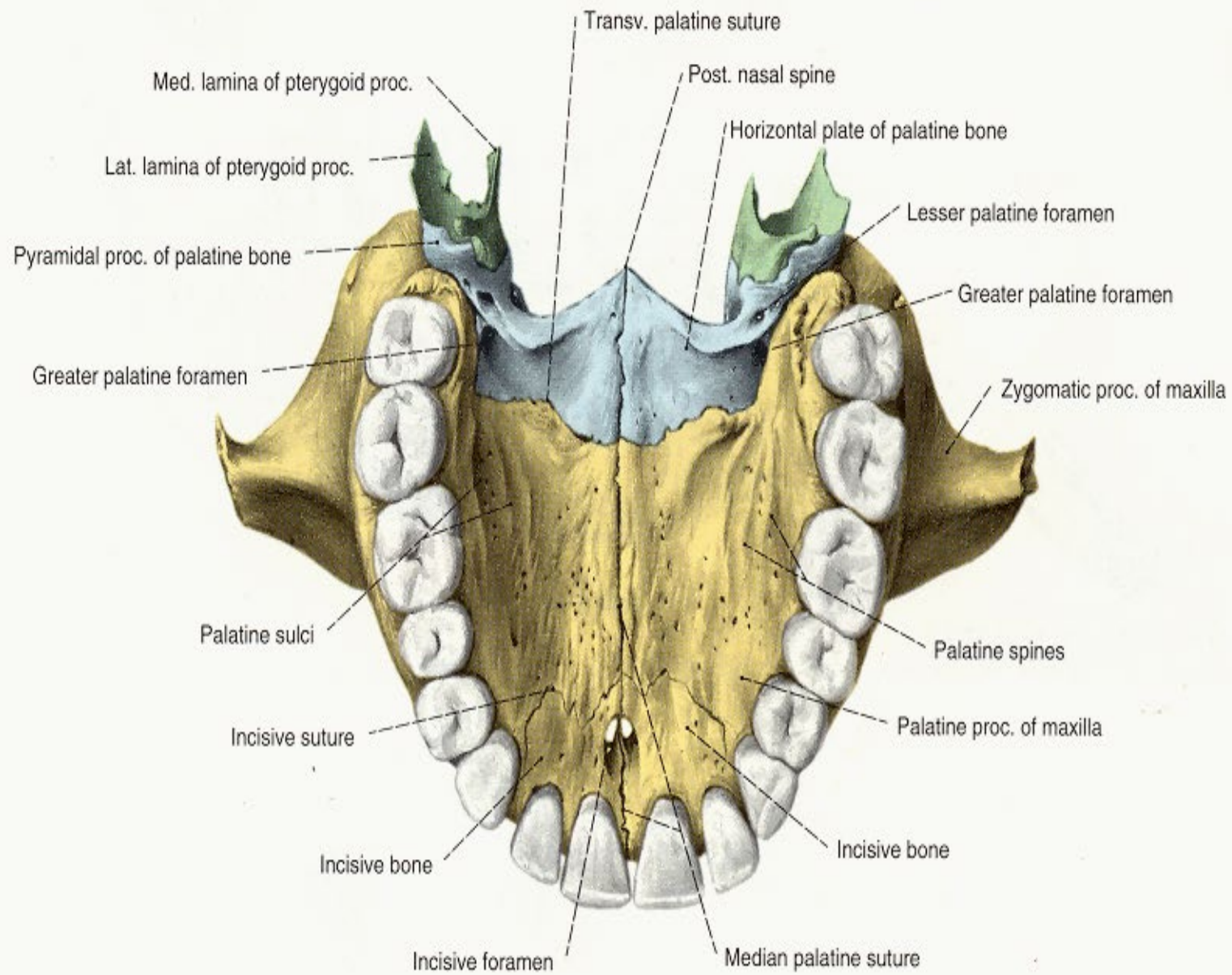
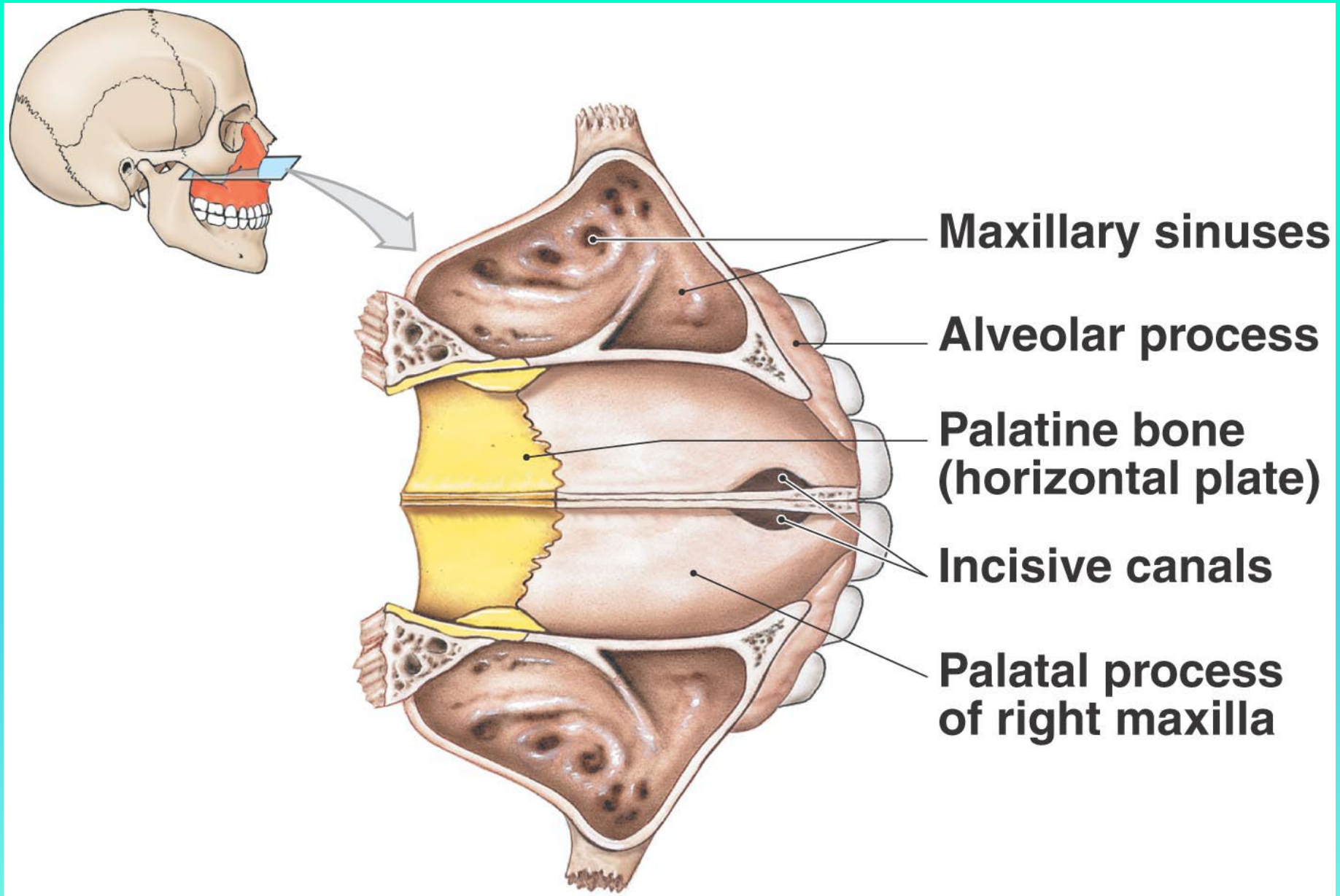
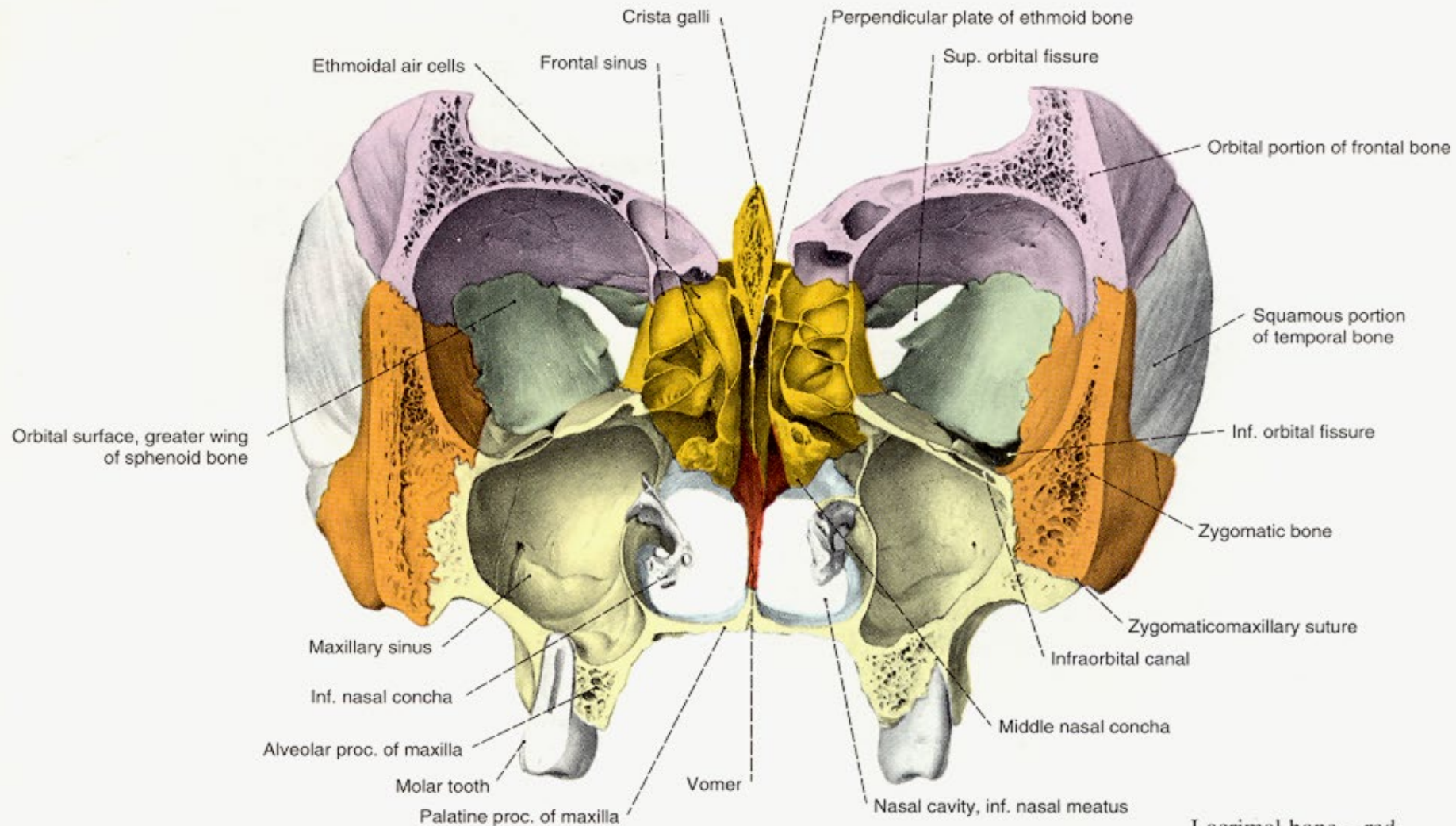


Fig. 53. Hard palate. Viewed from below (from the oral cavity).



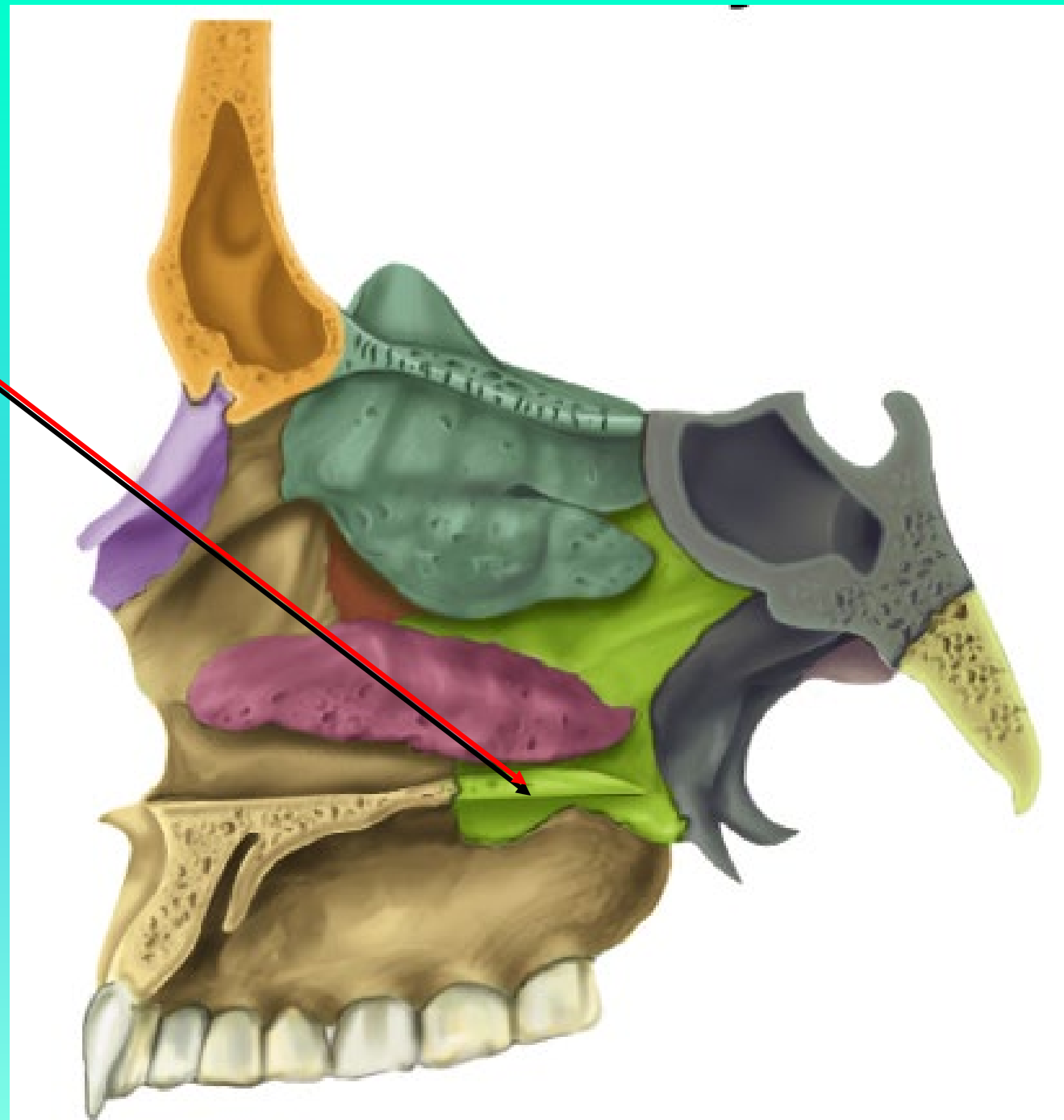
**Fig 6.12 (c) Maxillae and palatine bones,
sectional view**



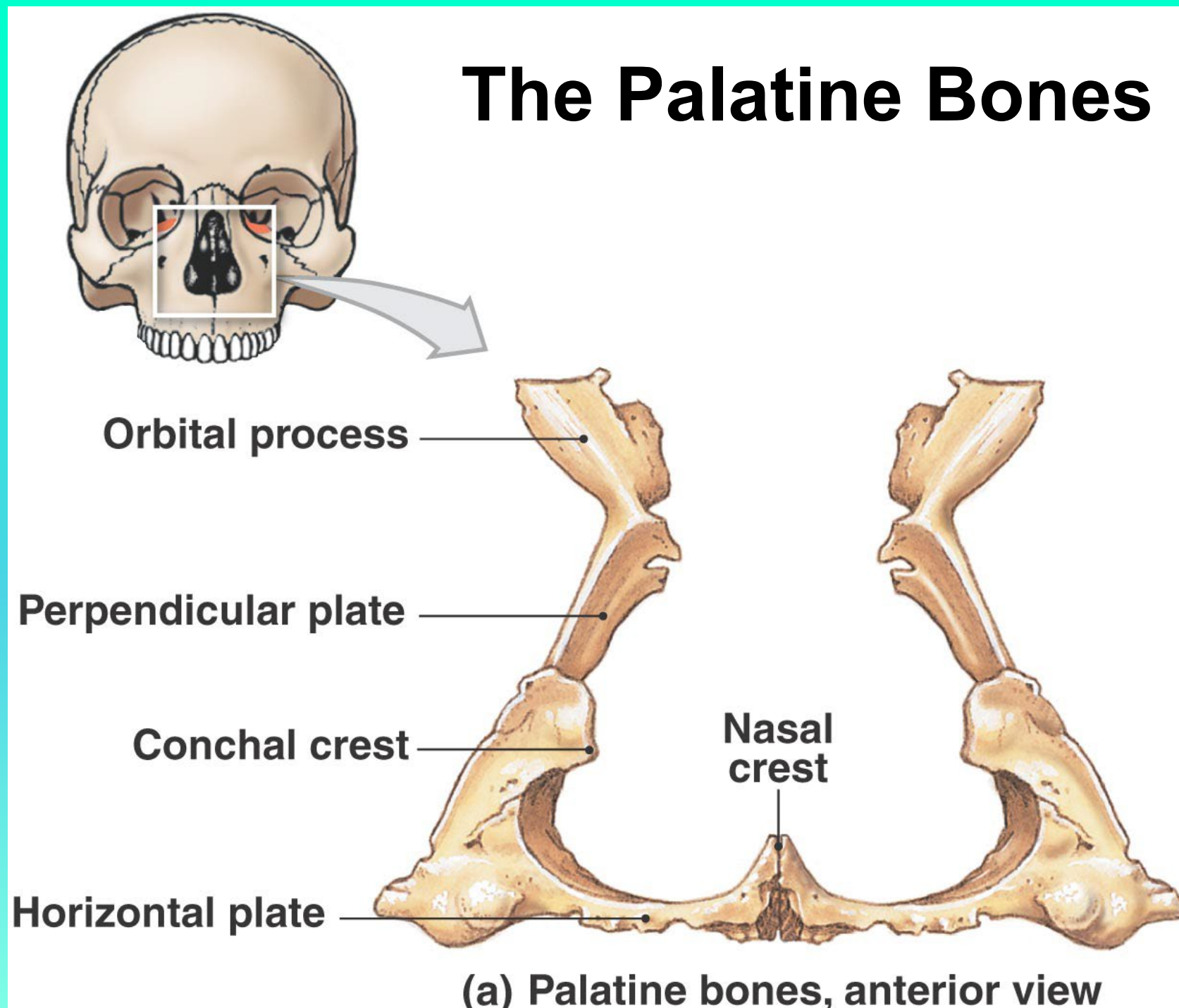
Lacrimal bone – red
 Nasal bone – gray
 Frontal bone – lavender
 Palatine bone – light blue
 Ethmoid bone – yellow
 Vomer – red
 Zygomatic bone – orange
 Maxilla – light yellow
 Inferior nasal concha,
 temporal bone – gray
 Sphenoid bone – green

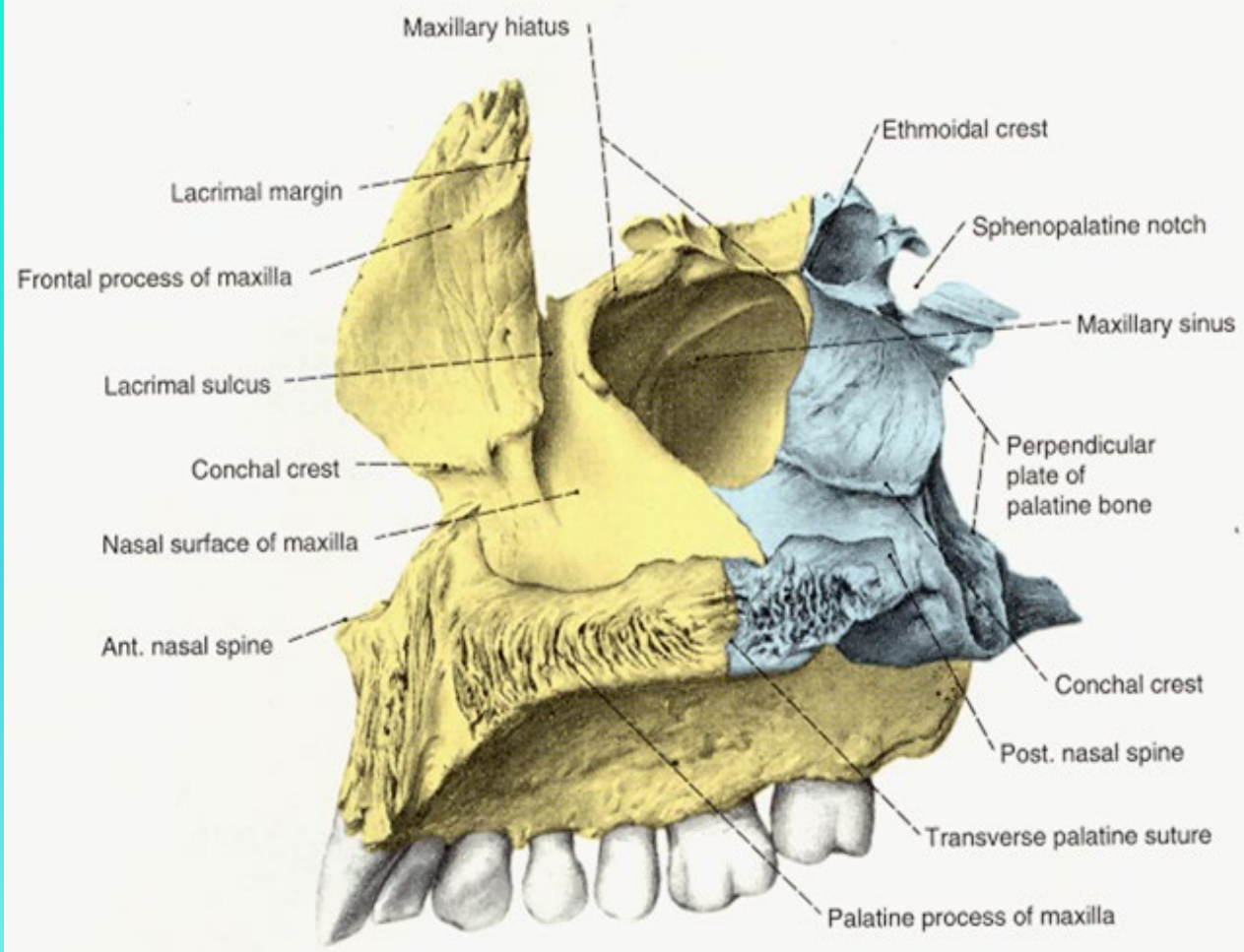
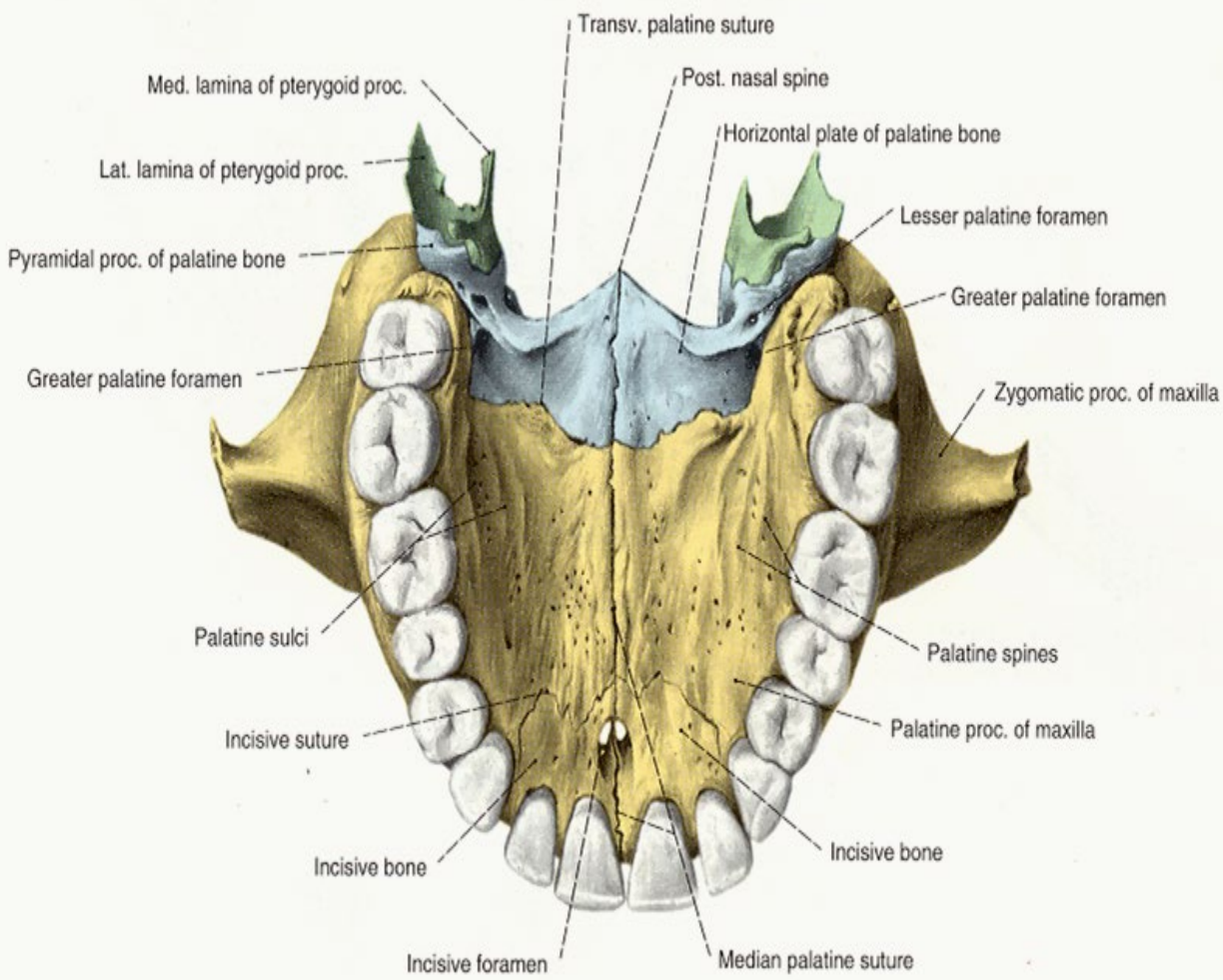
Fig. 68. Coronal section through the anterior part of the facial skeleton: Orbital cavities, nasal cavities, maxillary sinus, ethmoid air cells. The component bones are depicted by different colors.

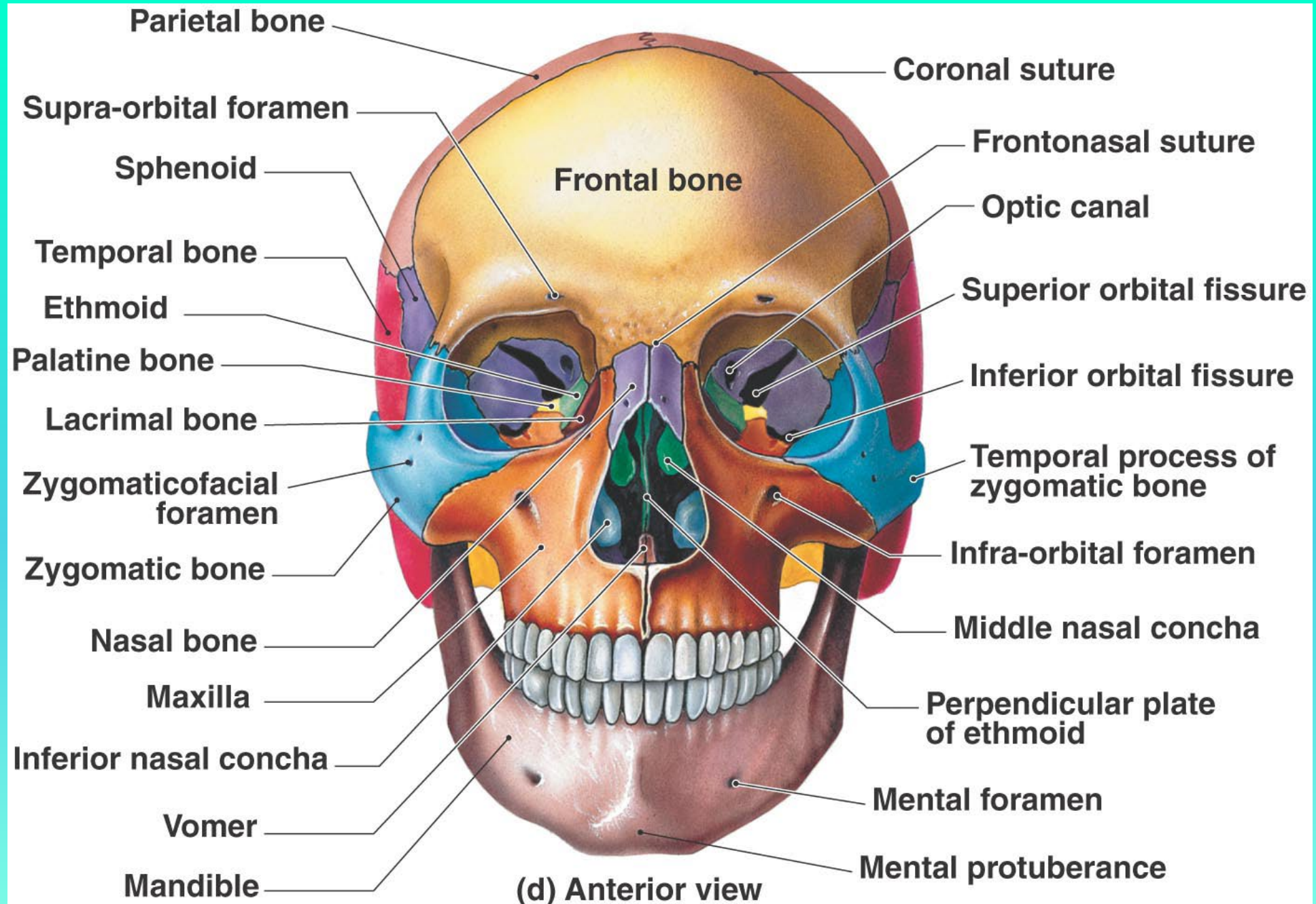
Palatine Bones



The Palatine Bones







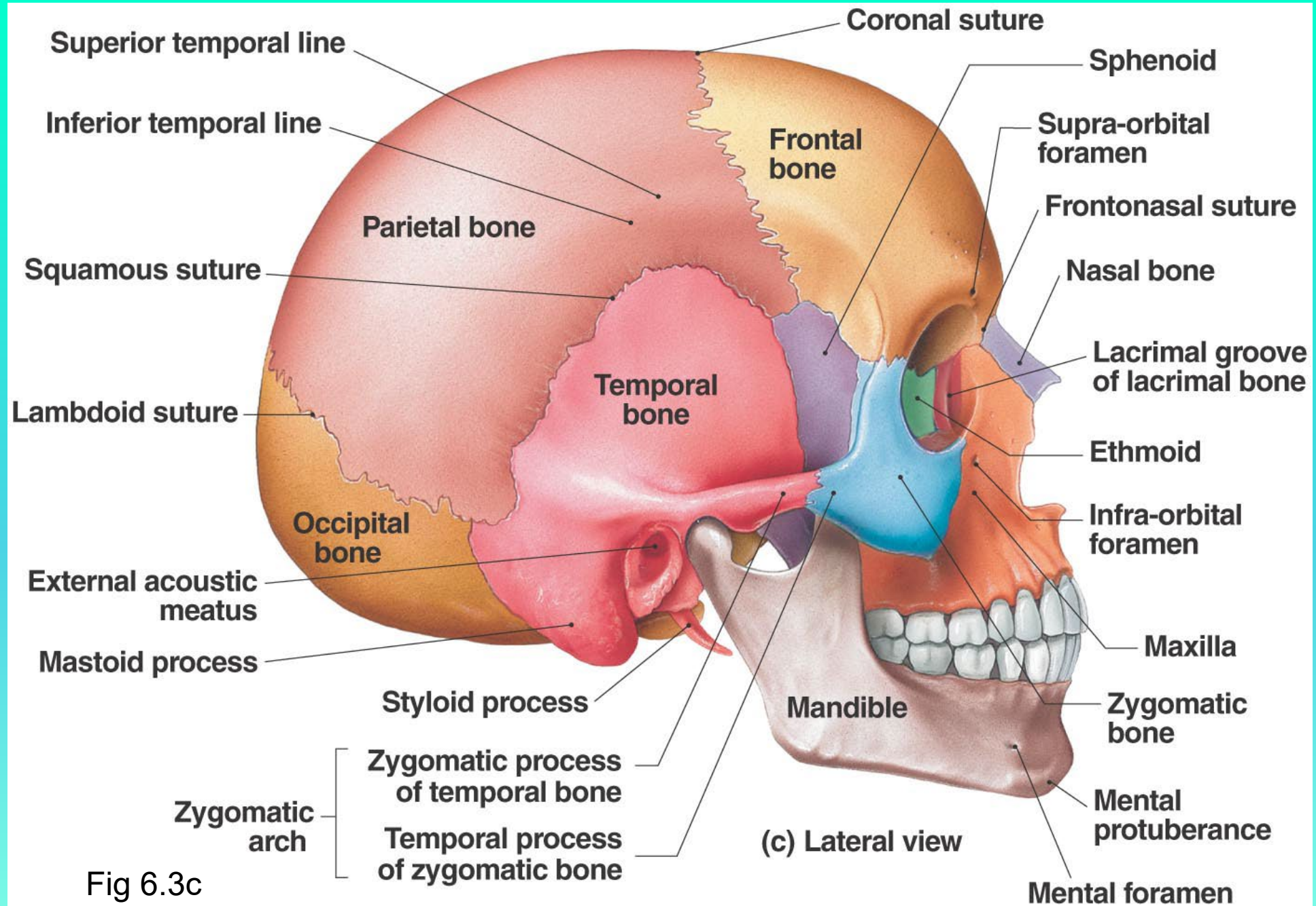
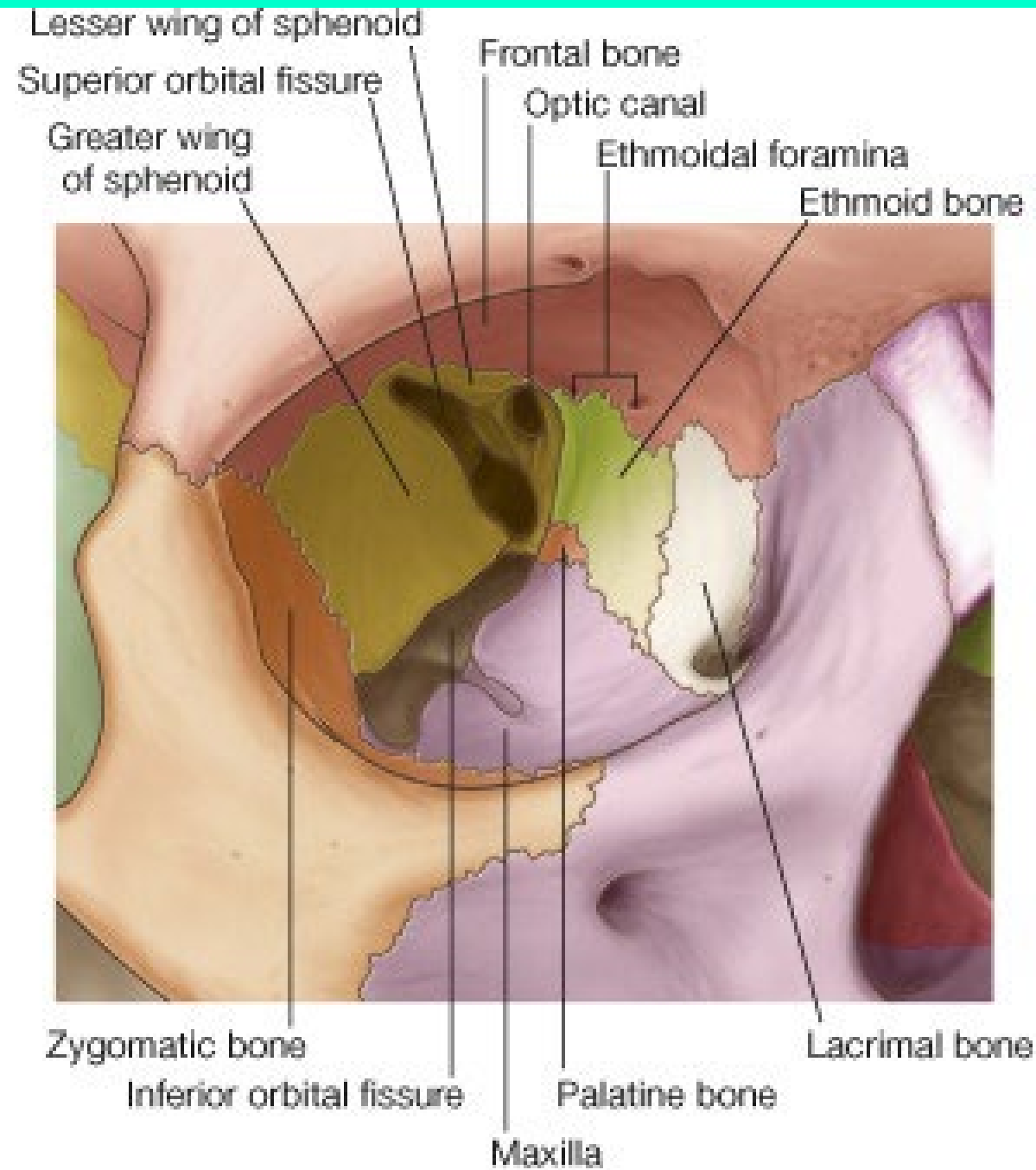
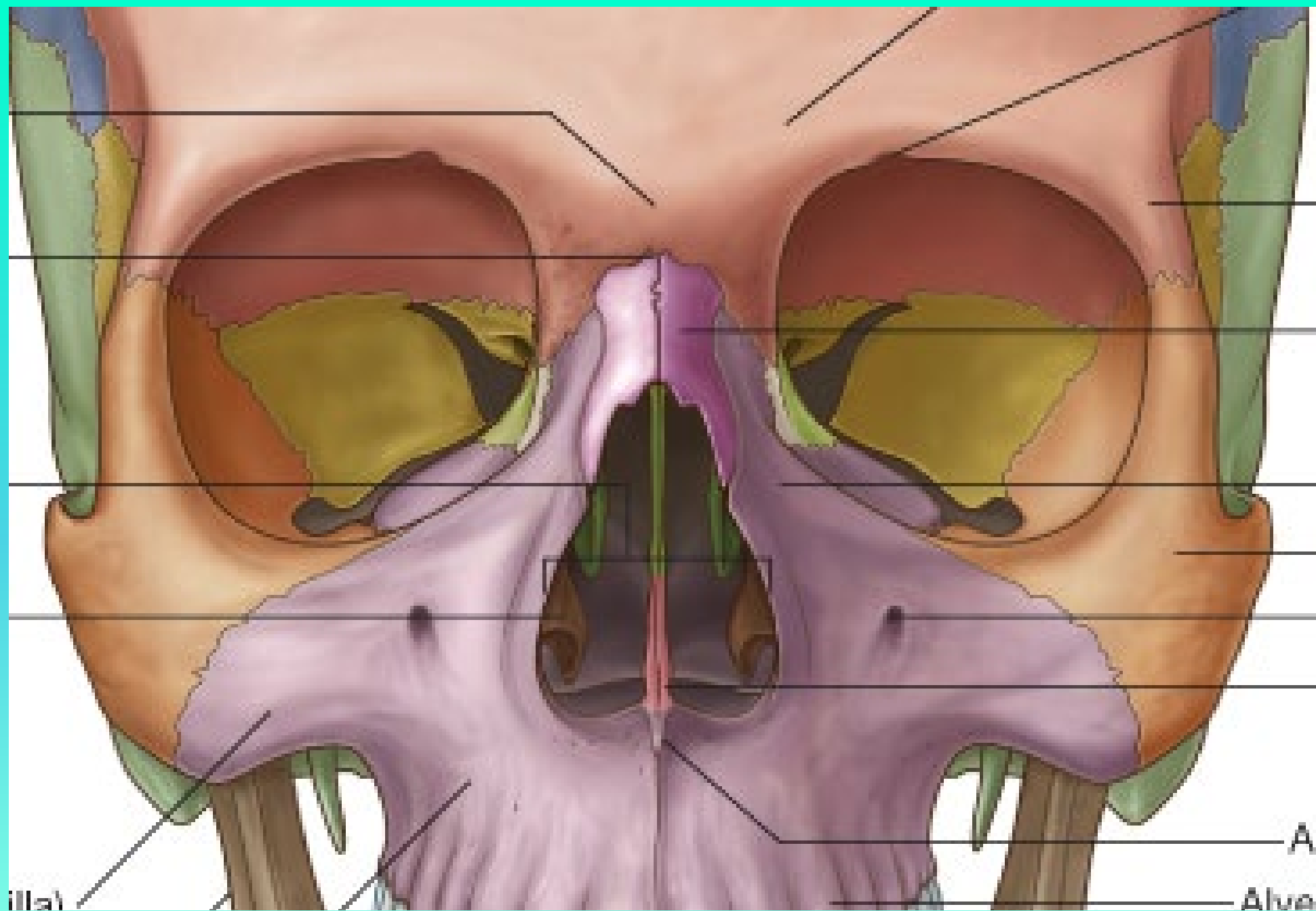
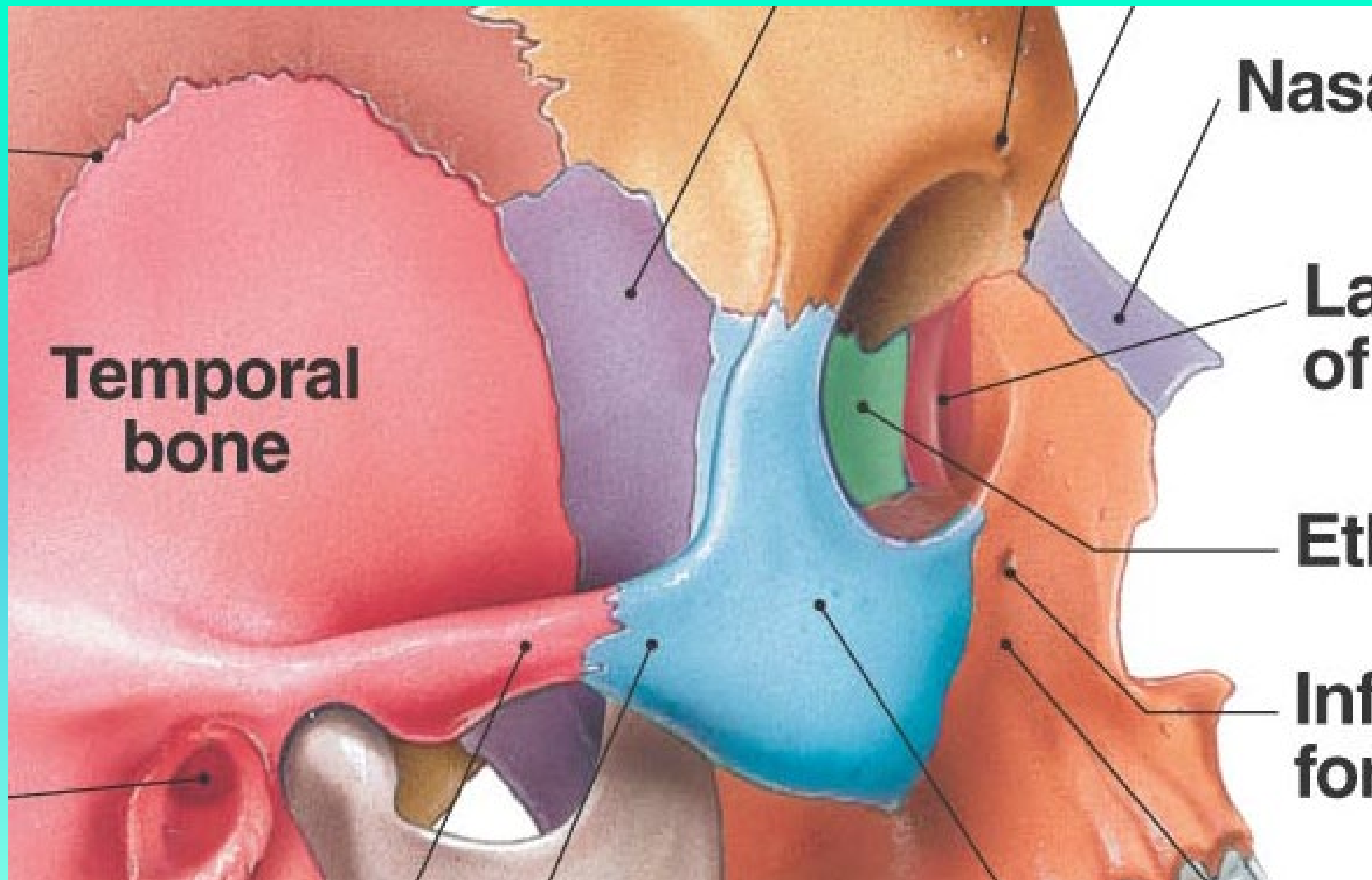


Fig 6.3c



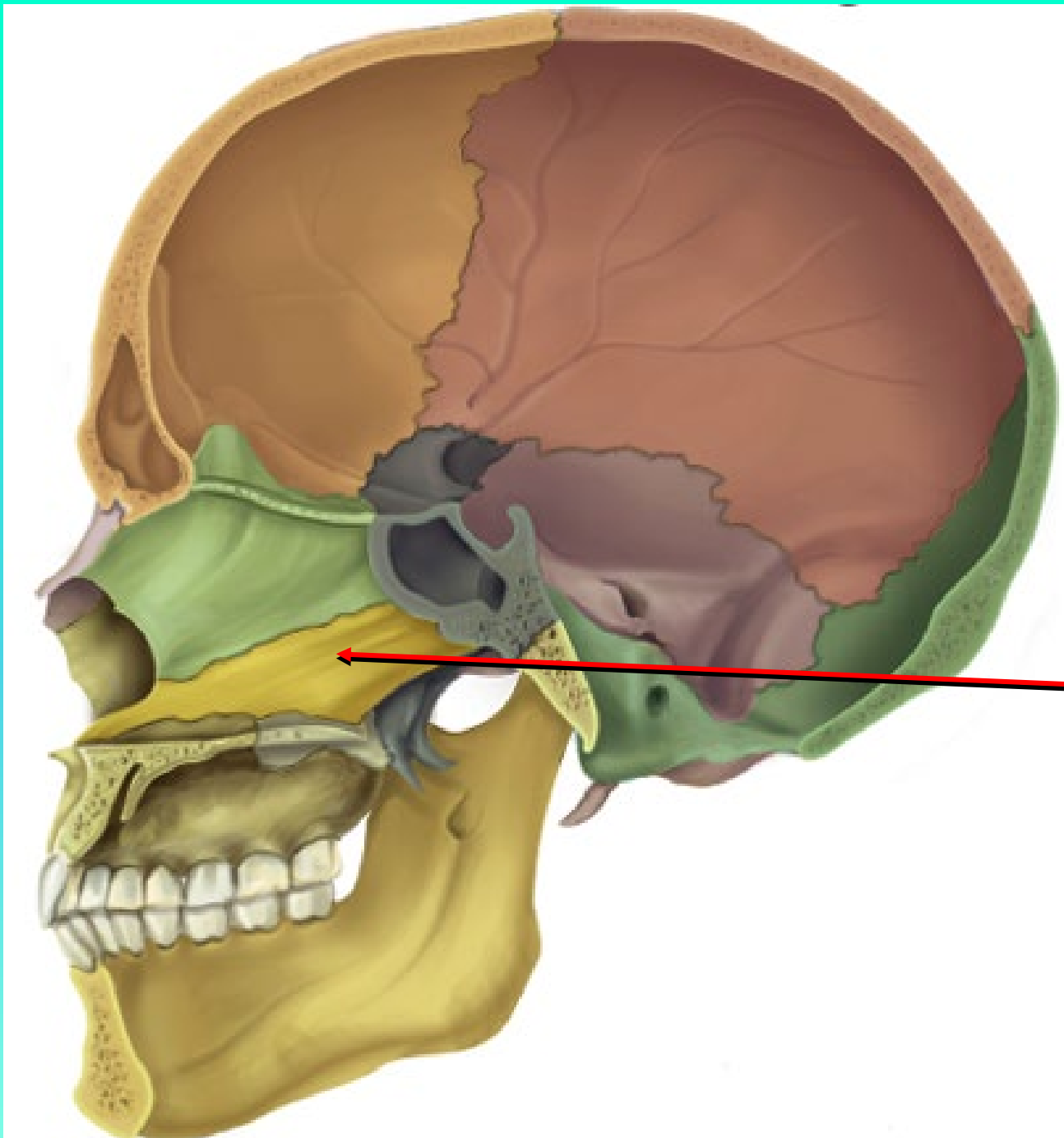




Vomer

- forms the anterior half of the nasal septum





Vomer

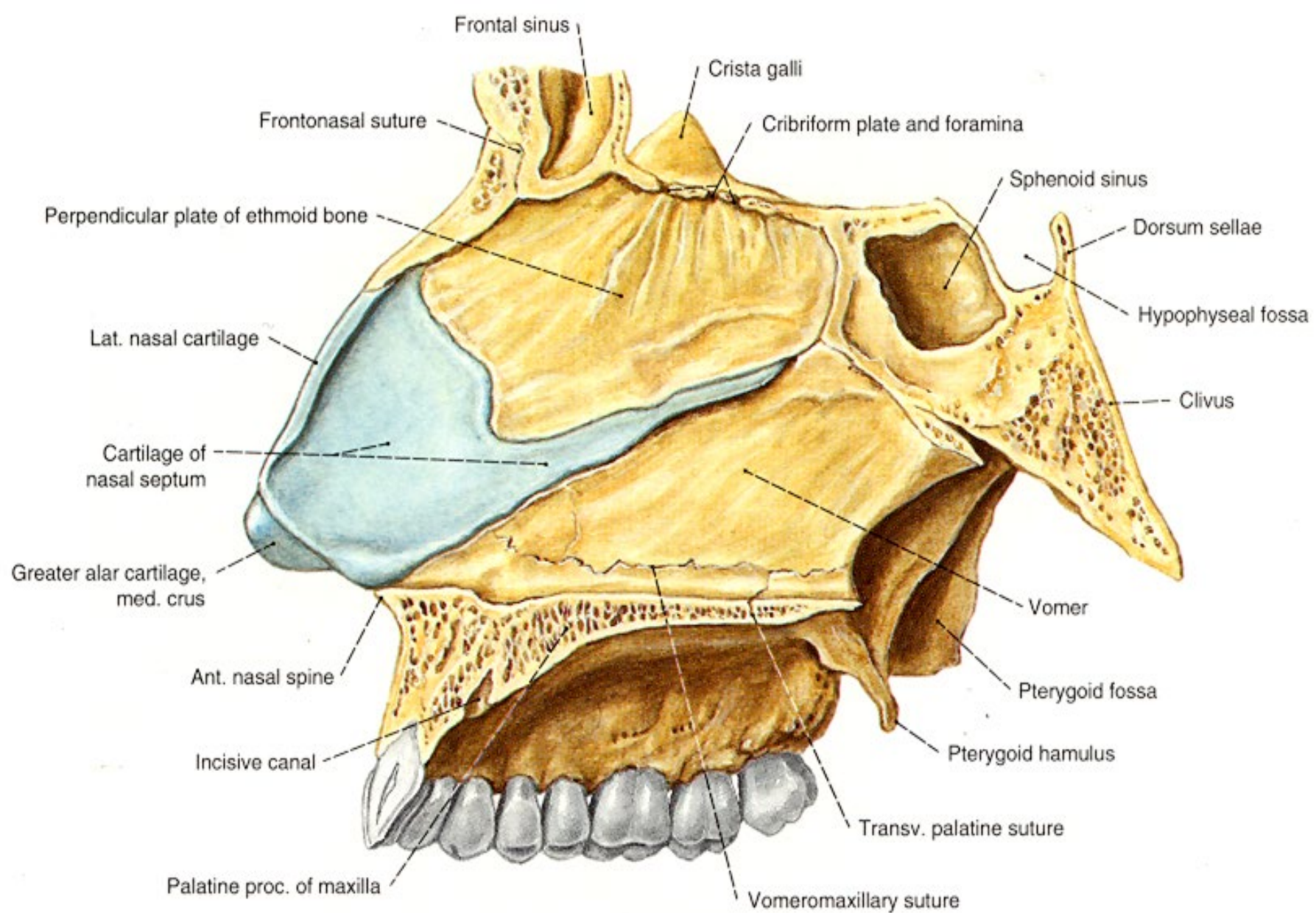
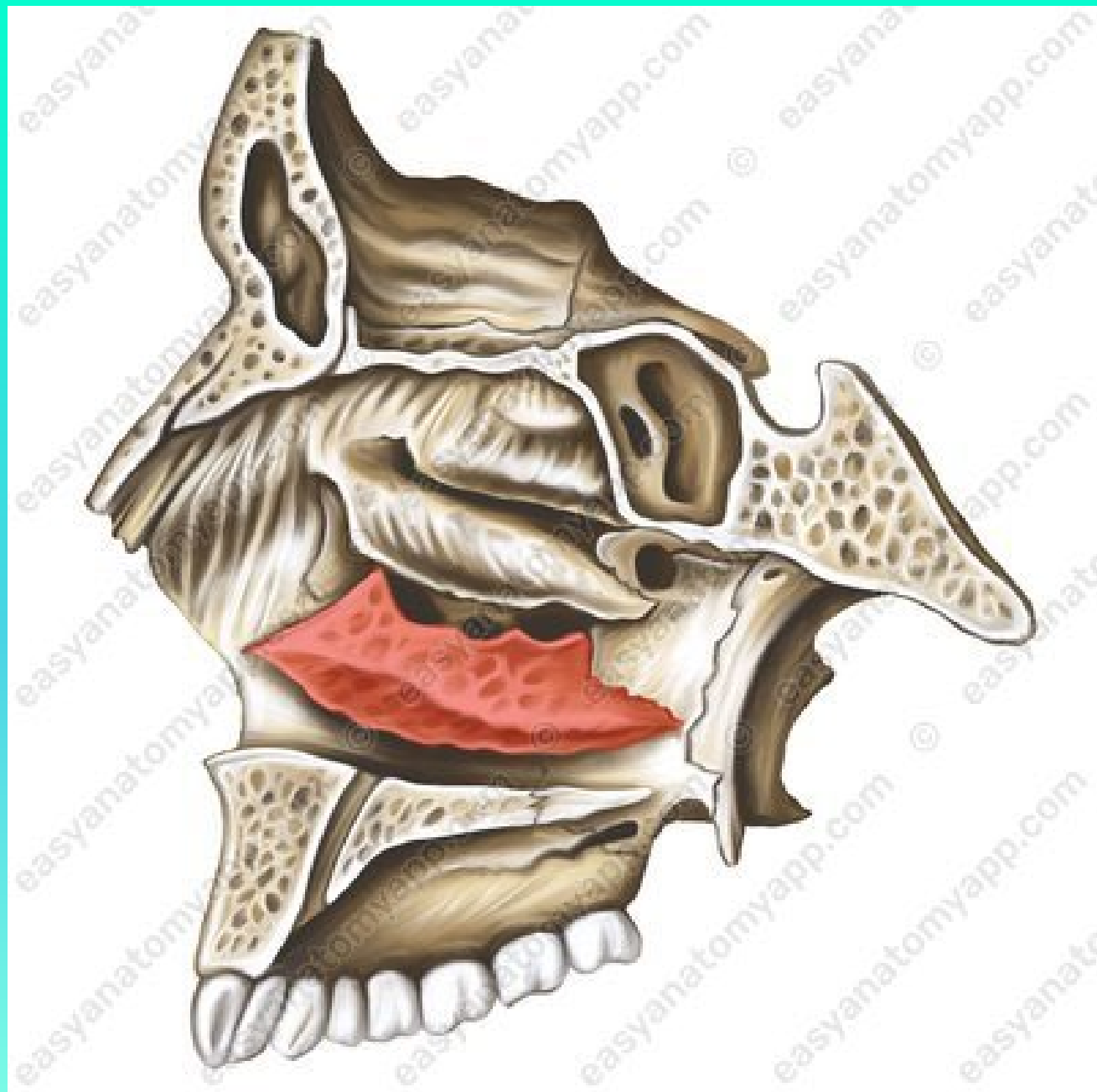
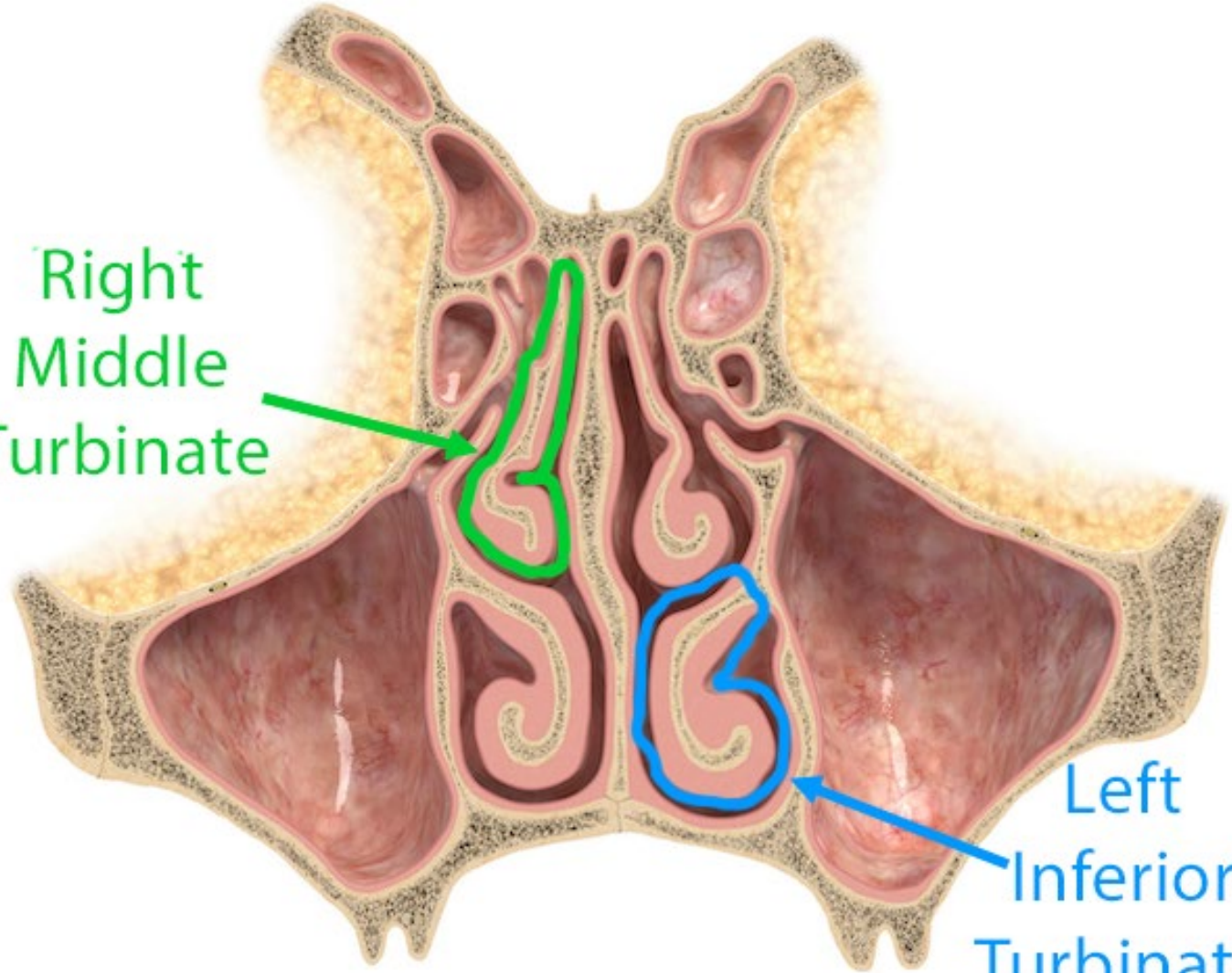


Fig. 93. The bony and cartilaginous nasal septum, and adjacent structures. Medial view.

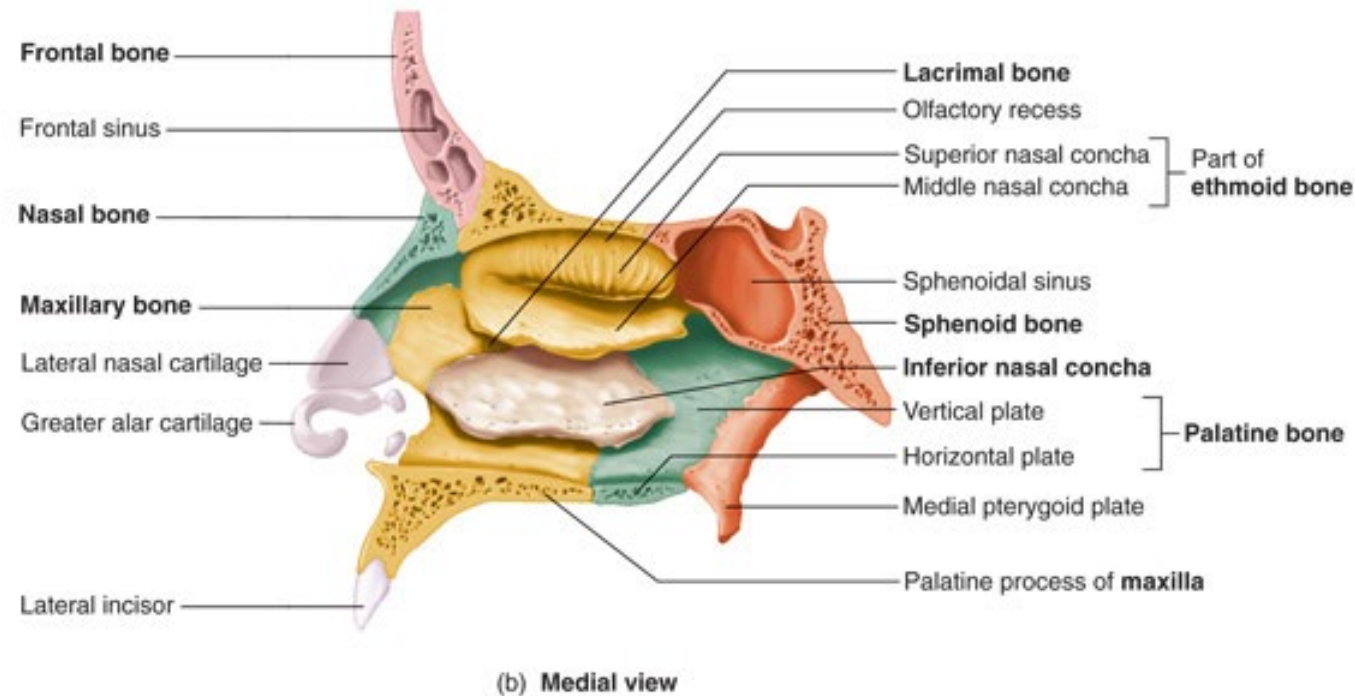
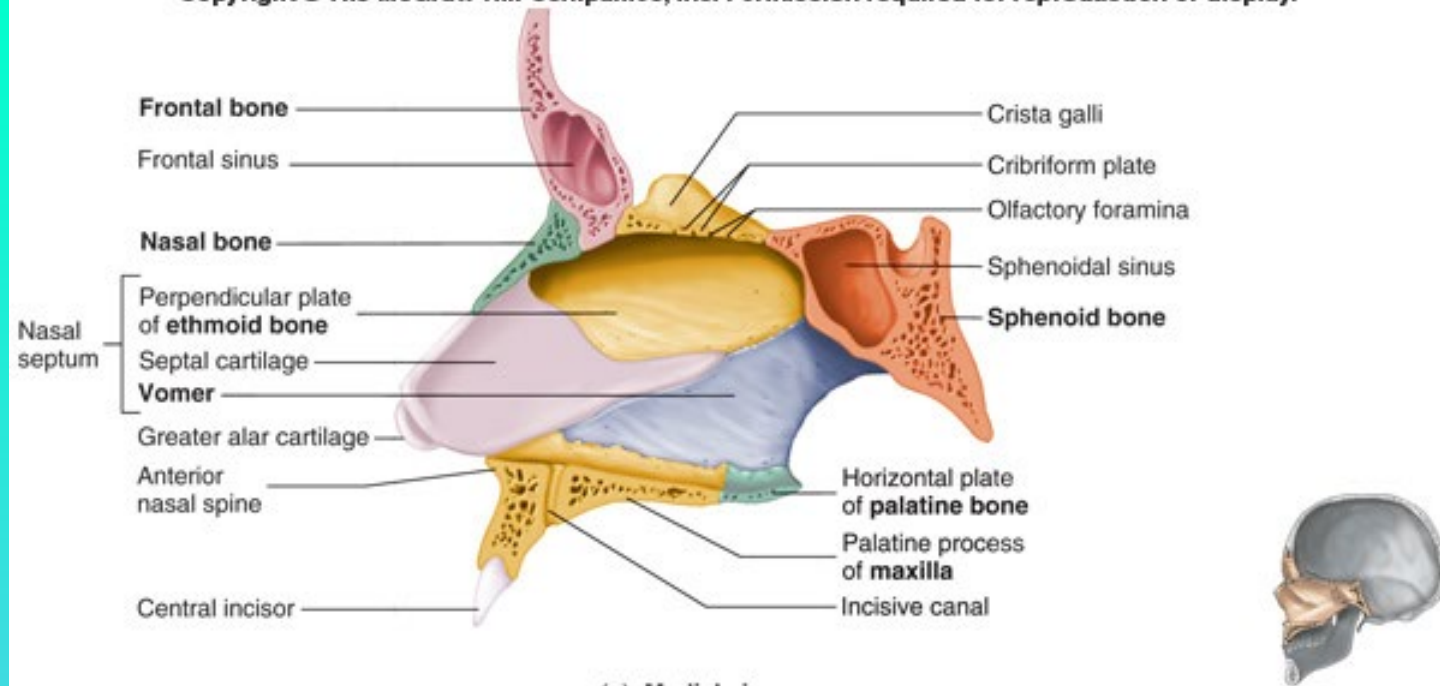


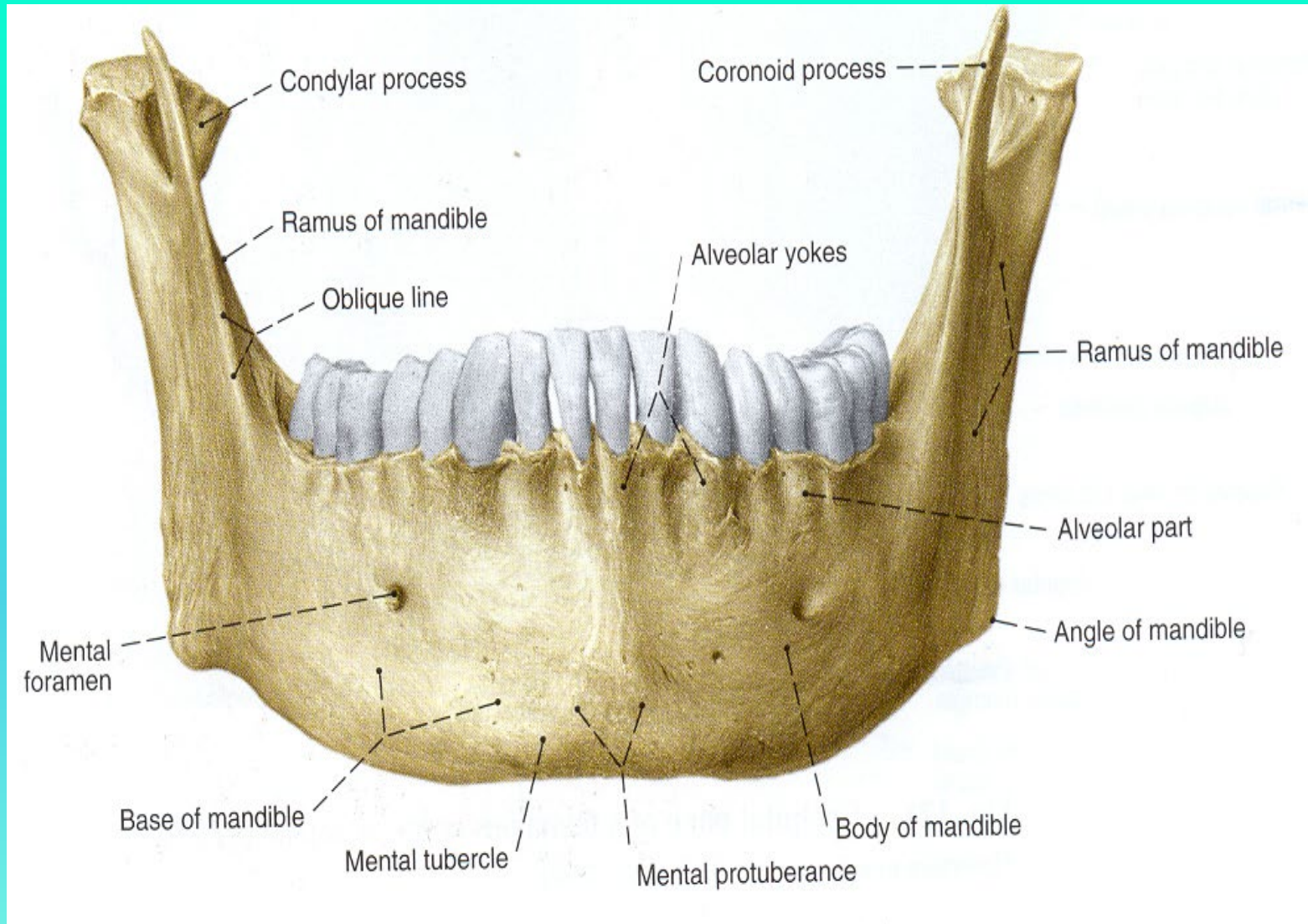


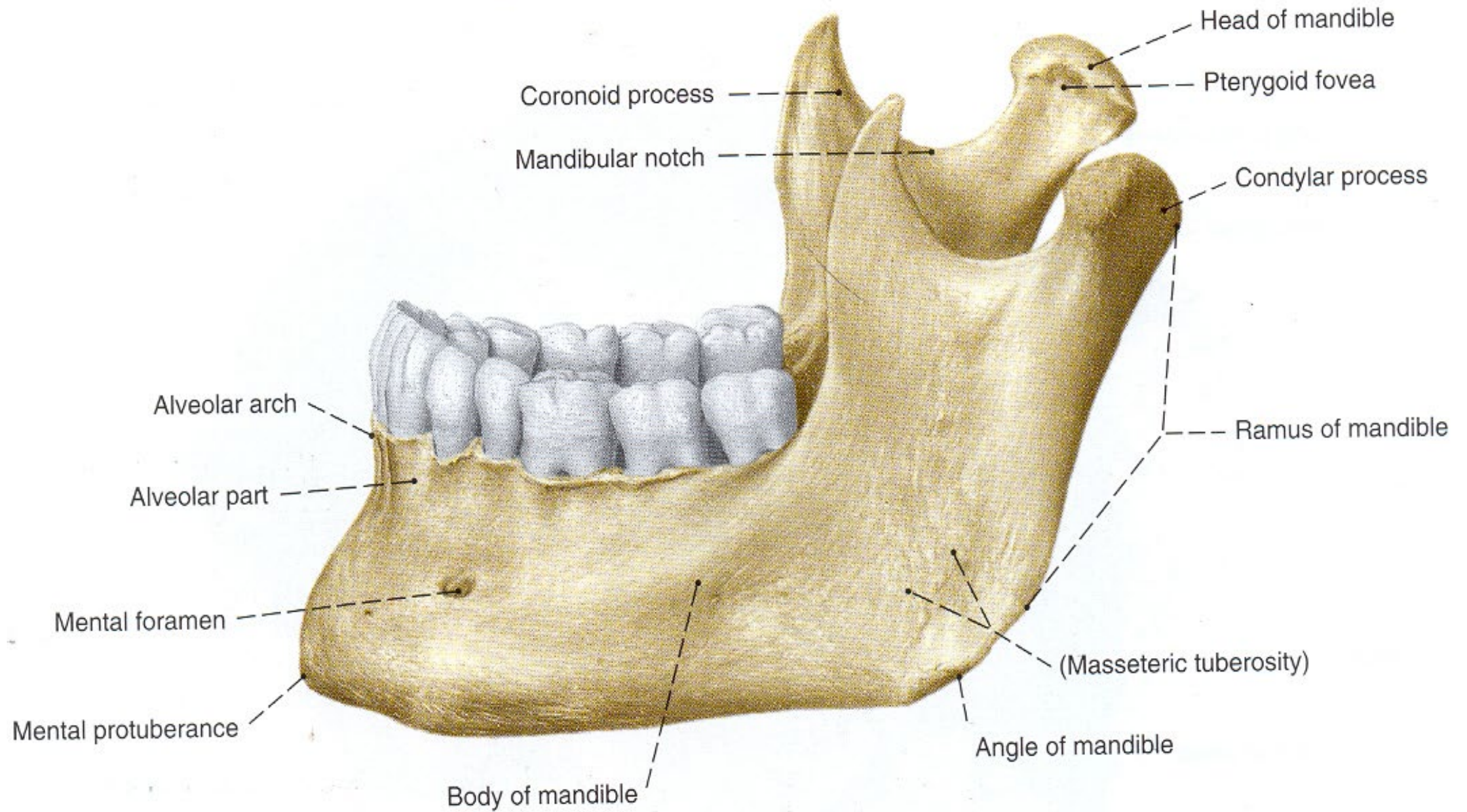
Right
Middle
Turbinates



Left
Inferior
Turbinate







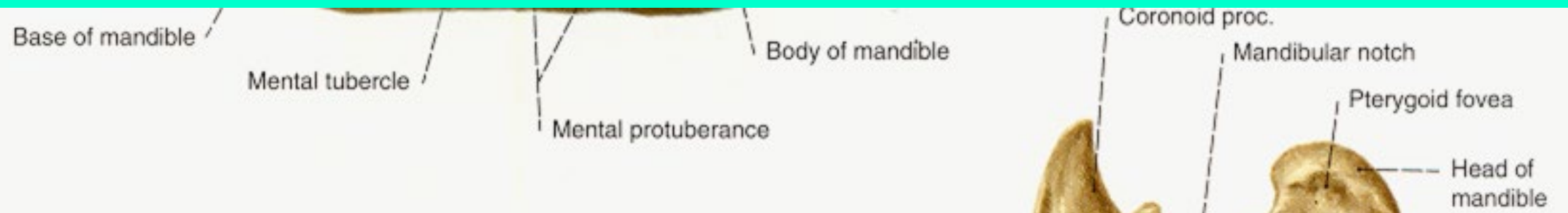


Fig. 54. Mandible. Anterior aspect.

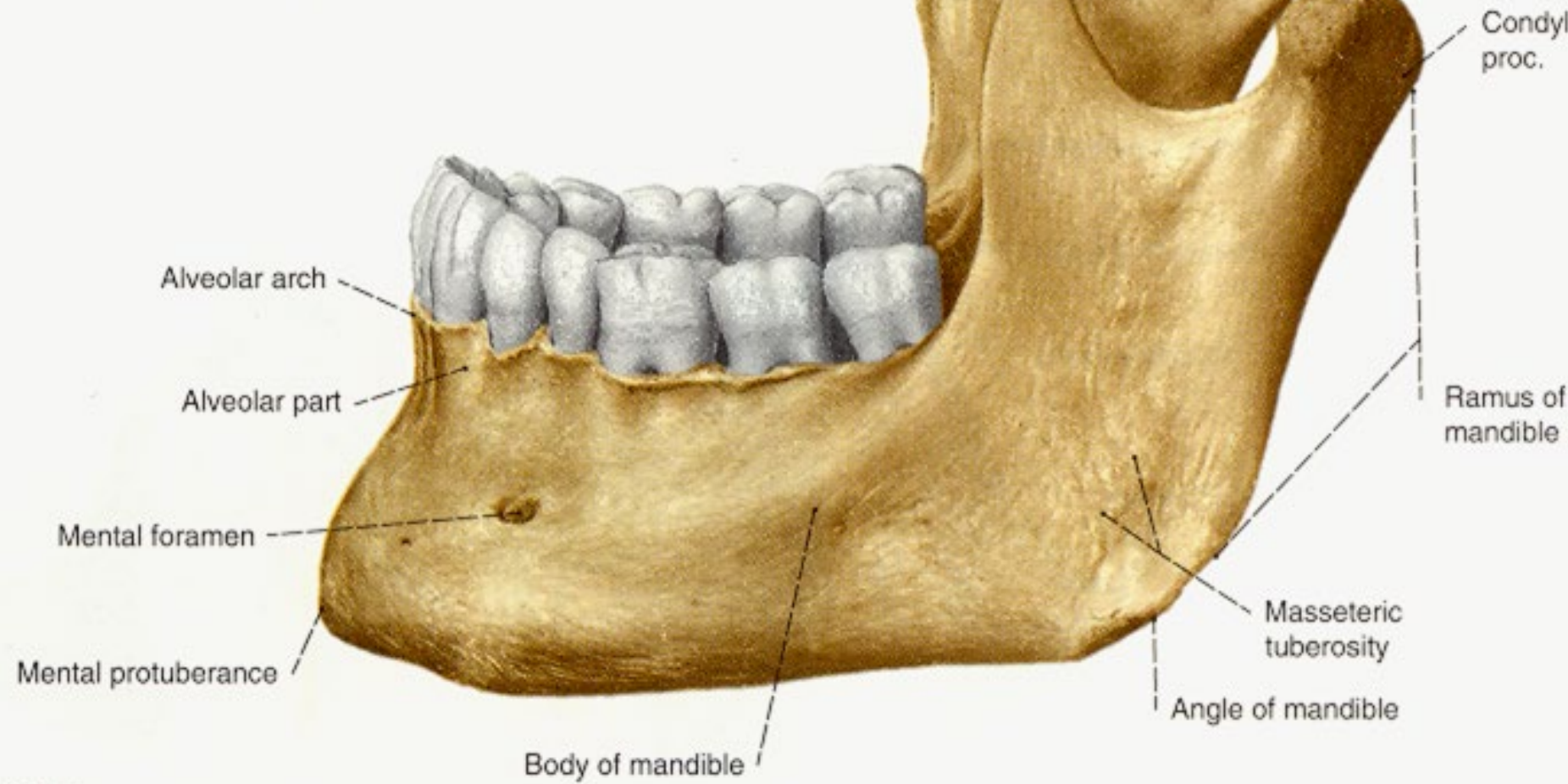


Fig. 55. Mandible. Lateral aspect.

Fig. 55. Mandible. Lateral aspect.

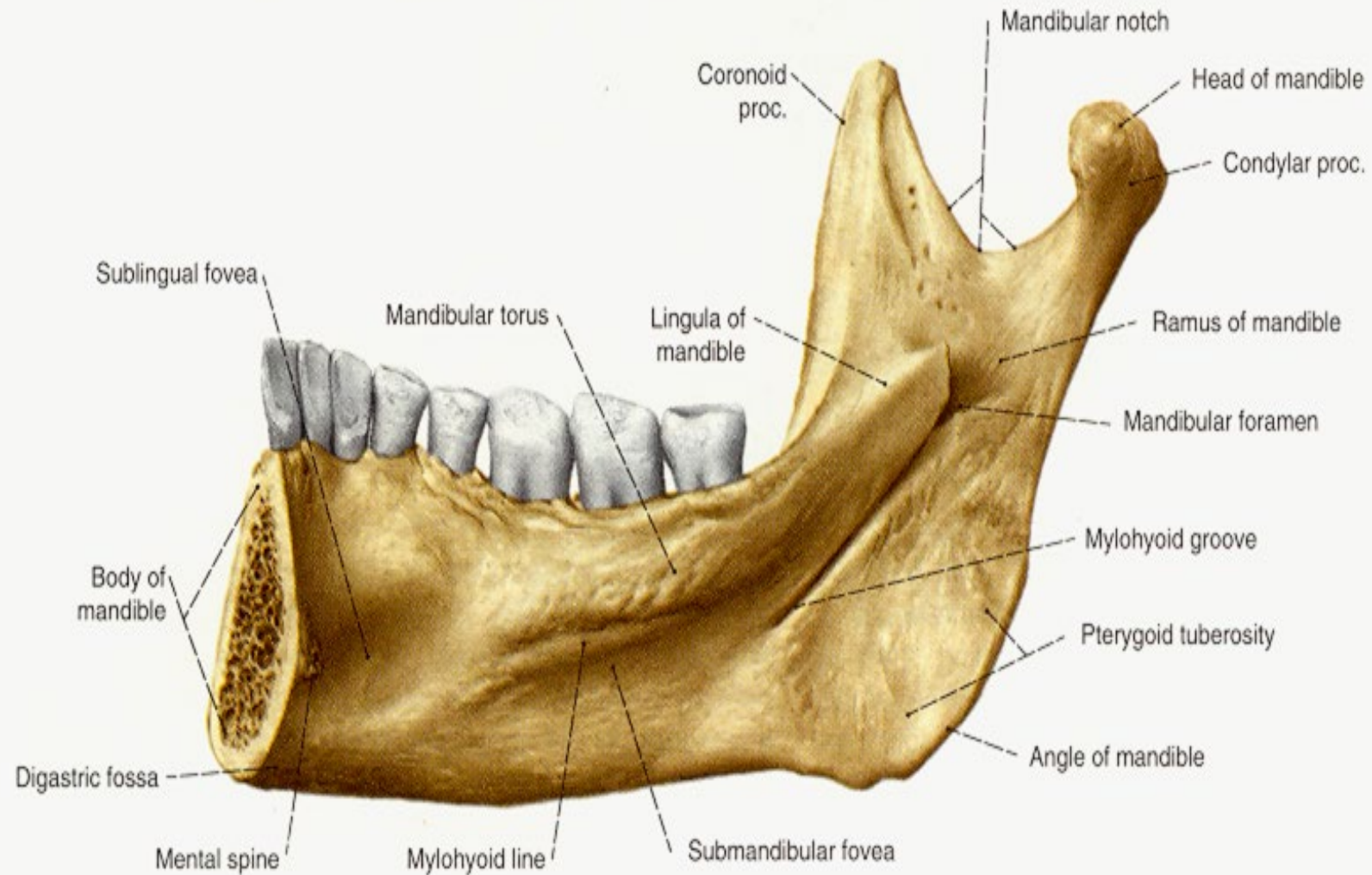


Fig. 56. Right half of the mandible. Medial aspect.

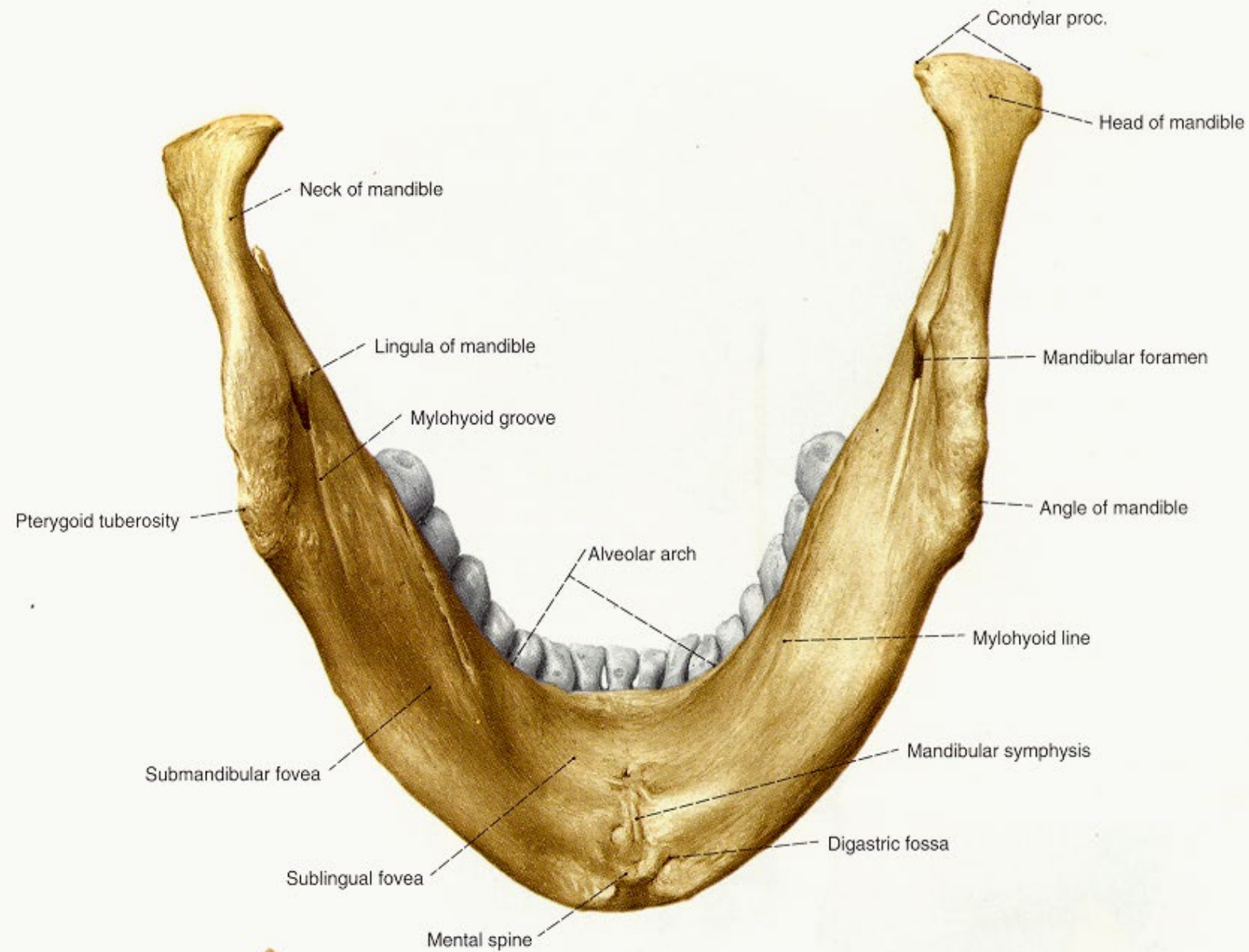


Fig. 57. Mandible. Viewed from below.

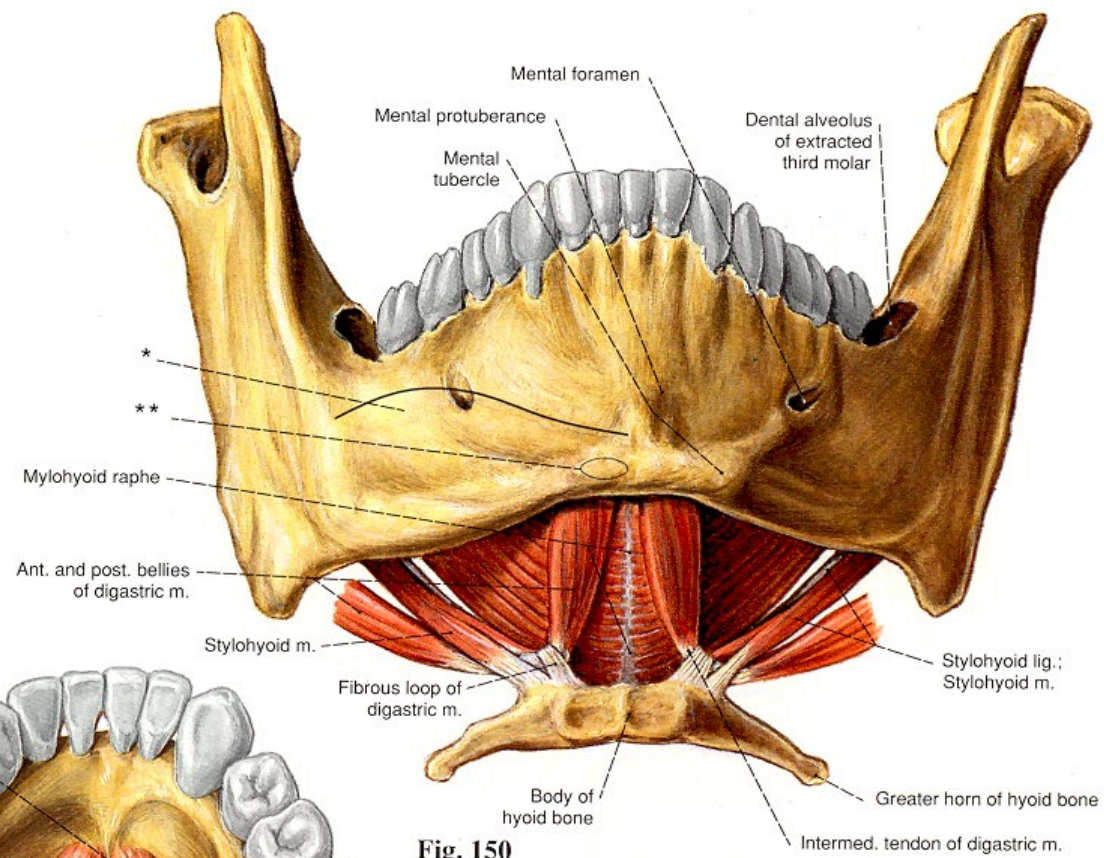


Fig. 150

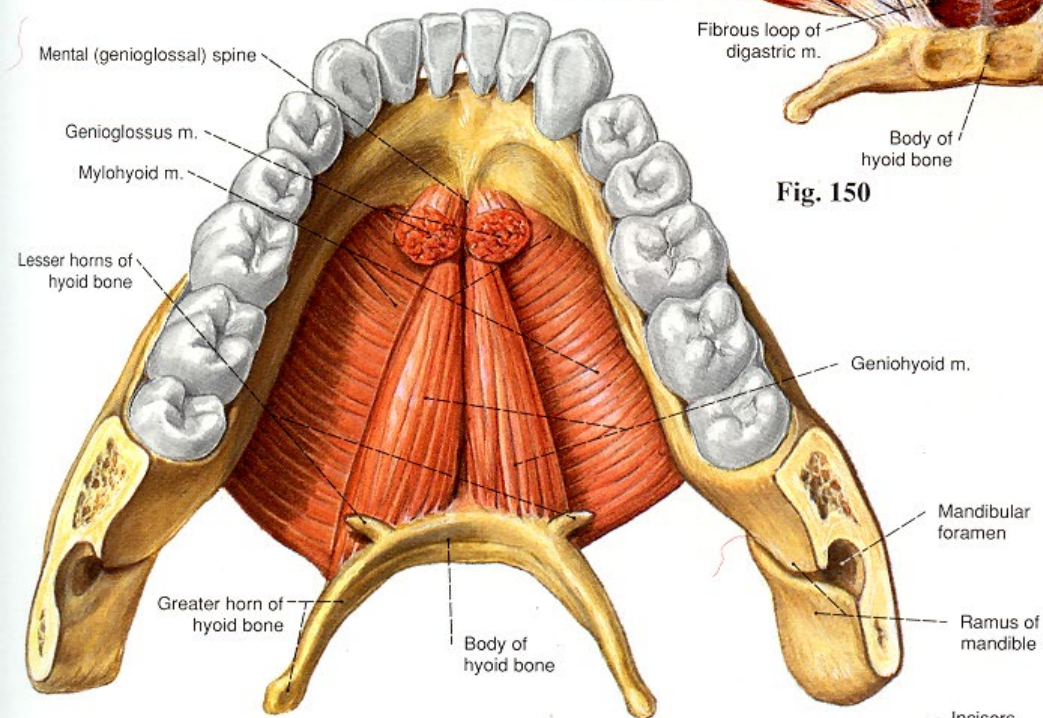
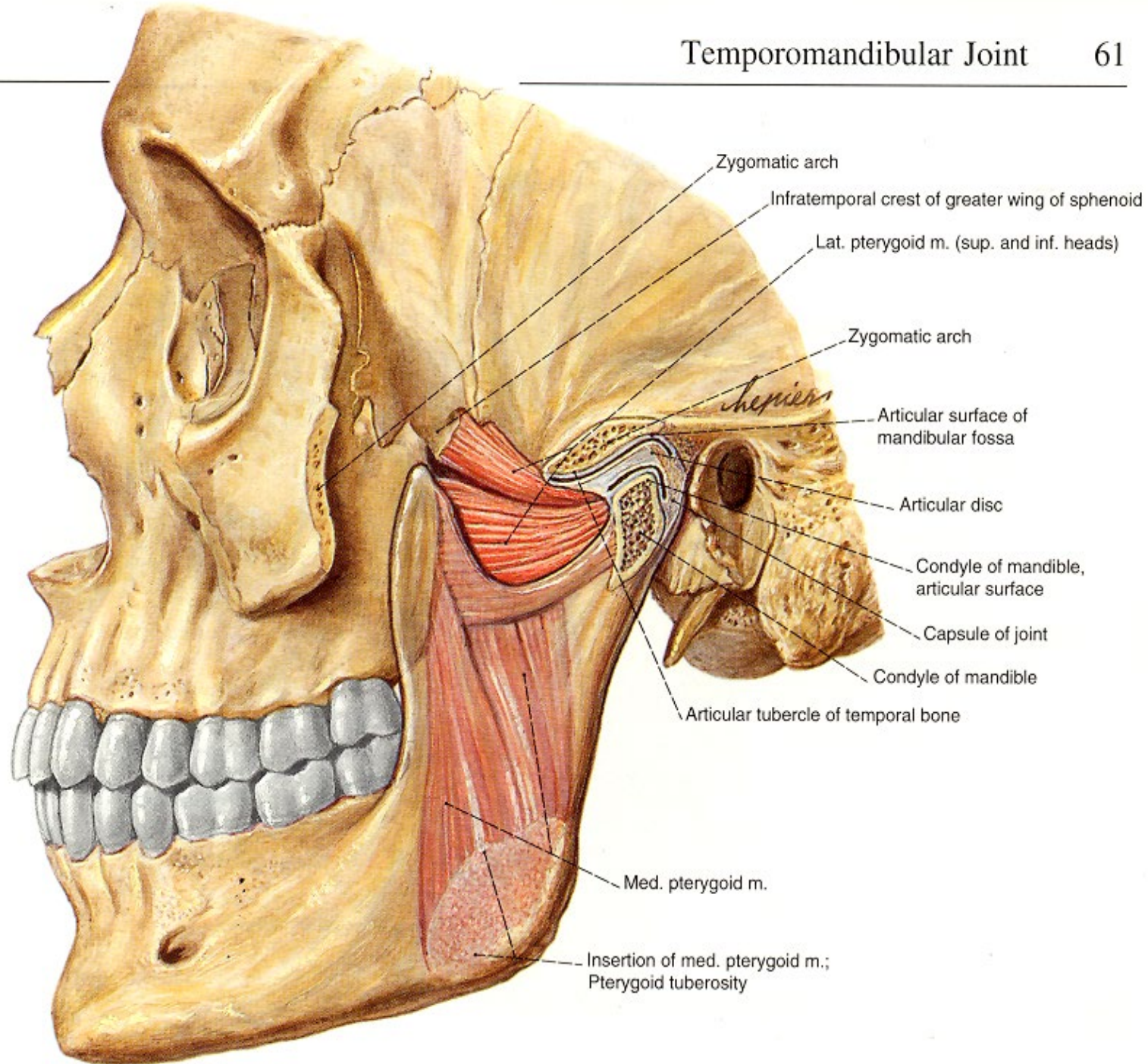
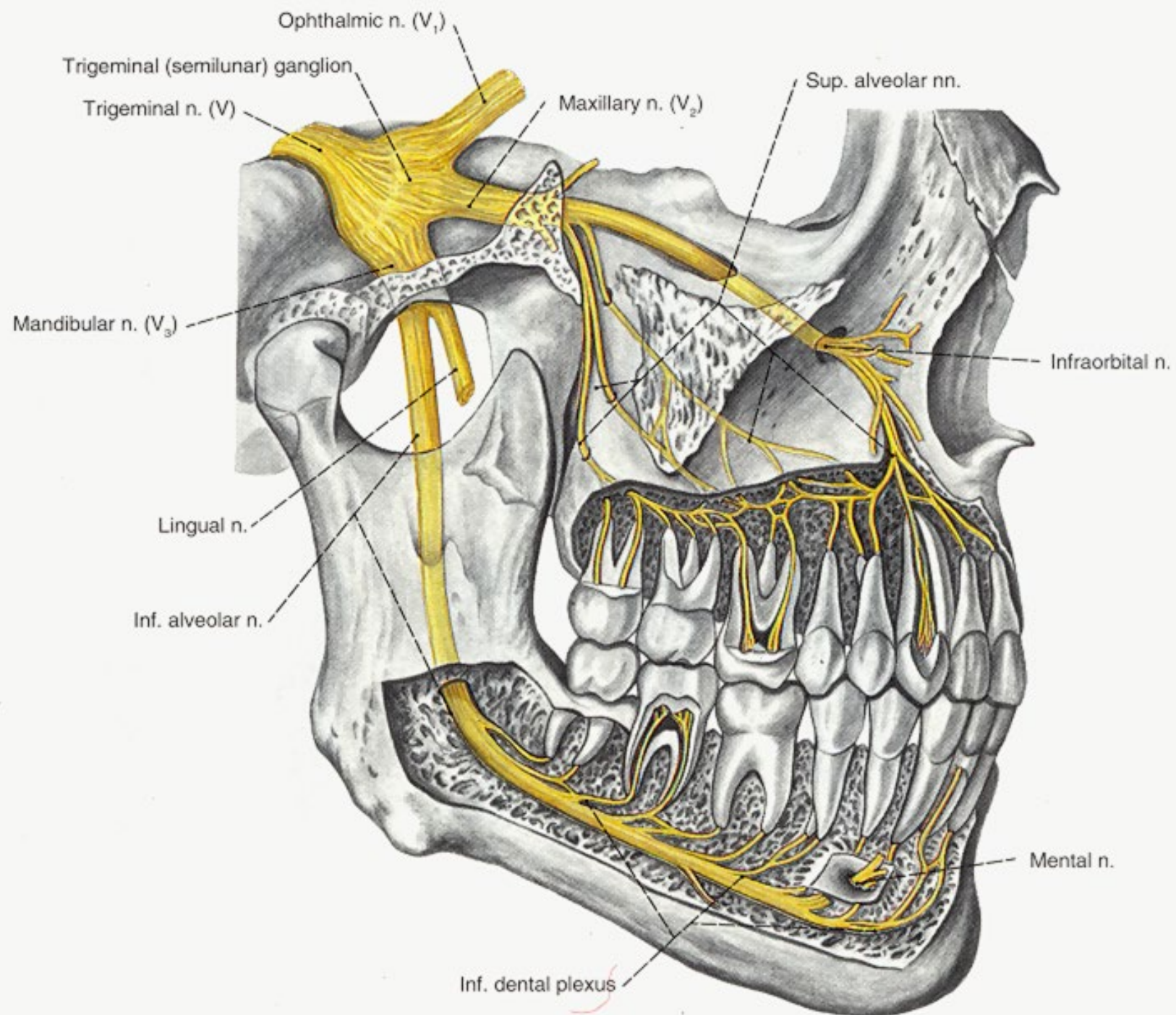


Fig. 151





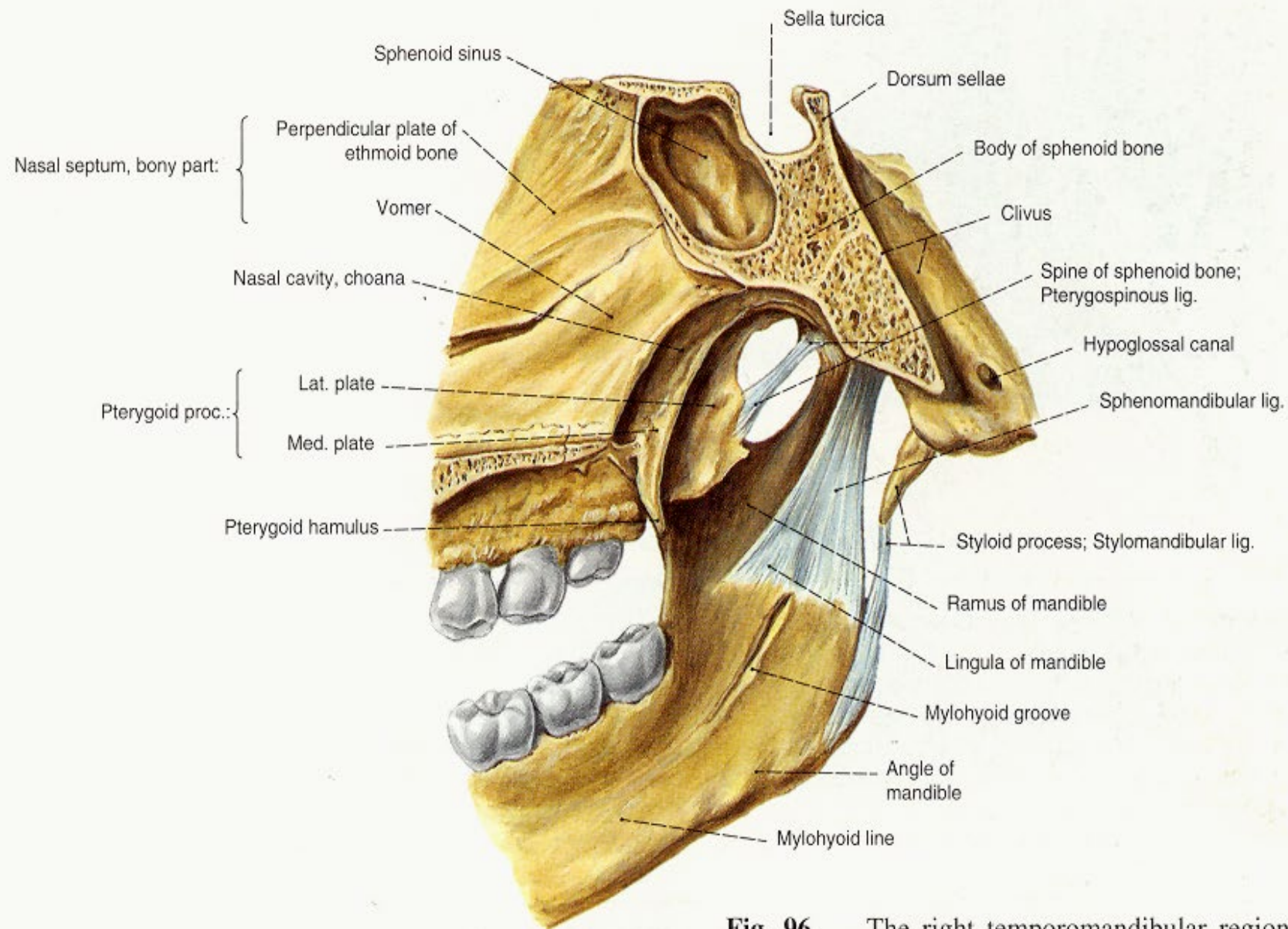
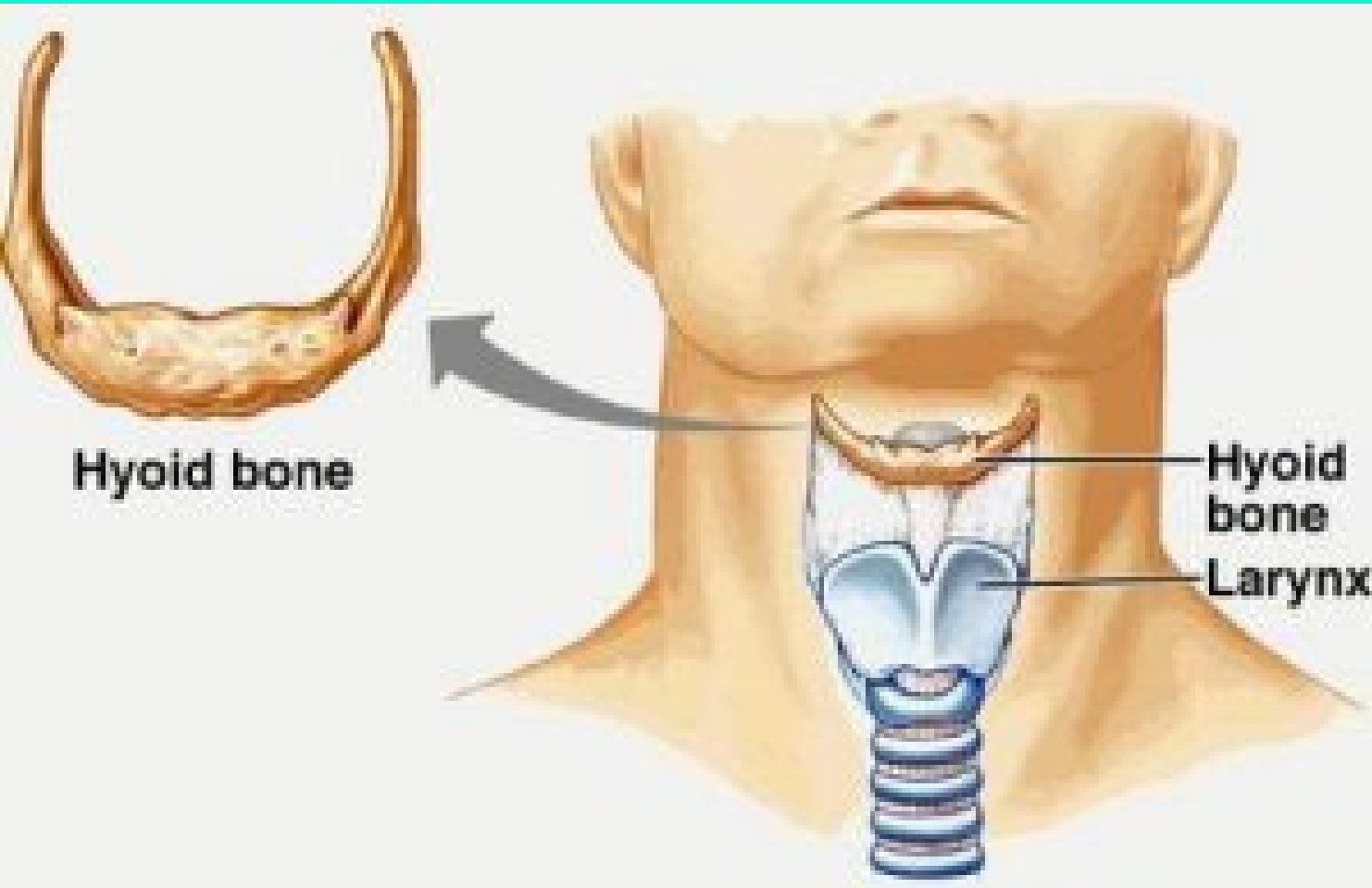
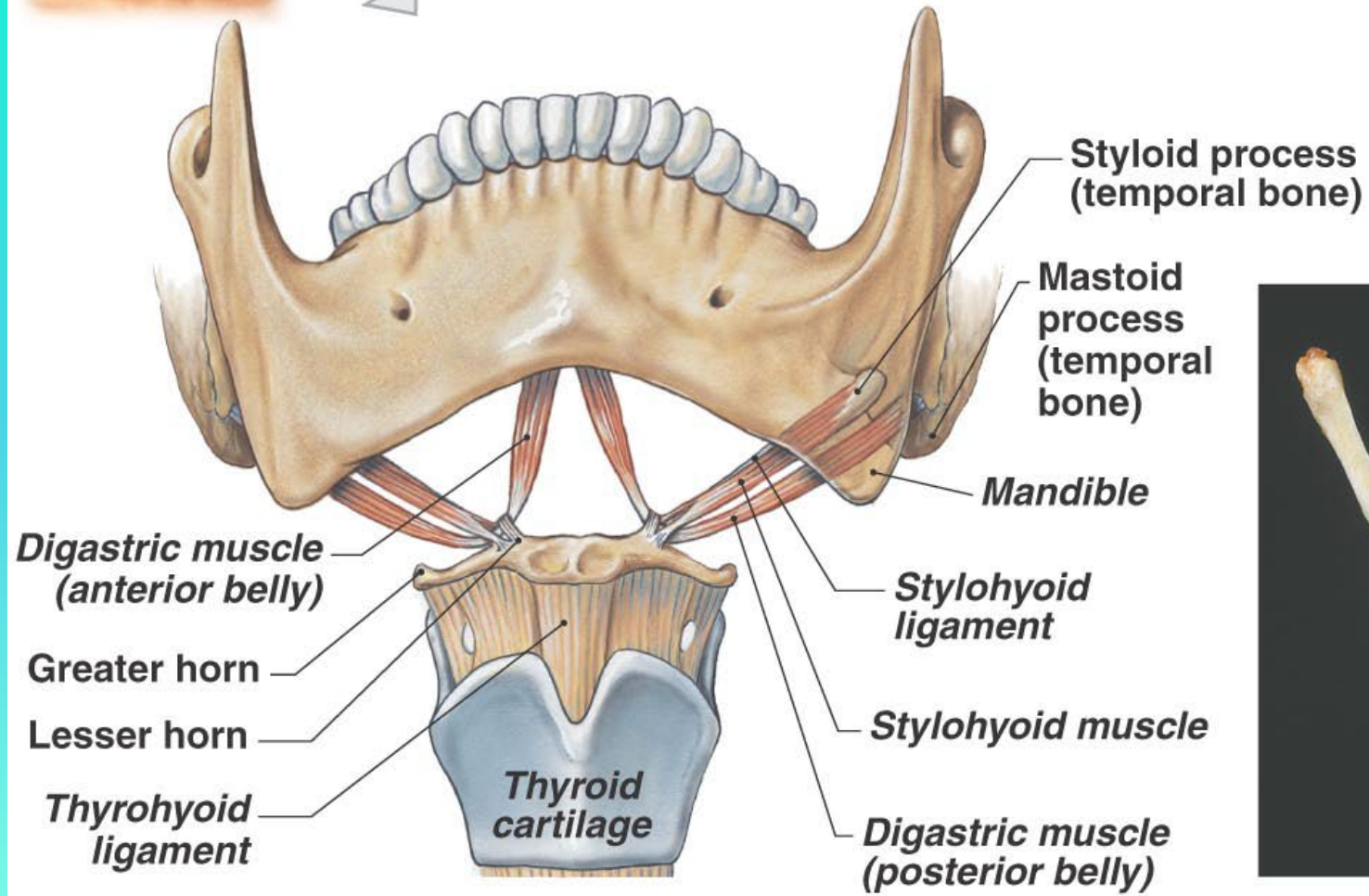
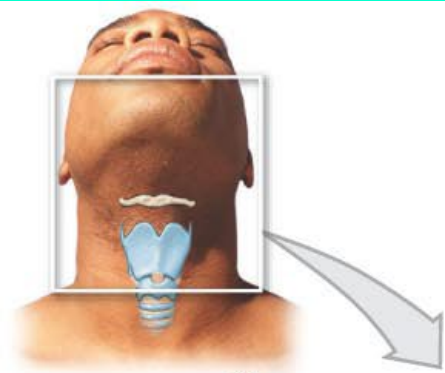


Fig. 96. The right temporomandibular region with the pterygospinous and sphenomandibular ligaments viewed from the medial aspect. A paramedian sagittal section through the sphenoid bone and the hard palate.

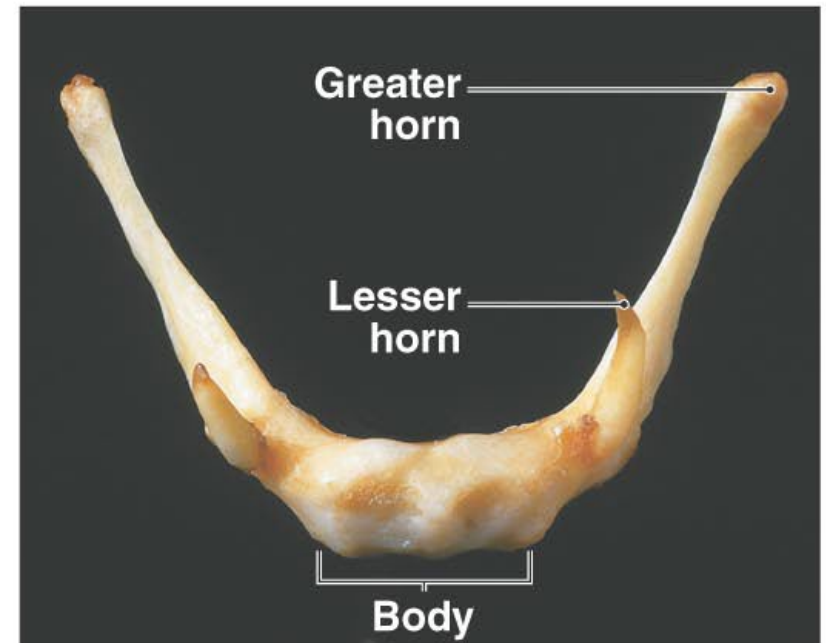
استخوان لامی (هیوئید)



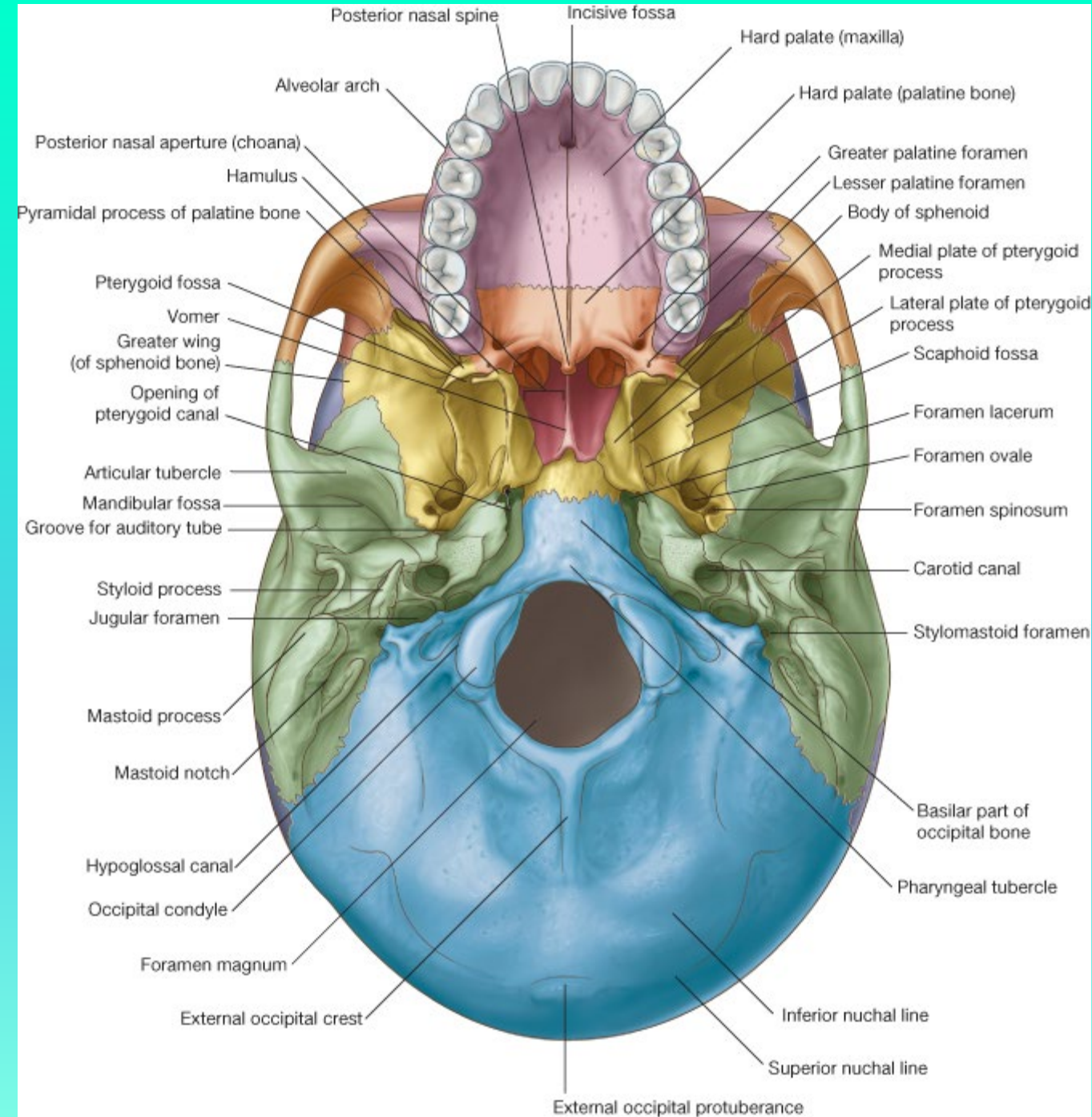
- استخوان فردی بالای حنجره
- نعل اسبی شکل
- شامل جسم، شاخ های بزرگ و شاخ های کوچک
- محل اتصال عضلاتی که در بلع، تنفس و صحبت کردن نقش دارند.

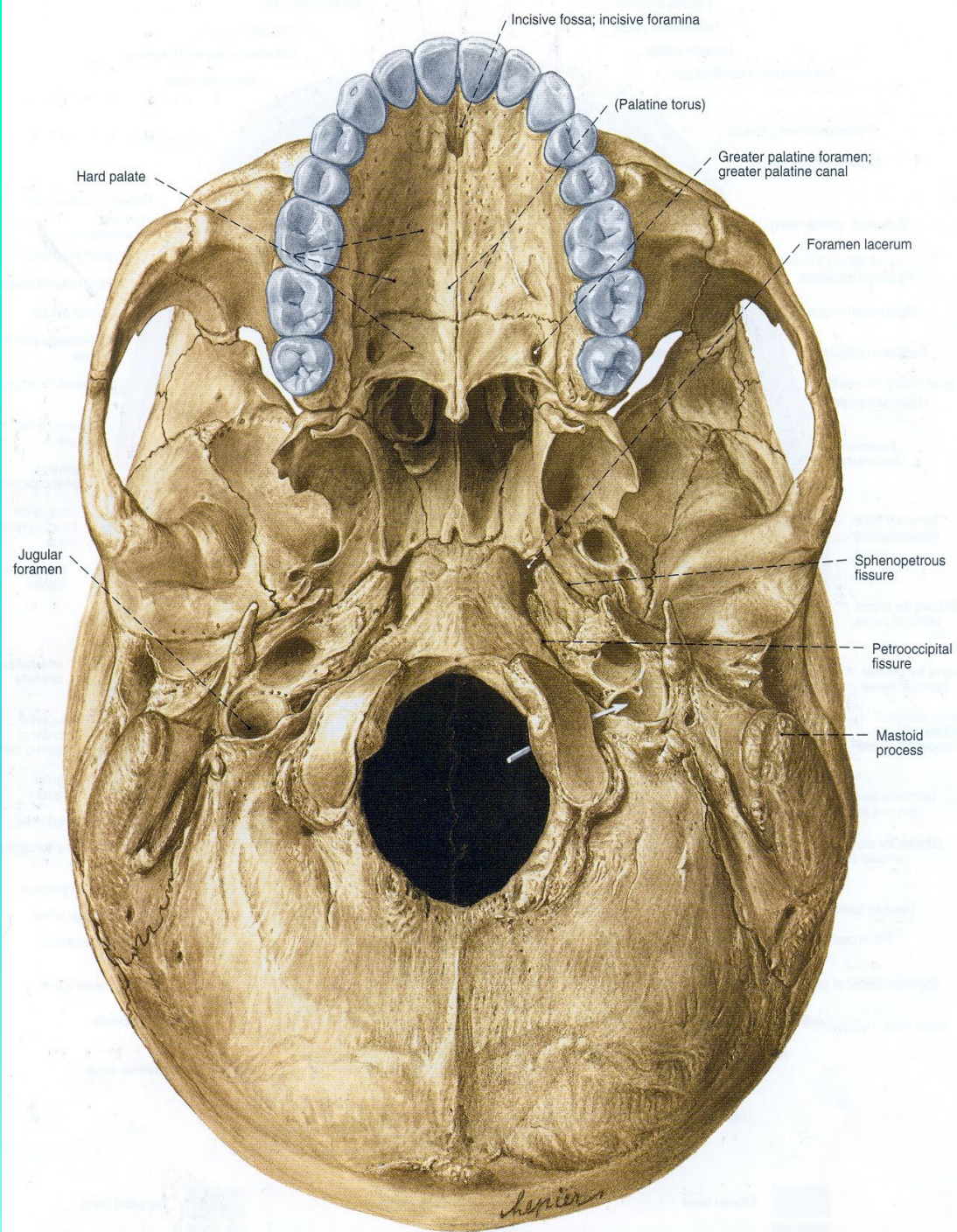


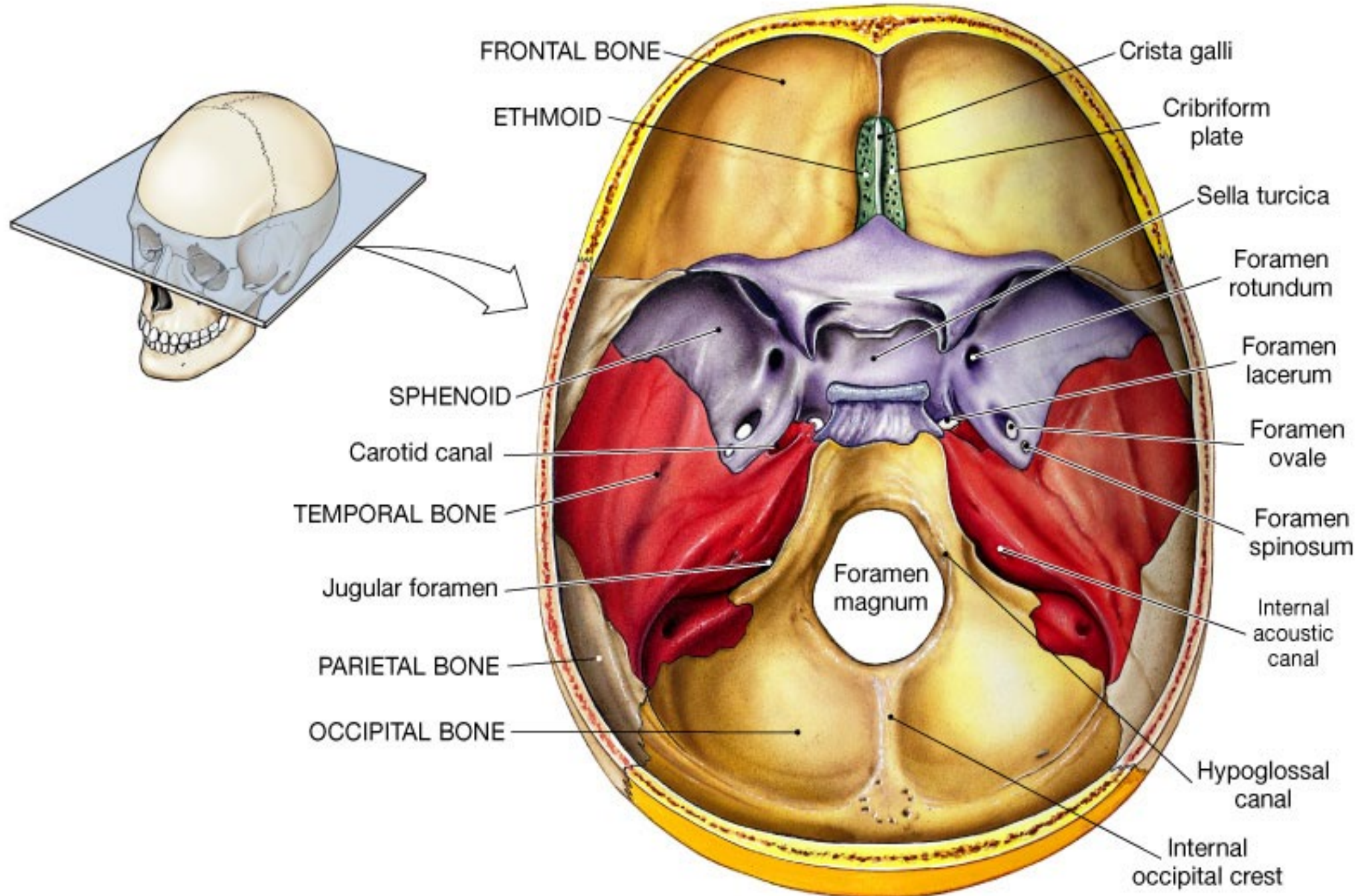
(a) Anterior view



(b) Hyoid bone, anterosuperior view

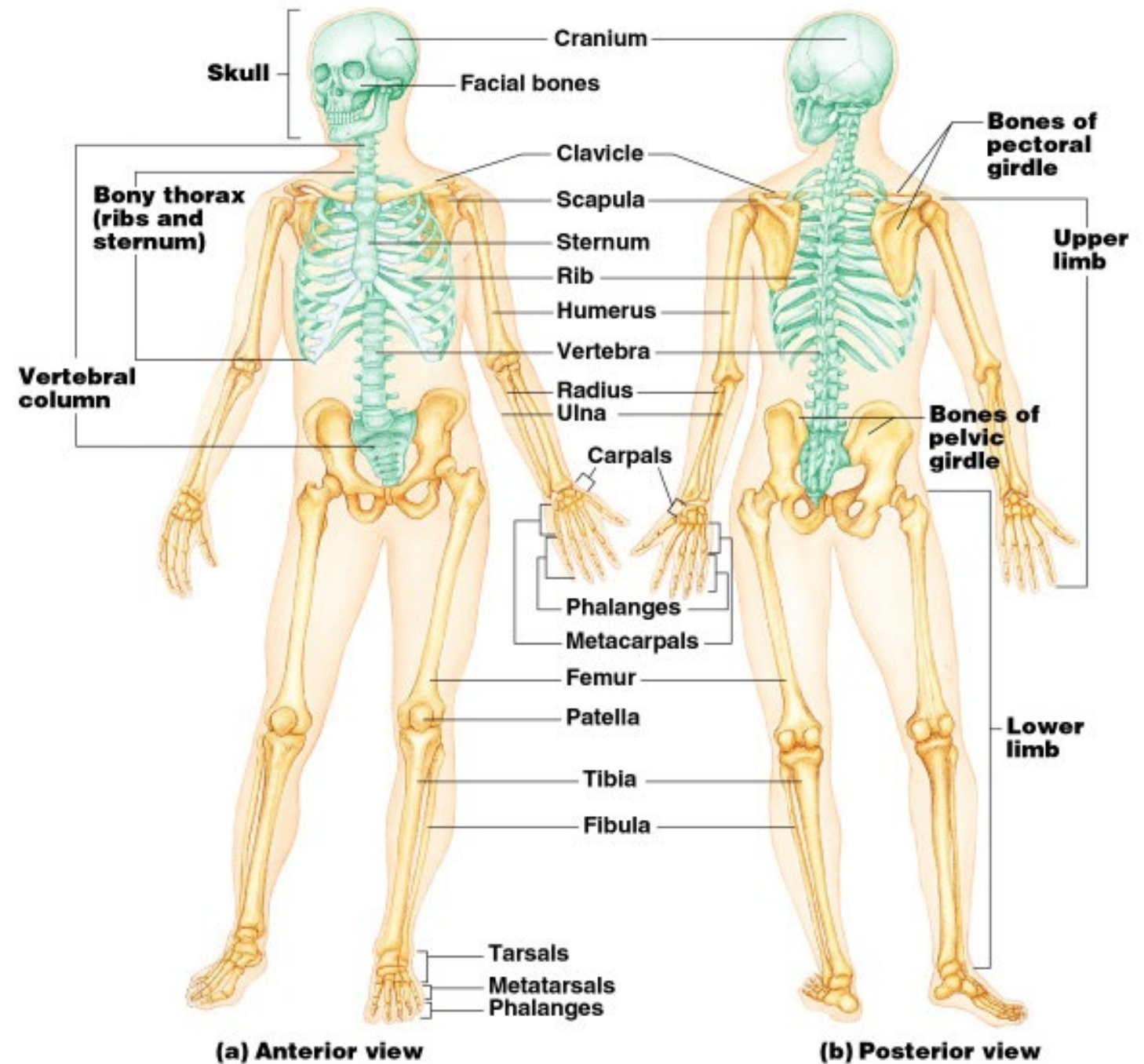




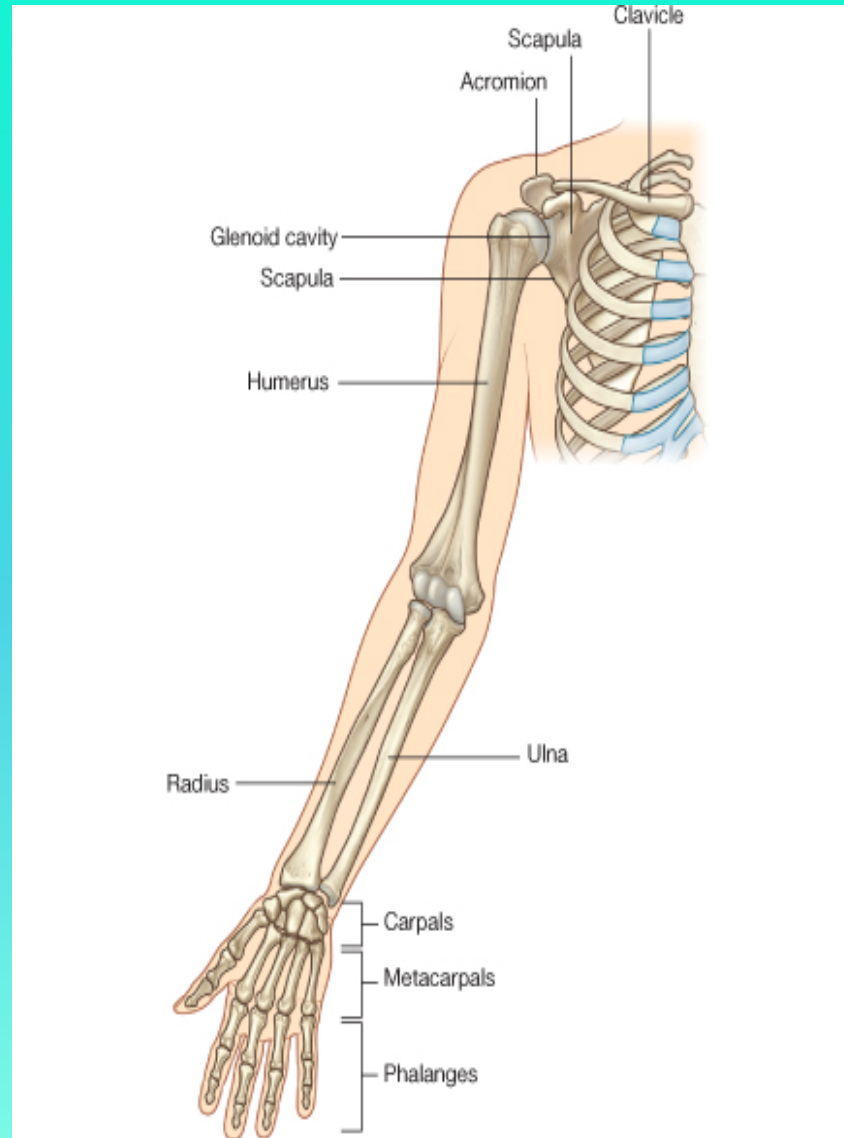


(b) Horizontal section

The Appendicular Skeleton



Upper Limbs



● کمر بند شانه

↪ کلاویکل و اسکاپولا

● بازو

↪ هومروس

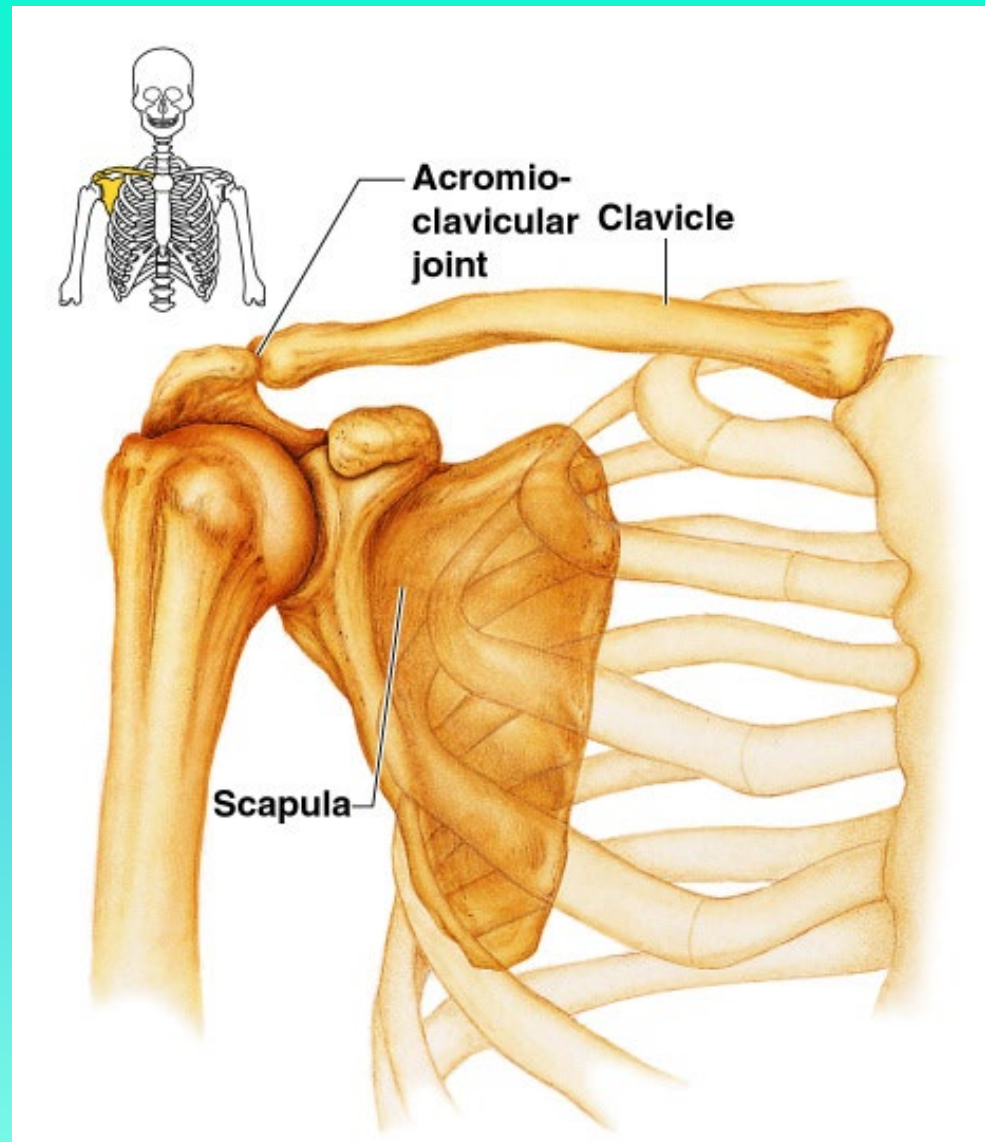
● ساعد

↪ رادیوس و اولنا

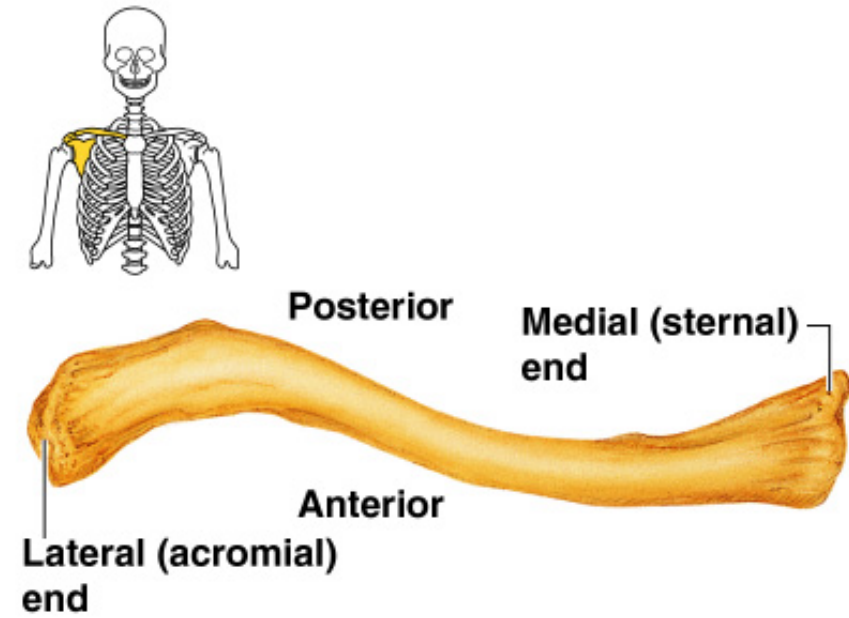
● دست

↪ مچ، کف دست و انگشتان

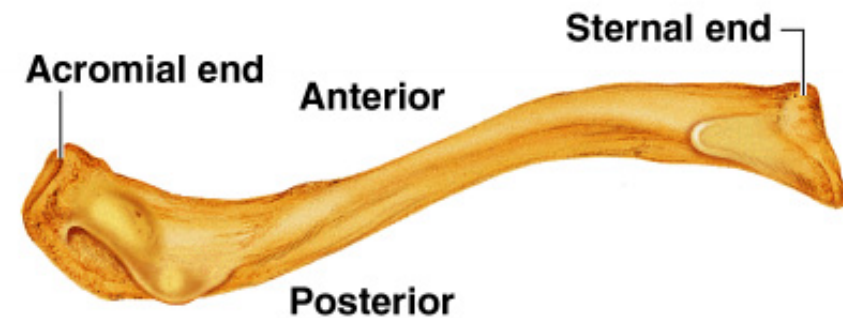
Bones of the Shoulder Girdle



(a) Articulated pectoral girdle



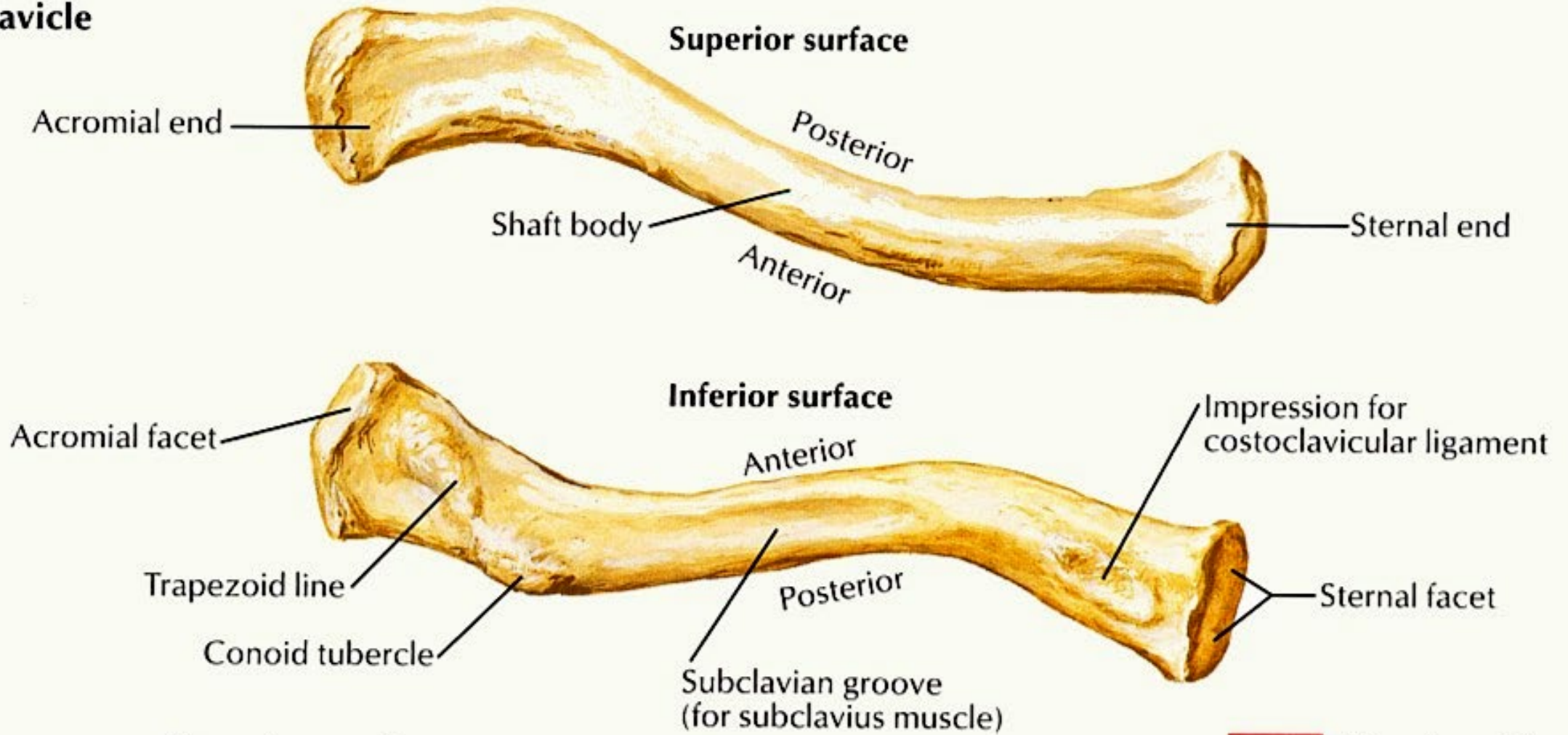
Superior view

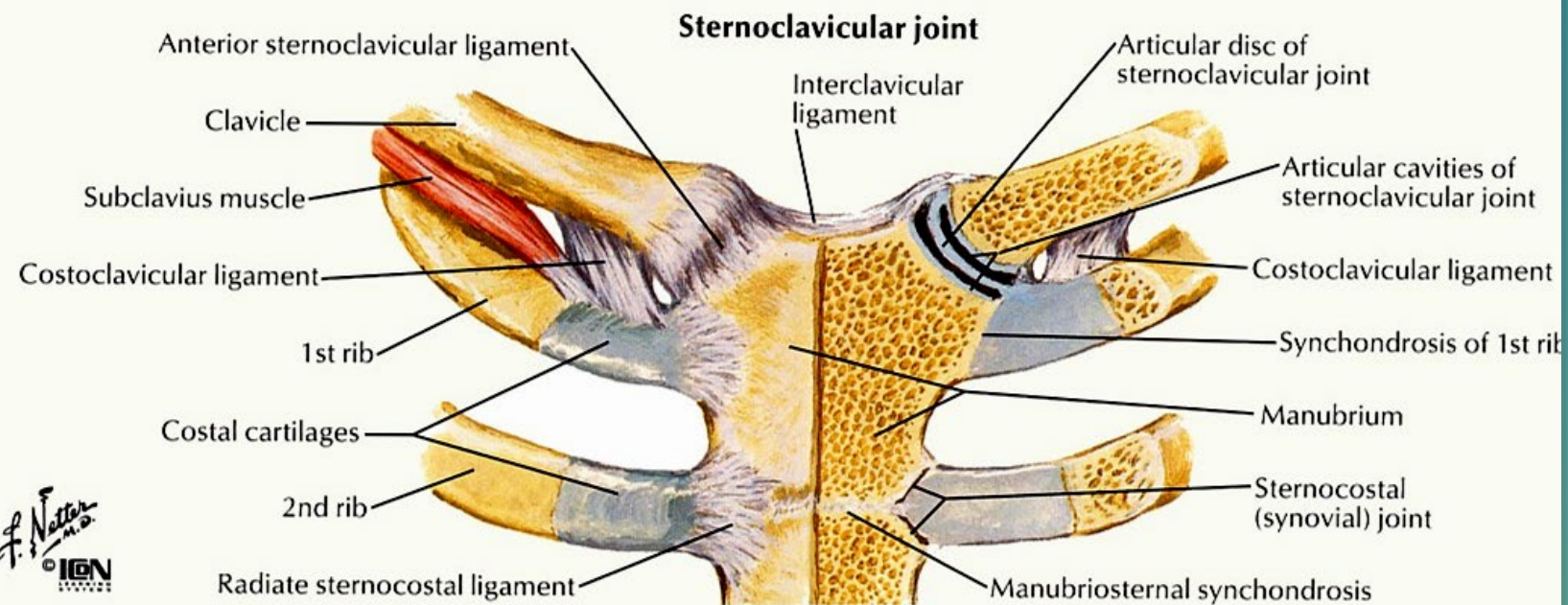
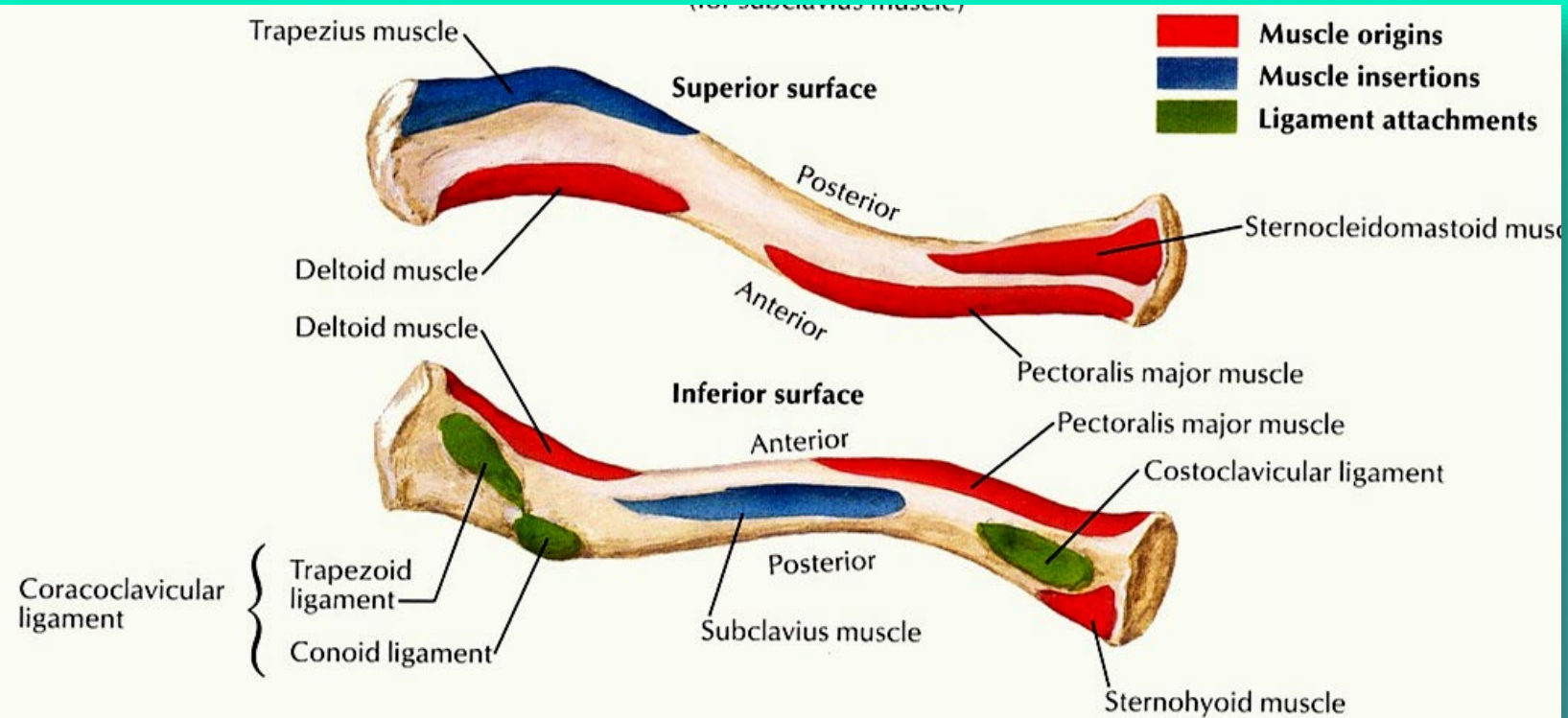


Inferior view

(b) Right clavicle

Right clavicle



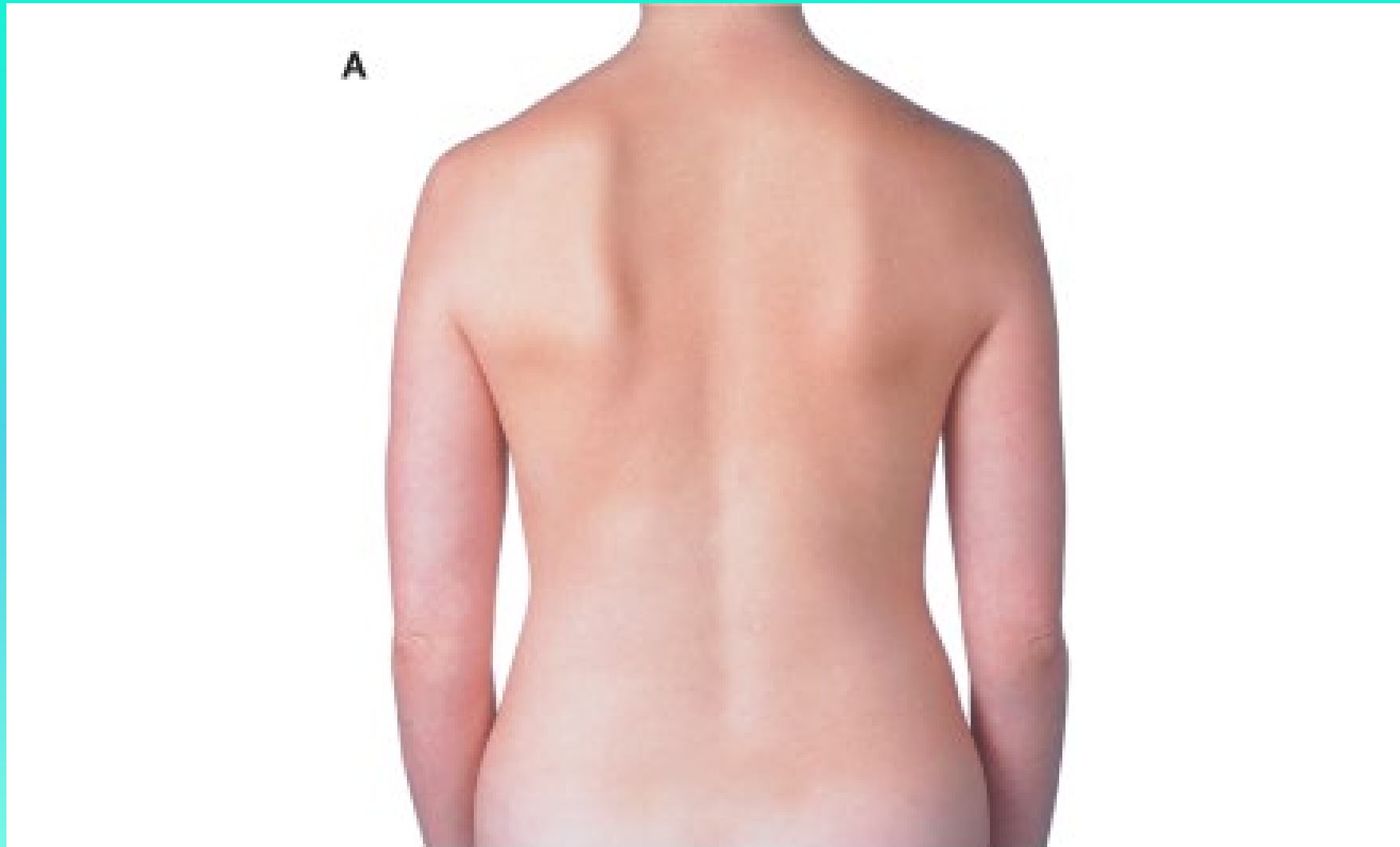


نکاتی در مورد کلاویکل

- اولین استخوانی است که استخوانی می شود (هفته پنجم داخل رحمی) و بروش داخل غشایی (اینتراممبرانوس) و توسط دو مرکز استخوانساز برخلاف استخوانهای دراز فاقد حفره مرکزی (no medulary cavity) است
- در زنان **کوتاهتر، نازکتر و با انحنای کمتر** و **انتهای آکرومیال** در سطحی پائین تر از **انتهای استرنال** (در مقایسه با مردان) قرار دارد
- در زیر پوست قابل لمس است
- حدود ۱۴ سانتیمتر طول دارد
- انتهای استرنال، انتهای در حال رشد است (حدود ۲۰ سالگی استخوانی می شود)
- انتهای لترال (آکرومیال) **تخت بوده و مفصل شدن** با لبه مدیال آکرومیون (نوک شانه)
- **انتهای مدیال مکعبی، مفصل شدن** با استرنوم (برای تشخیص استخوان راست از چپ)
- **محل شکستگی:**

بین یک سوم لترال و دو سوم مدیال

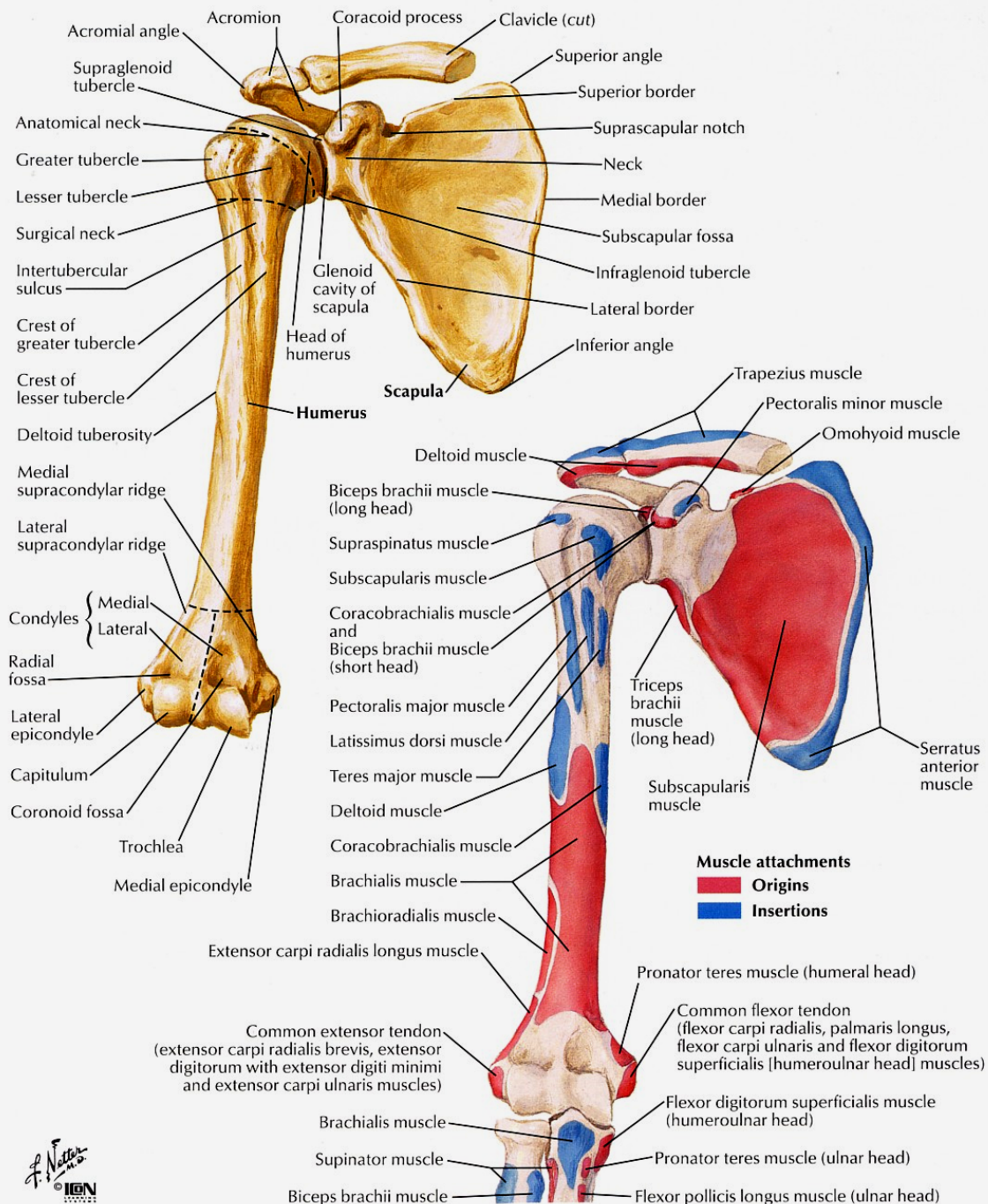
SCAPULA



SCAPULA



اسکاپولا (کتف)



- در مقابل دنده های دو تا هفت و در سطح خلفی قفسه سینه قرار دارد
- دارای سر و گردن و
- سه کنار، سه زاویه، دو سطح و دو زائده آکرومیون و کوراکوئید است
- کناره ها عبارتند از: **مدیال (ورتمبرال)**، **لترال (آگزیلاری)** و **فوقانی**
- سوپرا اسکاپولار ناچ در کناره فوقانی قرار دارد
- زاویه ها: **فوقانی**، **تحتانی** و **لترال**
- در زاویه لترال، حفره گلنوئید قرار دارد
- سوپرا و اینفرا گلنوئید **توبرکل** در بالا و پائین حفره گلنوئید قرار دارند
- **فرورفتگی سطح قدامی (کوستال)**، اسکاپولار فوسا نام دارد

سطح دور سال

- وجود خار یا اسپاین

- که مثلثی و تقریباً افقی است

- و زیر پوست قابل لمس است

- کنار خلفی آن آزاد بوده

- در حالیکه راس آن بسمت داخل می باشد

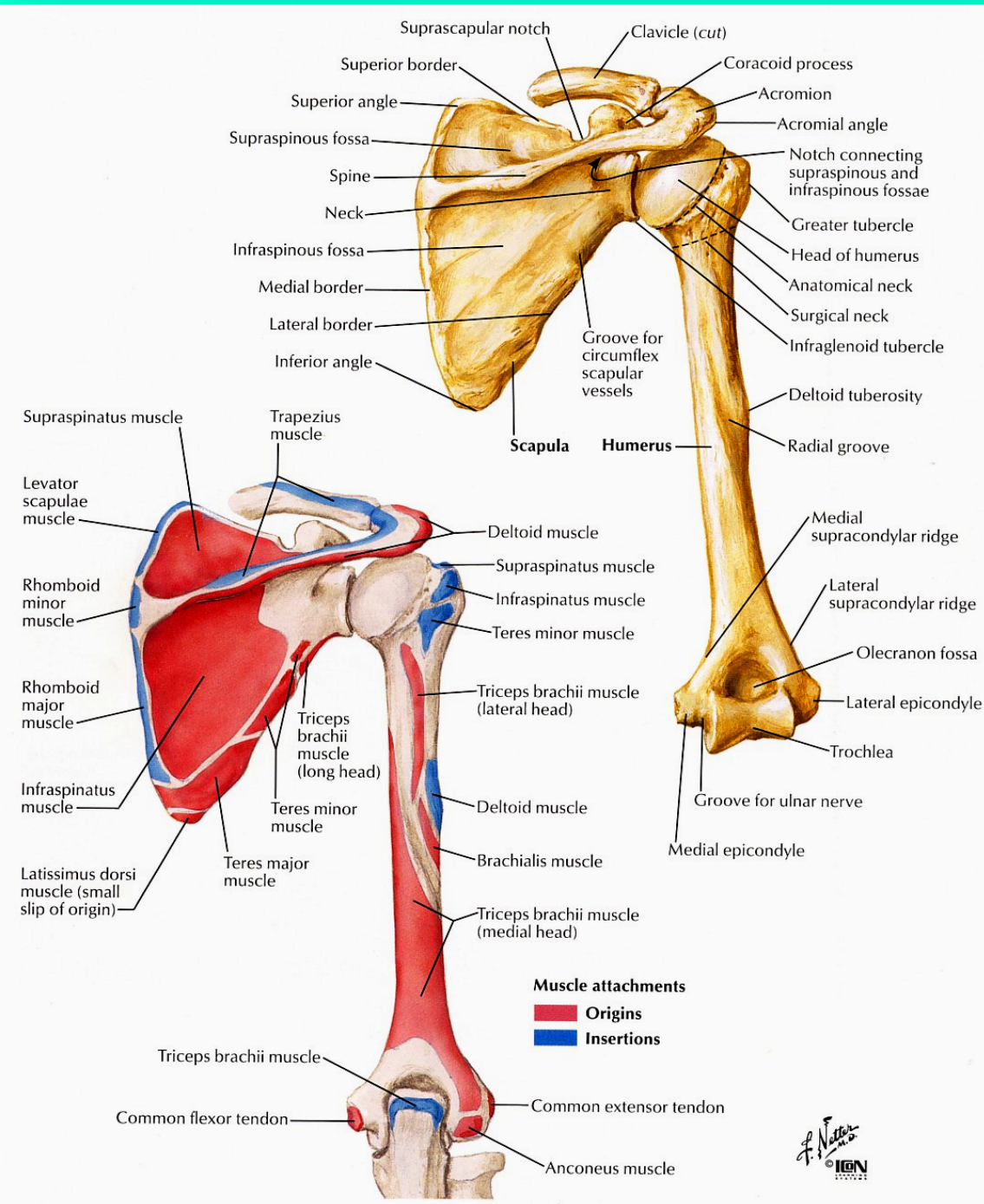
- در امتداد آن آکرومیون واقع شده است

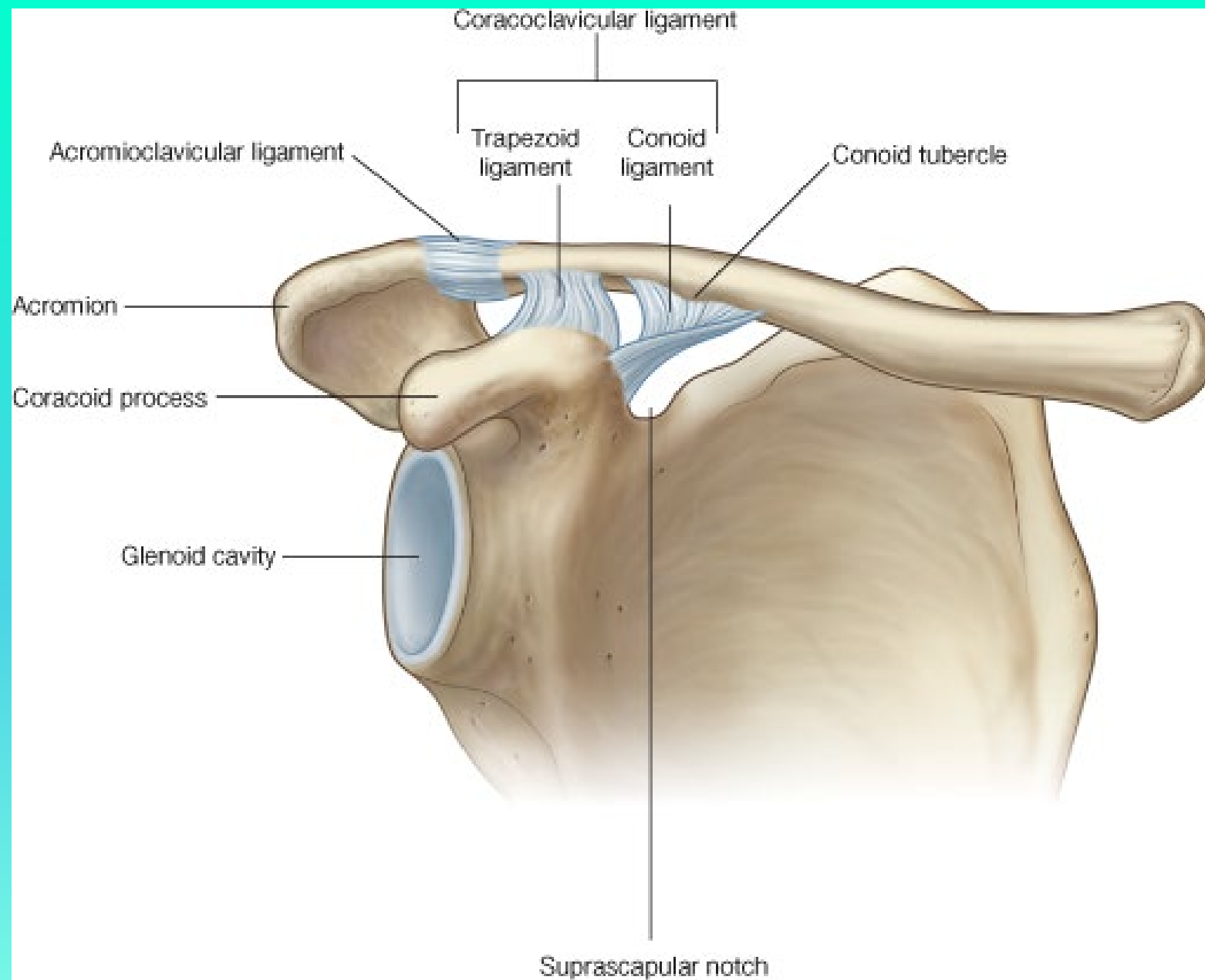
- حفرات سوپرا و اینفرا اسپیناتوس در بالا و پائین

- خار اسکاپولا قرار دارند

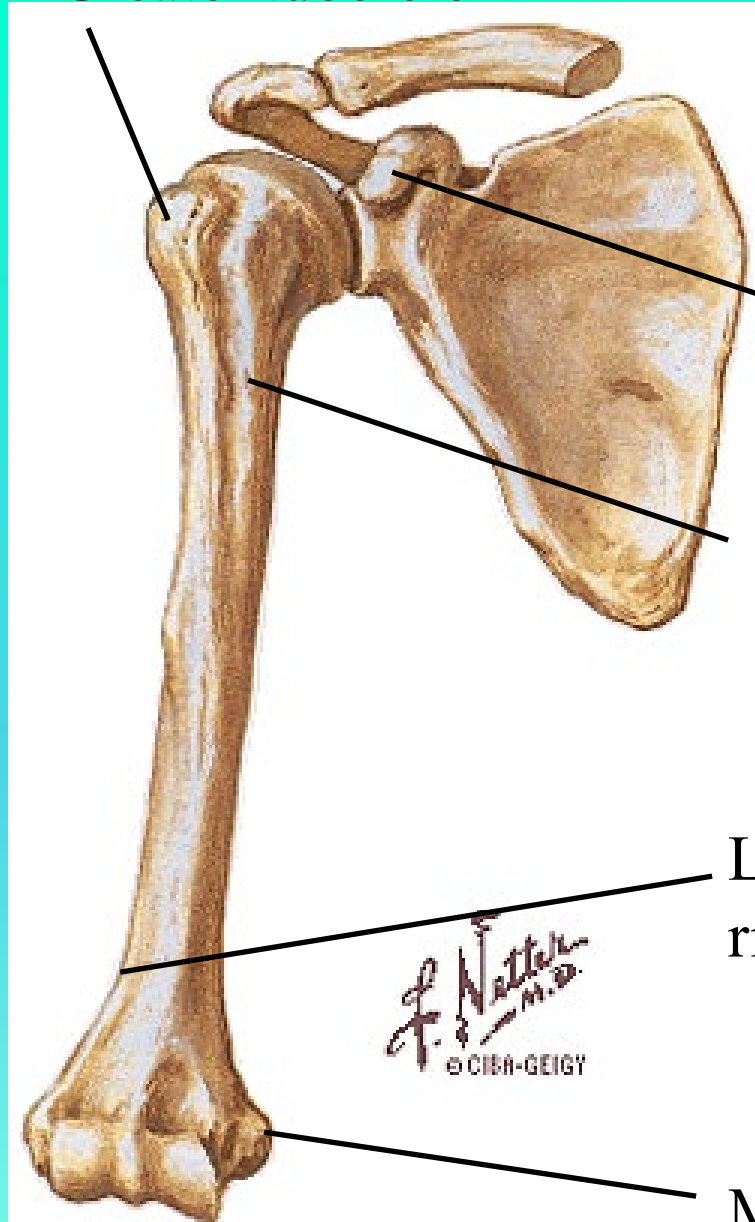
- به اتصال عضلات در سطح خلفی اسکاپولا توجه

شود





Greater tubercle



Spine of
scapula

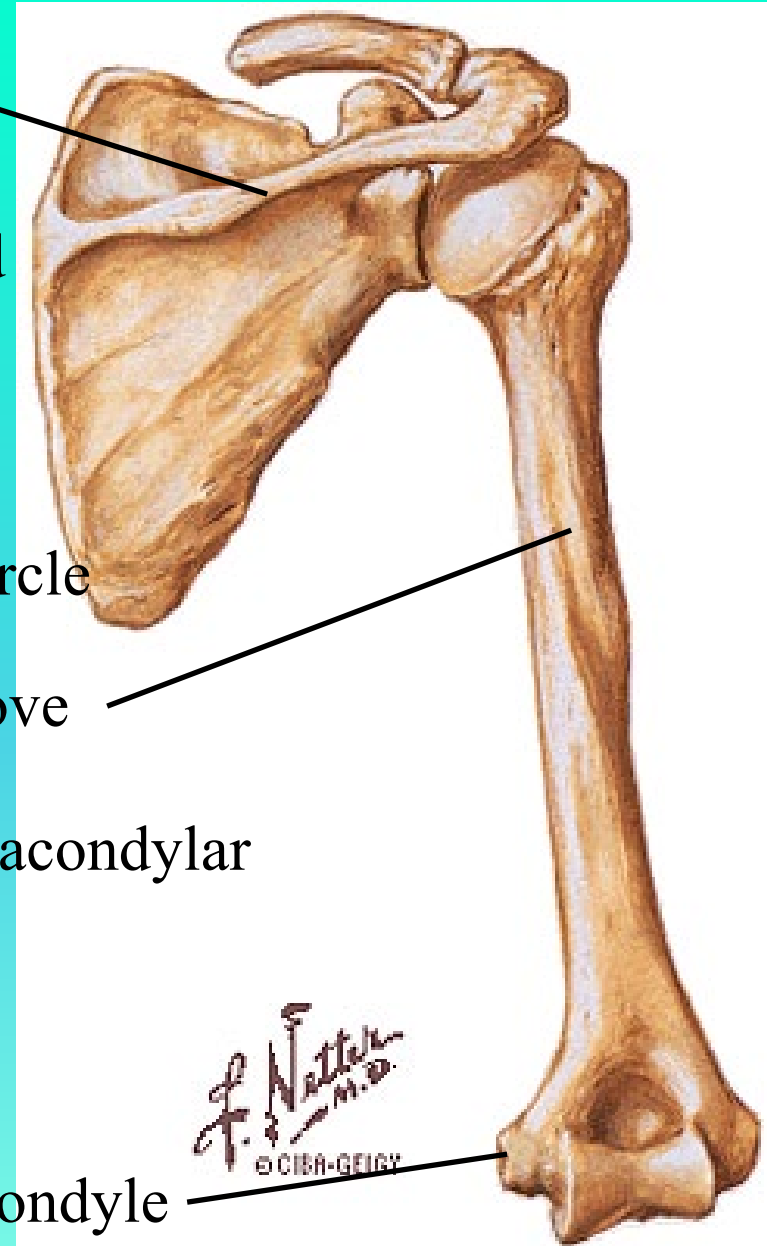
Coracoid
process

Crest of
lesser tubercle

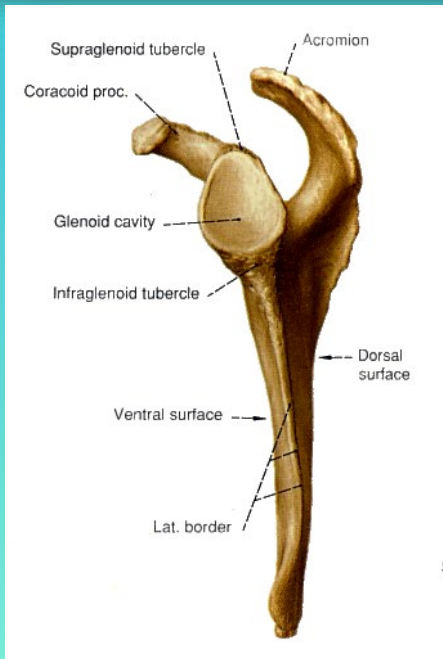
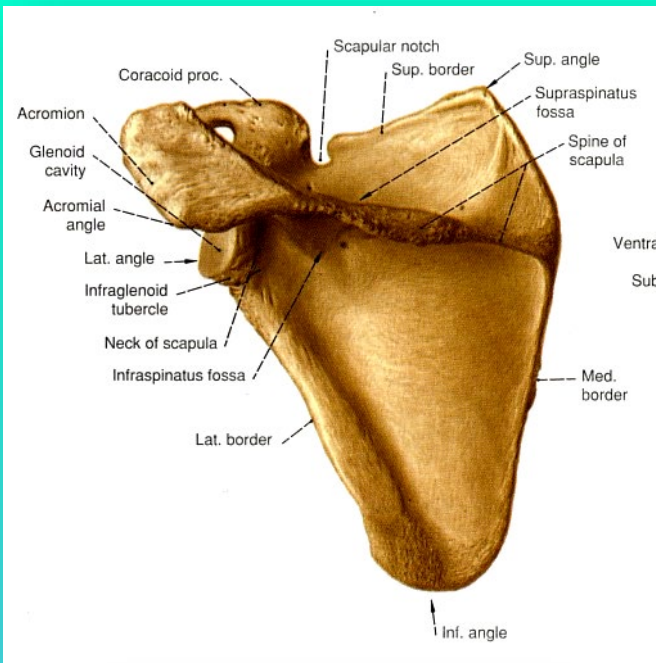
Spiral groove

Lateral supracondylar
ridge

Medial epicondyle



زوائد آکرومیون و کوراکوئید



- آکرومیون (قله شانه) در امتداد خار شانه قرار دارد

- که دارای چهار کنار است:

قدامی، خلفی، داخلی و خارجی

- آکرومیال انگل:

بین کنار خارجی و خلفی قرار دارد

- در نزدیکی انتهای قدامی کنار داخلی:

سطح مفصلی برای کلاویکل دیده می شود

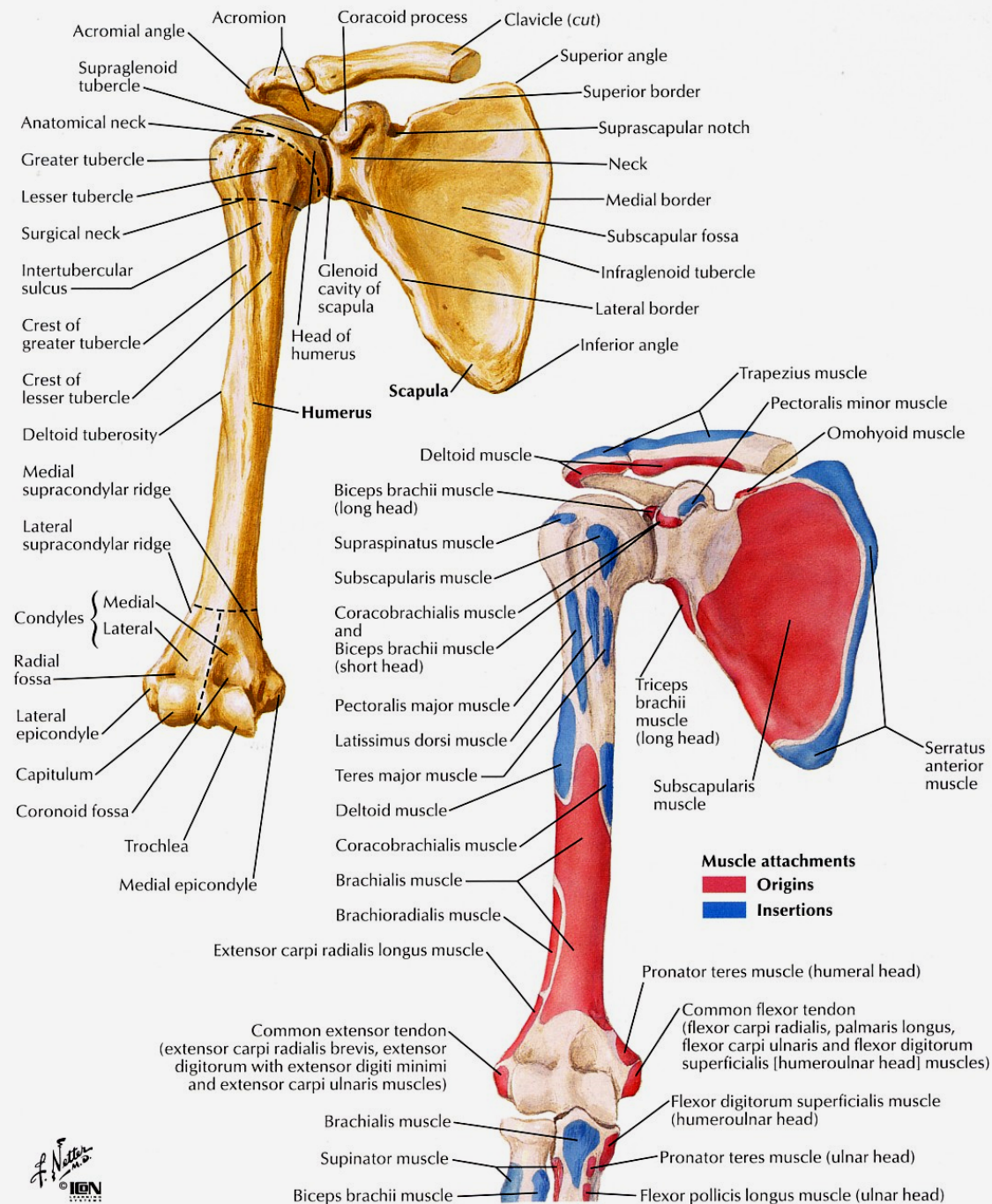
- کوراکوئید (غرابی): واژه یونانی است بمعنای **crow** کلاغ

👉 در انتهای خارجی کناره فوقانی

👉 که جهت آن بطرف بالا، جلو و خارج می باشد

اتصالات عضلانی

سطح قدامی



عضله ساب اسکا پولار

➤ به فوسا اسکا پولار

سراتوس آنتریور

➤ به سرتاسر سطح قدامی کنار داخلی

تریسپس (سر دراز)

➤ به اینفرا اگلوئید توبرکل

بایسپس (سر دراز)

➤ به سوپرا اگلوئید توبرکل

اتصالات عضلانی

سطح خلفی

● سوپرا اسپیناتوس و اینفرا اسپیناتوس

➤ به حفرات بالا و پائین خار اسکاپولا

● لواتور اسکاپولار، رومبویید مینور و ماژور

➤ به سطح خلفی کنار داخلی از زاویه فوقانی تا زاویه تحتانی

● لاتیسیموس دورسی

➤ به سطح خلفی زاویه تحتانی

● ترس ماژور و مینور

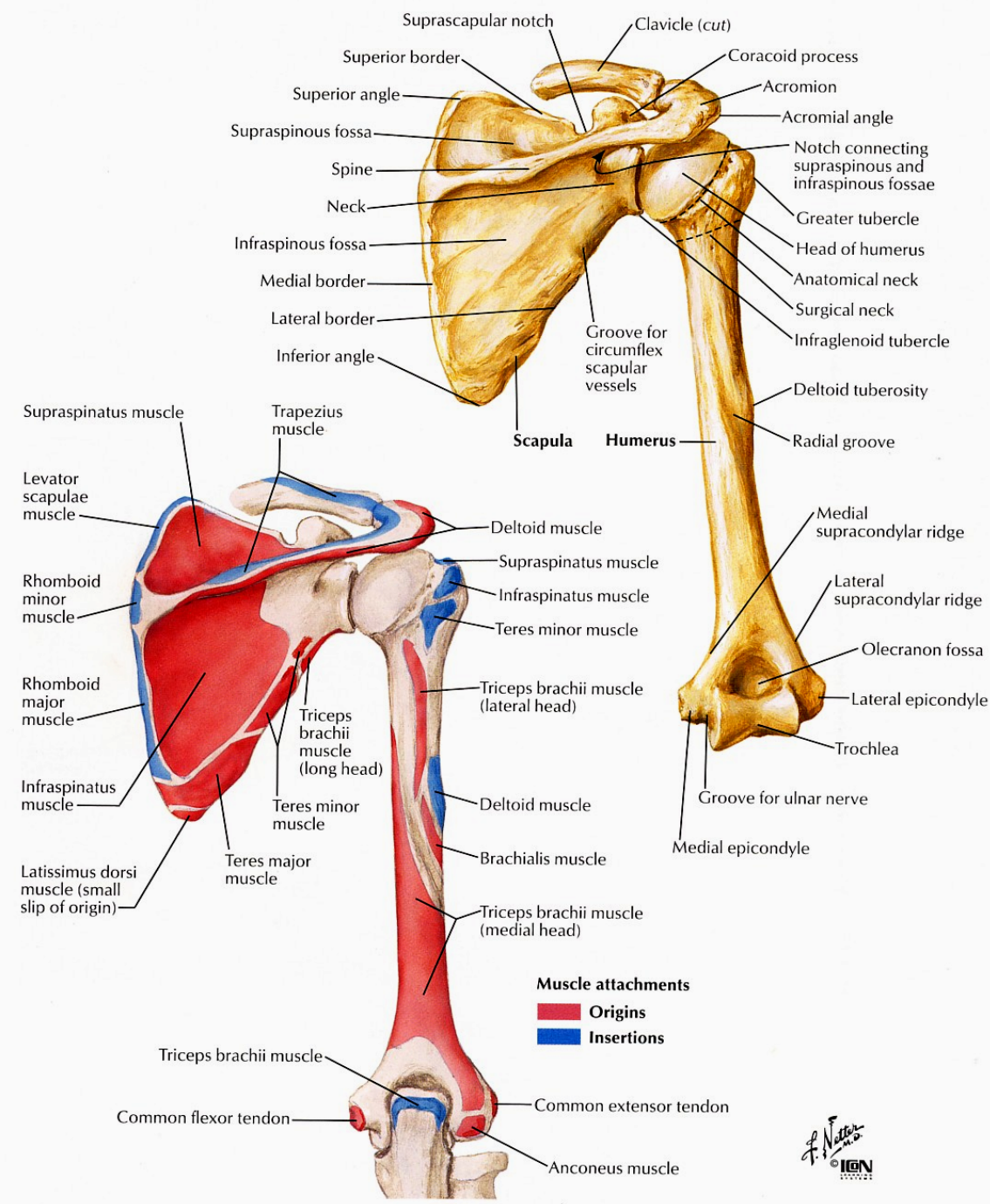
● به سطح خلفی کنار داخلی خارجی

● تراپزیوس

➤ به کناره فوقانی خار اسکاپولا و لبه داخلی آکرومیون

● دلتوئید

➤ به لبه تحتانی خار اسکاپولا، لبه خارجی و قدامی آکرومیون



نکاتی در مورد اسکاپولا

- کوتاهترین کنار: فوقانی
- سوپریور ترانسورس اسکاپولار لیگامان: به لبه های اسکاپولار ناچ متصل است
- عبور عصب سوپرا اسکاپولار از زیر و عروق سوپرا اسکاپولار از بالای لیگامان فوق
- تنها استخوان پهنی است که بروش داخل غضروفی استخوانی می شود
- توسط یک مرکز اولیه و هفت مرکز استخوانساز ثانویه
- شکستگی آن ناشایع و همراه شکستگی دنده می باشد
- توازن در تونوس عضلات باعث ثابت ماندن وضعیت قرارگیری آنست
- فلج سراتوس آنتریور باعث افتادگی آن و برجستگی کناره مدیال اسکاپولا می شود

هومروس (بازو)

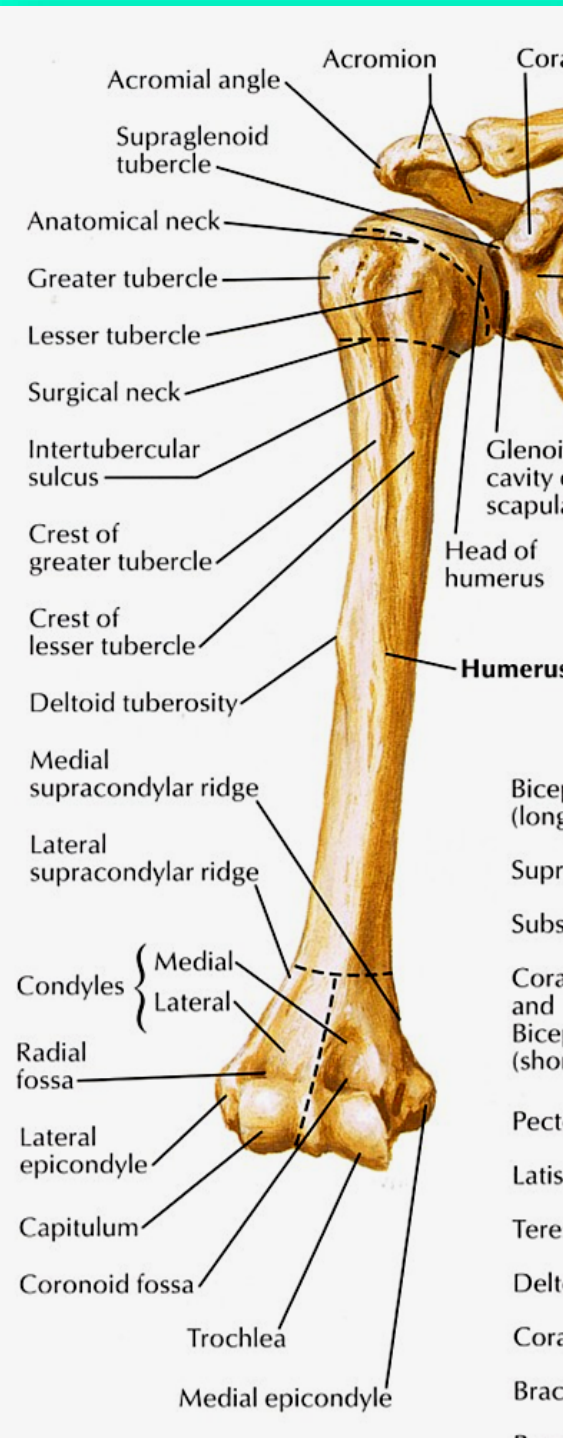
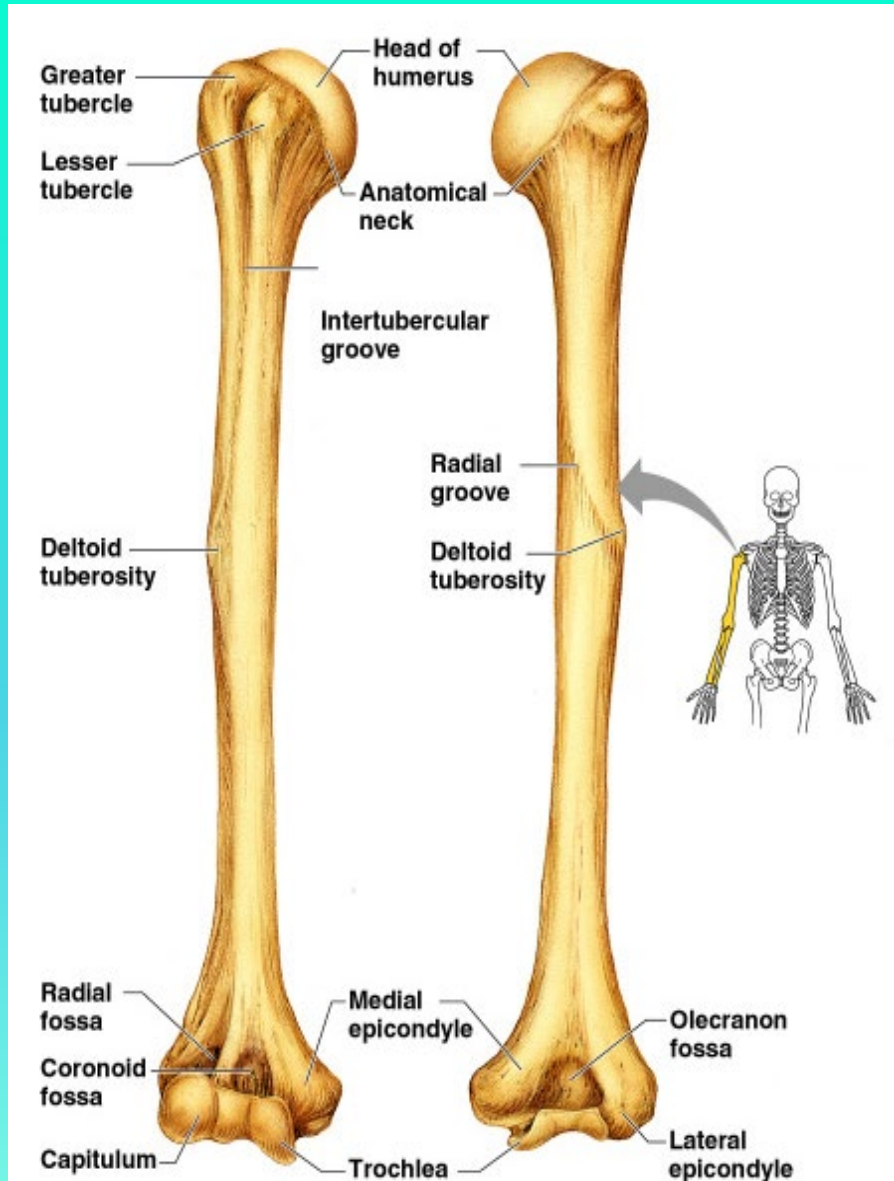
● بزرگترین استخوان اندام تحتانی است

● دارای انتهای فوقانی (سر) و تحتانی و جسم می باشد

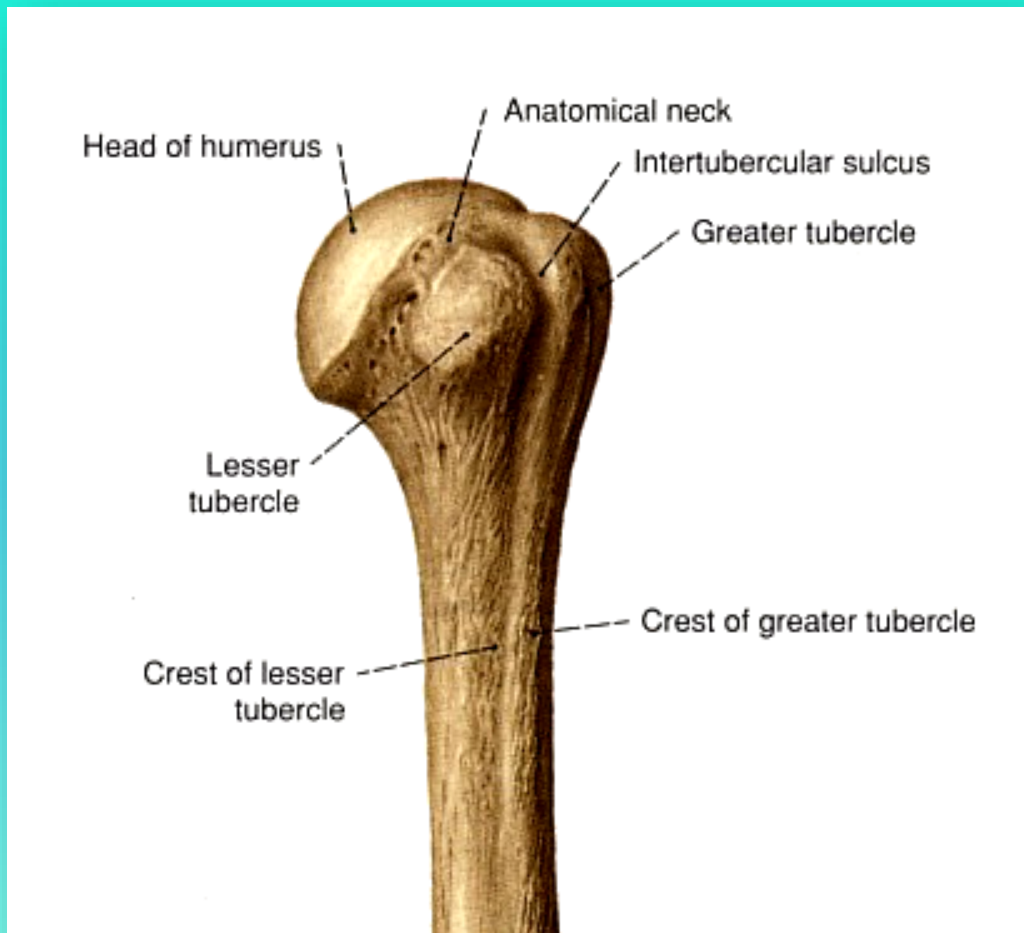
● انتهای فوقانی با اسکاپولا

● و انتهای تحتانی با

رادیوس و اولنا مفصل می شود



انتهای فوقانی



● سر دارای سطح مفصلی است

● ثلث یک کره، چهار برابر گلوئید است

● در حالت استراحت

● ربع تحتانی قدامی در تماس با گلوئید است

● جهت سر: بالا، داخل و عقب

● گردن آناتومیکال، حدفاصل سطح مفصلی و توبرکل ها می باشد

● توبرکل بزرگ و کوچک

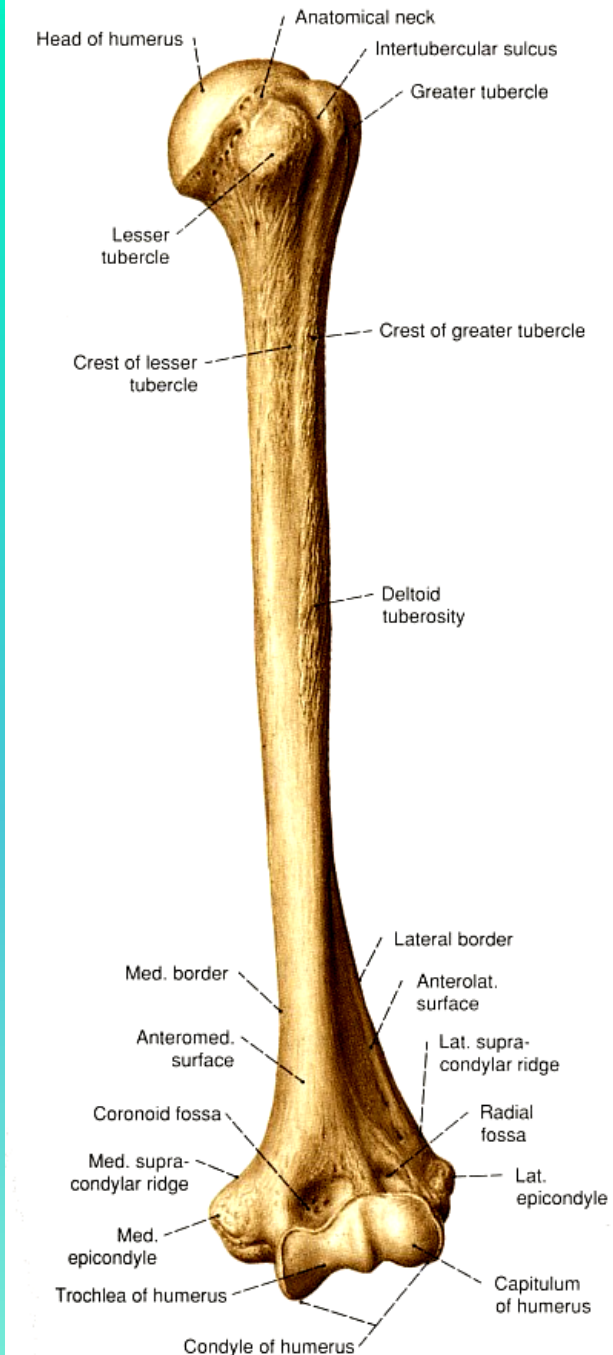
👉 بعد از گردن آناتومیک قرار داشته، در نمای قدامی هر دو توبرکل دیده می شوند اما در نمای خلفی فقط توبرکل بزرگ دیده میشود

● و اینترتوبرکلار سولکوس

که بین دو توبرکل قرار دارد

● تعدادی از در این ناحیه عضلات به توبرکل ها و ناودان بین آنها و متصل می شوند

● گردن جراحی: که بعد از توبرکلها و قبل از جسم قرار دارد



جسم هومروس

● در نیمه فوقانی استوانه ای بوده

● و در نیمه تحتانی هرمی و دارای سه سطح و سه کنار می باشد

● سطوح جسم: قدامی داخلی و خارجی و سطح خلفی

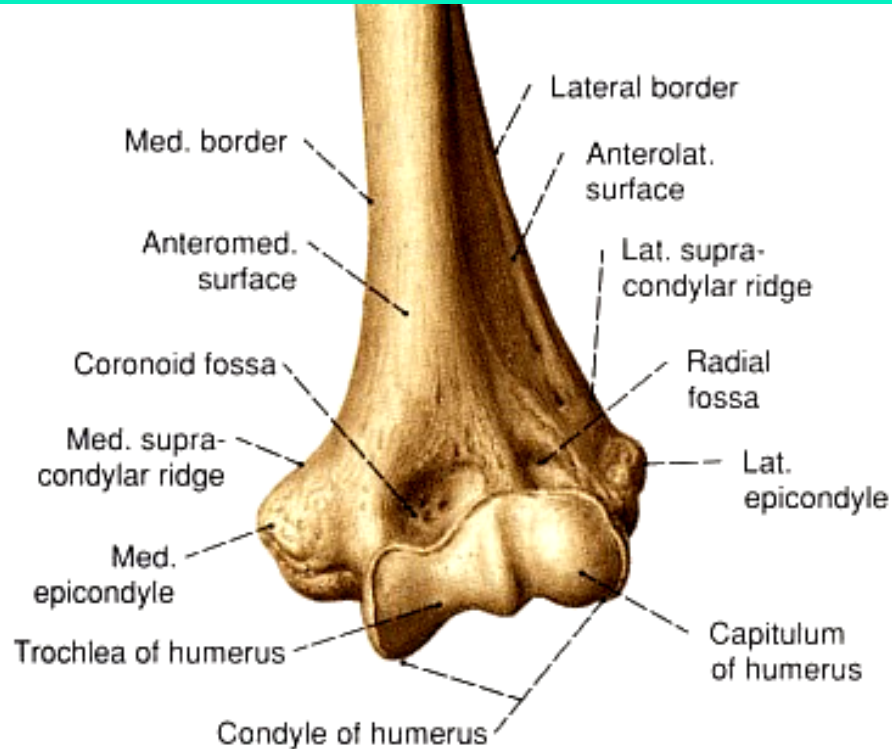
● کنار ها عبارتند از: قدامی، داخلی و خارجی
● توپروزیته دلتوئید:

● که در میانه سطح قدامی خارجی قرار دارد

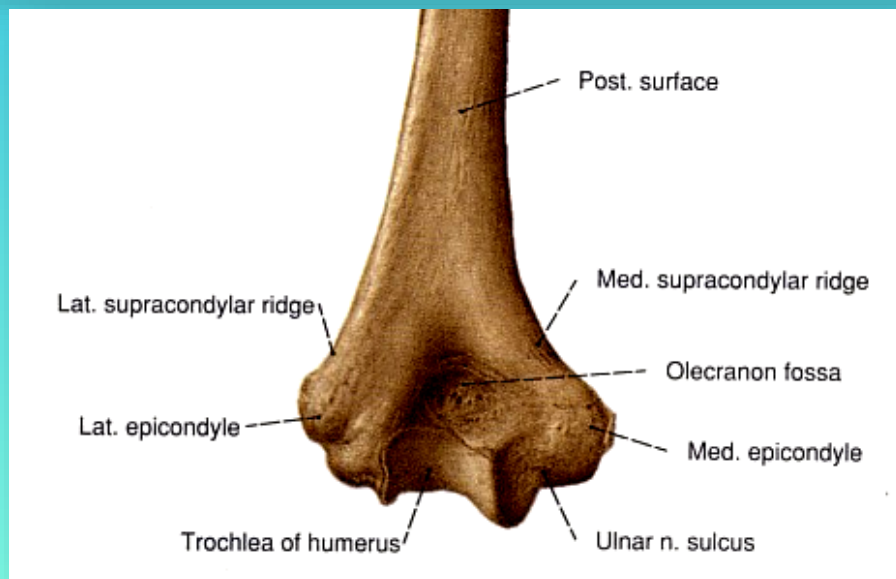
● ناودان عصب رادیال:

در میانه سطح خلفی قرار داشته در حالیکه جهت آن بطرف پائین و خارج می باشد

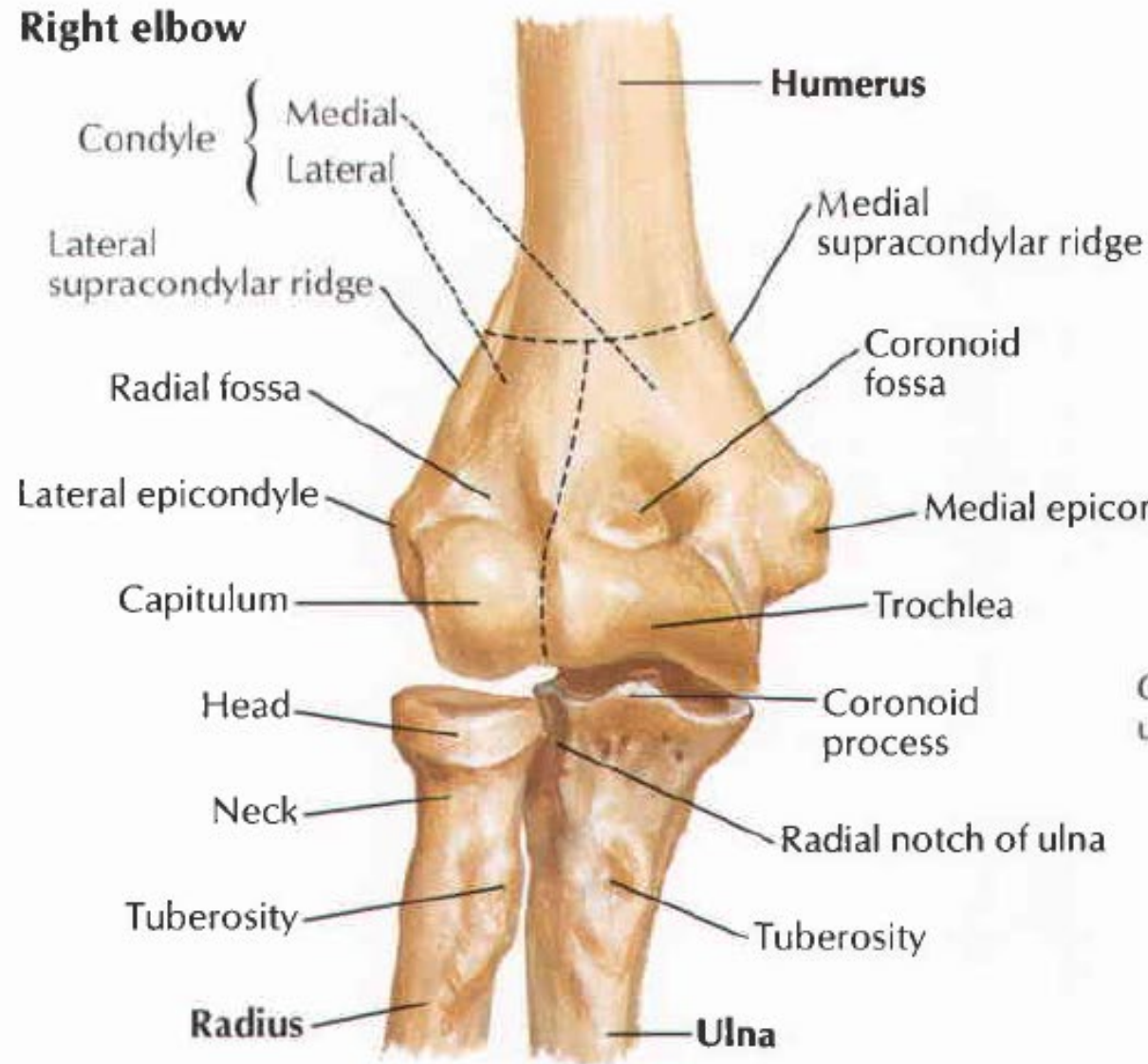
انتهای تحتانی



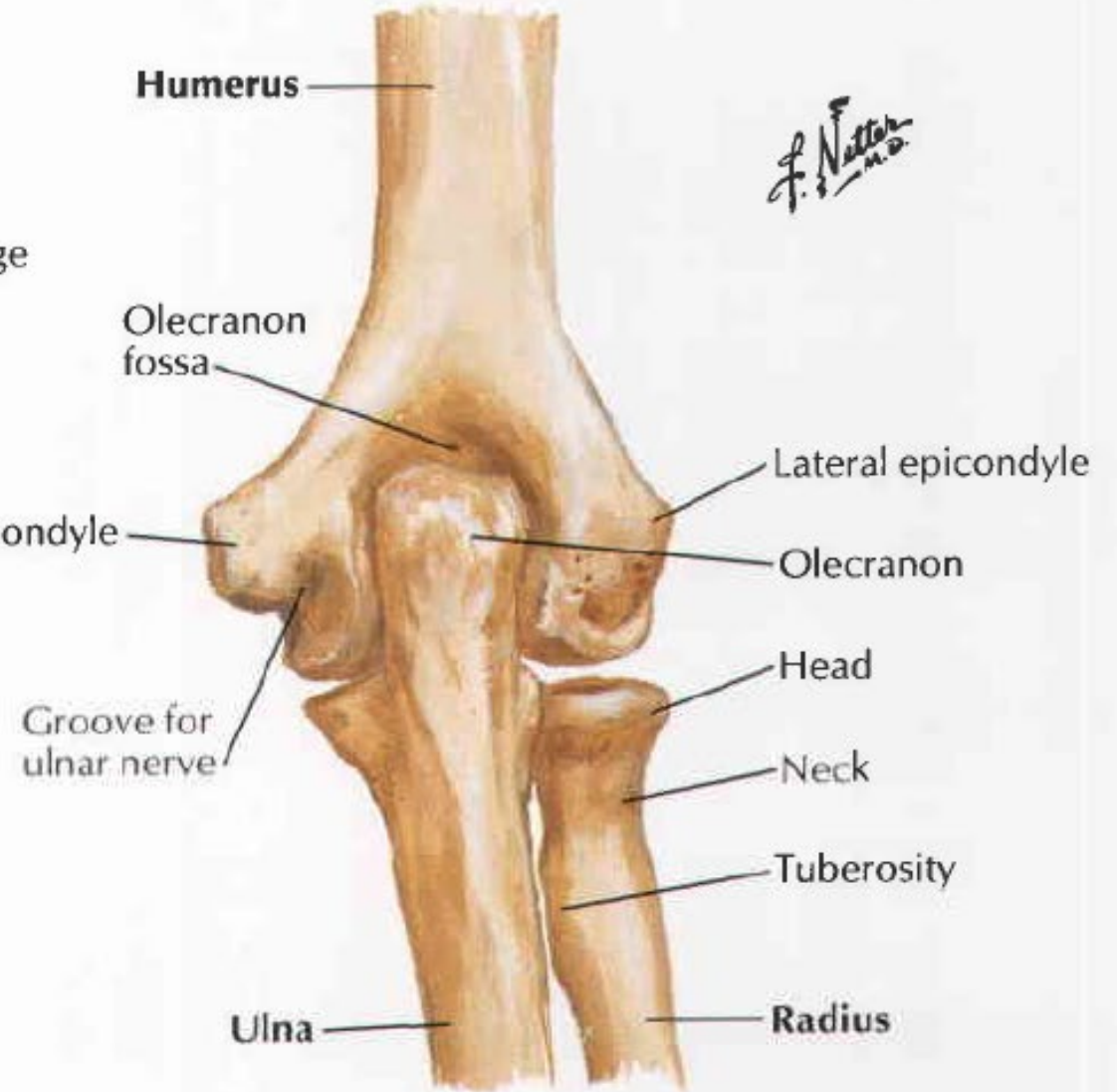
- دارای سطح مفصلی با استخوانهای ساعد
- کندیل داخلی (تروکلئاً) و خارجی (کاپیتلوم)
- تروکلئاً در نمای قدامی، تحتانی و خلفی و کاپیتلوم فقط در نمای قدامی دیده می شوند
- اپی کندیل داخلی و خارجی
- برجستگیهایی در سطح کندیل‌های داخلی و خارجی بوده و محل اتصال عضلات می باشند
- اپیکندیل مدیال بزرگتر و برجسته تر از اپیکندیل خارجی است
- حفرات کرونوئید و رادیال: فرورفتگی هایی در سطح قدامی انتهایی تحتانی و بالای تروکلئاً و کاپیتلوم دیده می شوند
- حفرة اولکرانون: در سطح خلفی انتهایی تحتانی قرار دارد



Right elbow



In extension: anterior view



In extension: posterior view

اتصال عضلات

● ساب اسکا پولار:

➤ به تو برکل کوچک

● سوپرا و اینفرا اسپیناتوس و ترس مینور:

➤ به تو برکل بزرگ

● ترس ماژور، لاتیس موز دورسی و

پکتورالیس ماژور

➤ به لبه داخلی و خارجی و کف ناودان

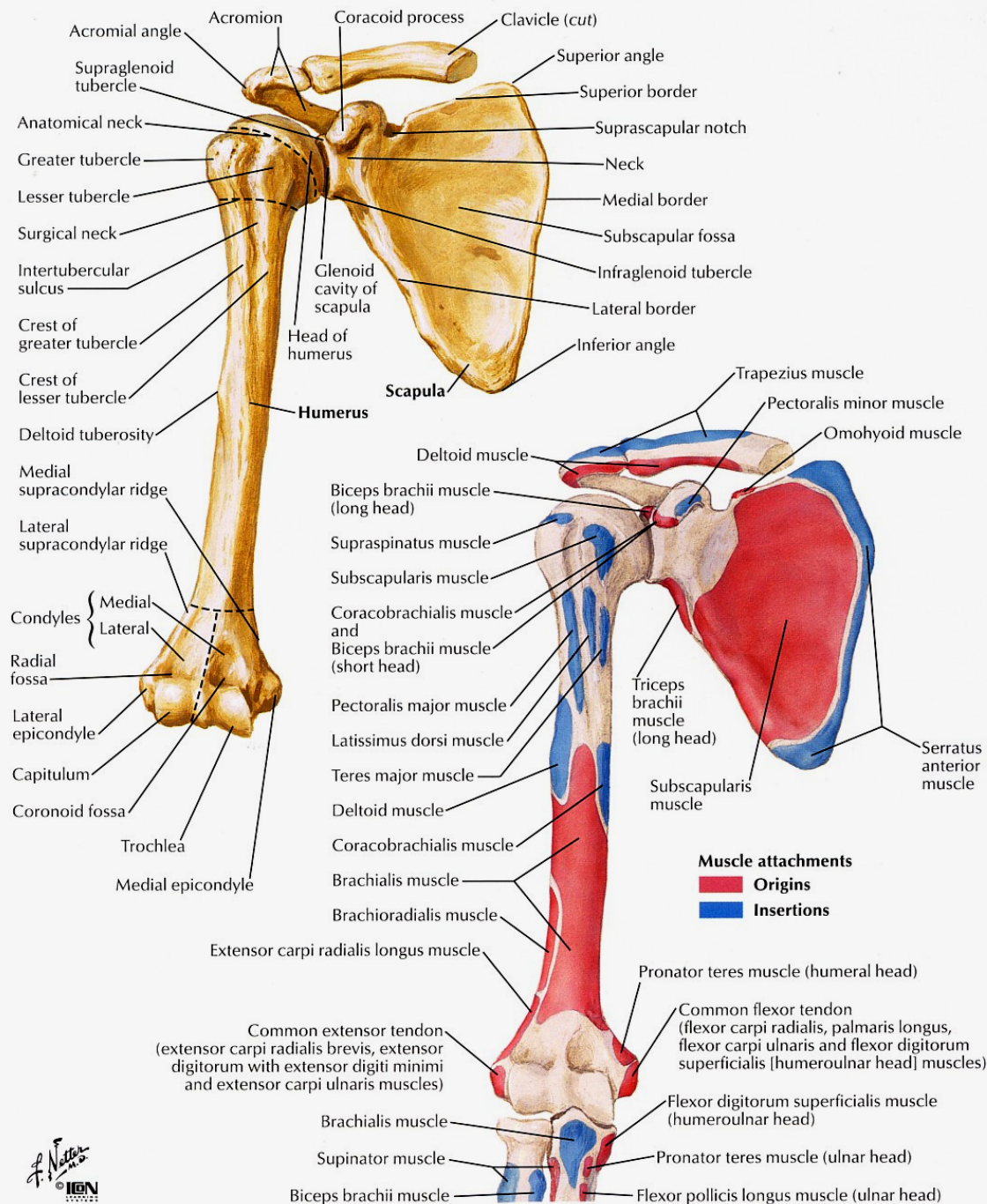
● دلتوئید

➤ به دلتوئید تو بروزیته (در میانه سطح

خارجی)

● کورا کوبراکیالیس

➤ به میانه سطح داخلی



اتصال عضلات

● براکیالیس

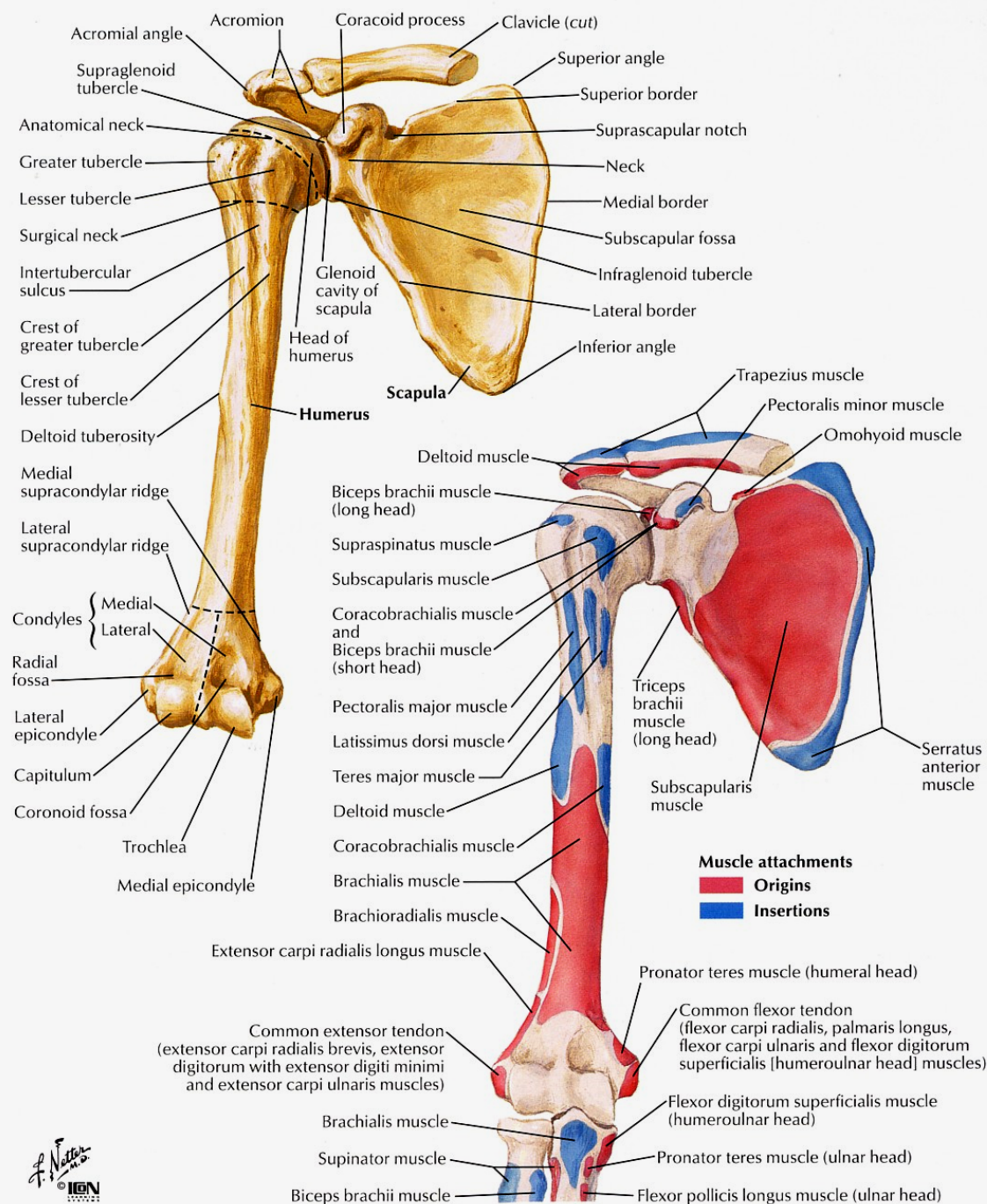
➡ به سطح قدامی نیمه تحتانی

● براکیورادیالیس و اکستنسور کاپی رادیالیس لونگوس

➡ به دوسوم پروگزیمال و یک سوم دیستال
ستیغ سوپراکندیلار لترال

● پرونیتور ترس

➡ به ناحیه کوچکی در بخش تحتانی
ستیغ سوپراکندیلار مدیال



اتصال عضلات به سطح خلفی

⊙ سوپرا و اینفرا اسپیناتوس و ترس مینور:

👉 به توبرکل بزرگ

⊙ تریسپس (سر لترال و مدیال)

👉 به دو طرف ناودان عصب رادیال

⊙ آنکانئوس

👉 به سطح خلفی اپیکندیل لترال

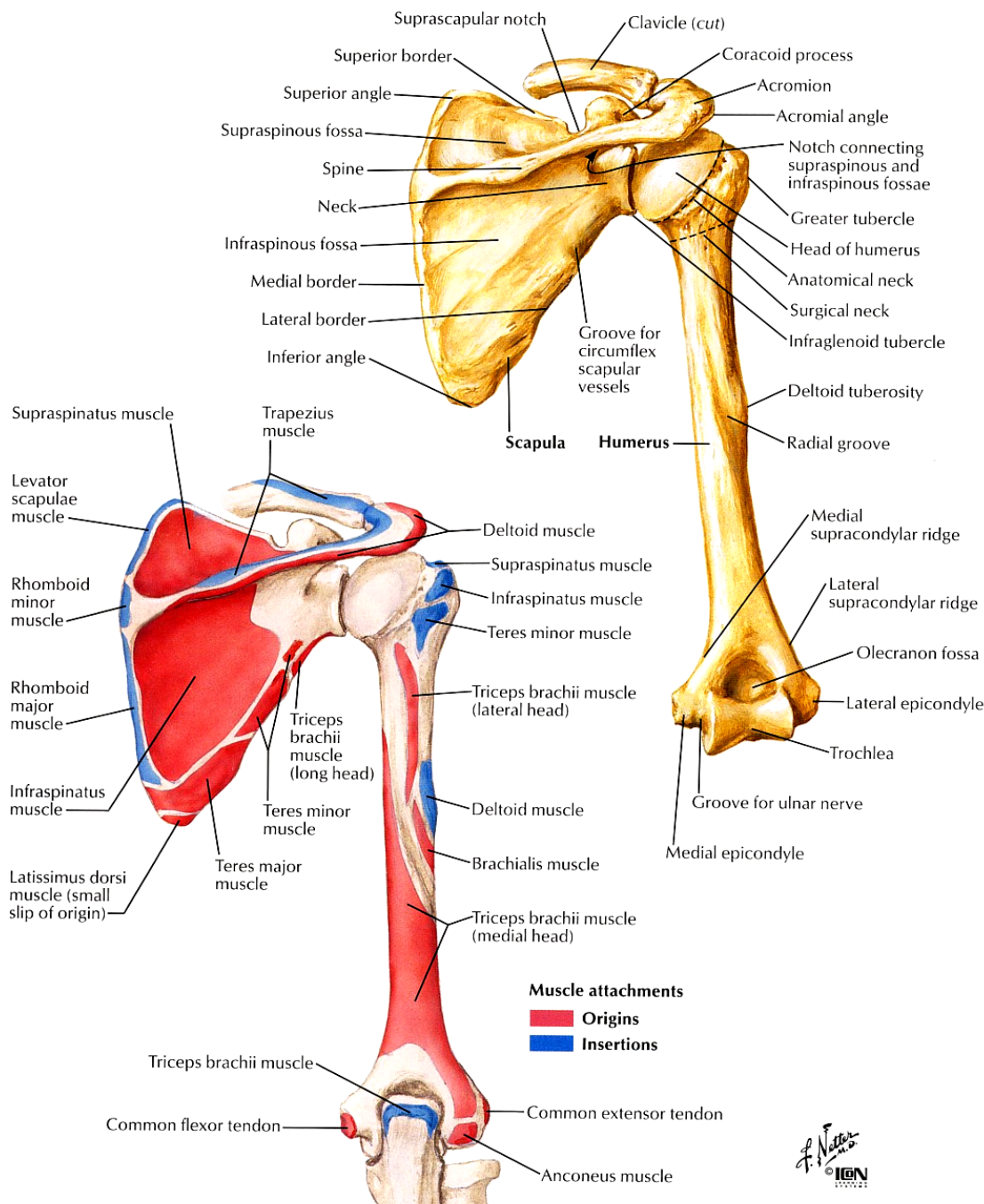
⊙ منشاء مشترک اکستنسورهای ساعد و

انگشتان

👉 به اپیکندیل لترال

⊙ منشاء مشترک فلکسورها ساعد و انگشتان

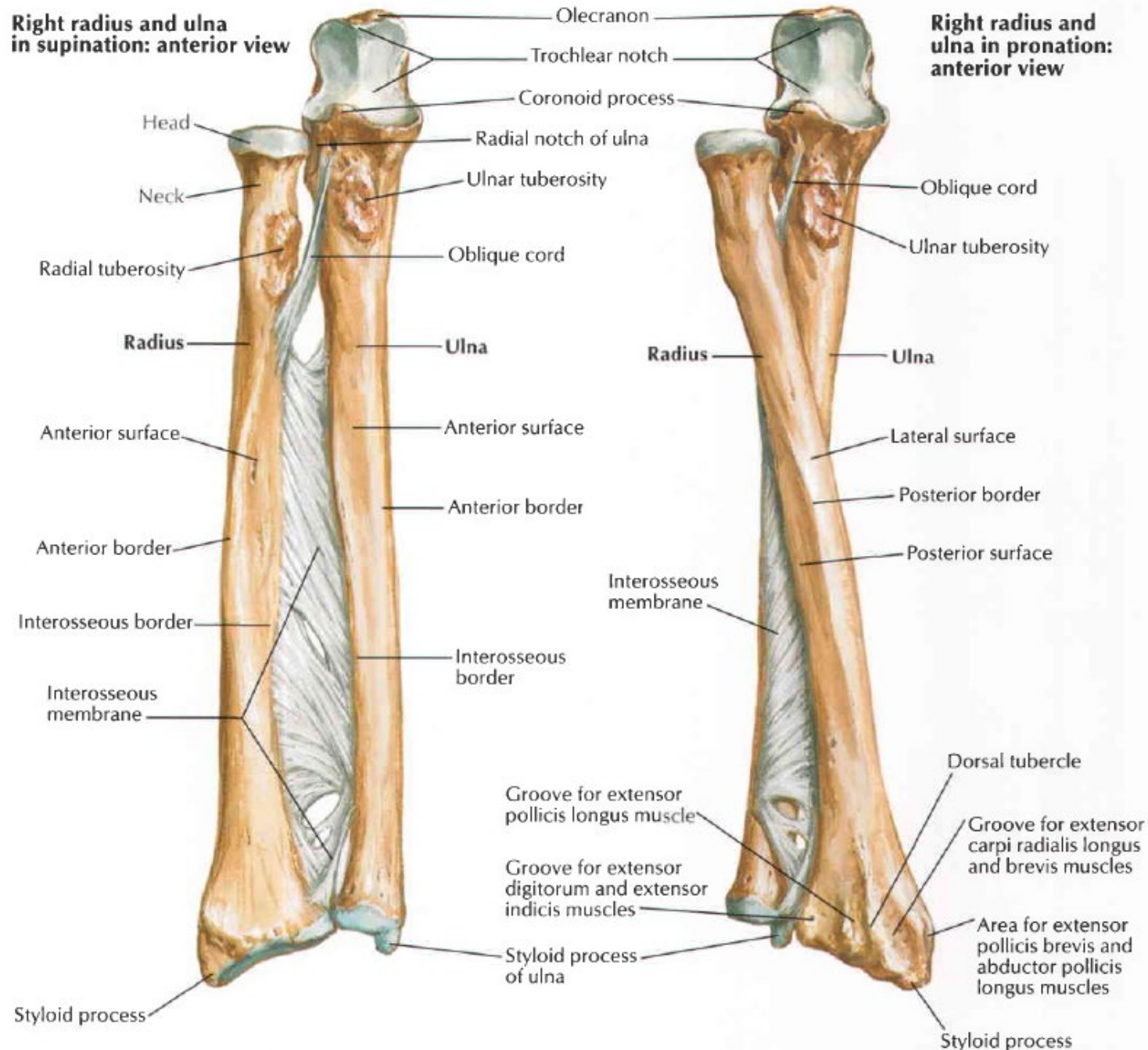
👉 به اپیکندیل مدیال

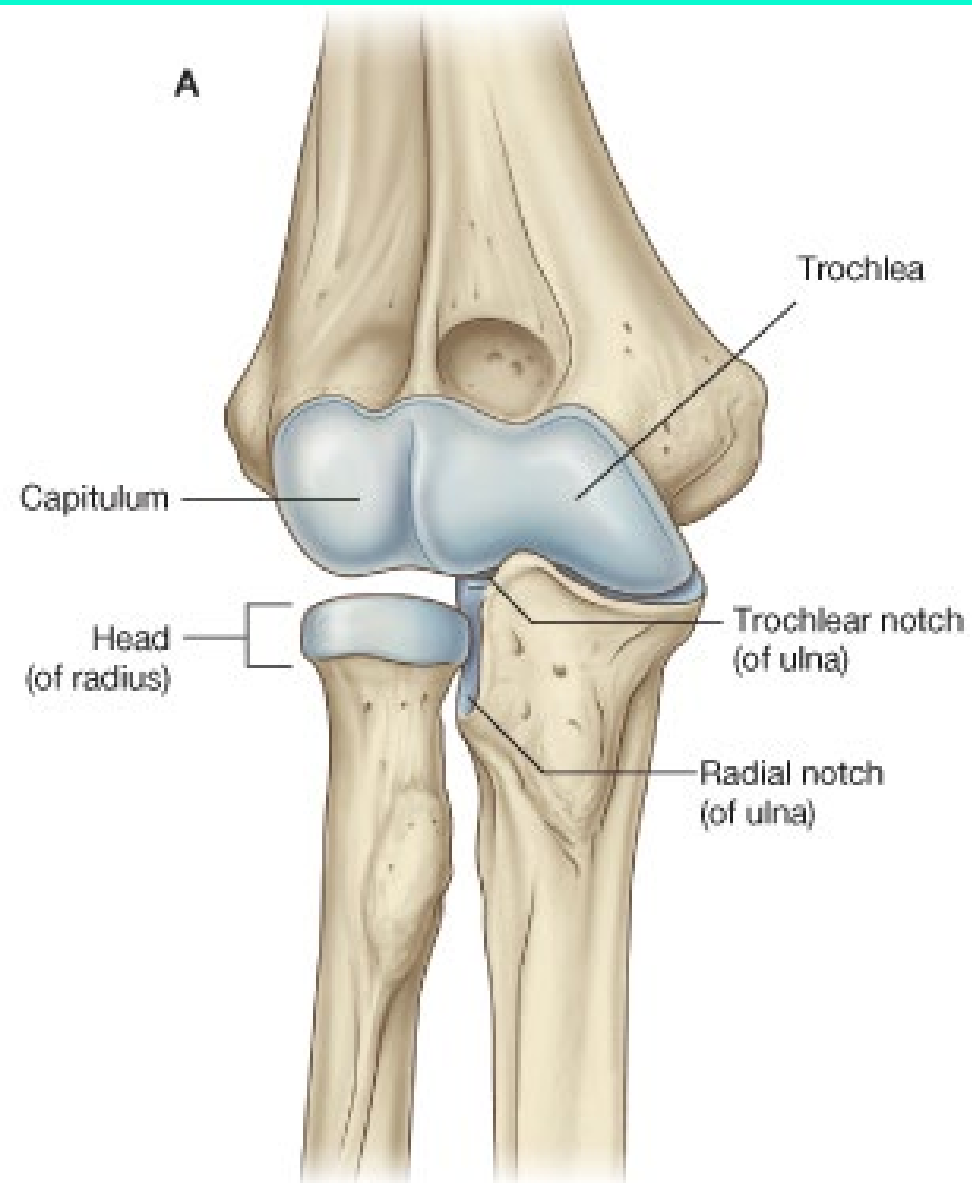


نکاتی در مورد هومروس

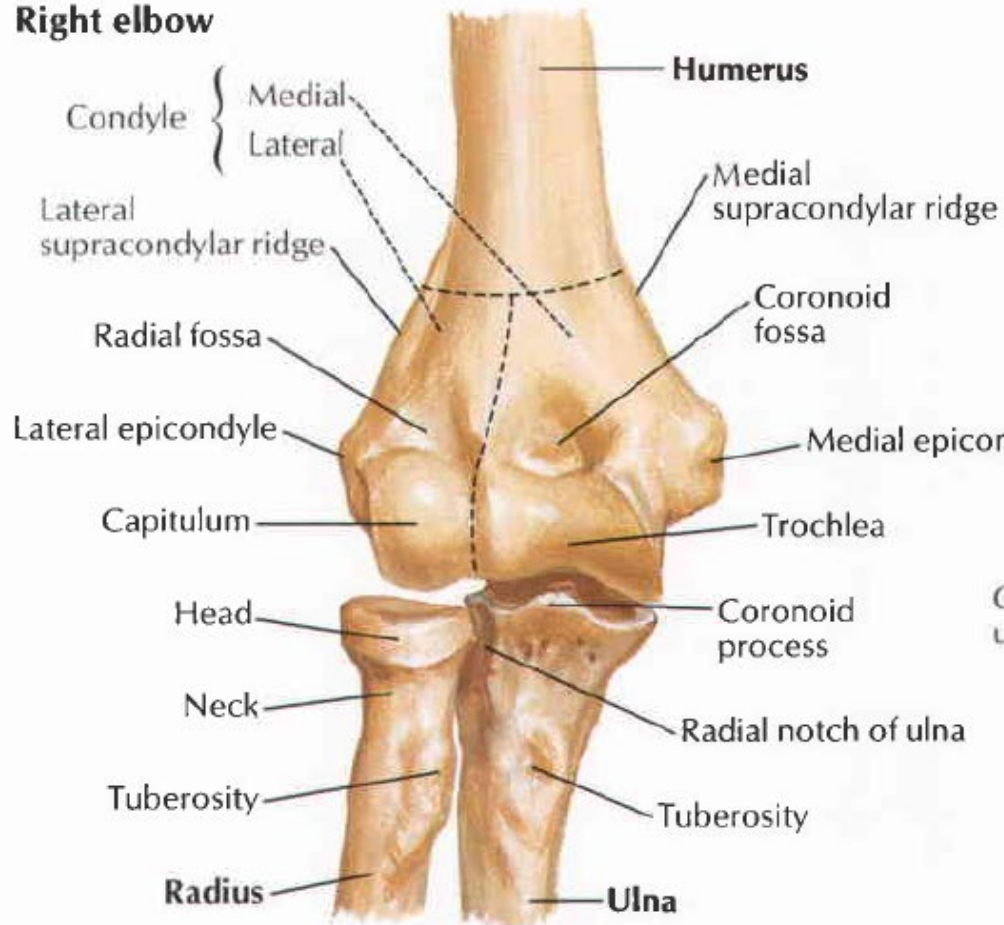
- ⊙ ناودان عصب اولنار: پشت اپی کندیل مدیال
- ⊙ زاویه حمل (۱۶۳ درجه): برآمدگی بیشتر لبه مدیال 6mm تروکلئاً نسبت به لته لترال
- ⊙ سوراخ تغذیه ای استخوان، زیر نقطه میانی، جهت به سمت پائین و در نزدیکی کناره مدیال قرار دارد
- ⊙ انتهای فوقانی استخوان در حال رشد است
- ⊙ شکستگی استخوان: بیشتر در پی کشش عضلانی نسبت به سایر استخوانهای دراز و بیشتر در محل زیر چسبندگی دلتوئید اتفاق می افتد
- ⊙ در شکستگی گردن جراحی آسیب به عصب آگزیلاری محتمل است
- ⊙ در شکستگی جسم استخوان: آسیب شریان پرفوندا براکئی و عصب رادیال محتمل است
- ⊙ شکستگی سوپراکندیلار (در کودکان): آسیب عصب مدین، شریان براکیال و عصب اولنار (در صورت کنده شدن اپی کندیل مدیال) ممکن است اتفاق افتد

**Right radius and ulna
in supination: anterior view**

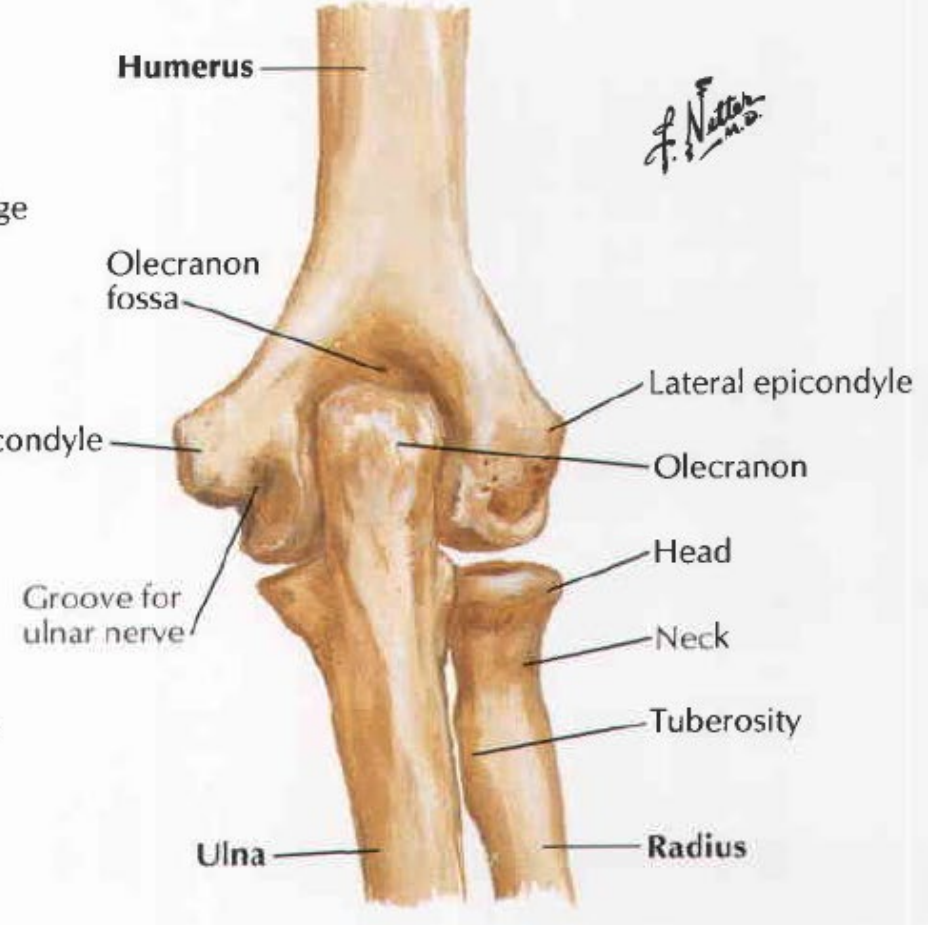




Right elbow

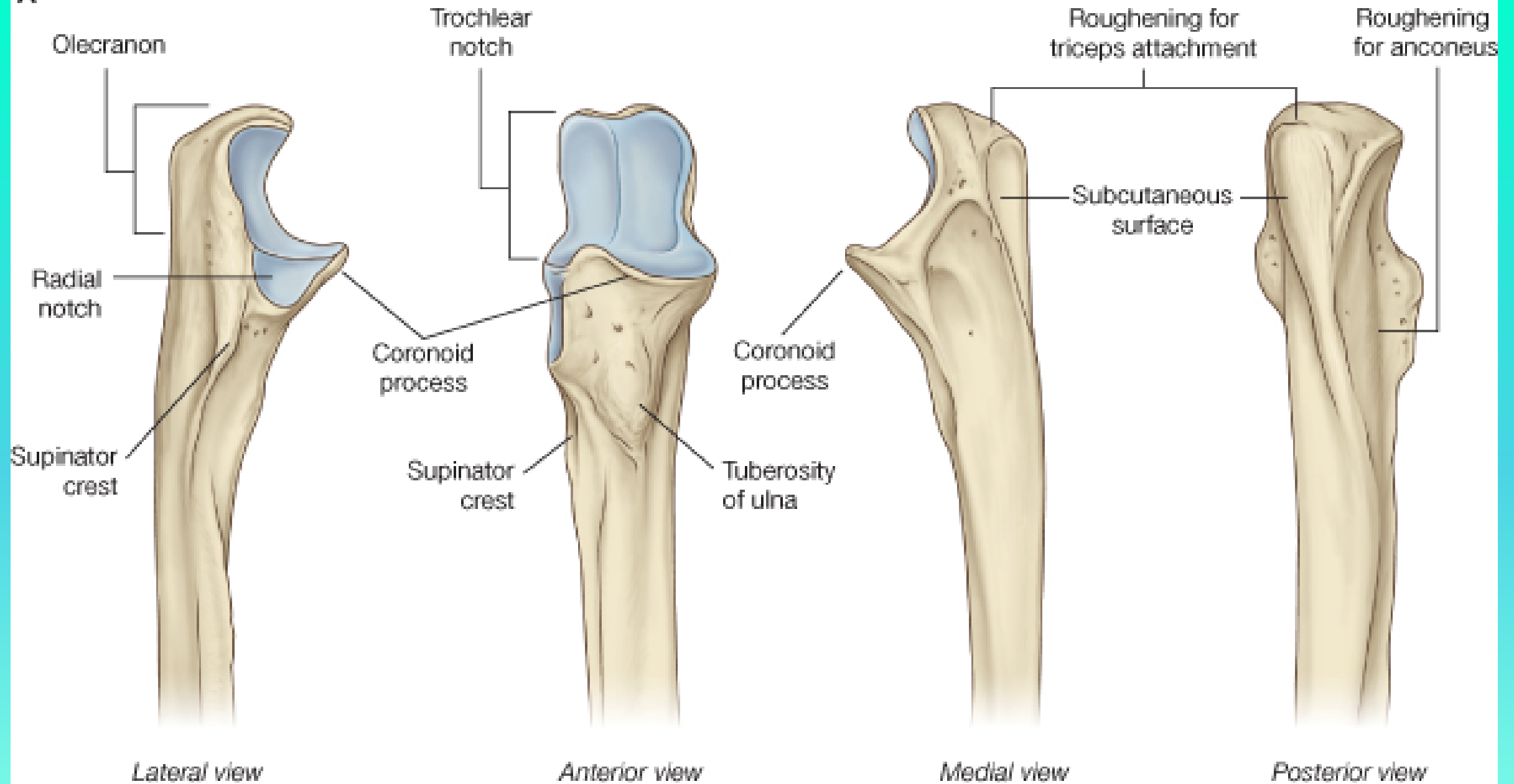


In extension: anterior view

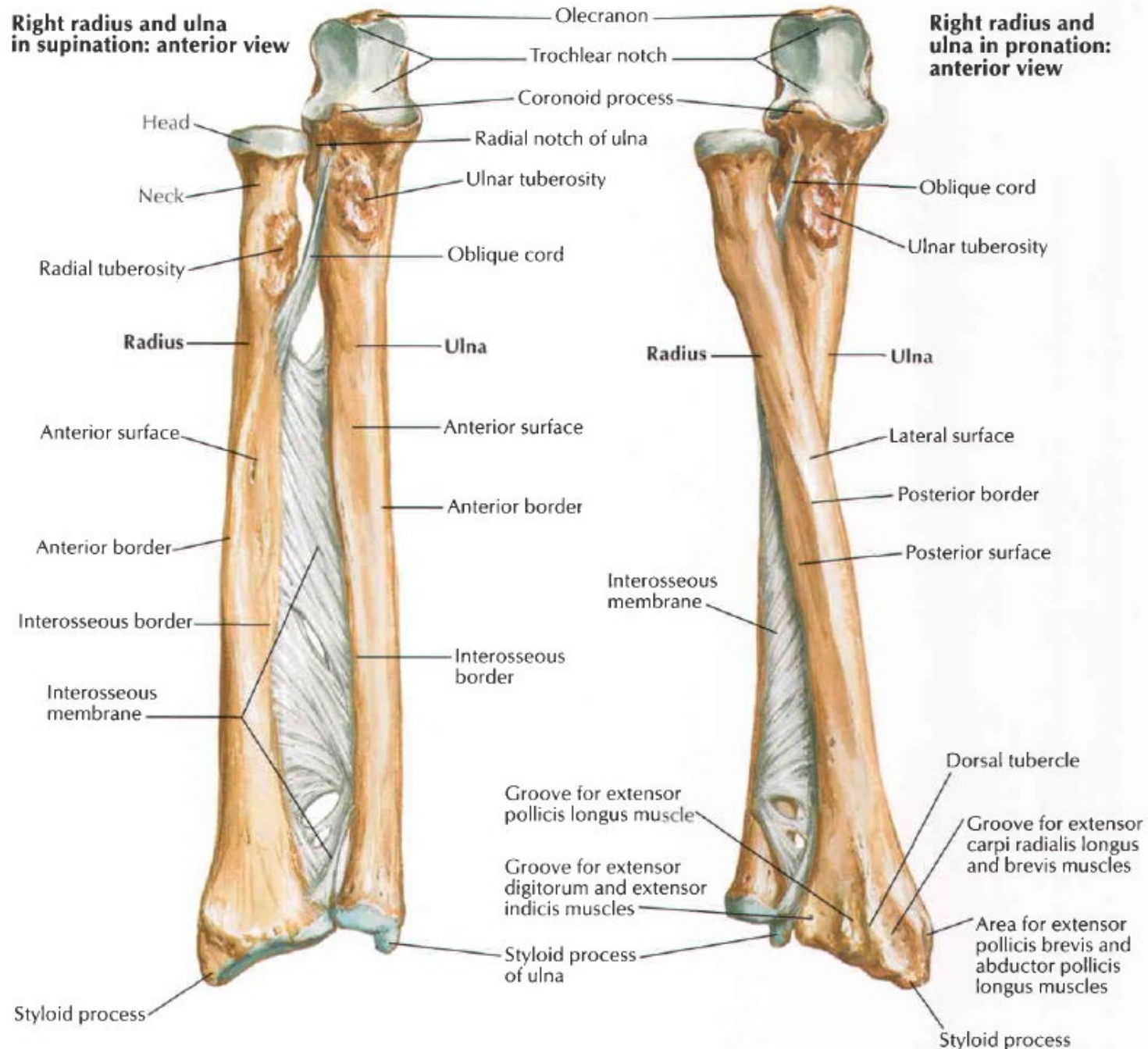


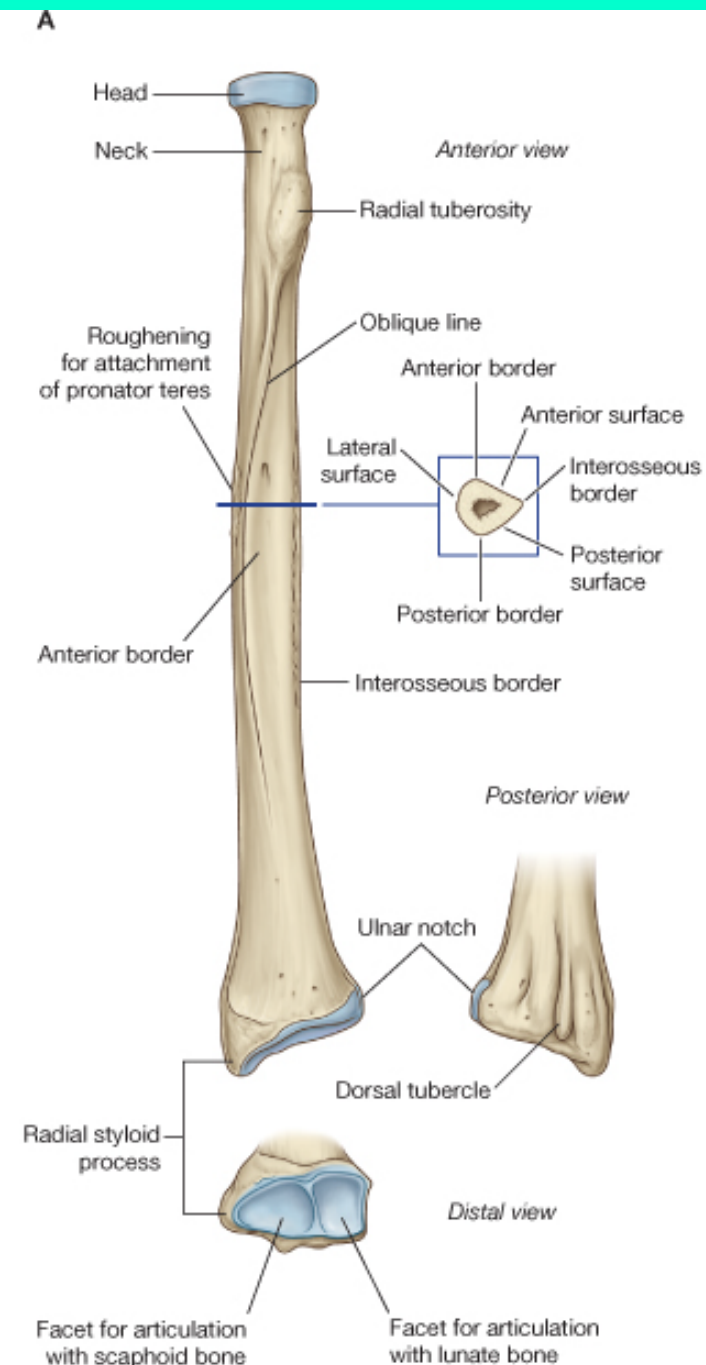
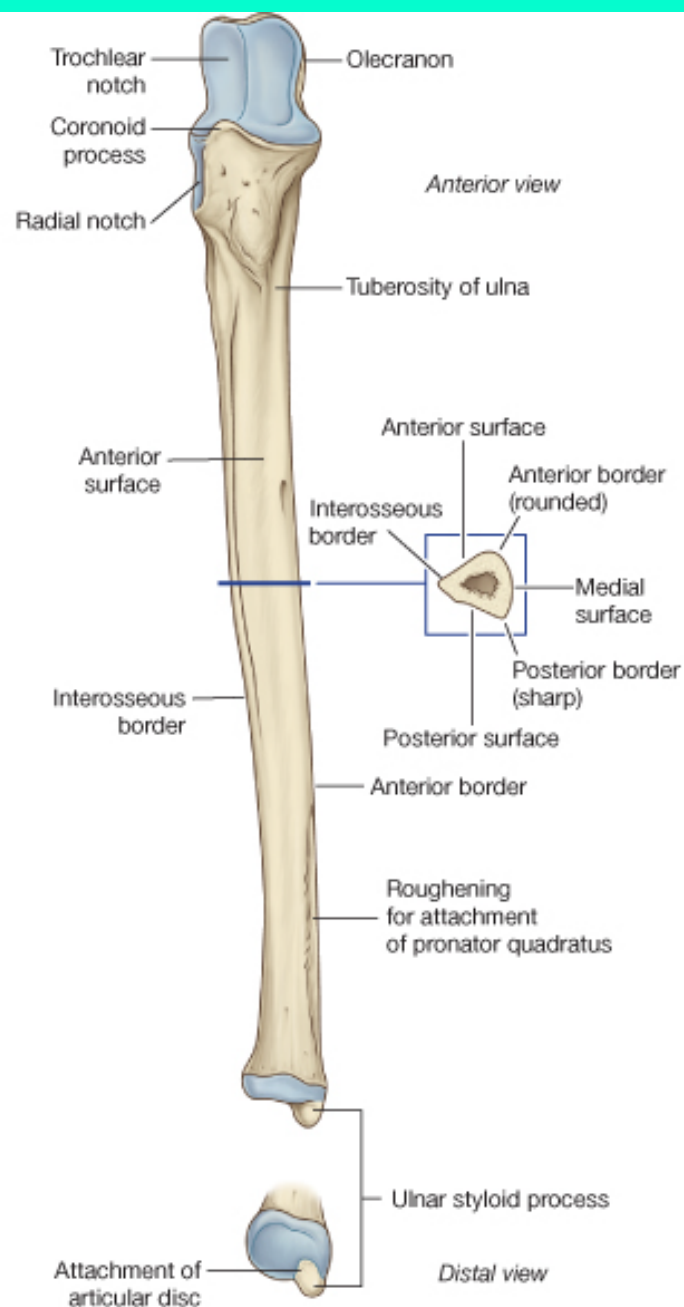
In extension: posterior view

A

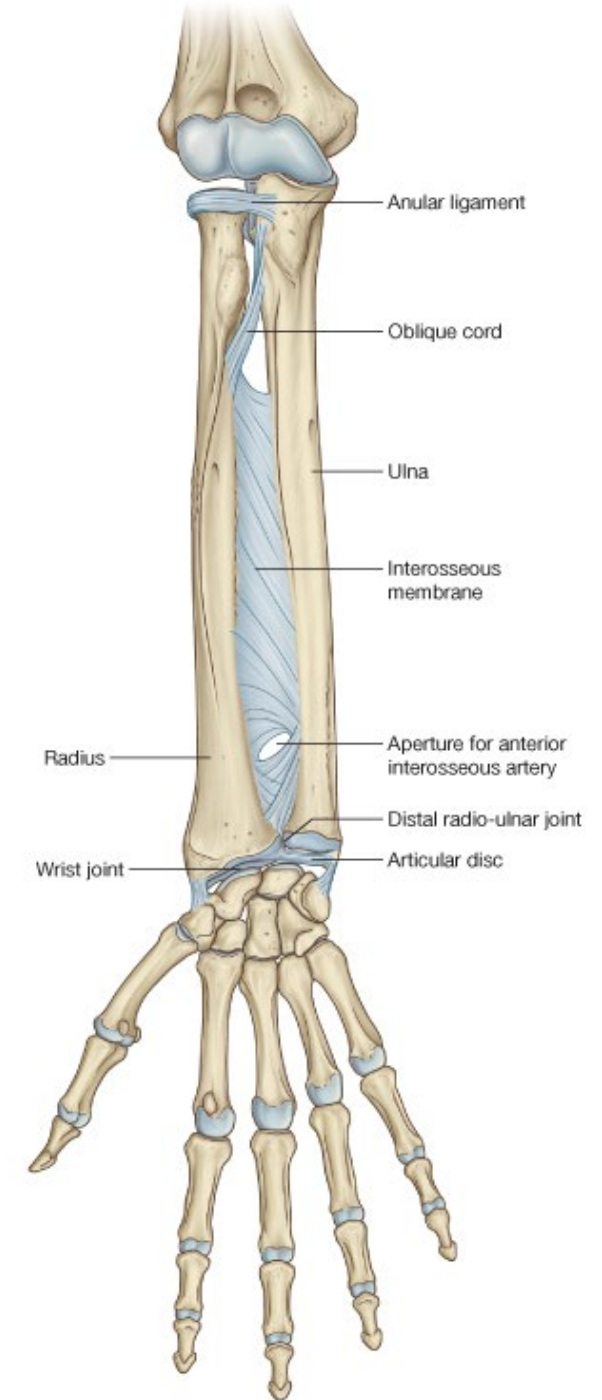
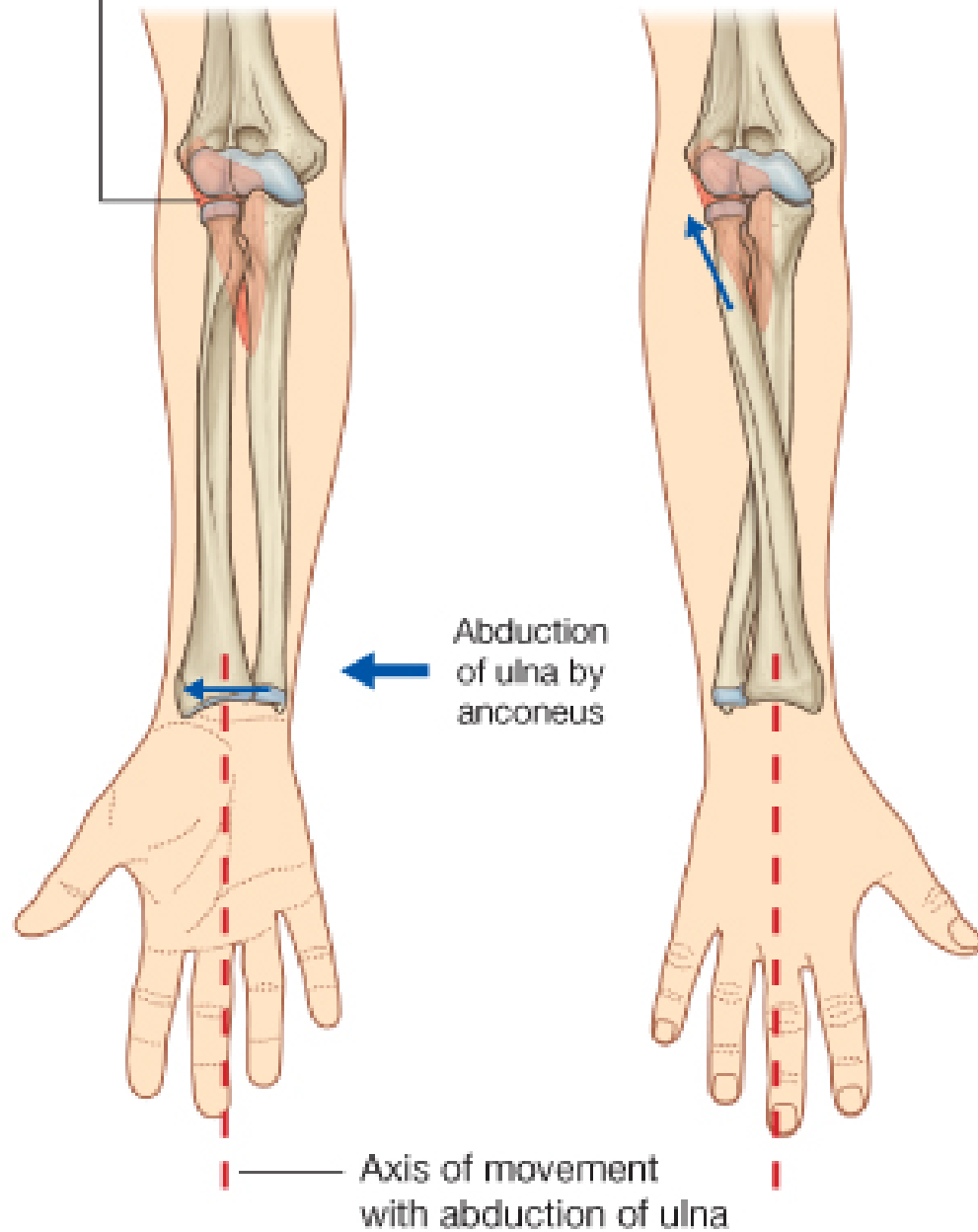


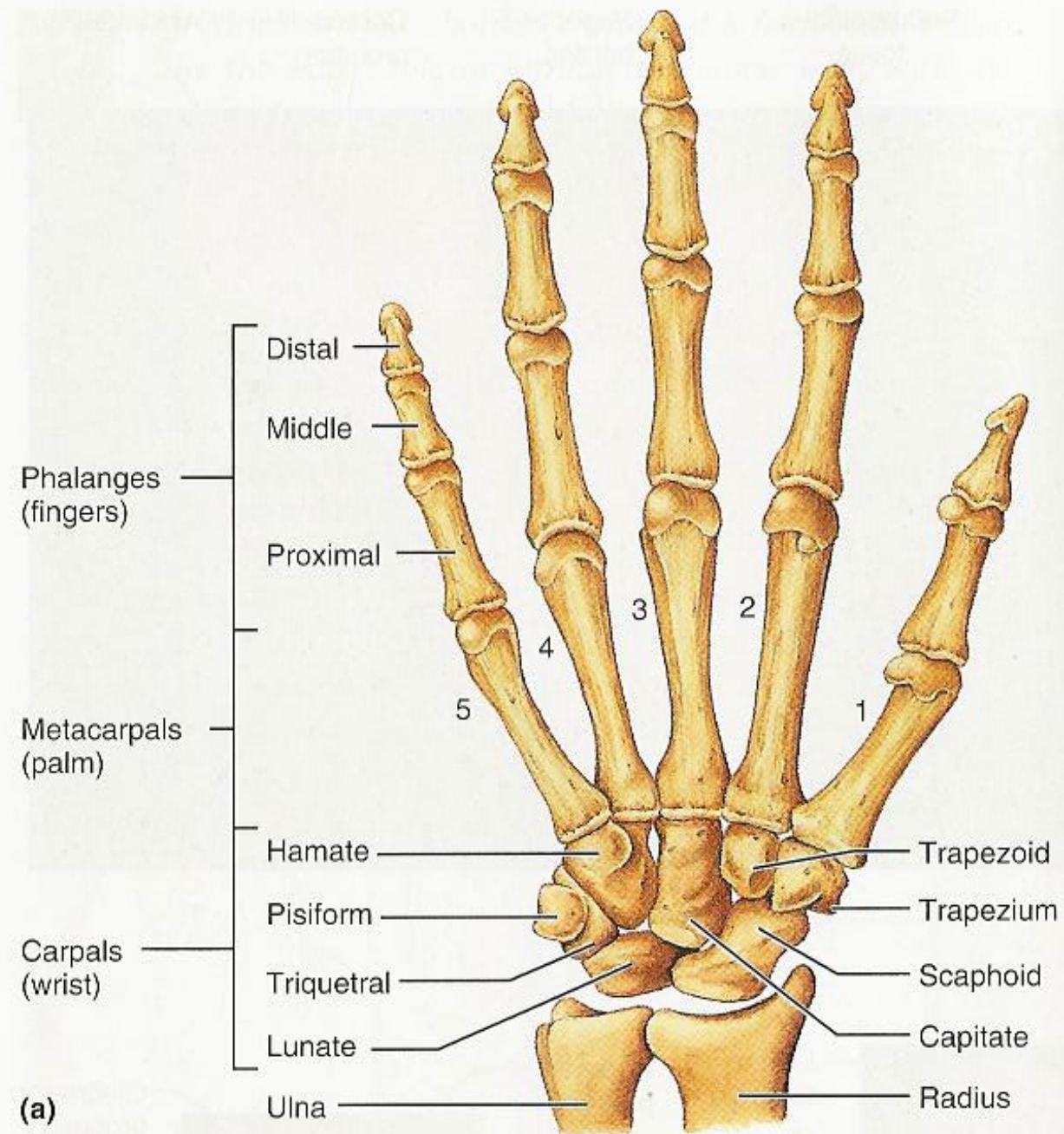
**Right radius and ulna
in supination: anterior view**





Anconeus



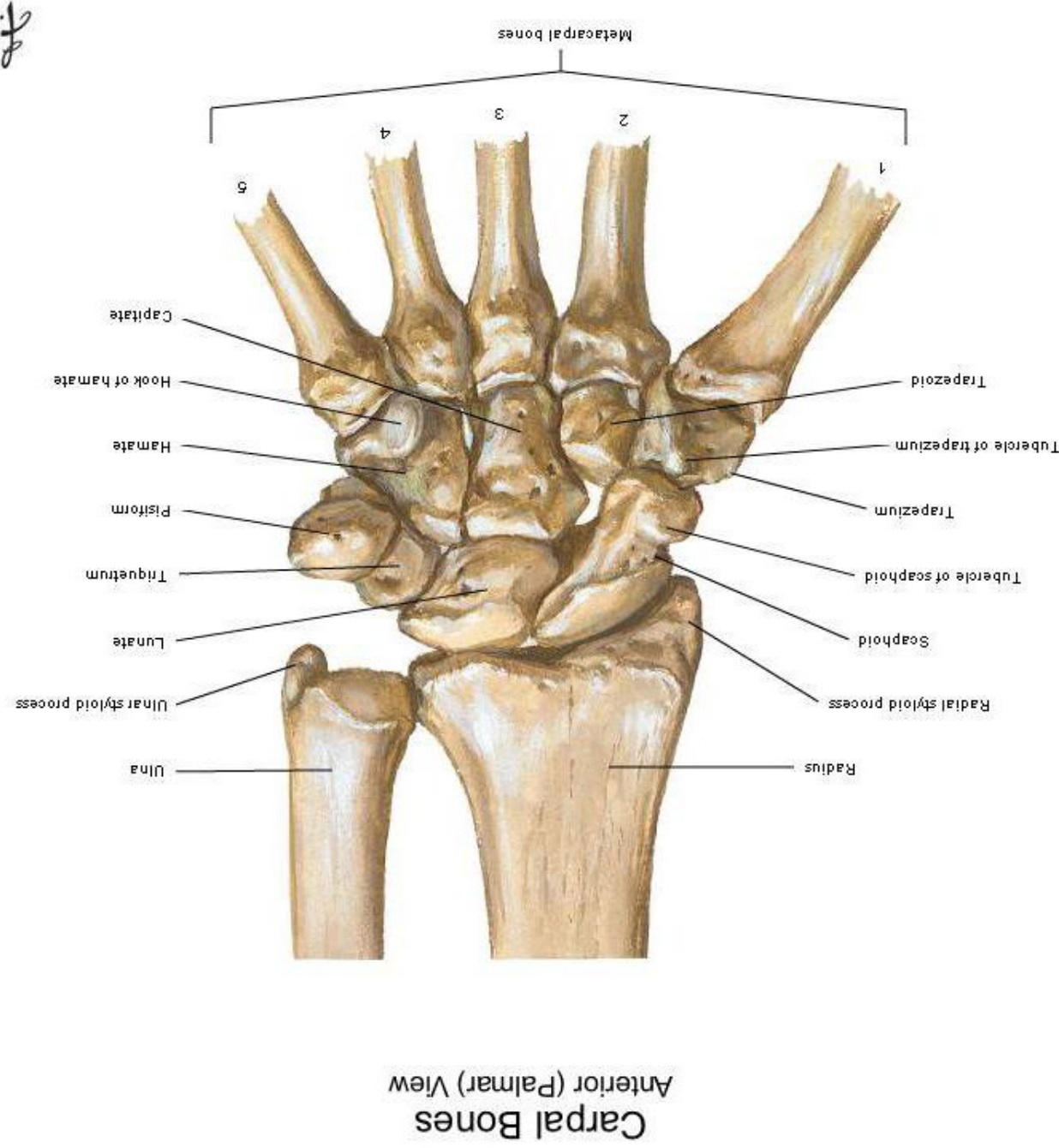


Proximal:

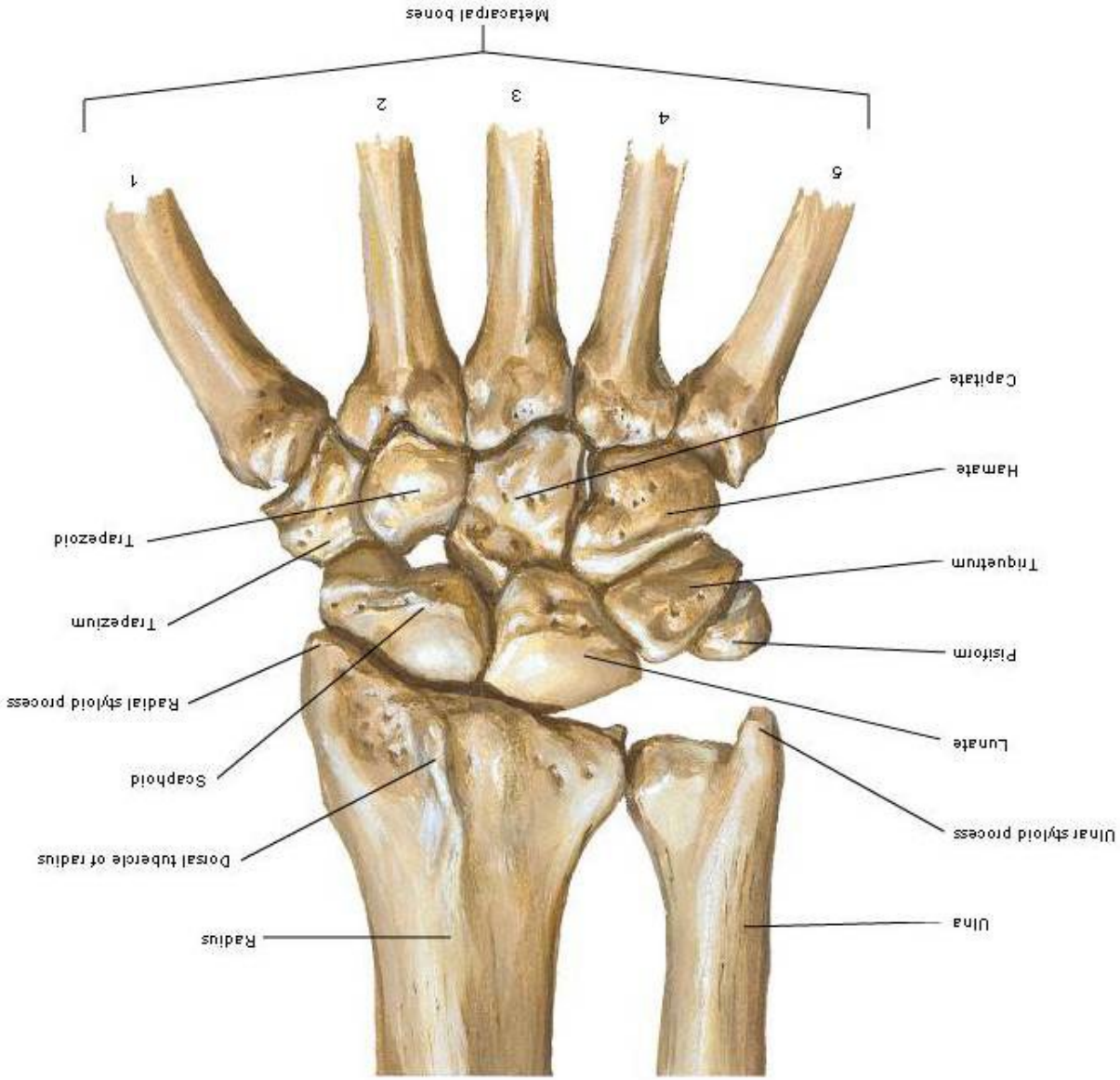
- 1- Scaphoid
- 2- Lunate
- 3- Triquetrum
- 4- Pisiform

Distal:

- 1- Trapezium
- 2- Trapezoid
- 3- Capitate
- 4- Hamate

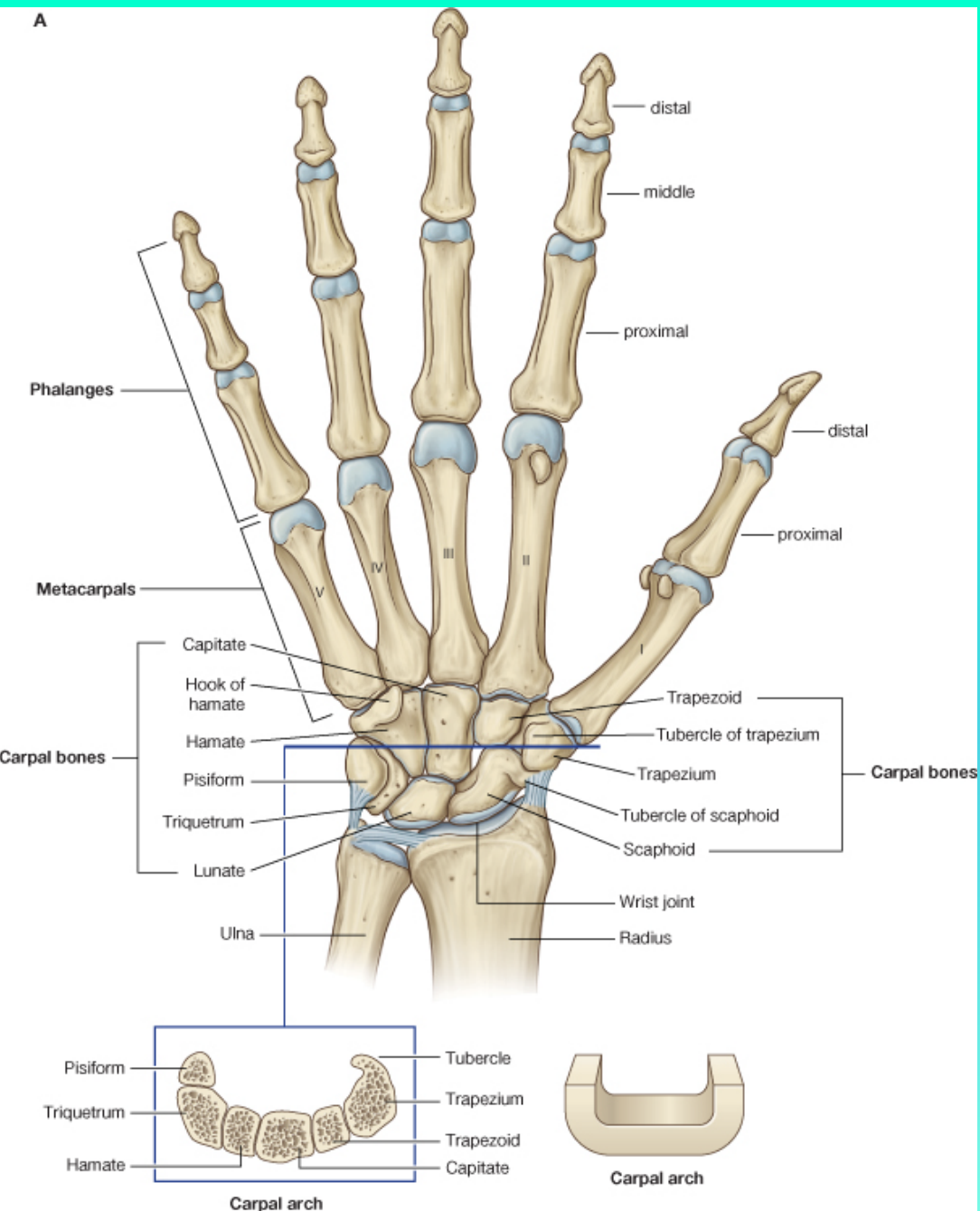


Carpal Bones

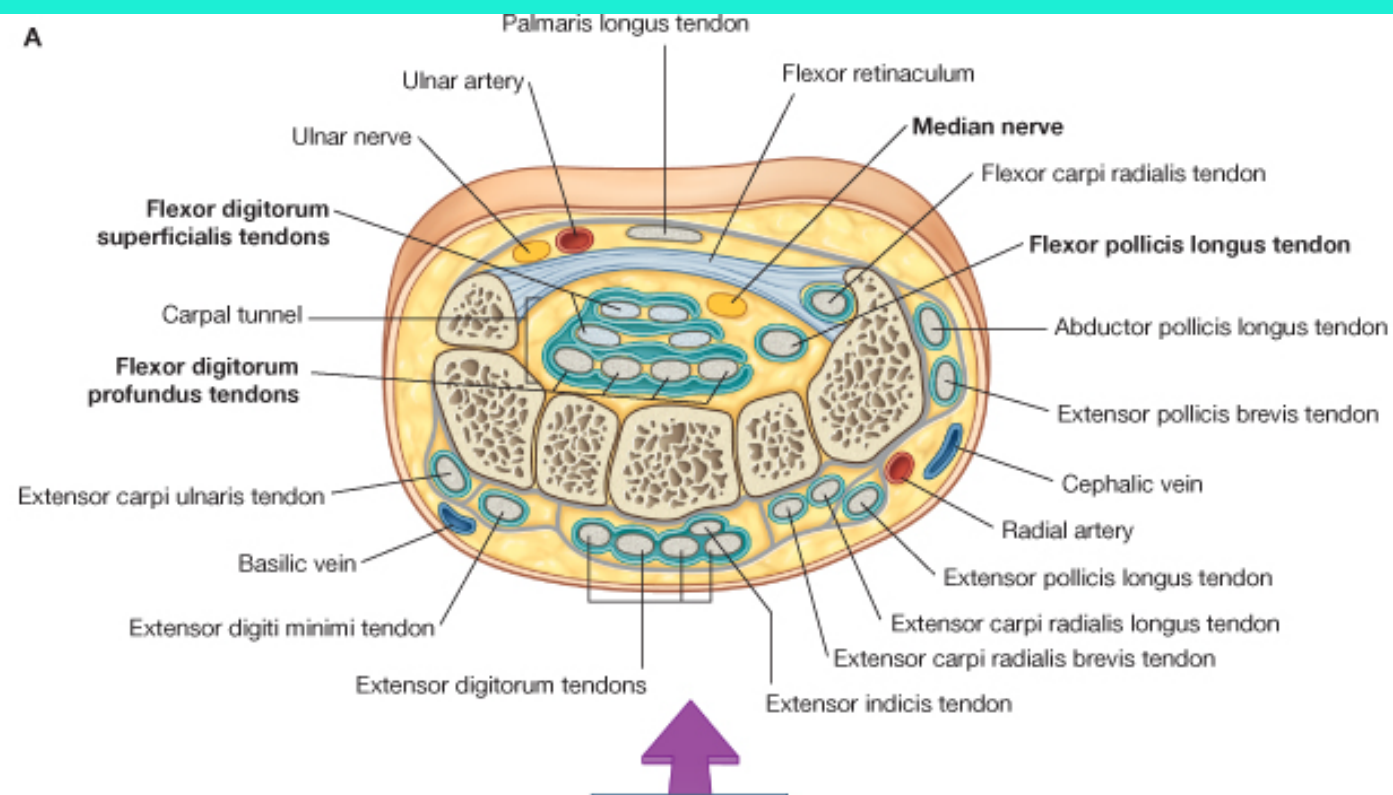


Not a
N. W. N.

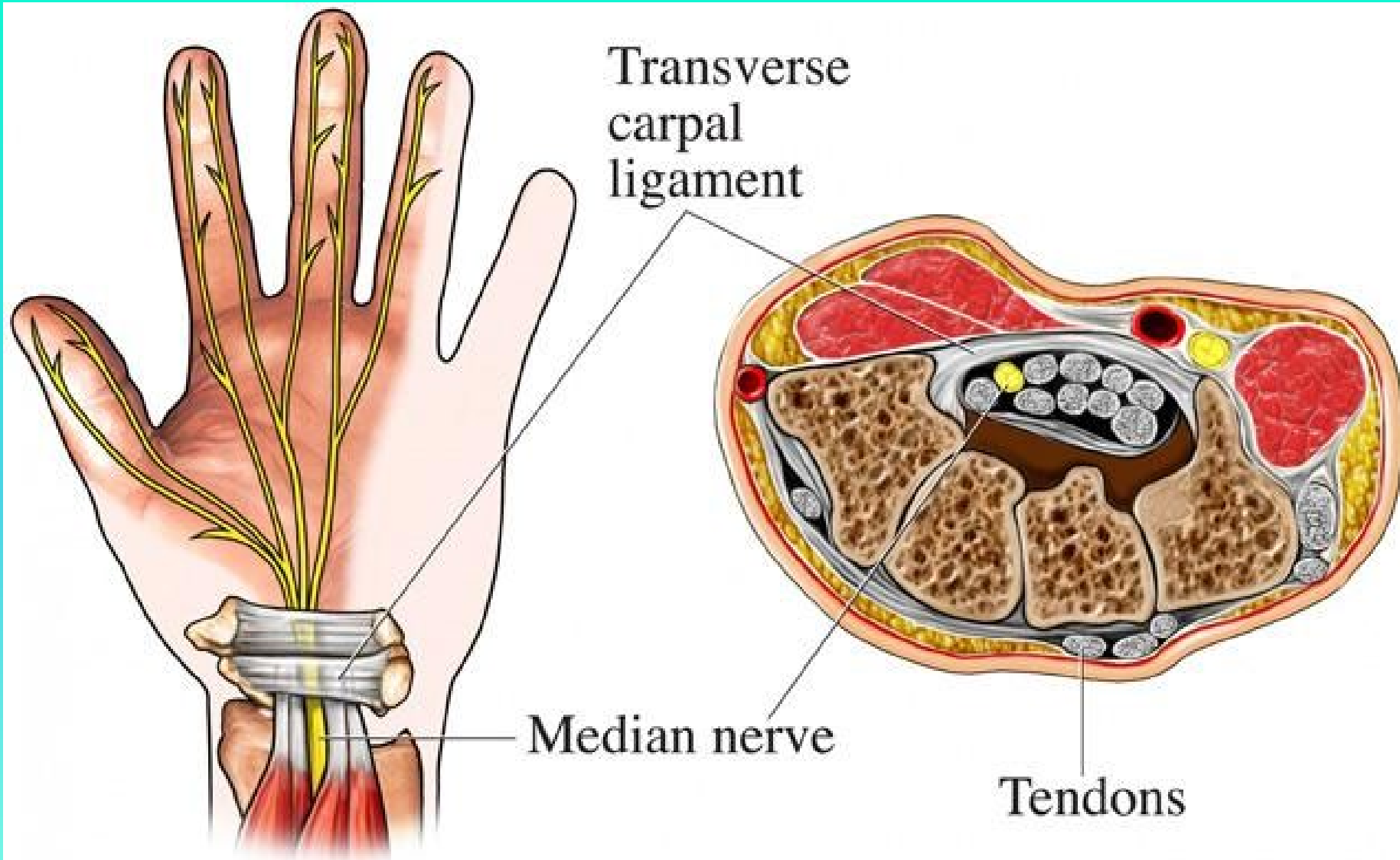
A

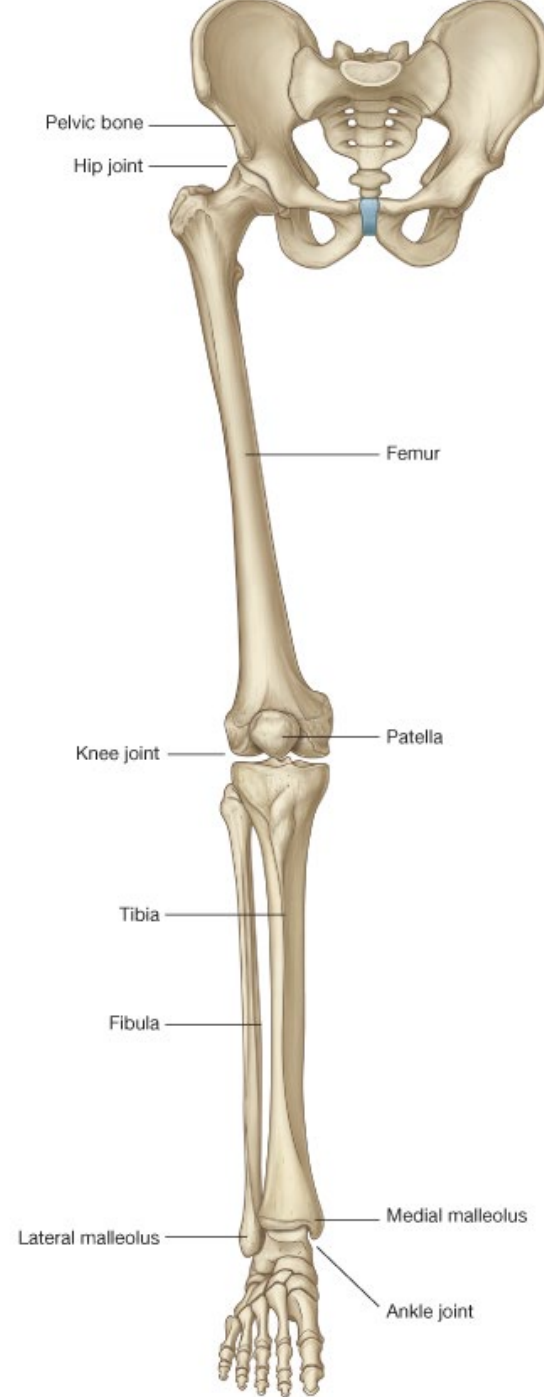


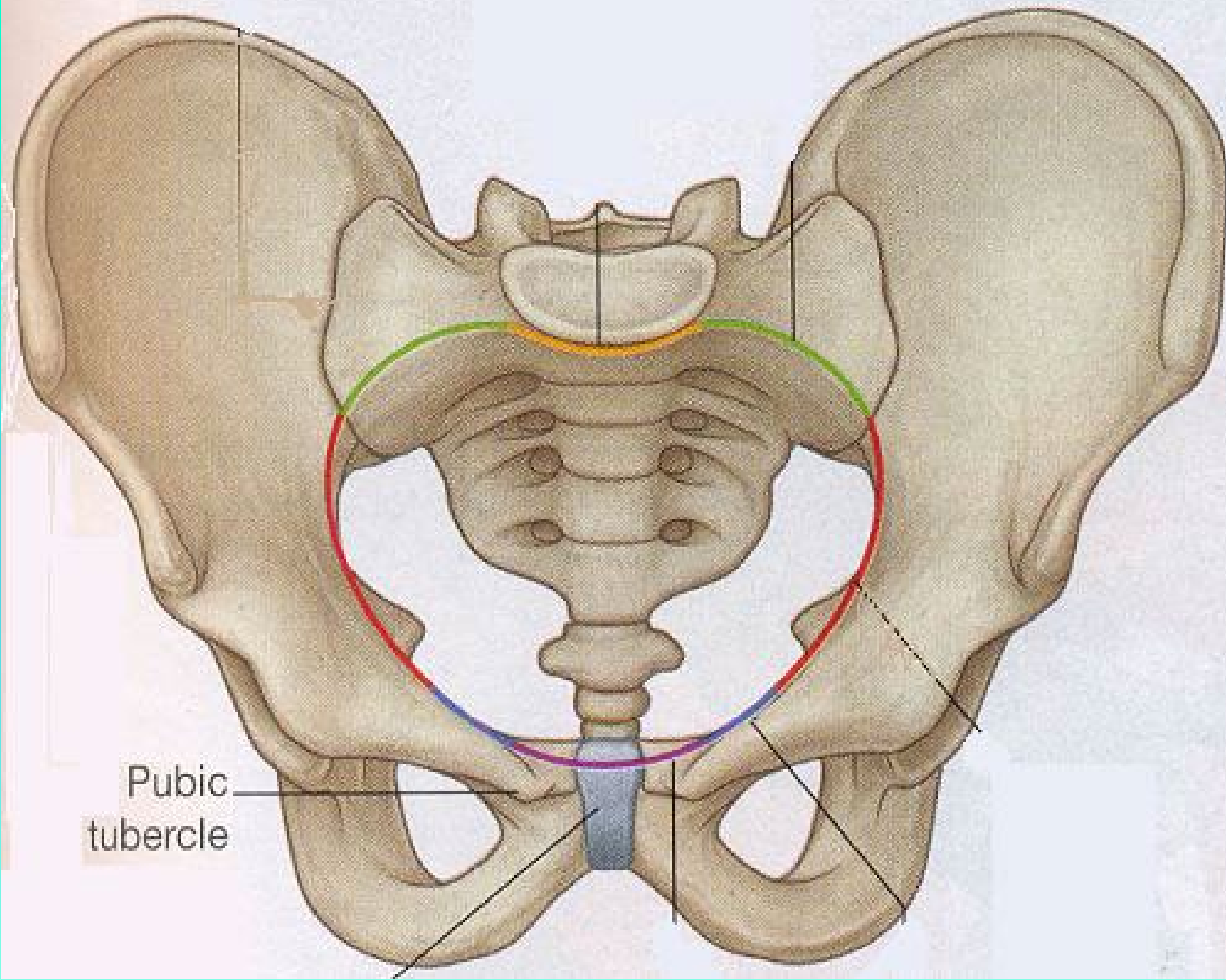
A



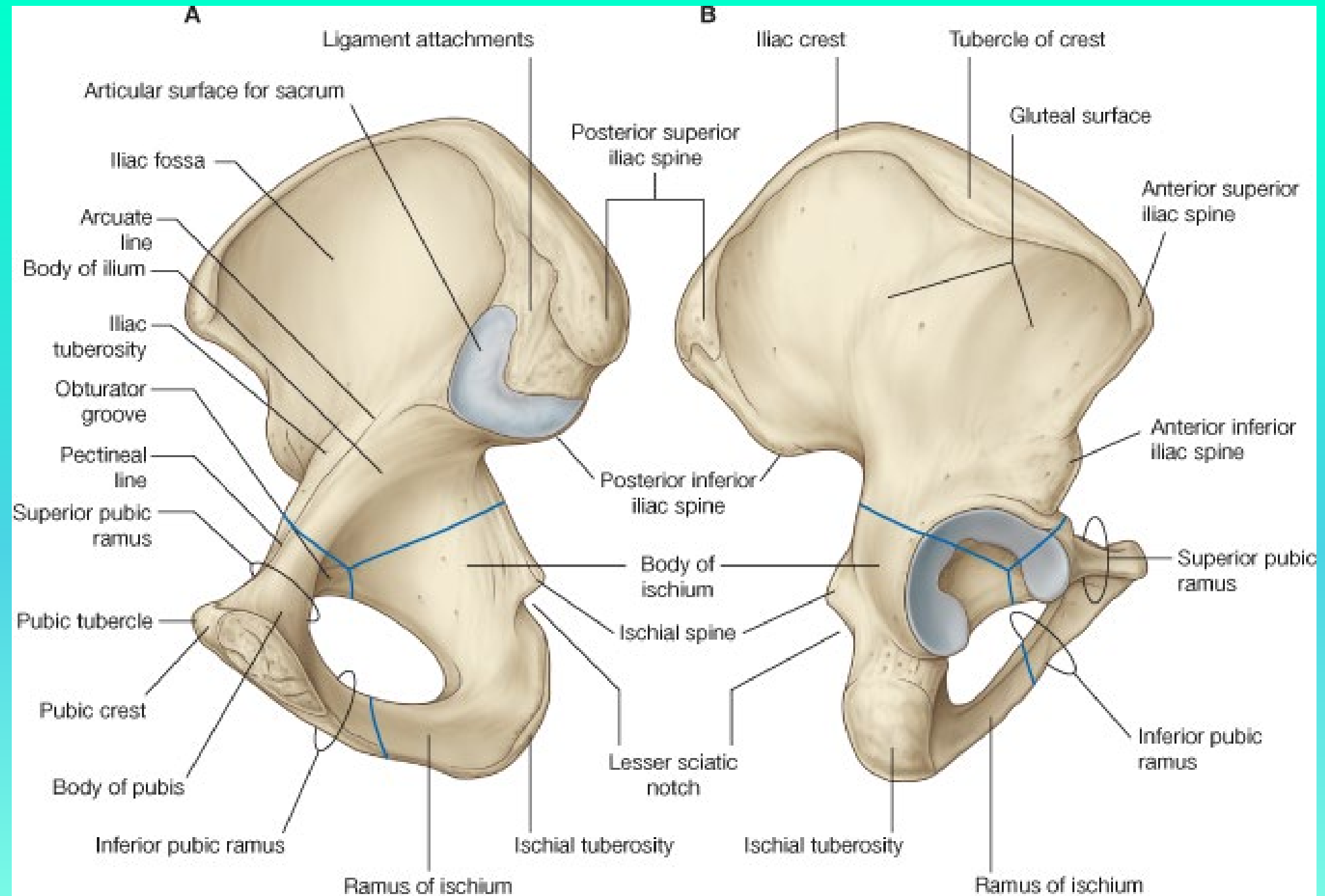
• ٹونل کارپال (cts)

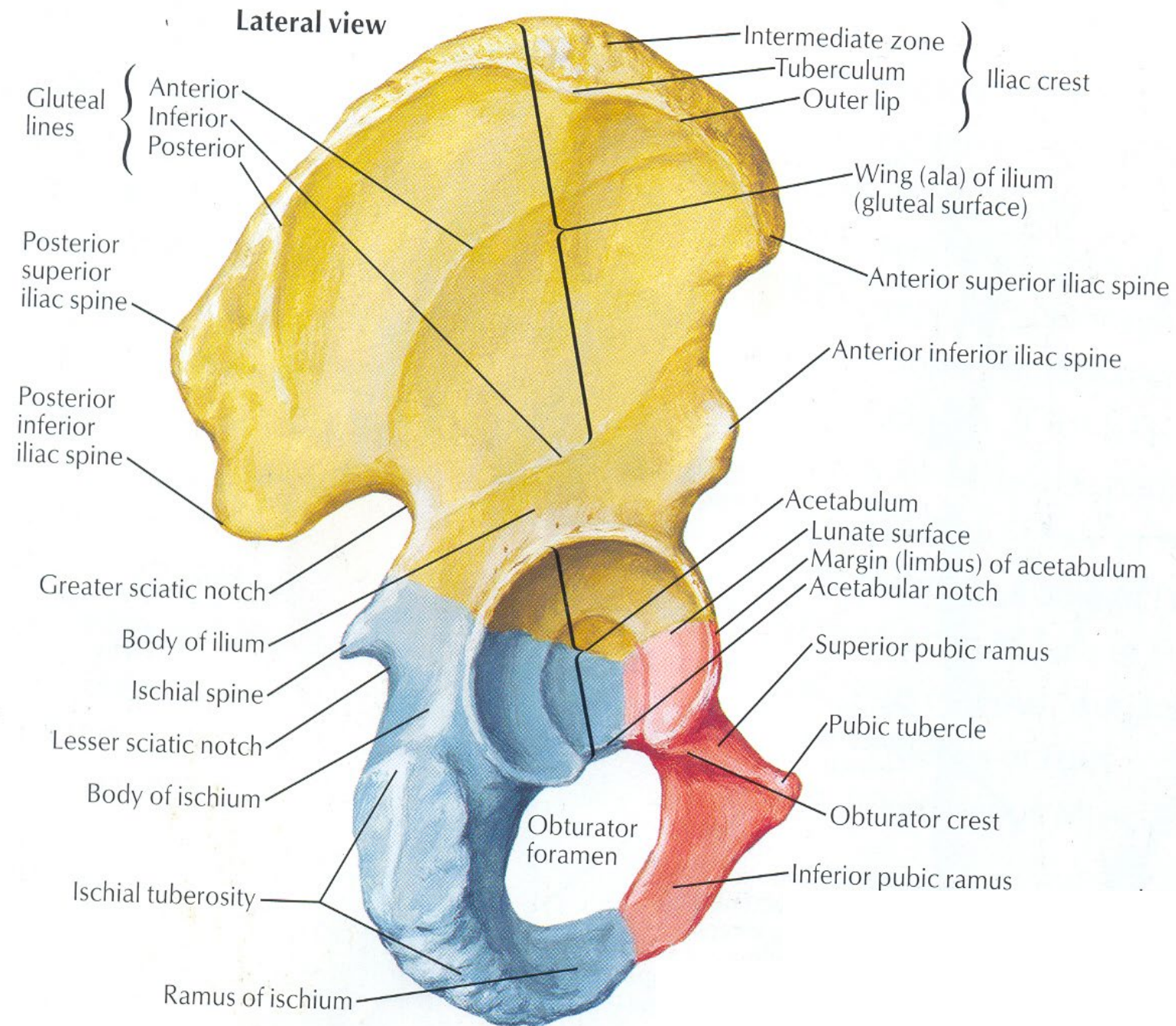


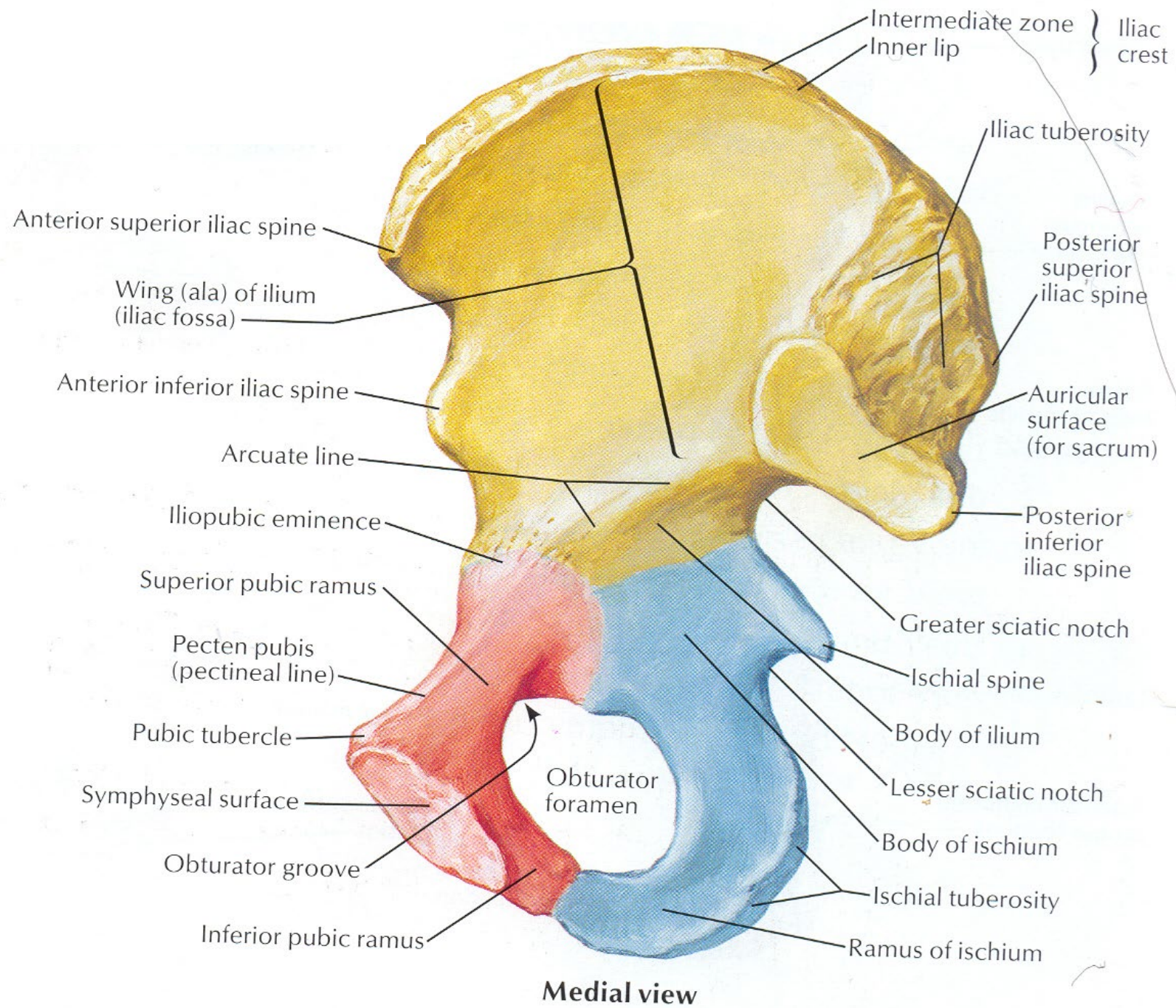




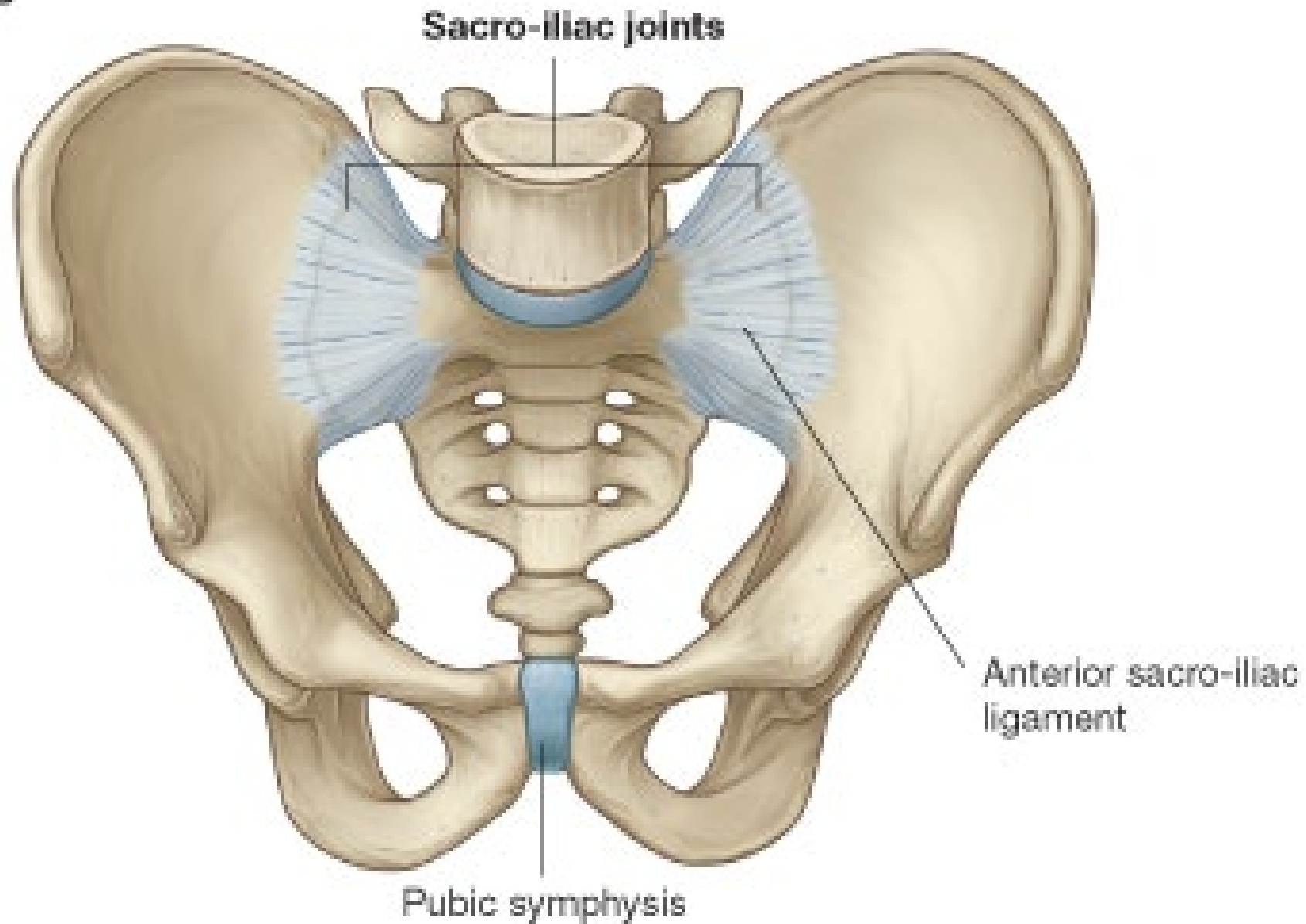
Pubic
tubercle

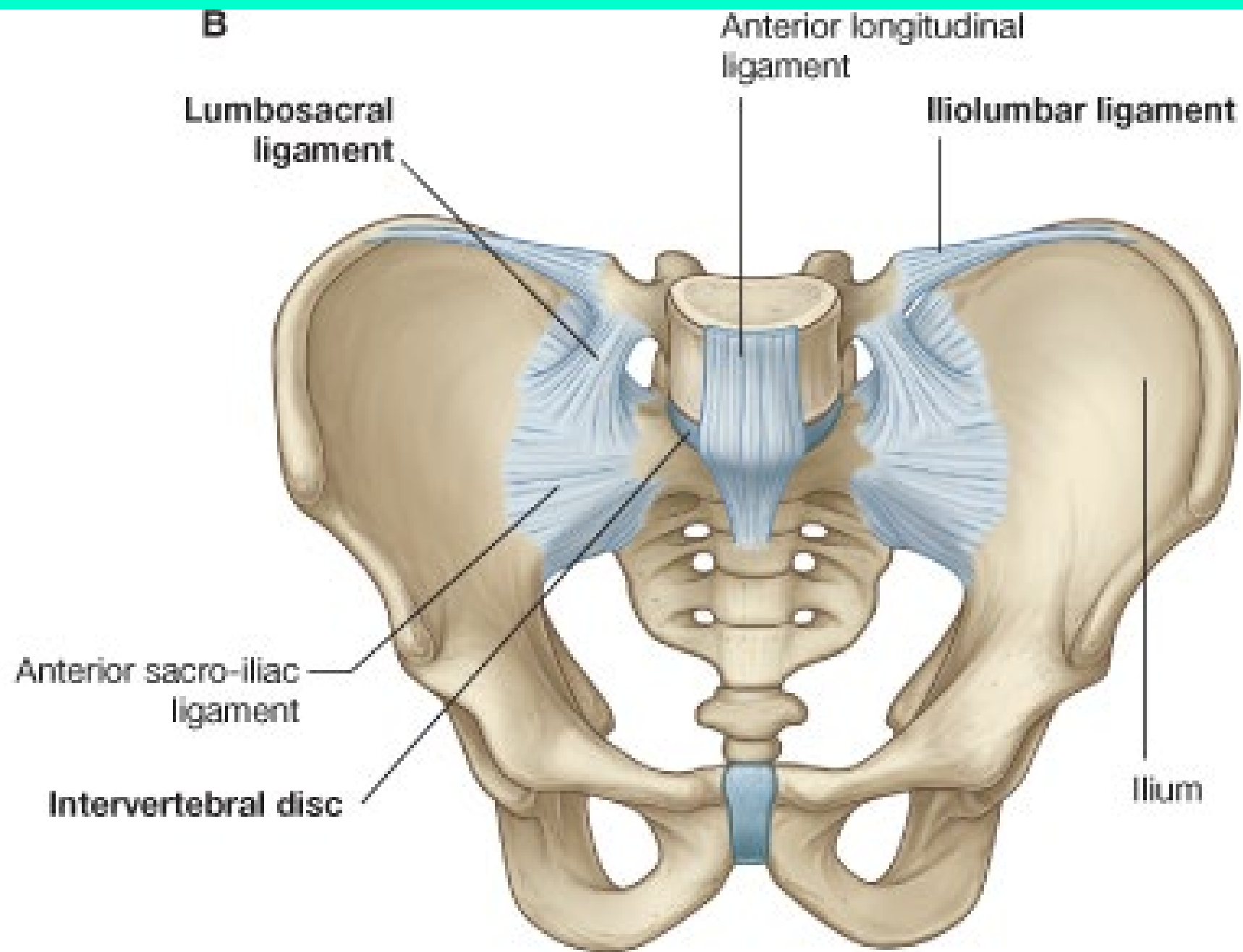


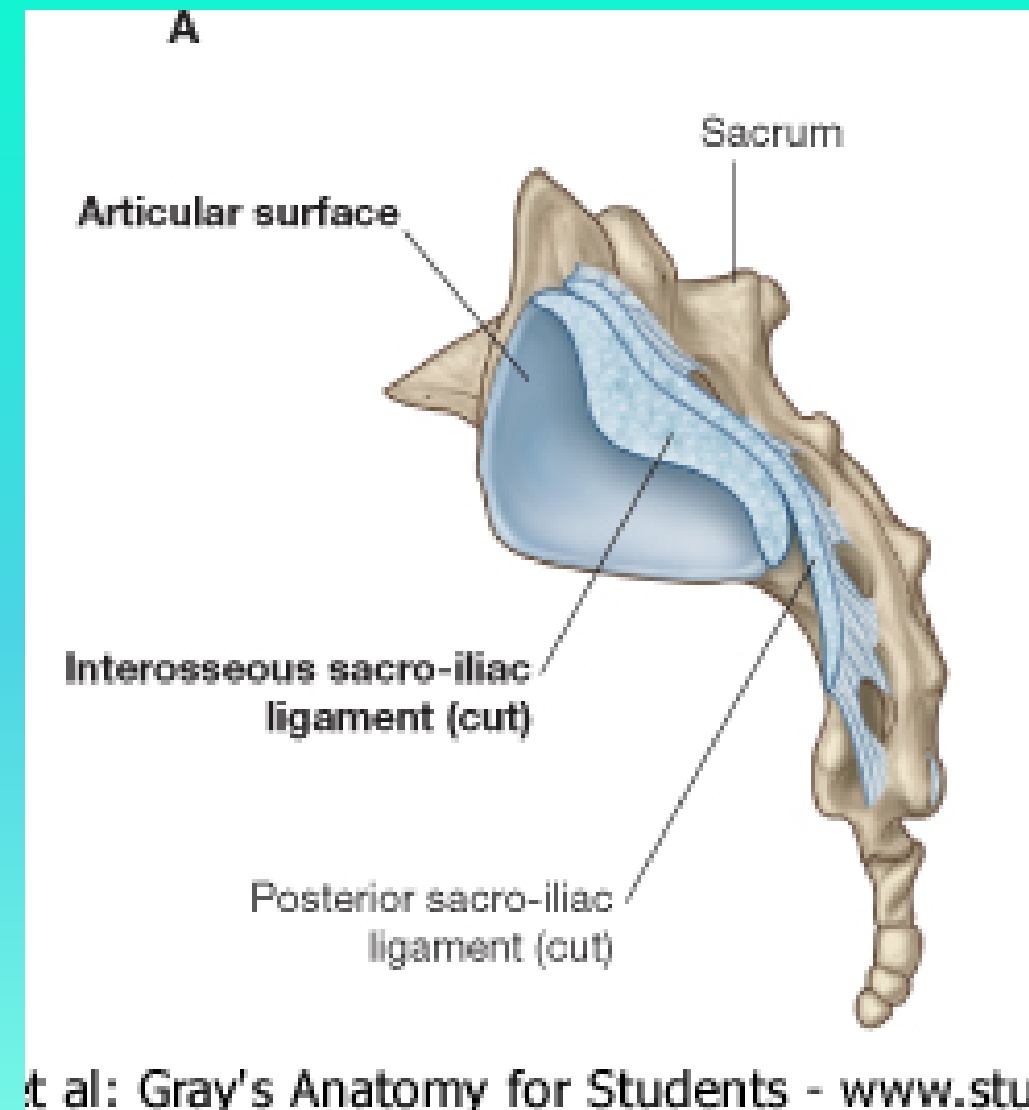
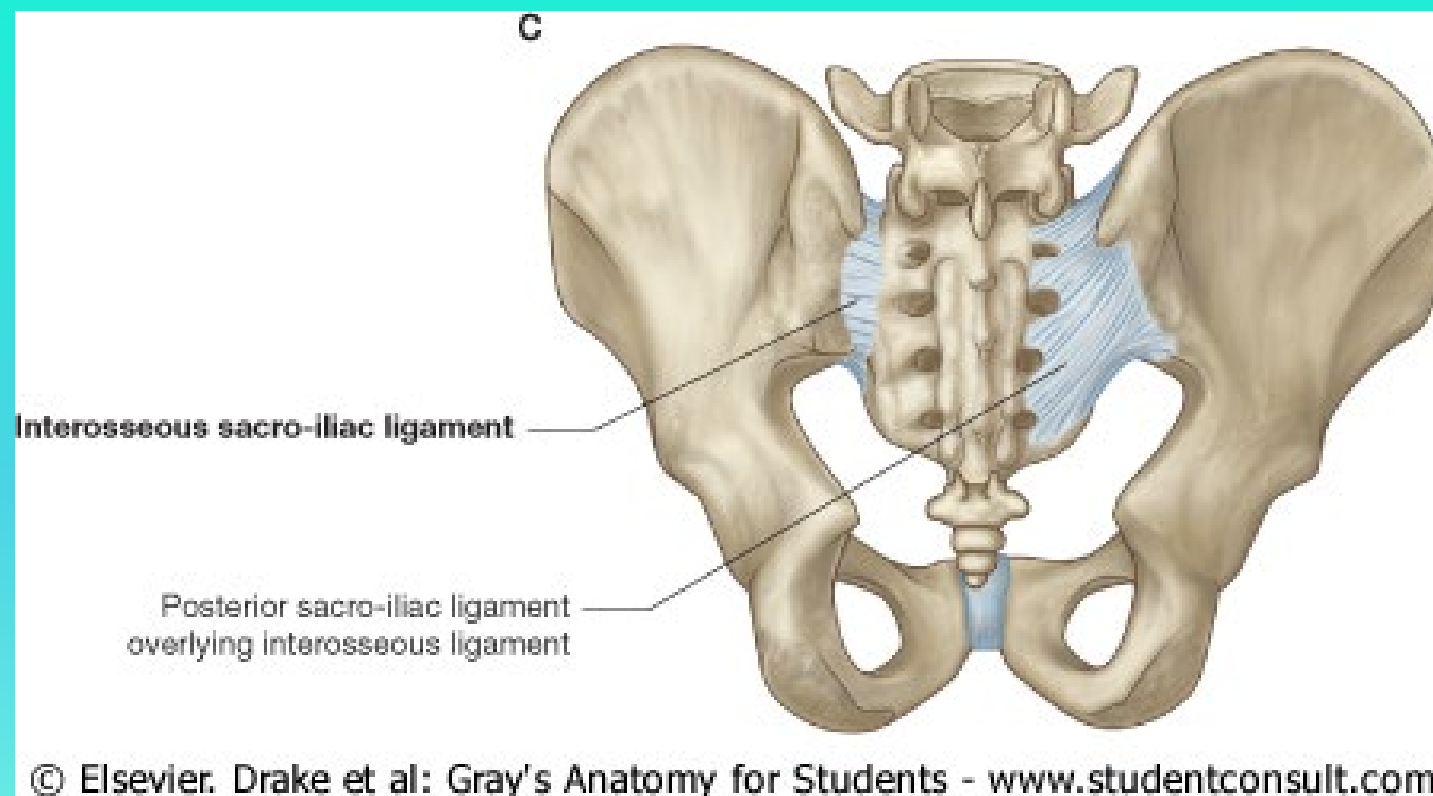


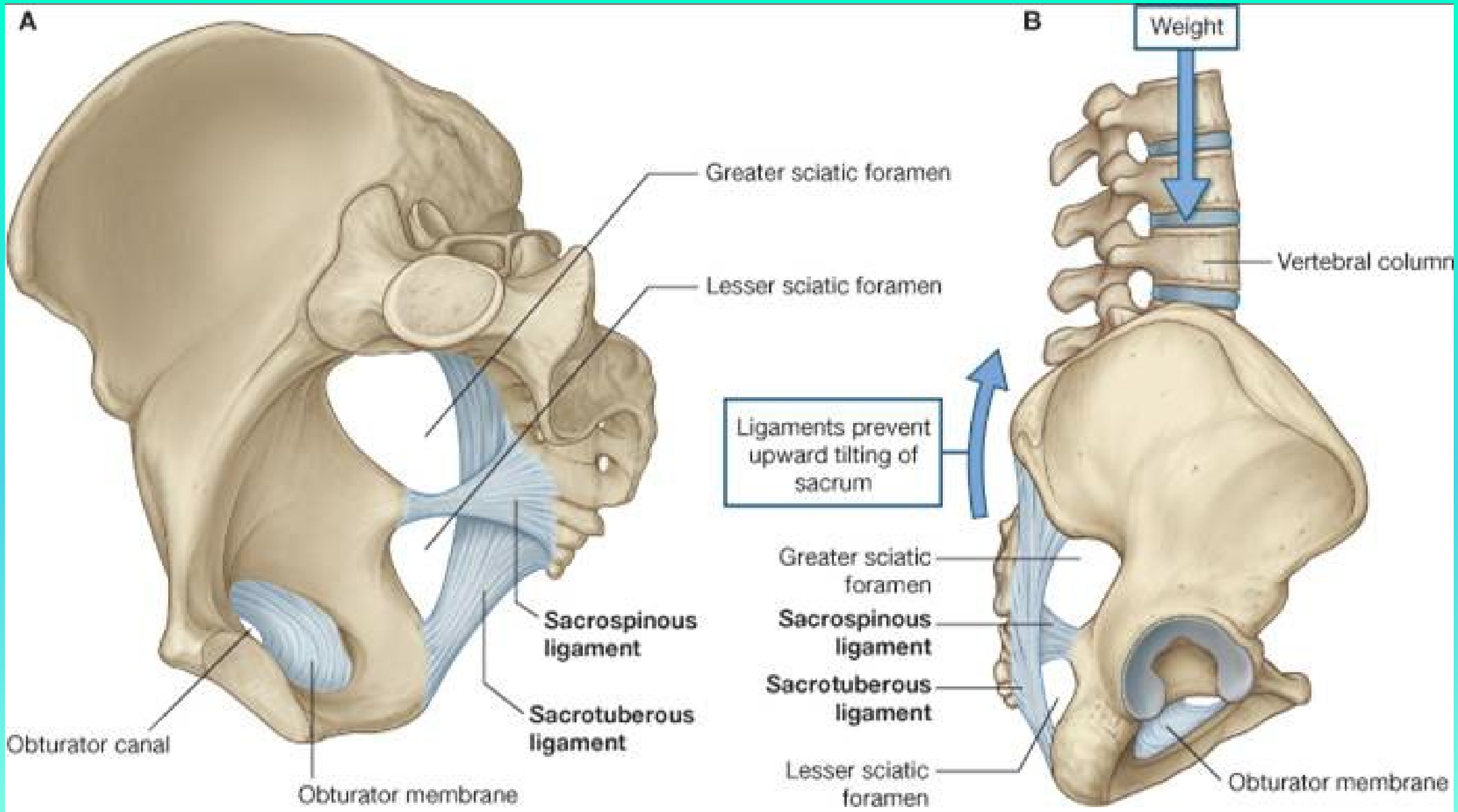


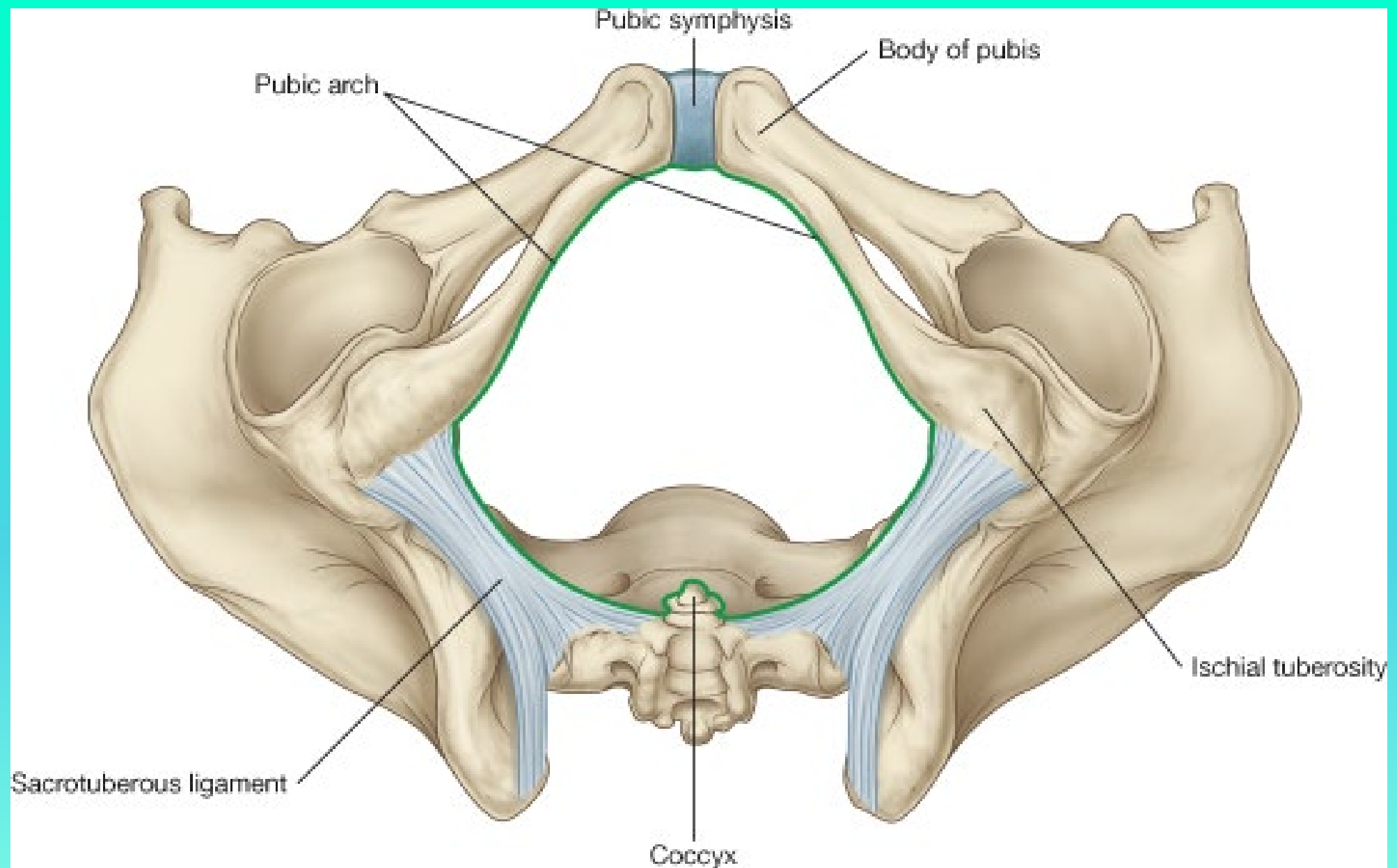
B

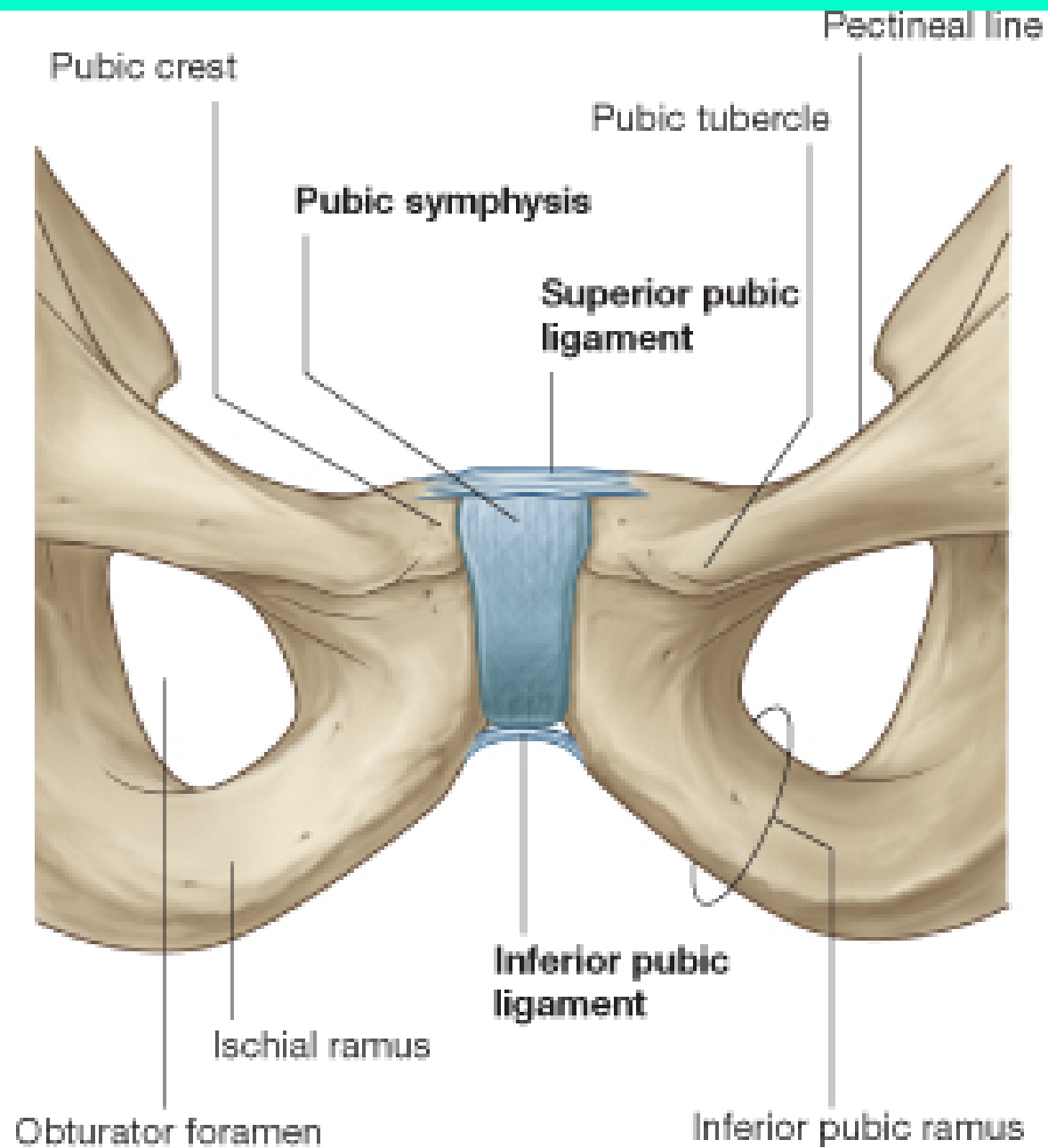






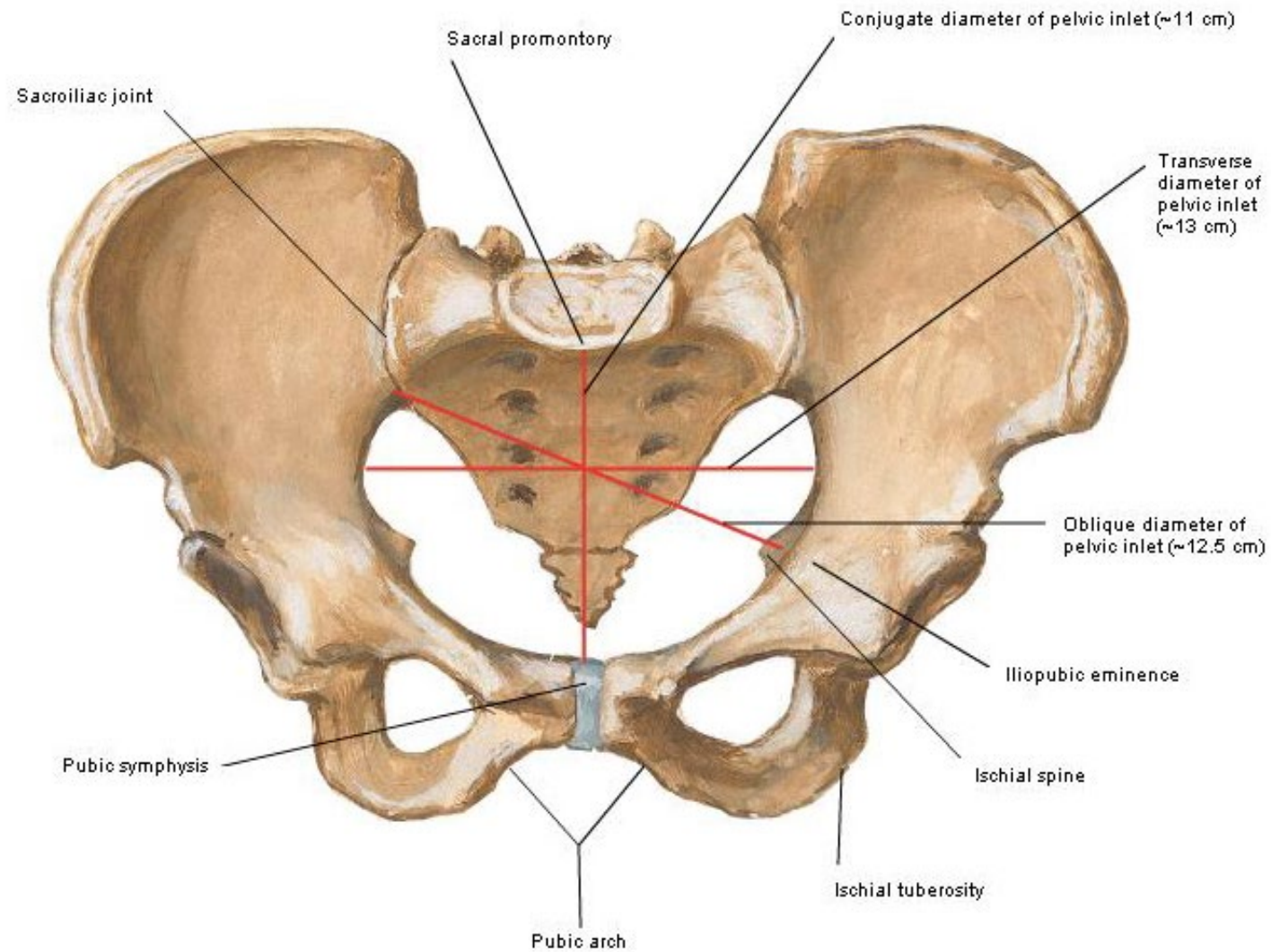






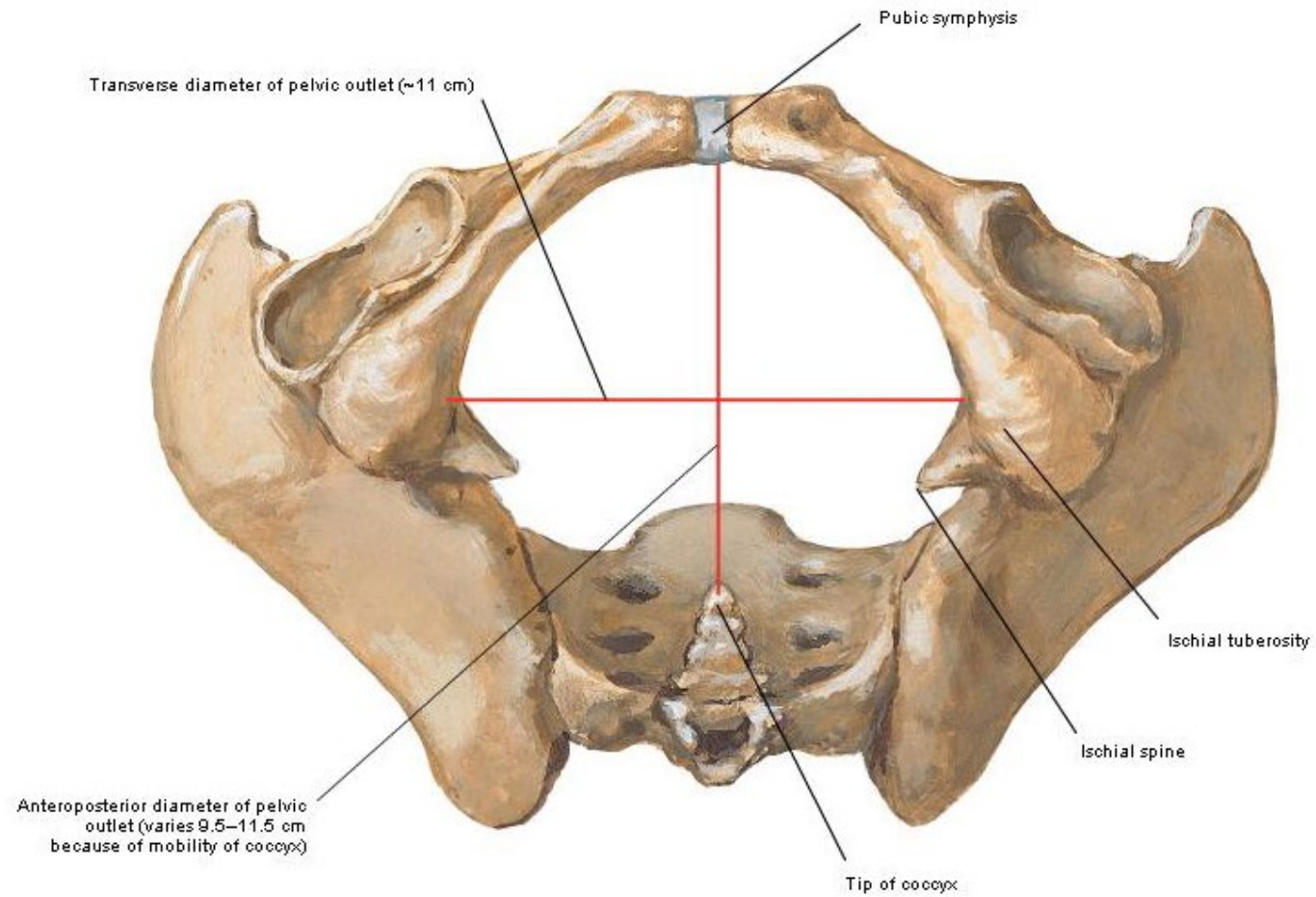
Female Pelvis

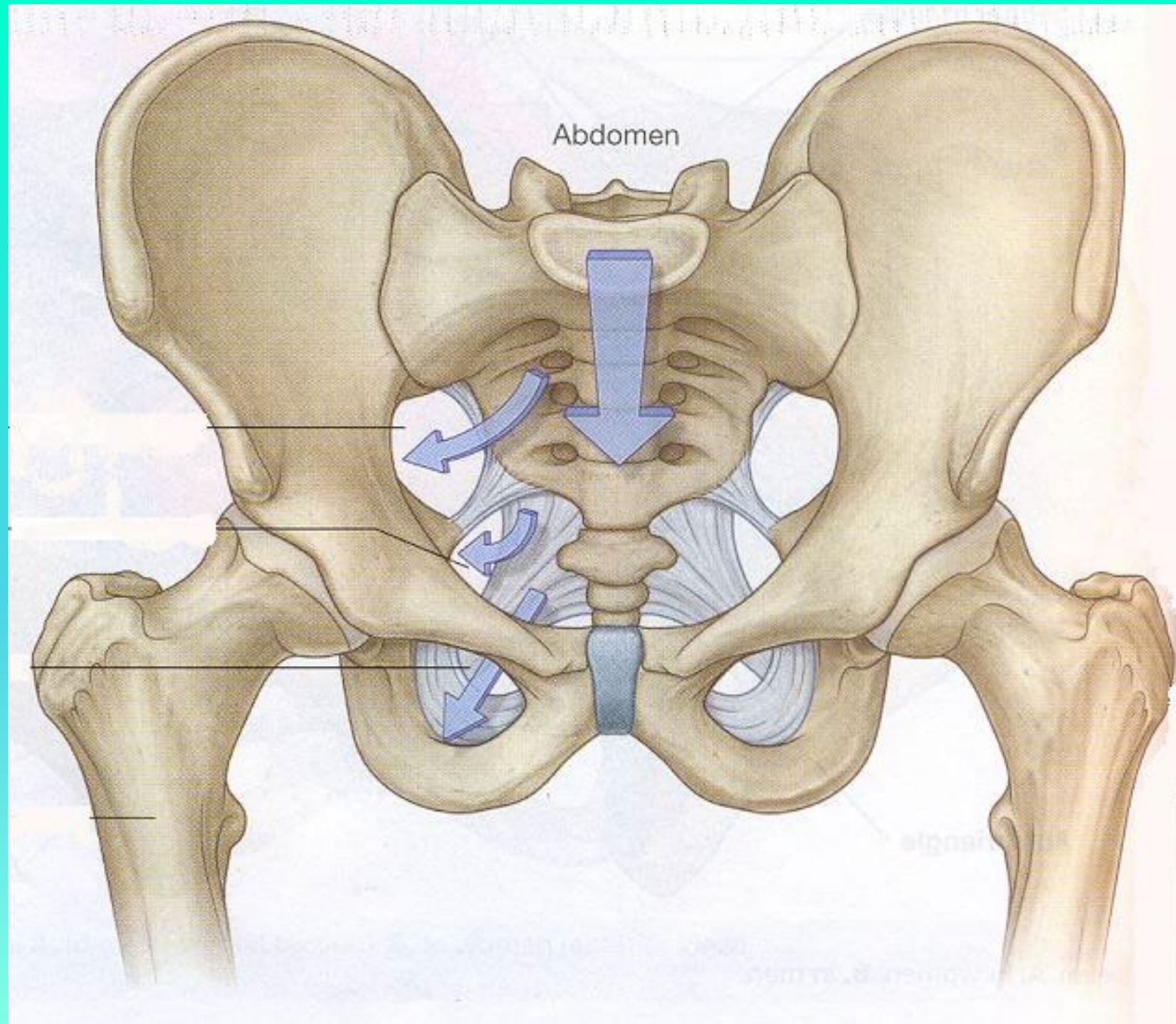
Measurements - Anterior View



Female Pelvis

Measurements - Inferior View





Gender Differences of the Pelvis

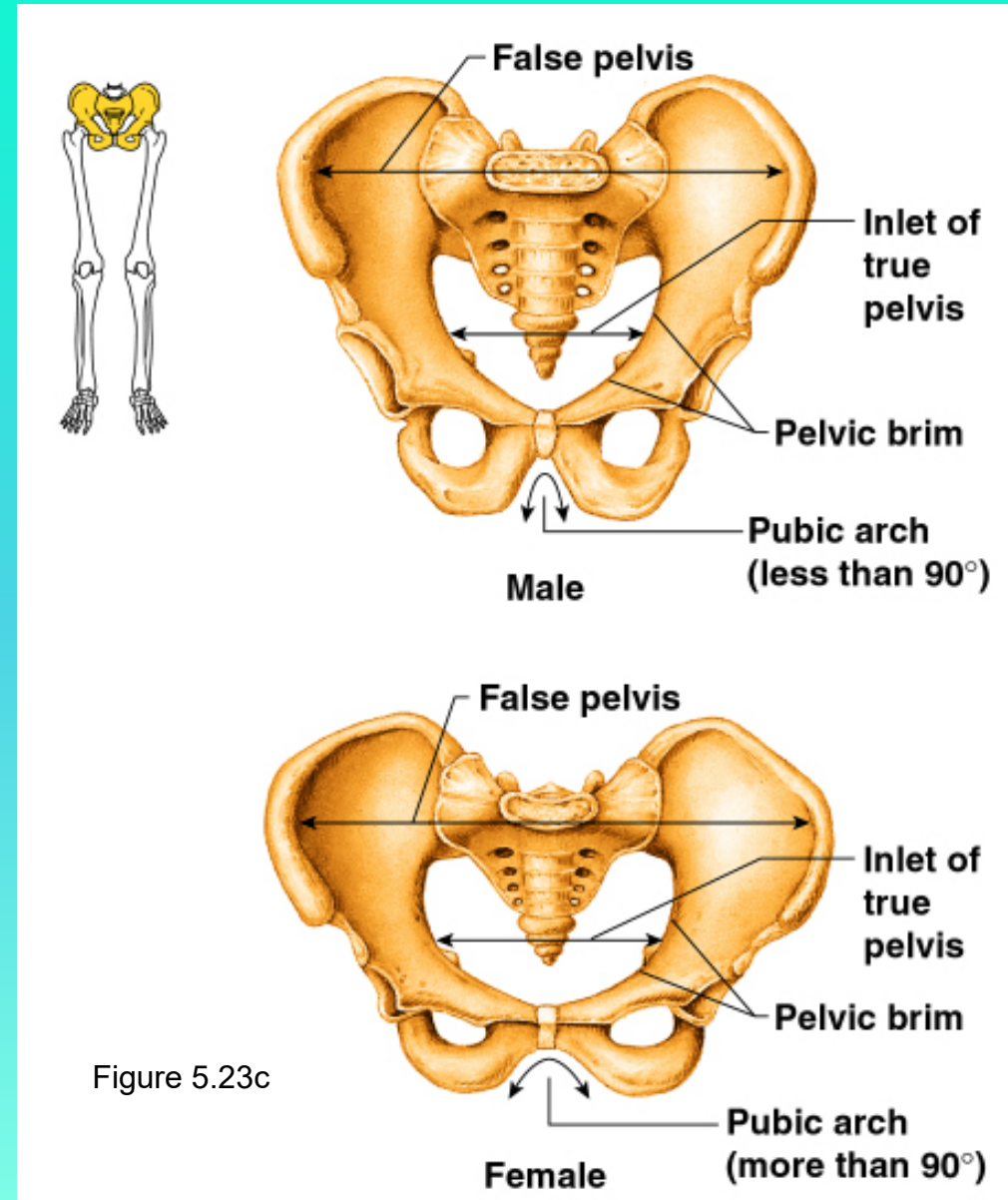
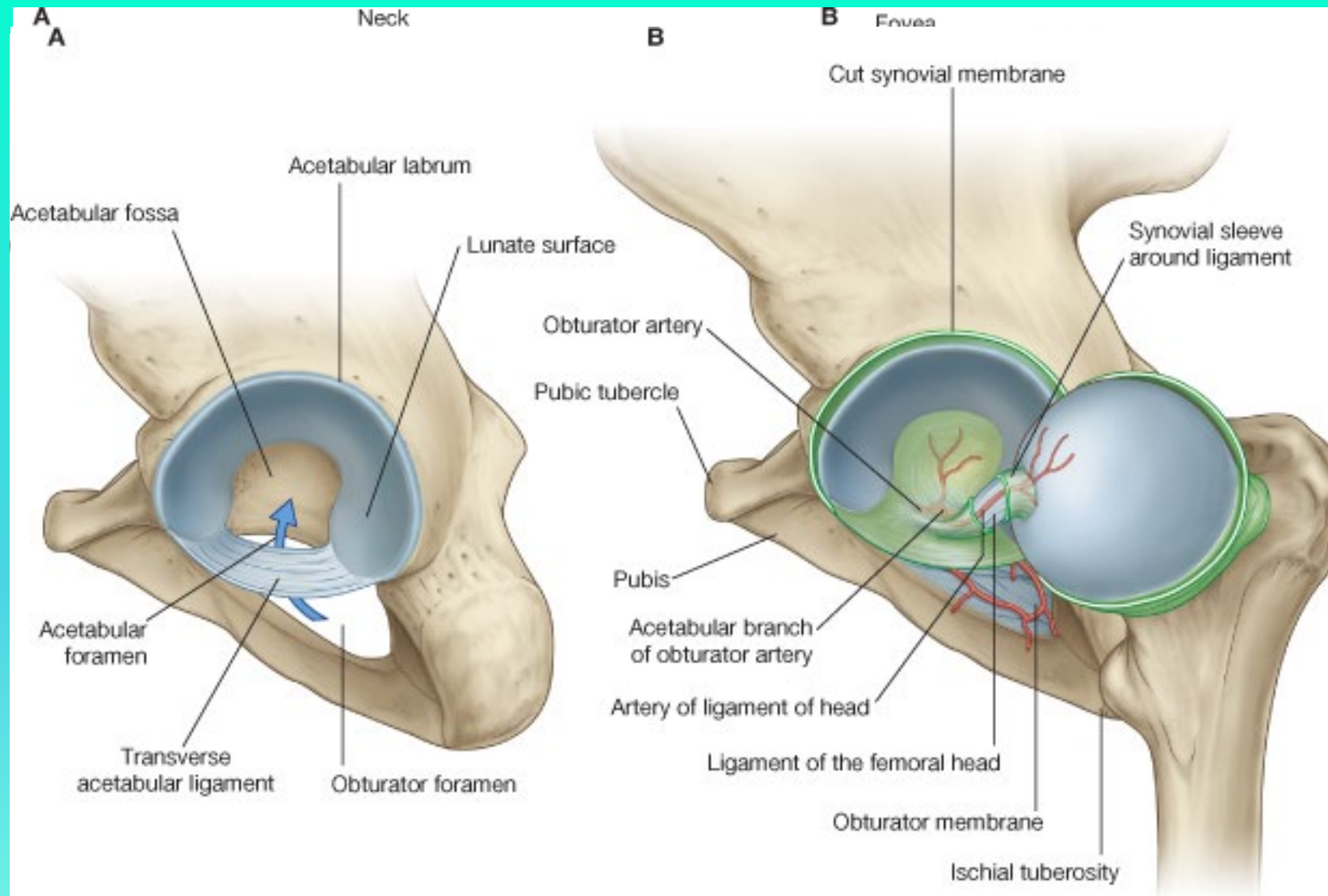
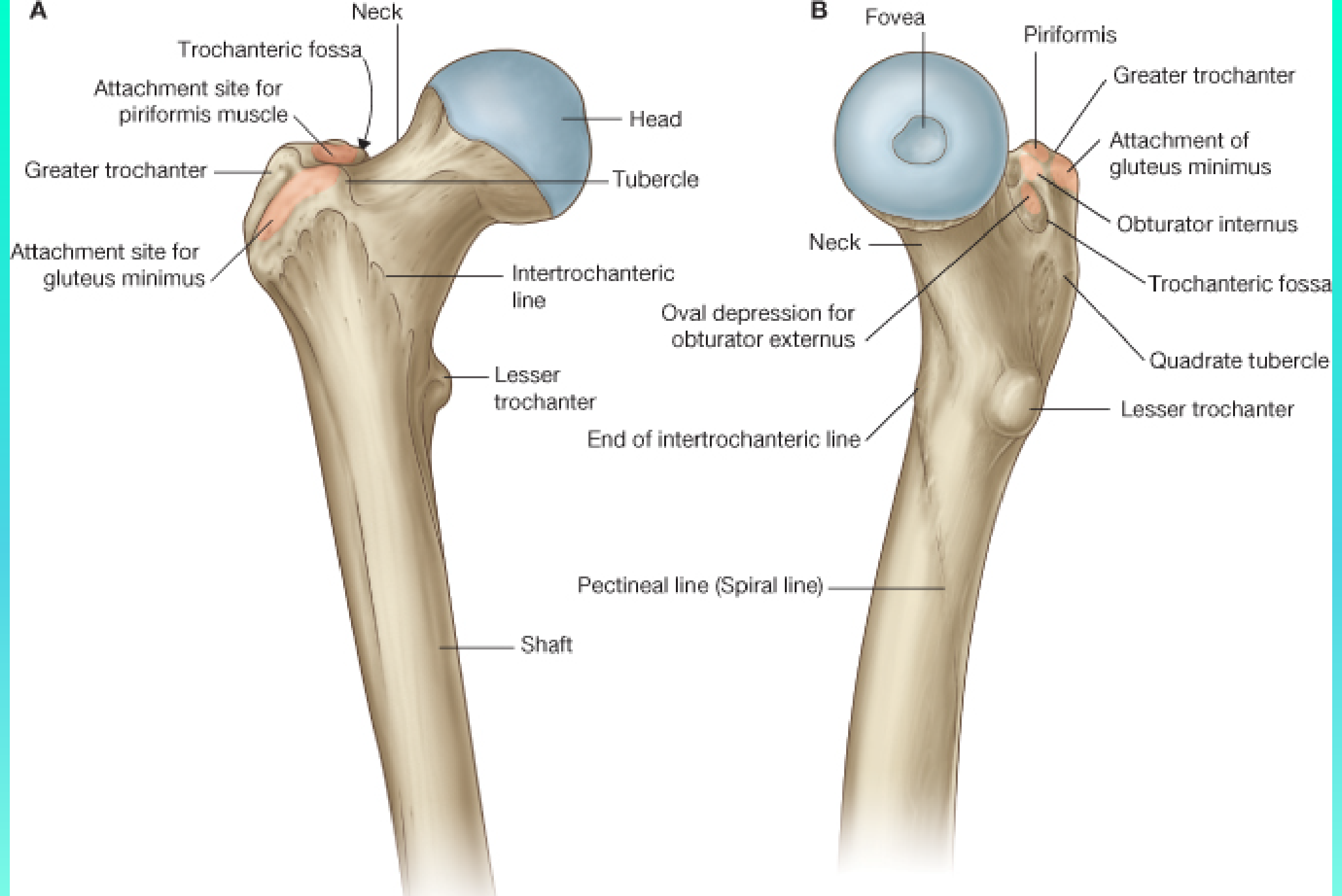
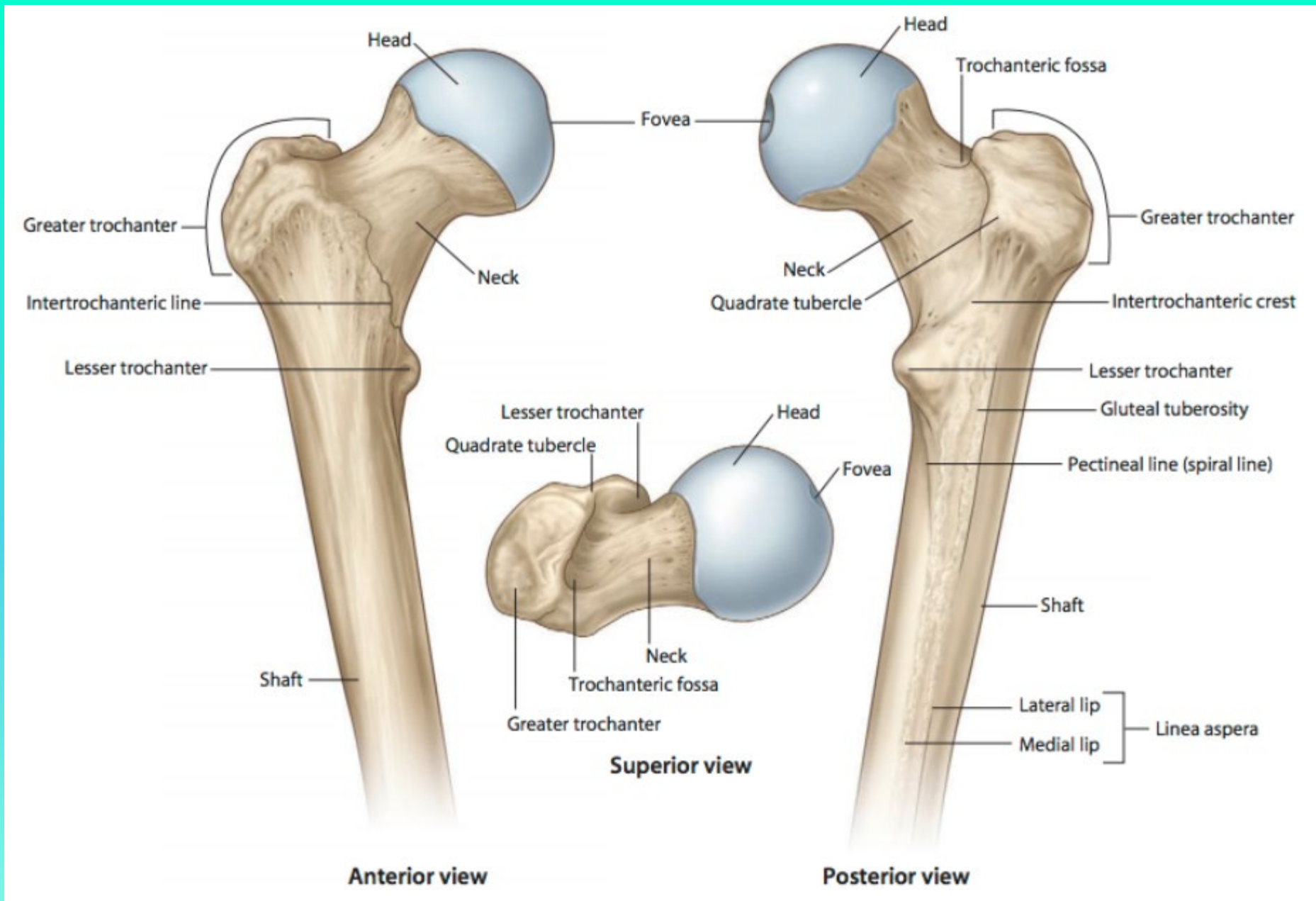
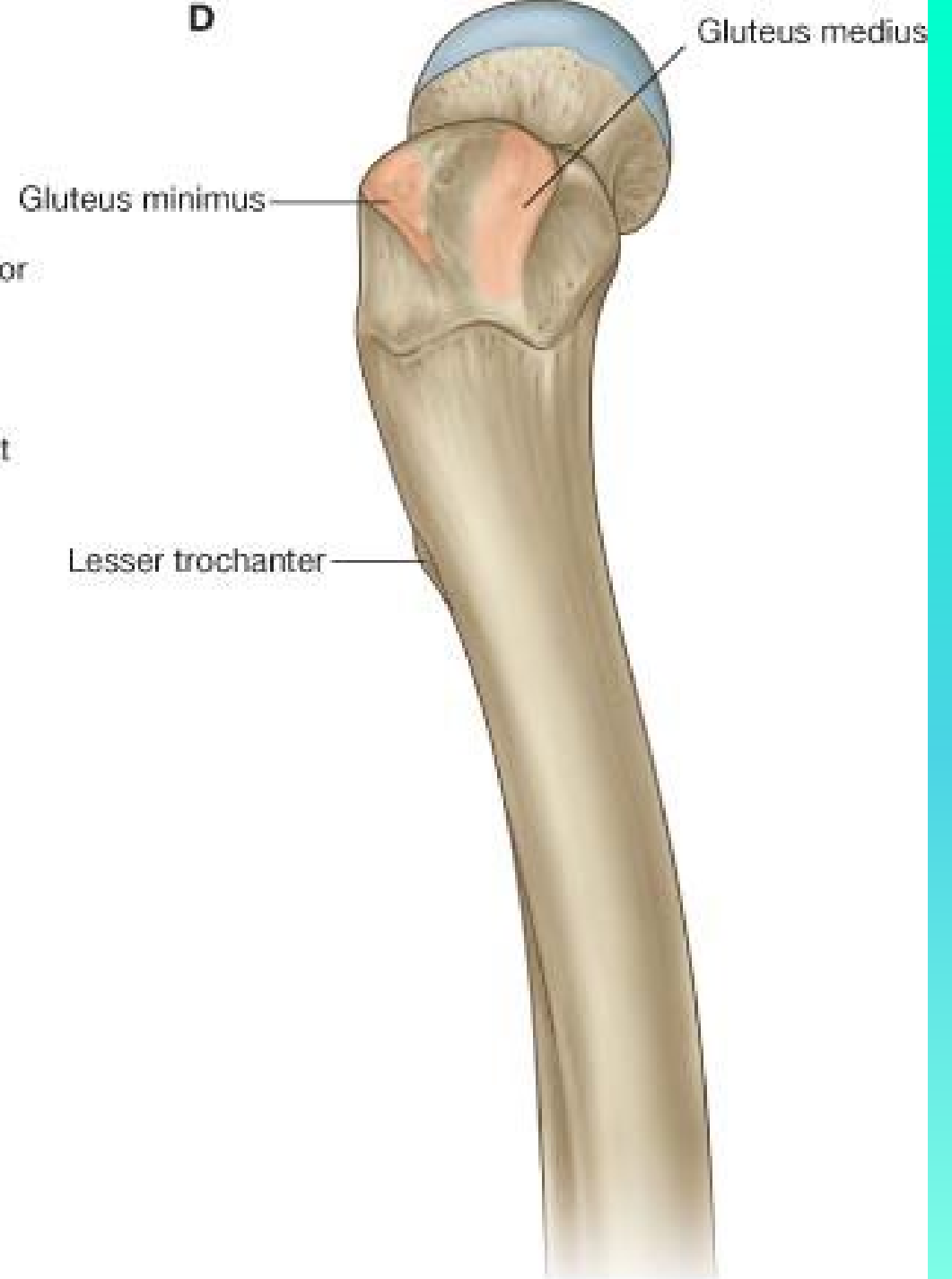
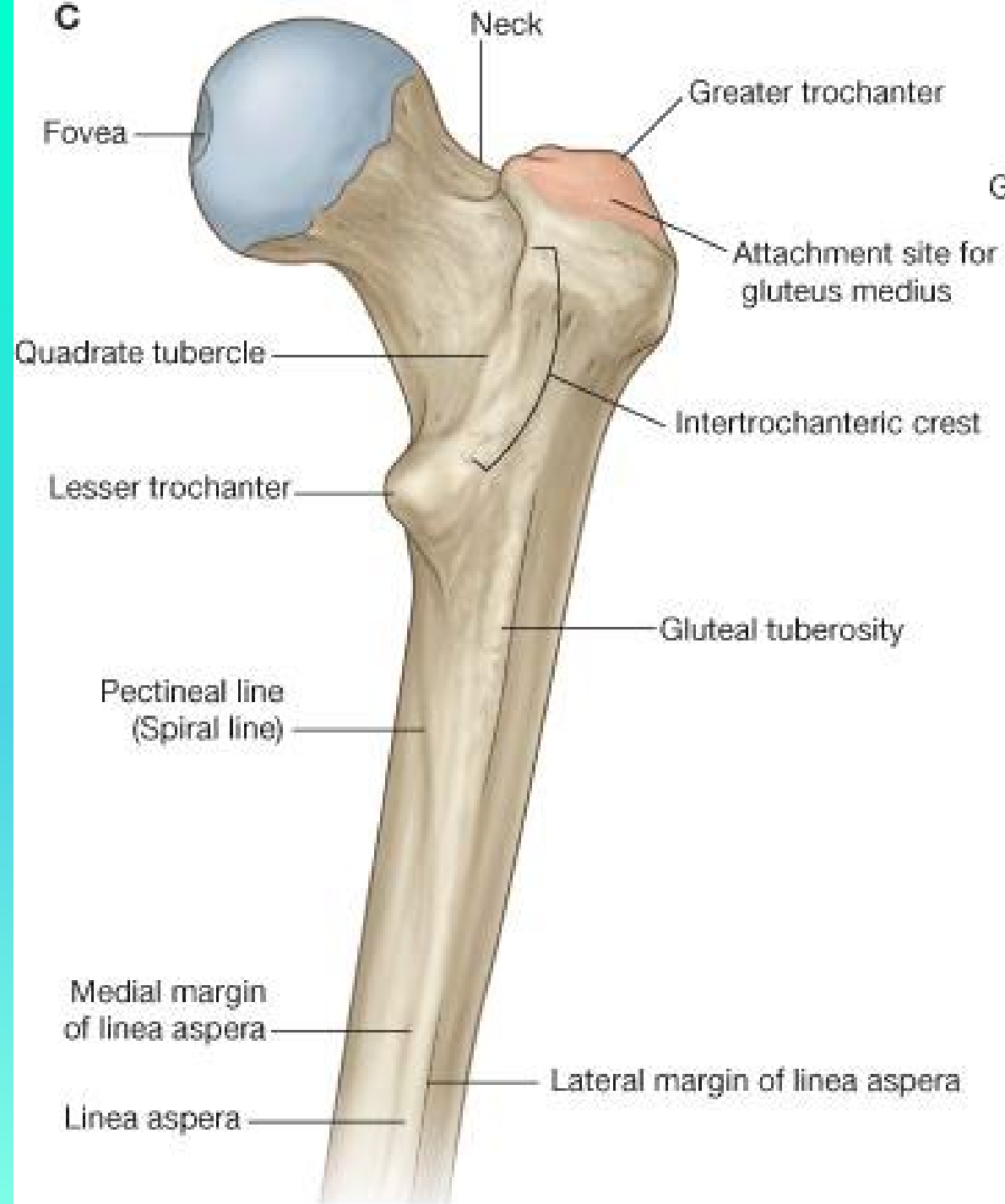


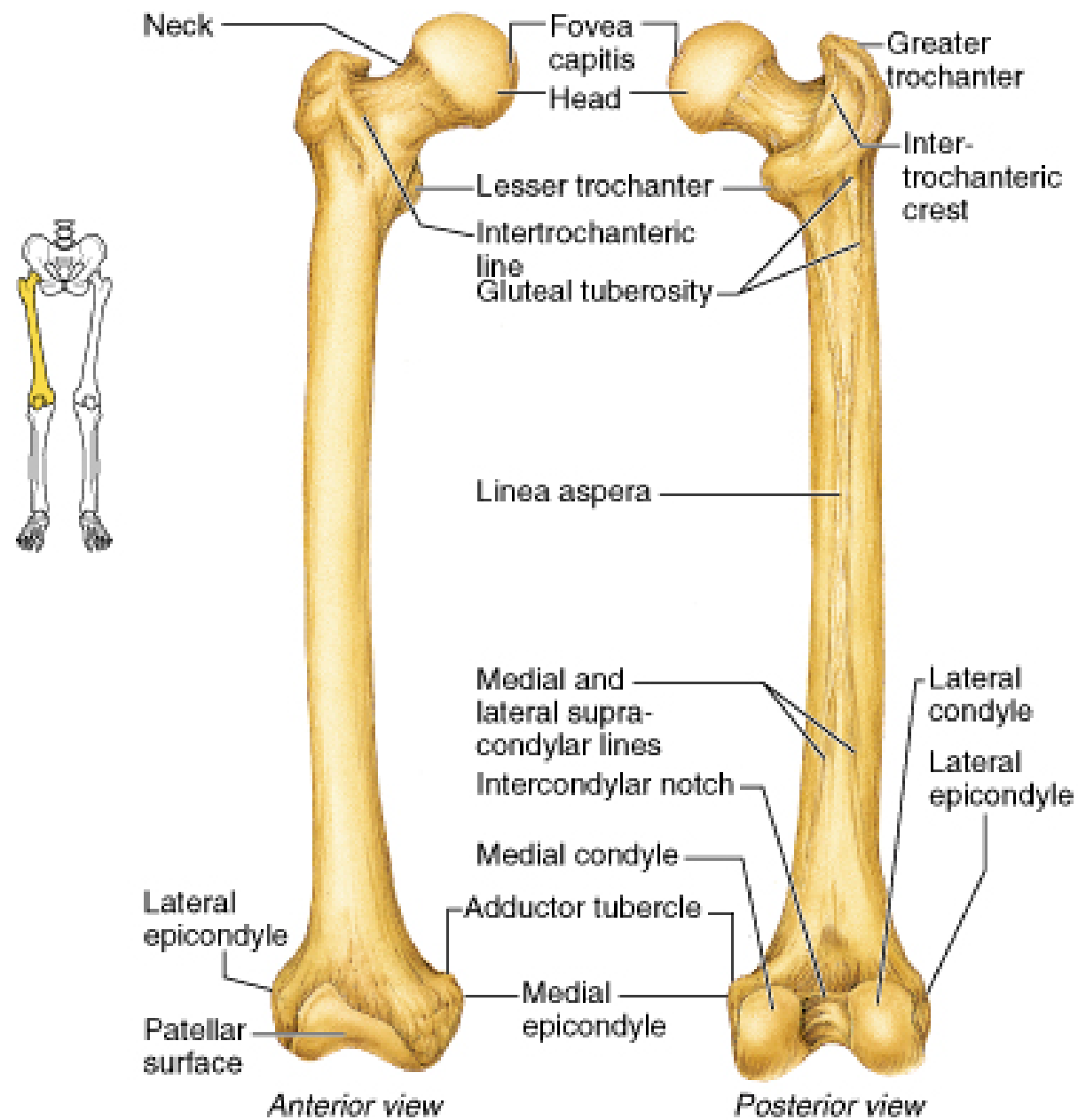
Figure 5.23c



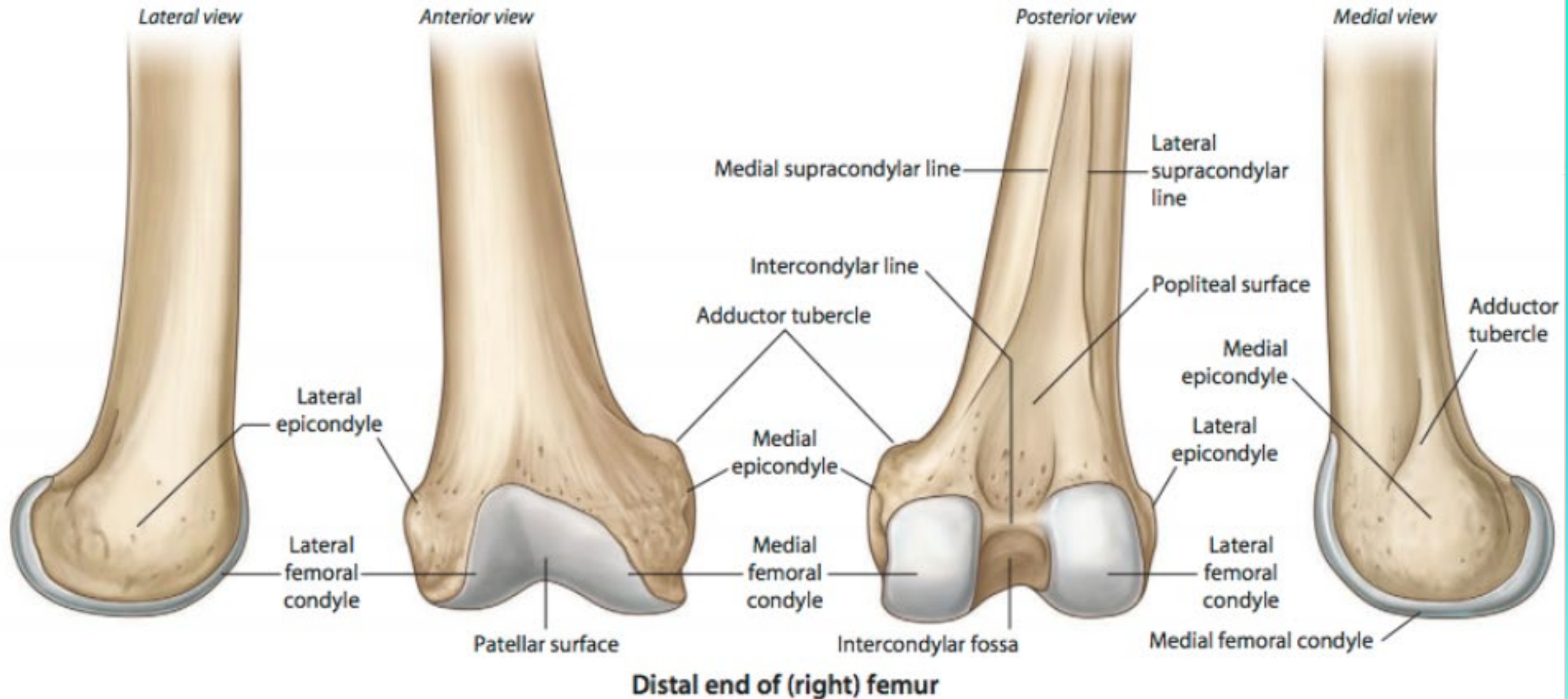




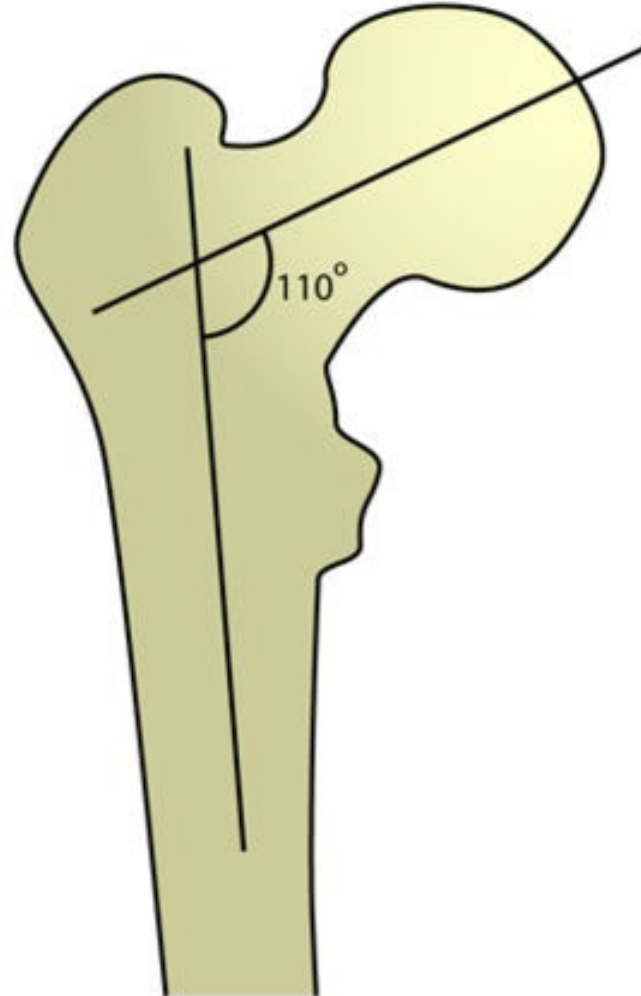




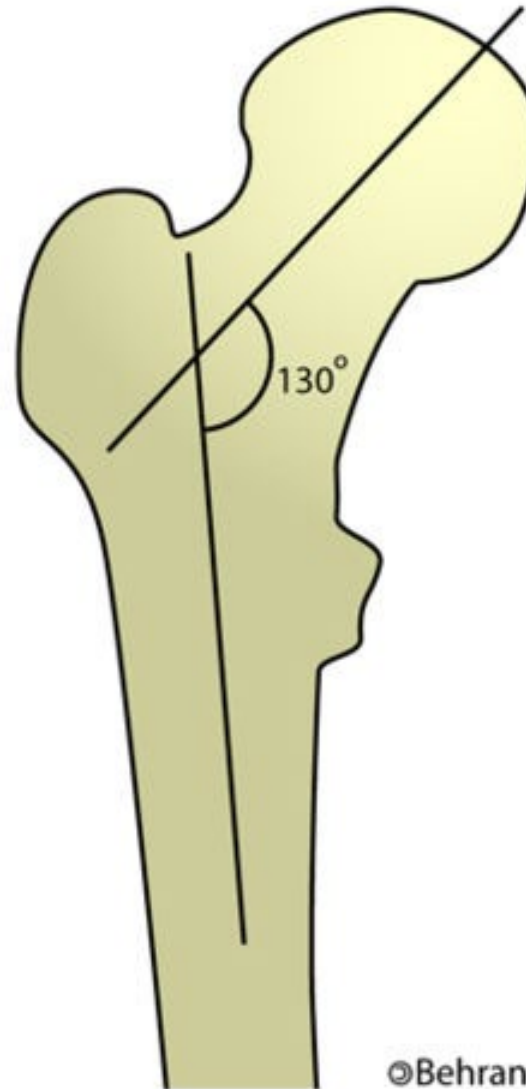
(b) Femur



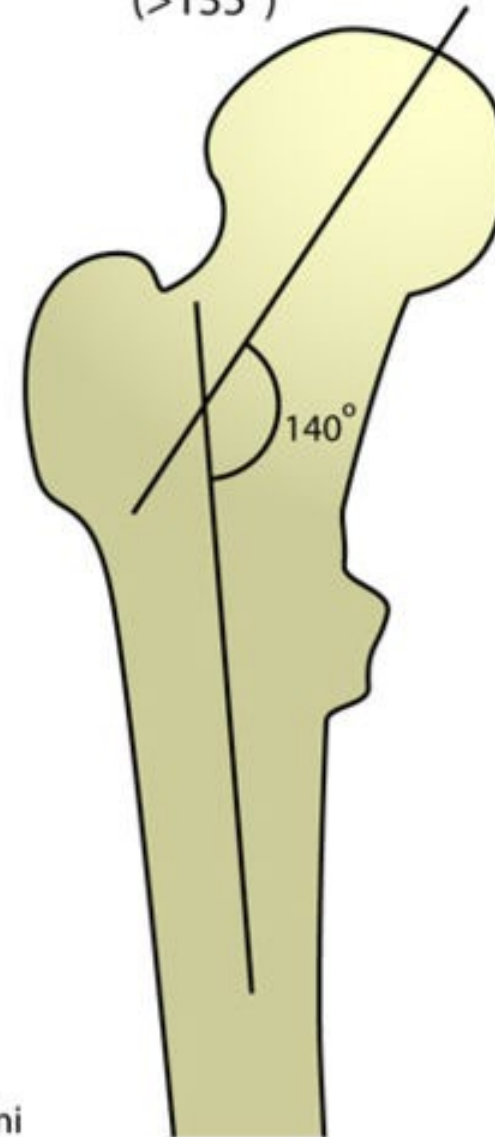
Coxa vara
($<120^\circ$)



Normal
(120° - 135°)

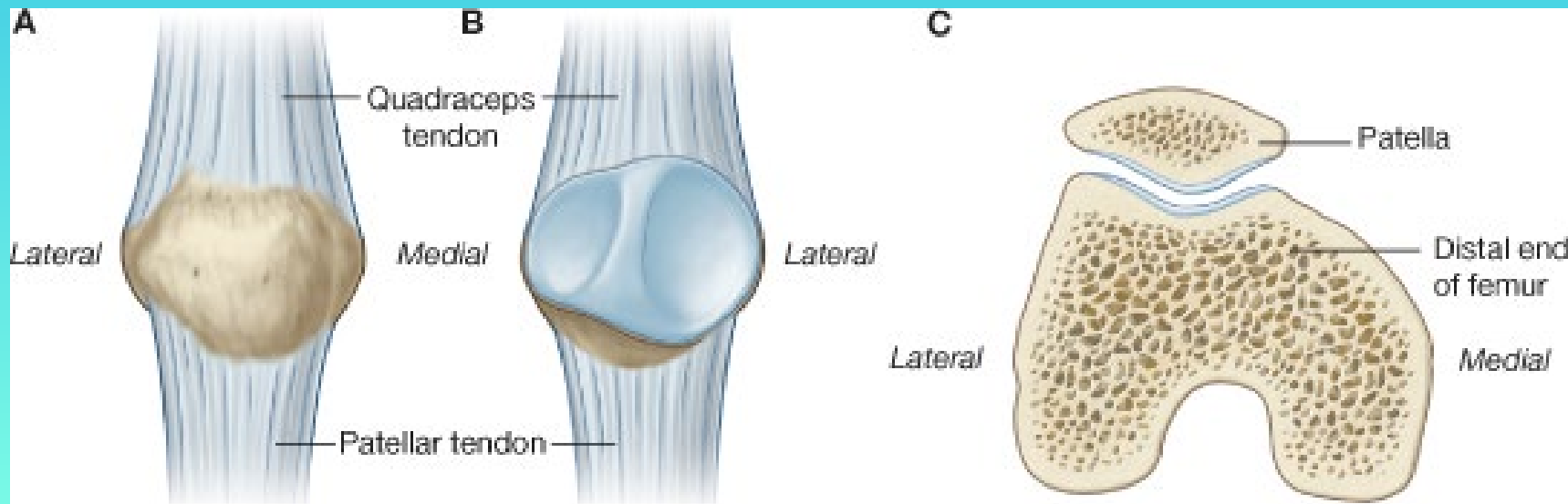
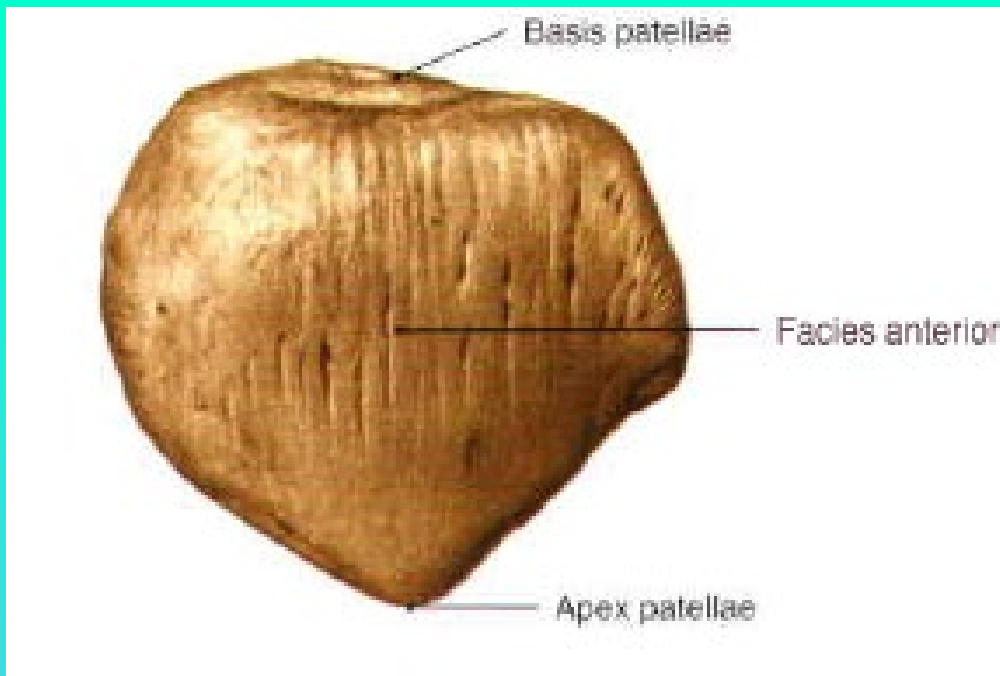


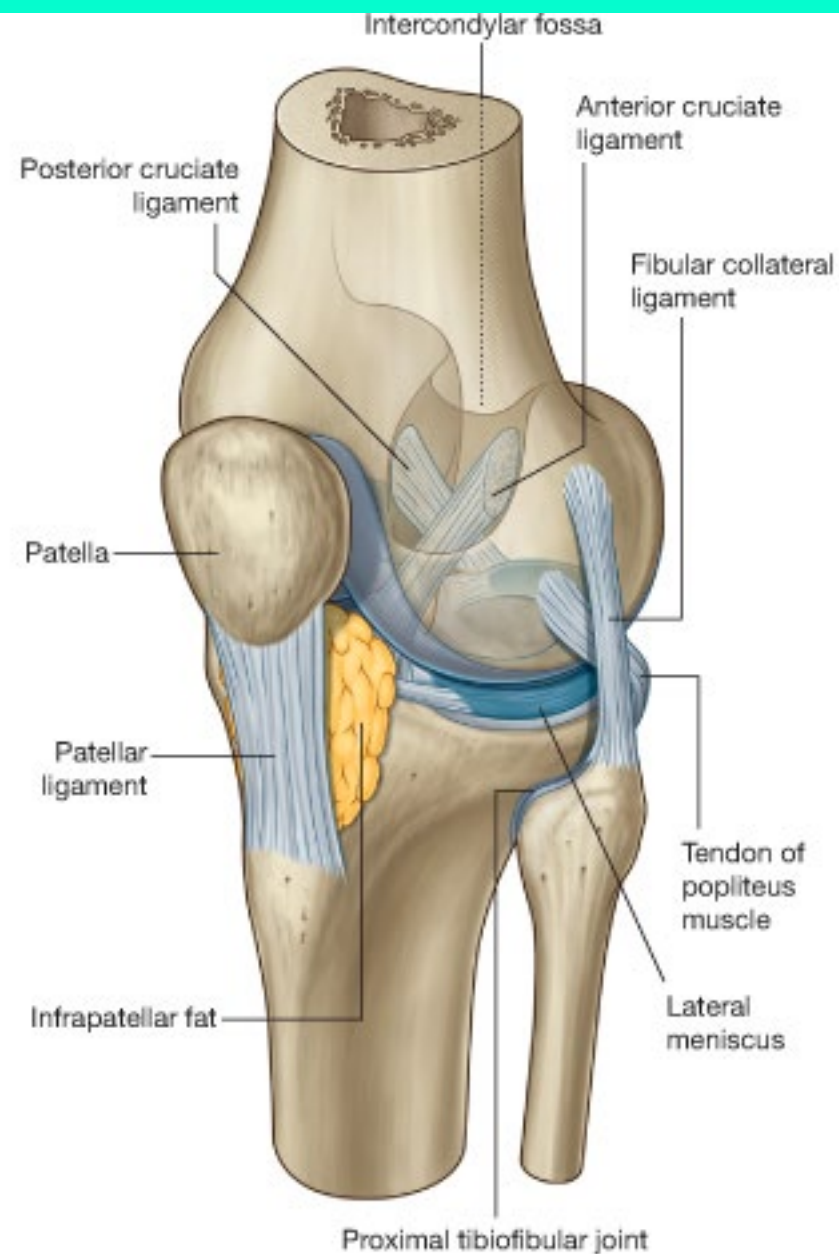
Coxa valga
($>135^\circ$)

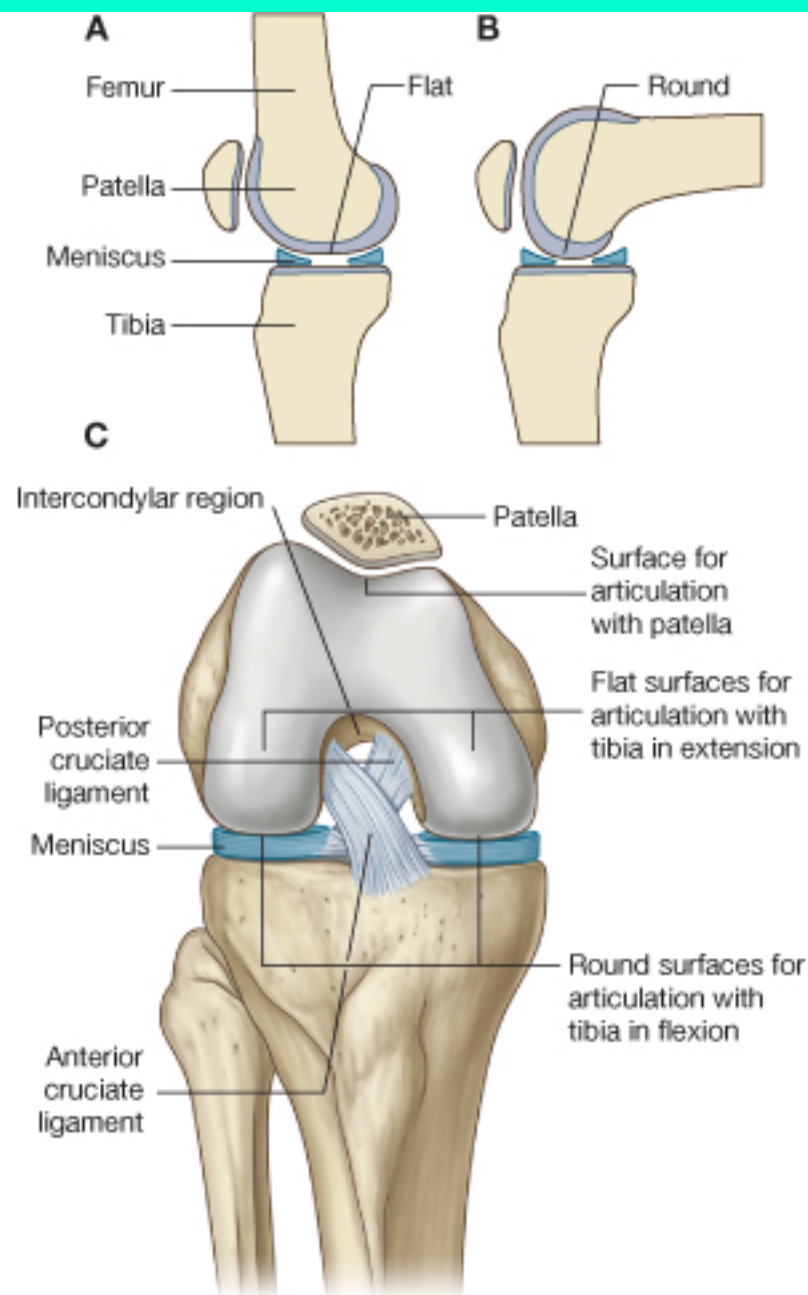


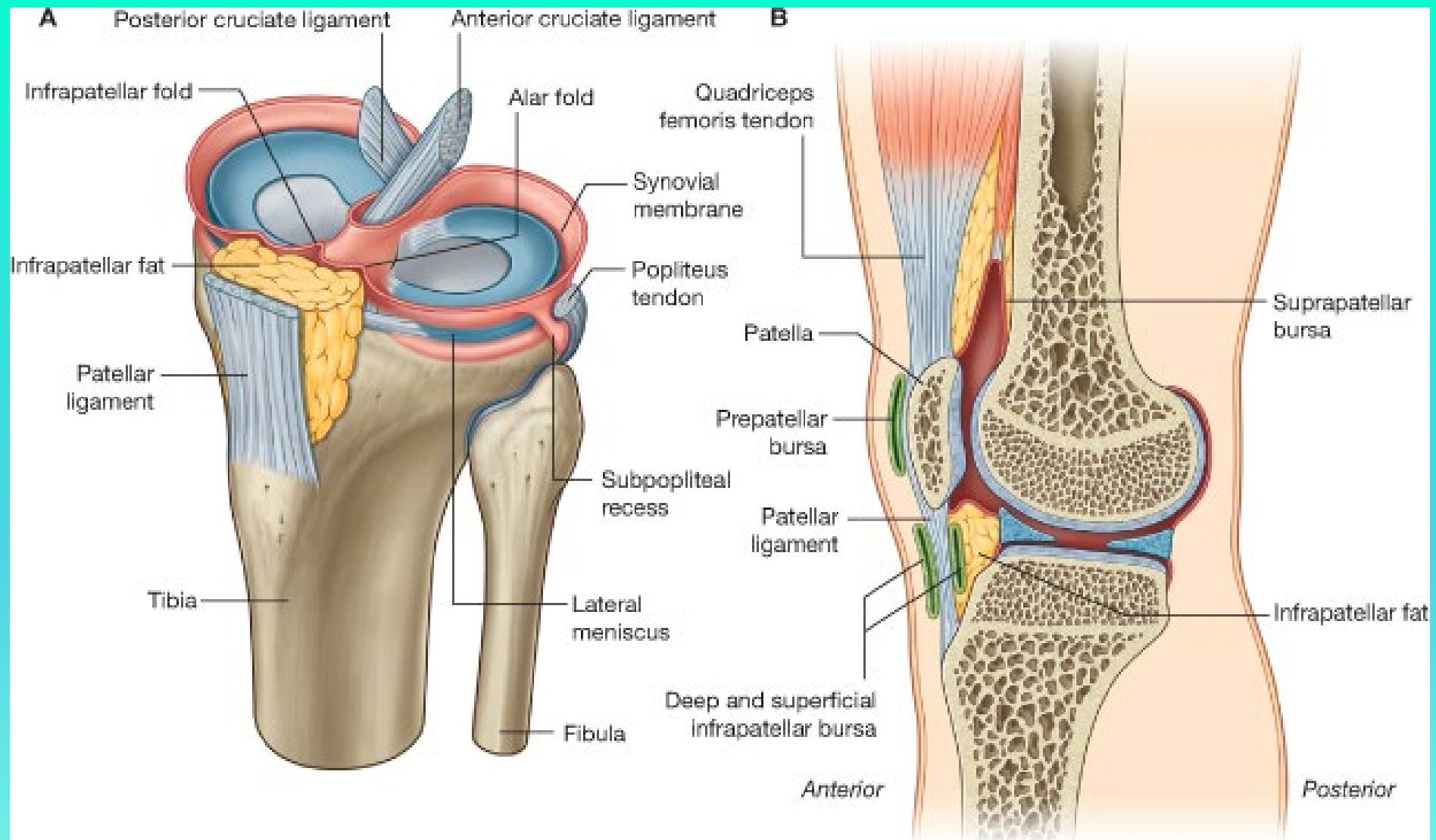
کشک (پاتلا)

- بزرگترین استخوان سزاموئید بدن
- سطح خلفی با انتهای تحتانی فمور مفصل

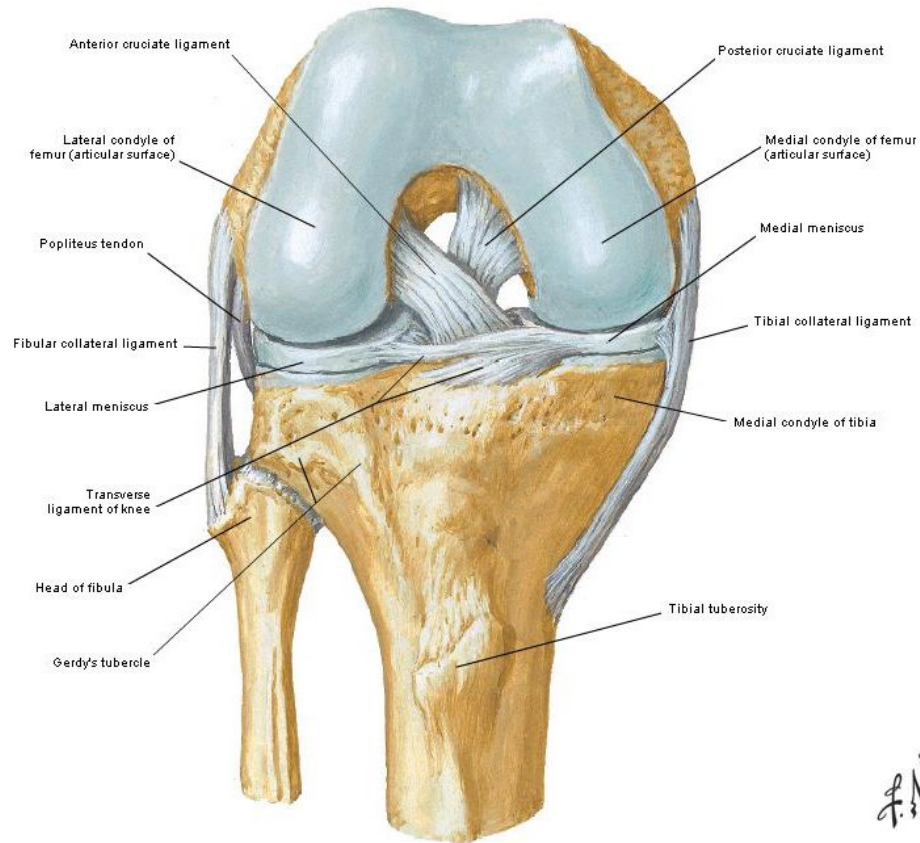




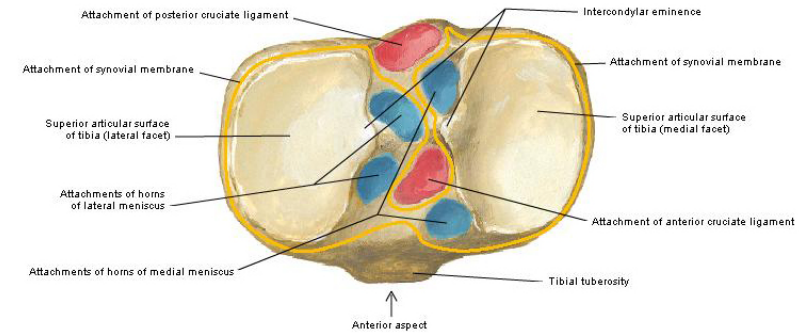




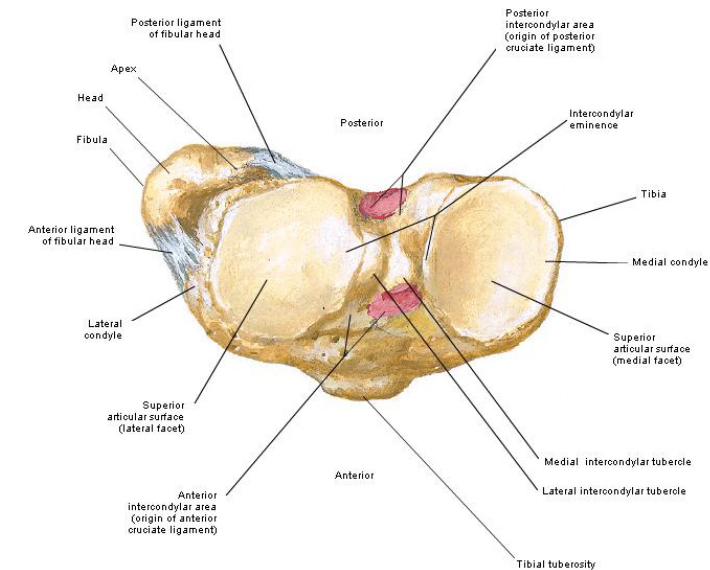
Knee - Cruciate and Collateral Ligaments Right Knee in Flexion: Anterior View

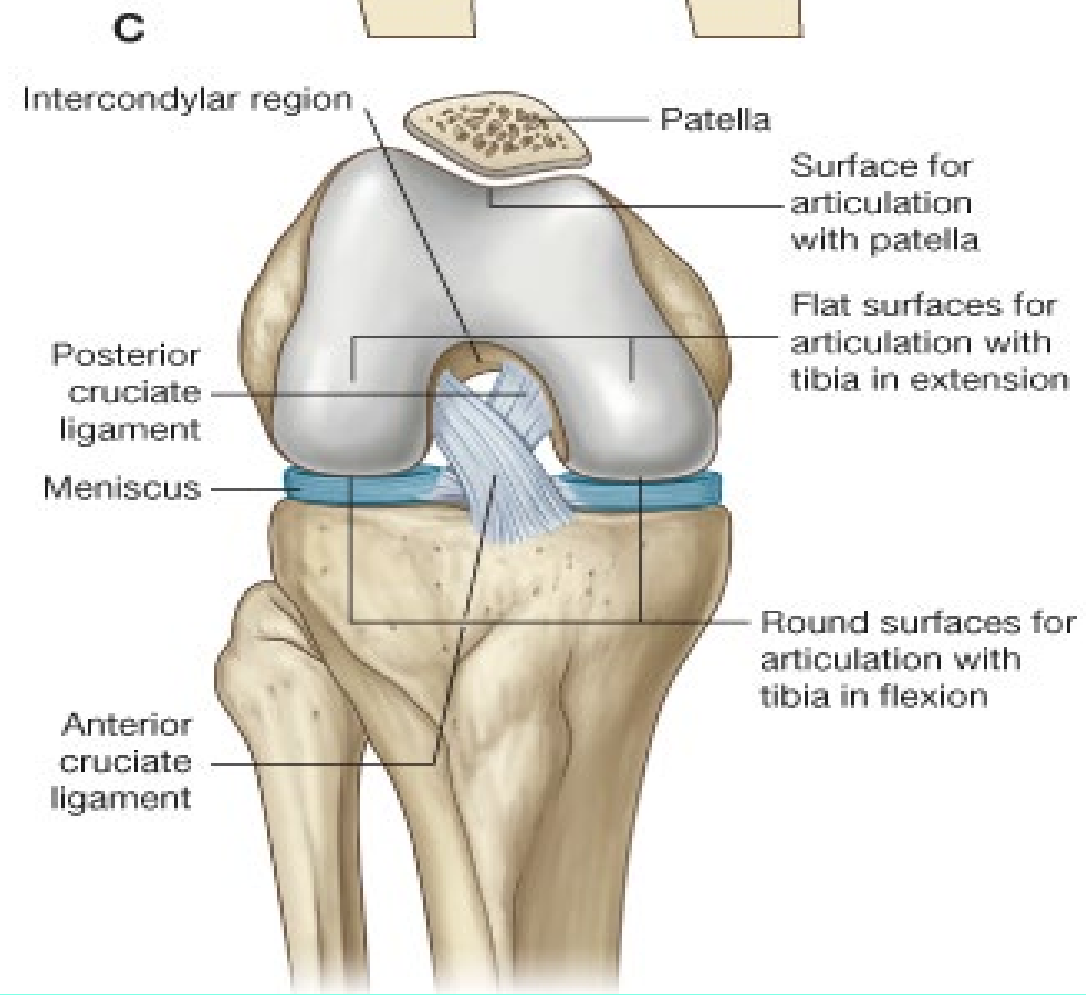
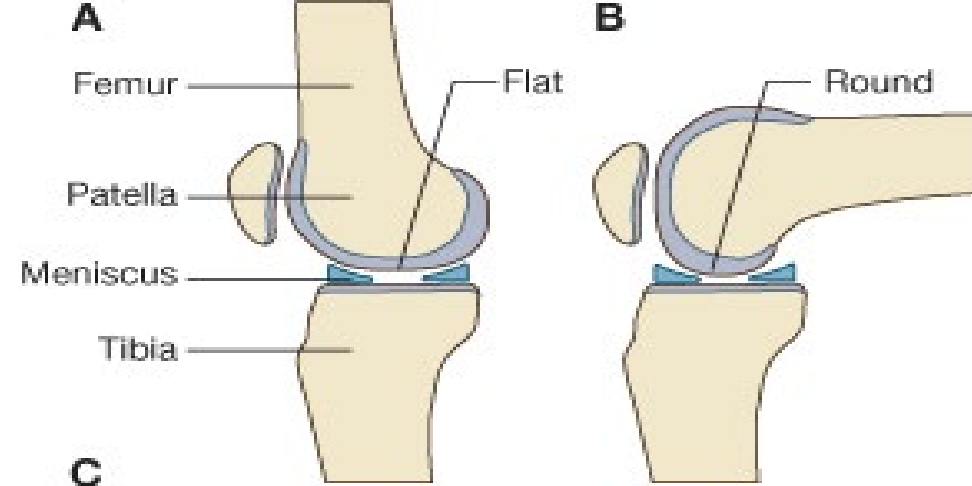


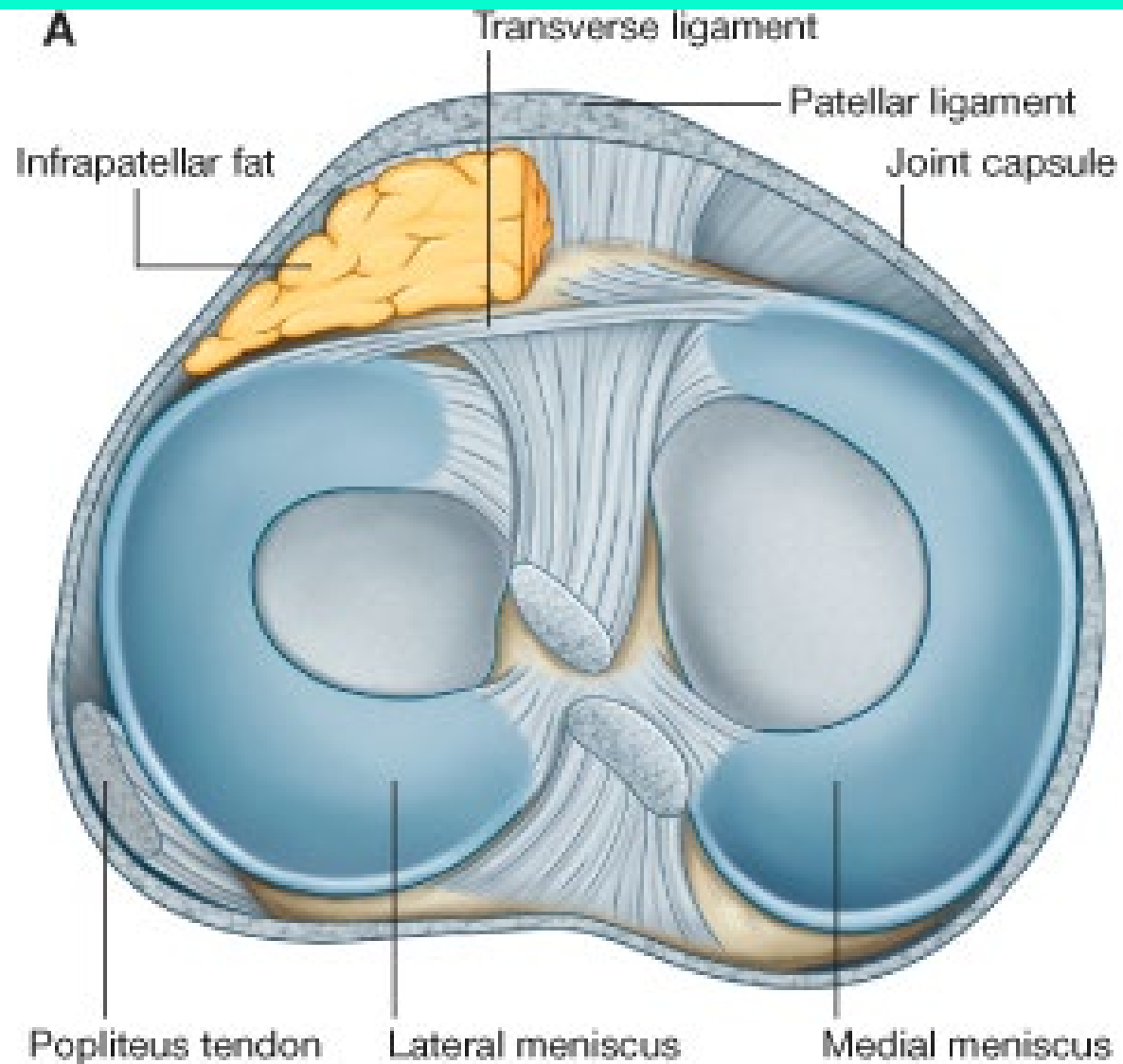
Knee - Interior Superior View - Ligaments and Cartilage Removed

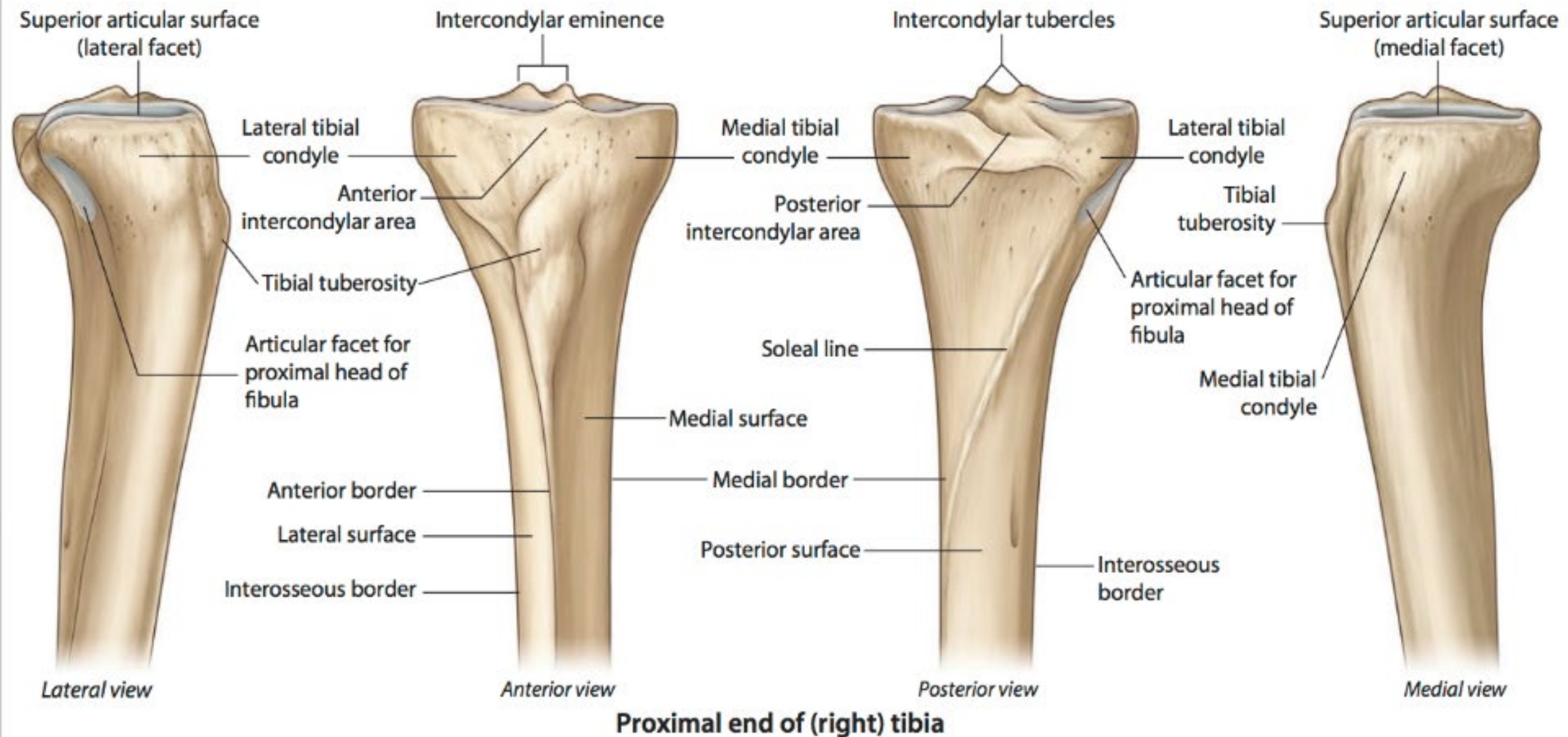


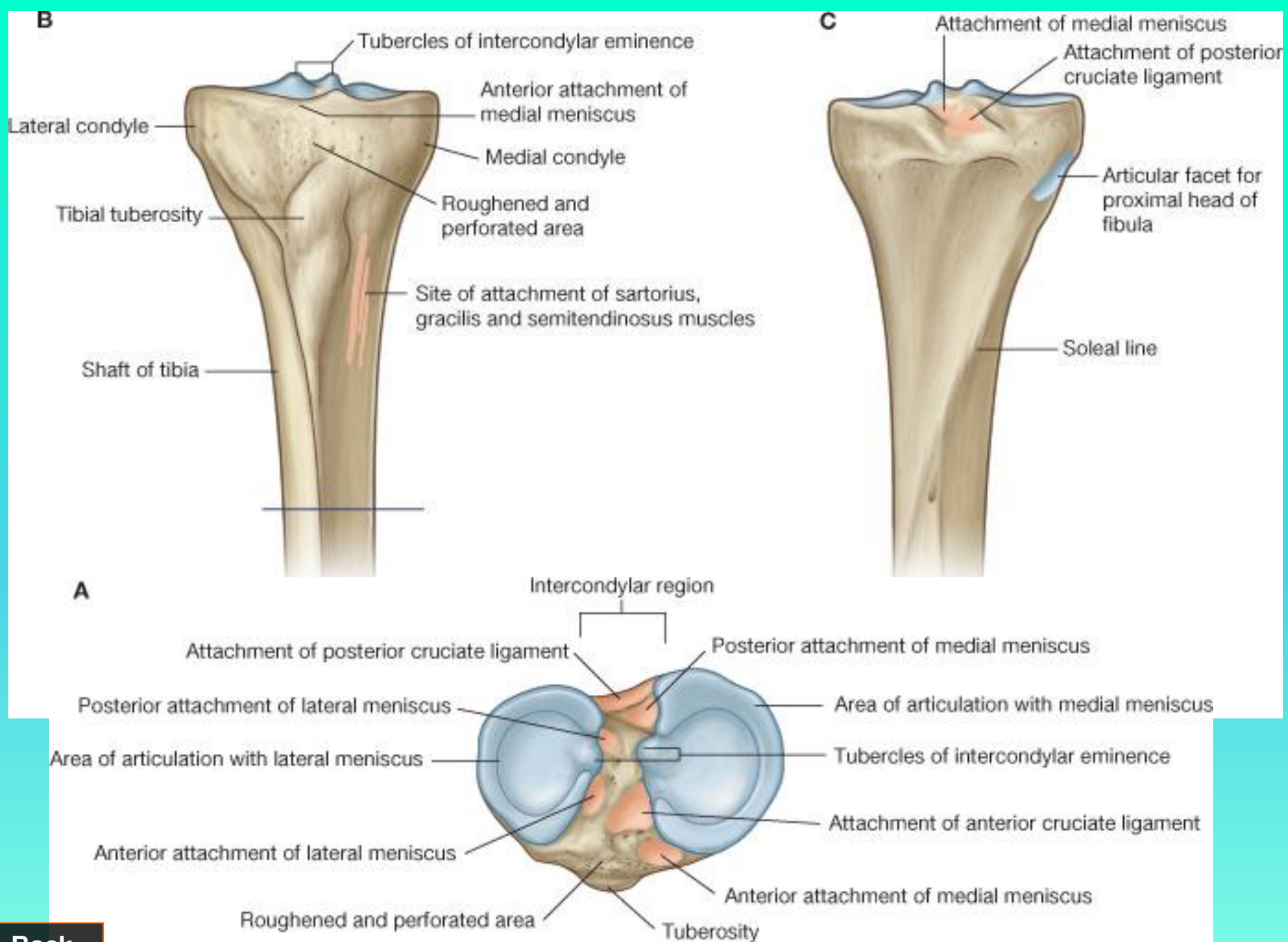
Tibia and Fibula of Right Leg Superior View

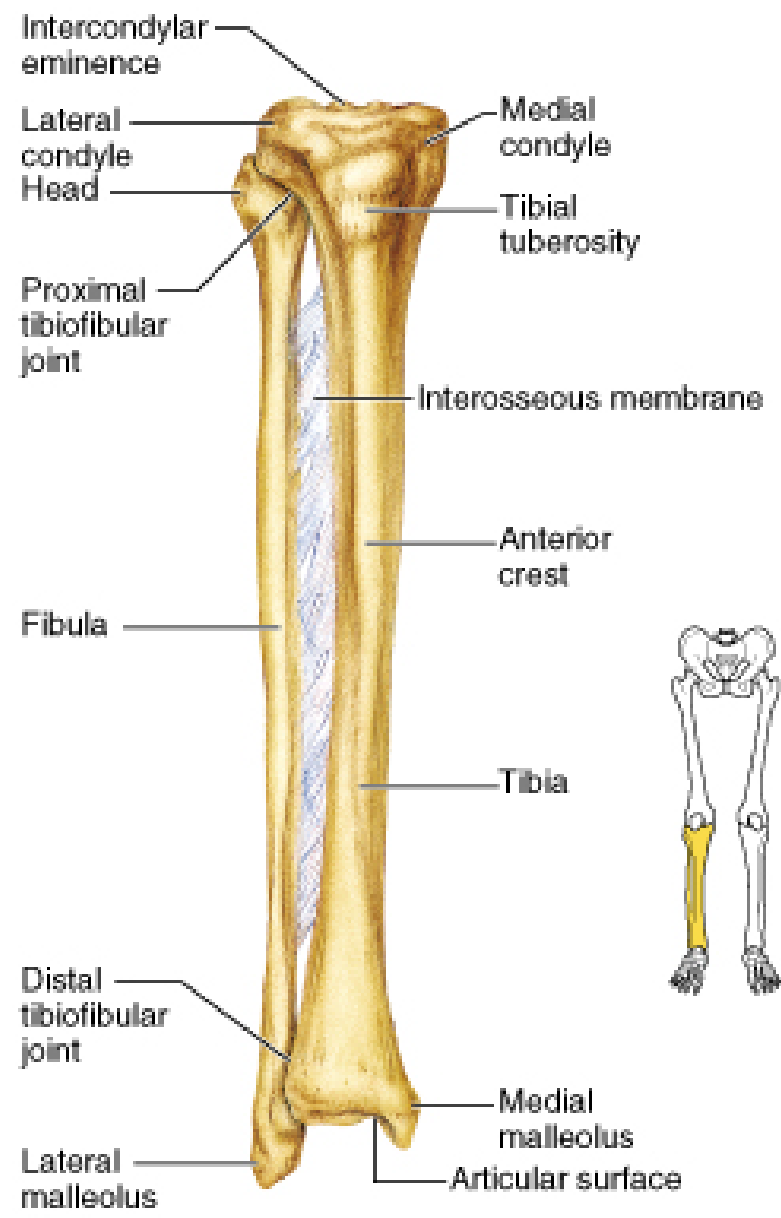




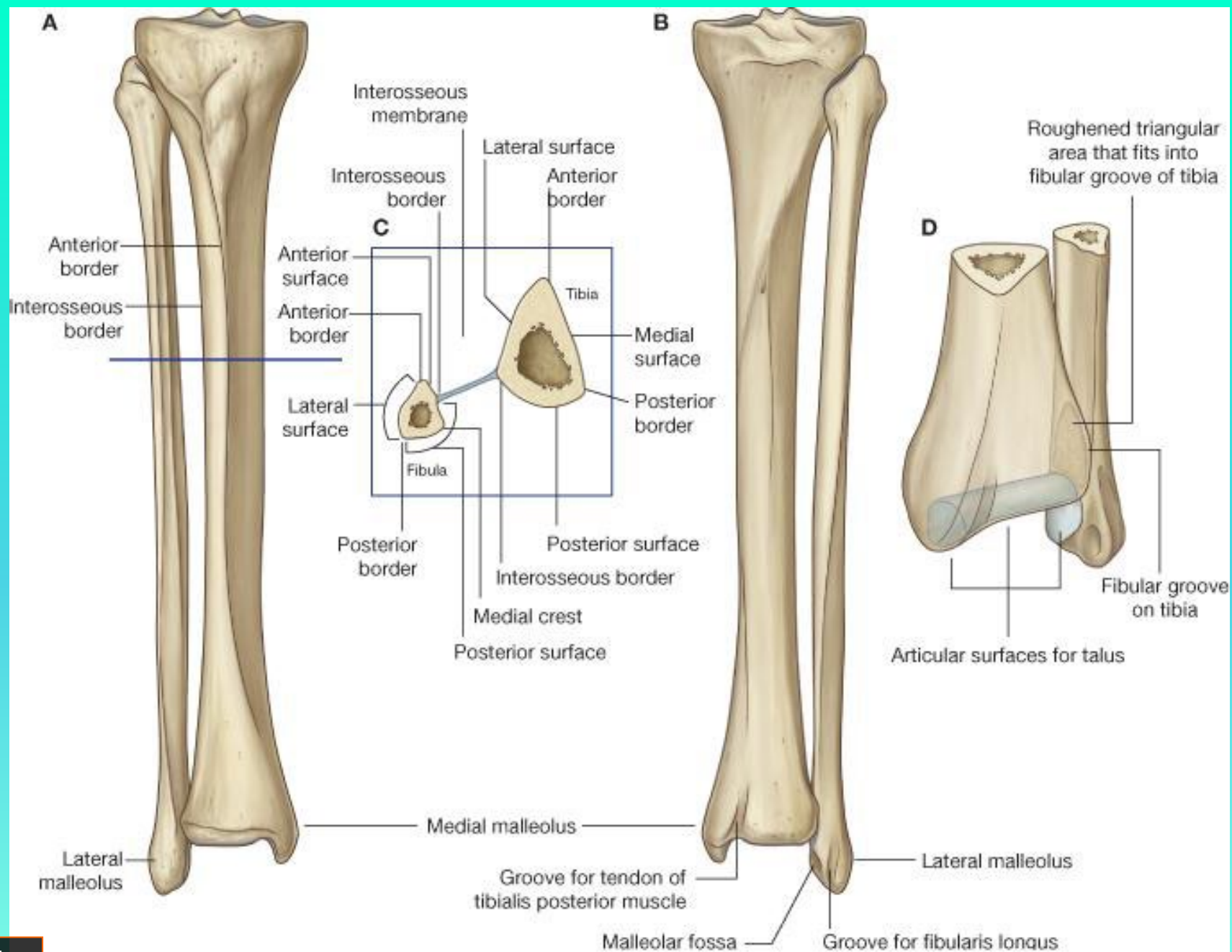








(a) Anterior view



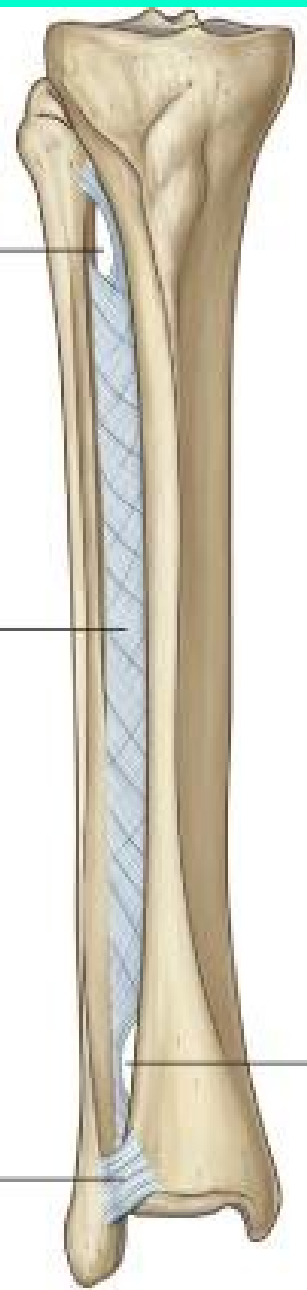


A

Aperture for anterior tibia vessels

Interosseous membrane

Anterior tibiofibular ligament



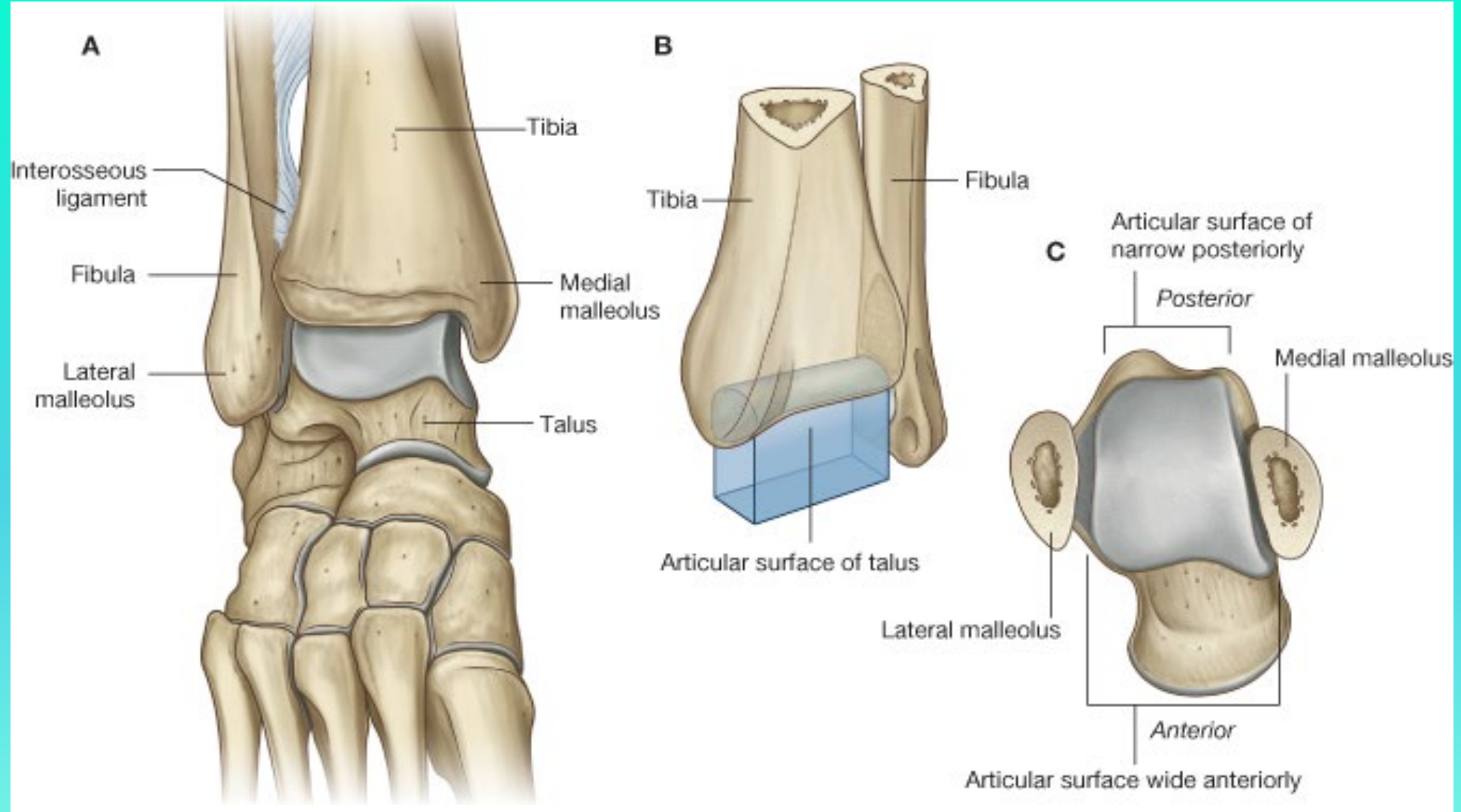
B

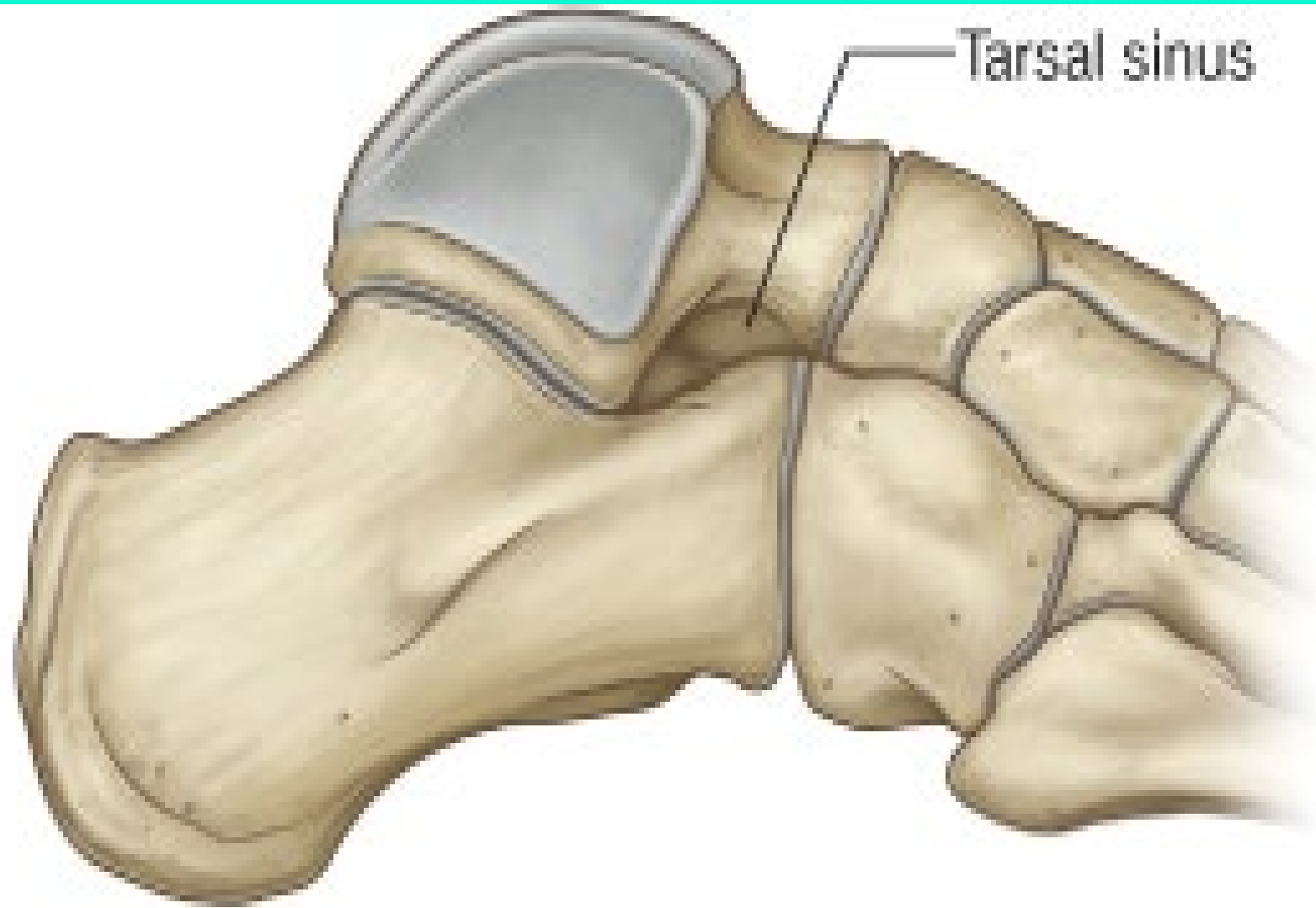
Interosseous membrane

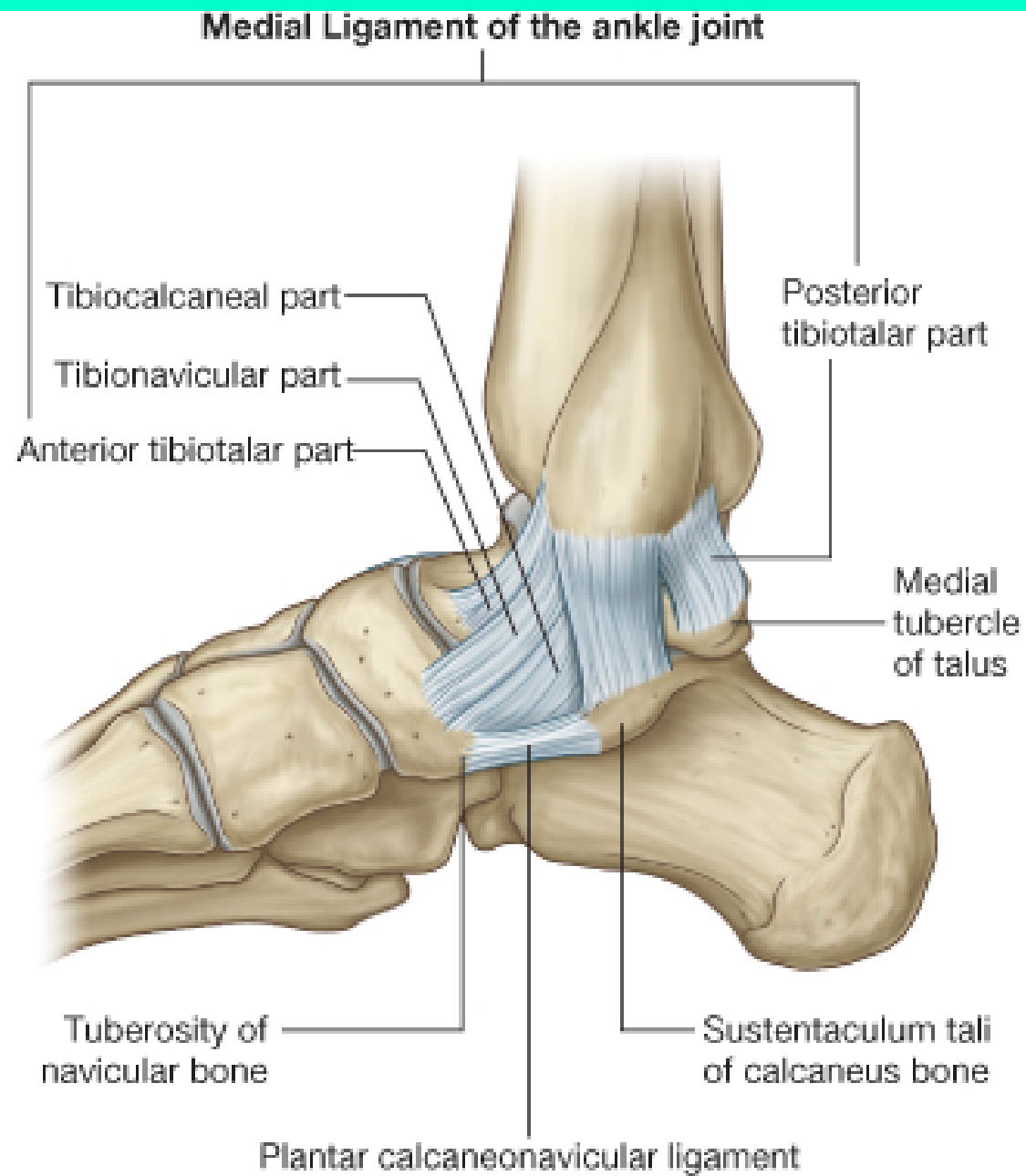
Posterior tibiofibular ligament

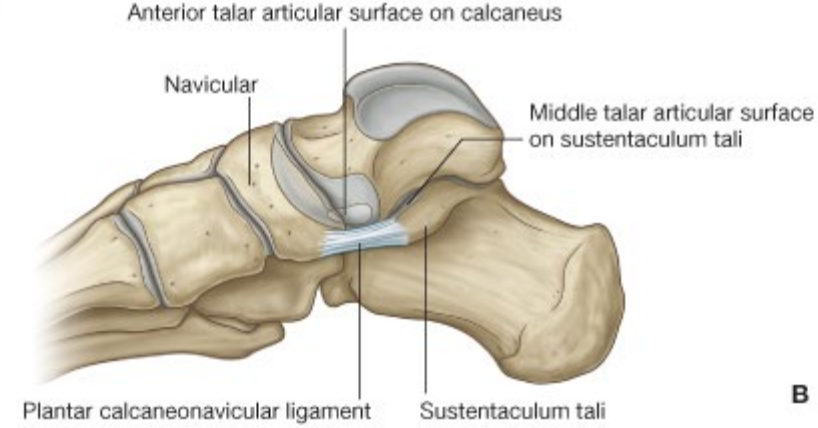
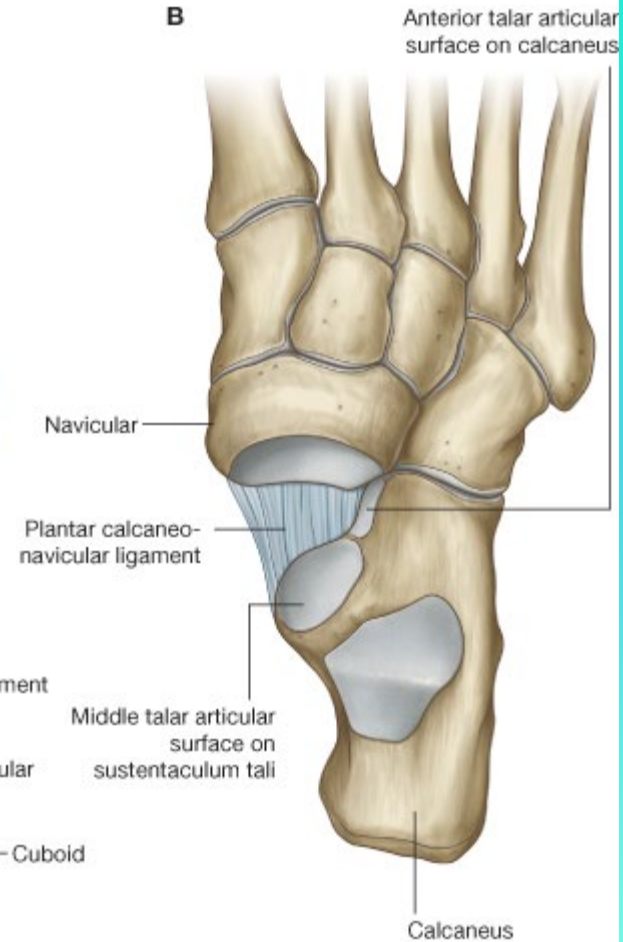
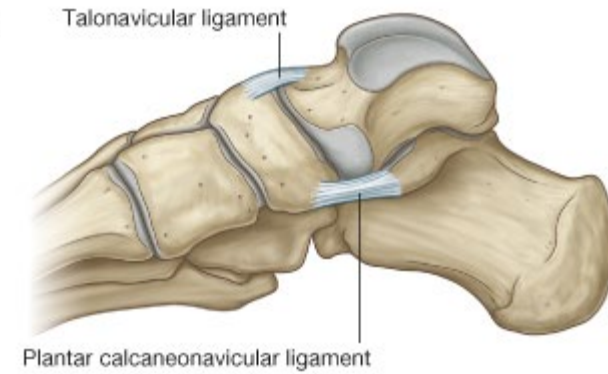
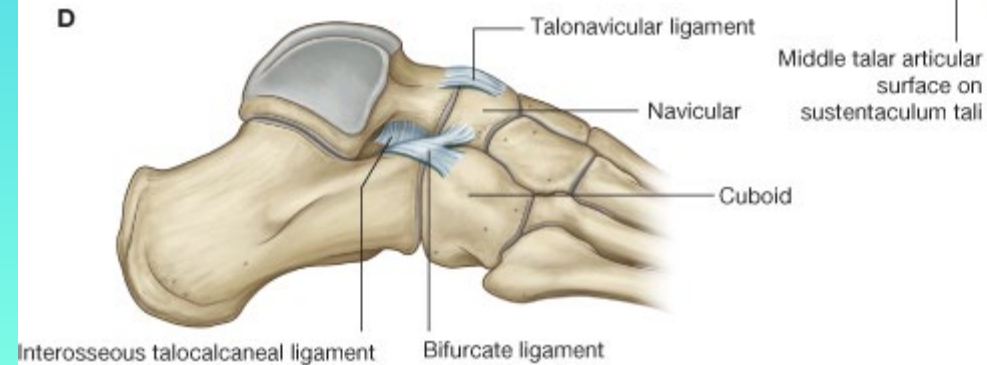
Aperture for perforating branch of fibular artery

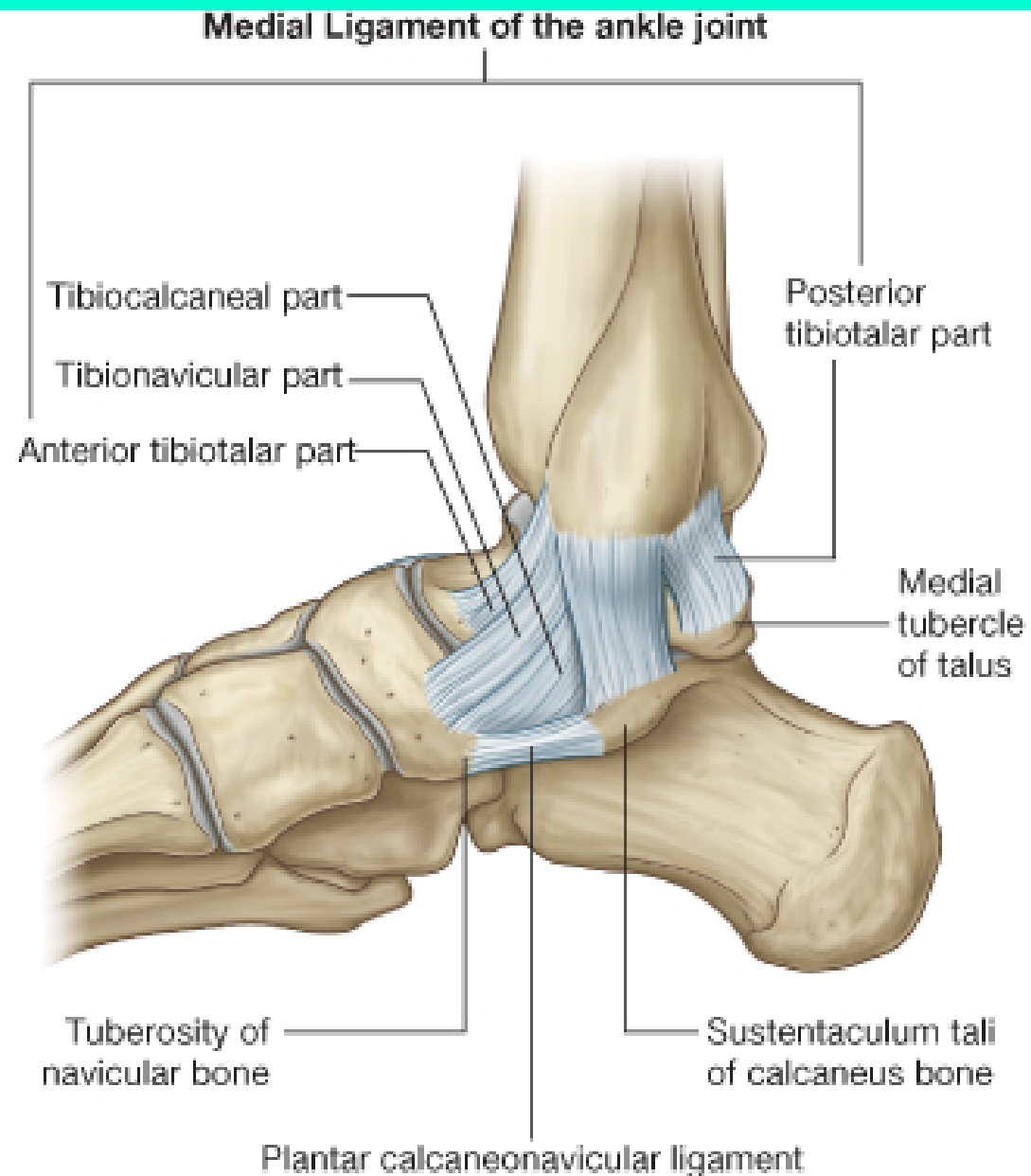




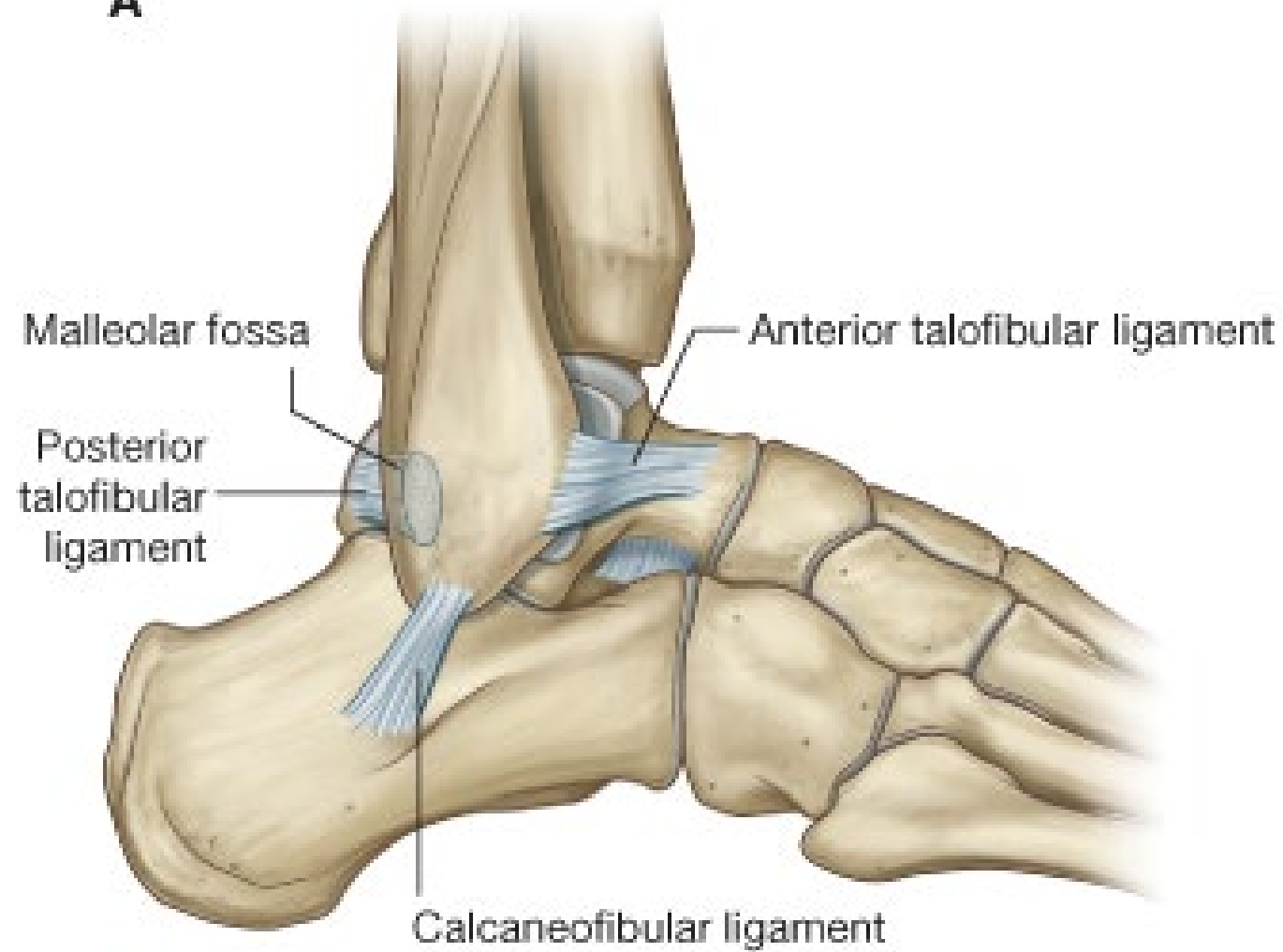




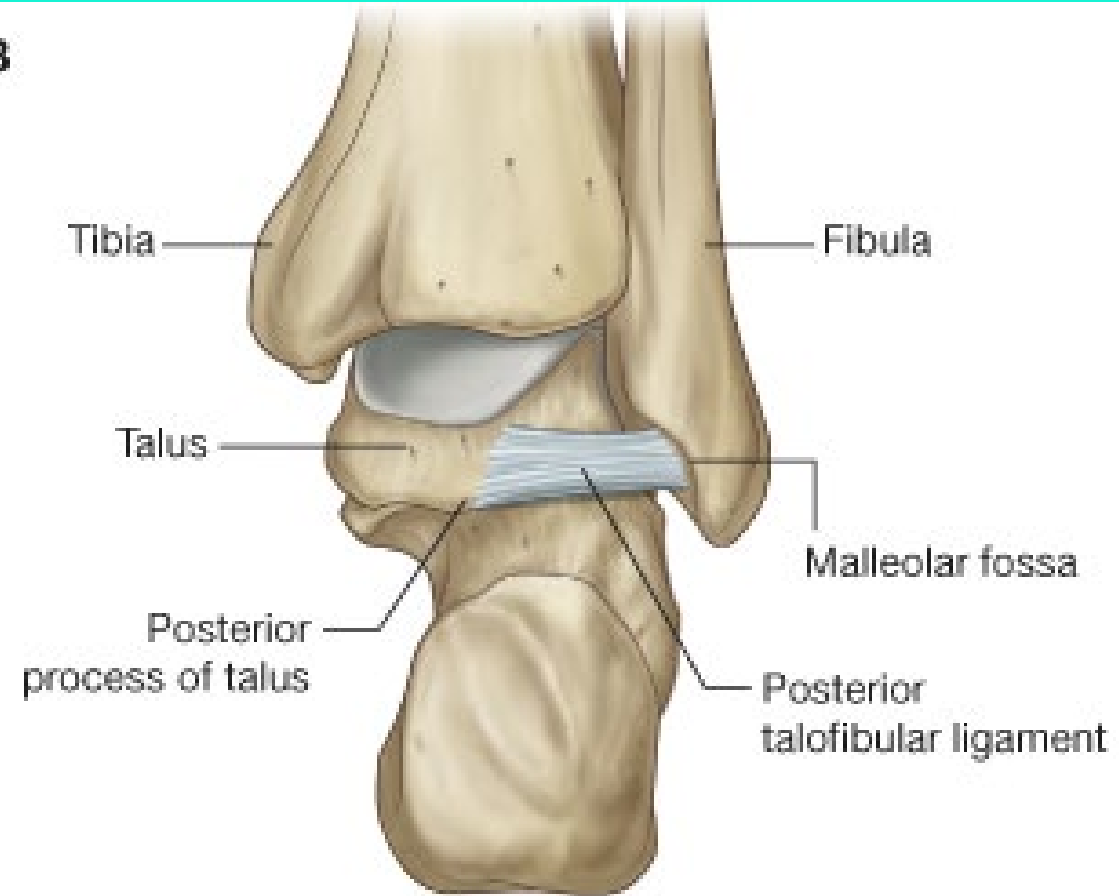
A**B****C****D**



A



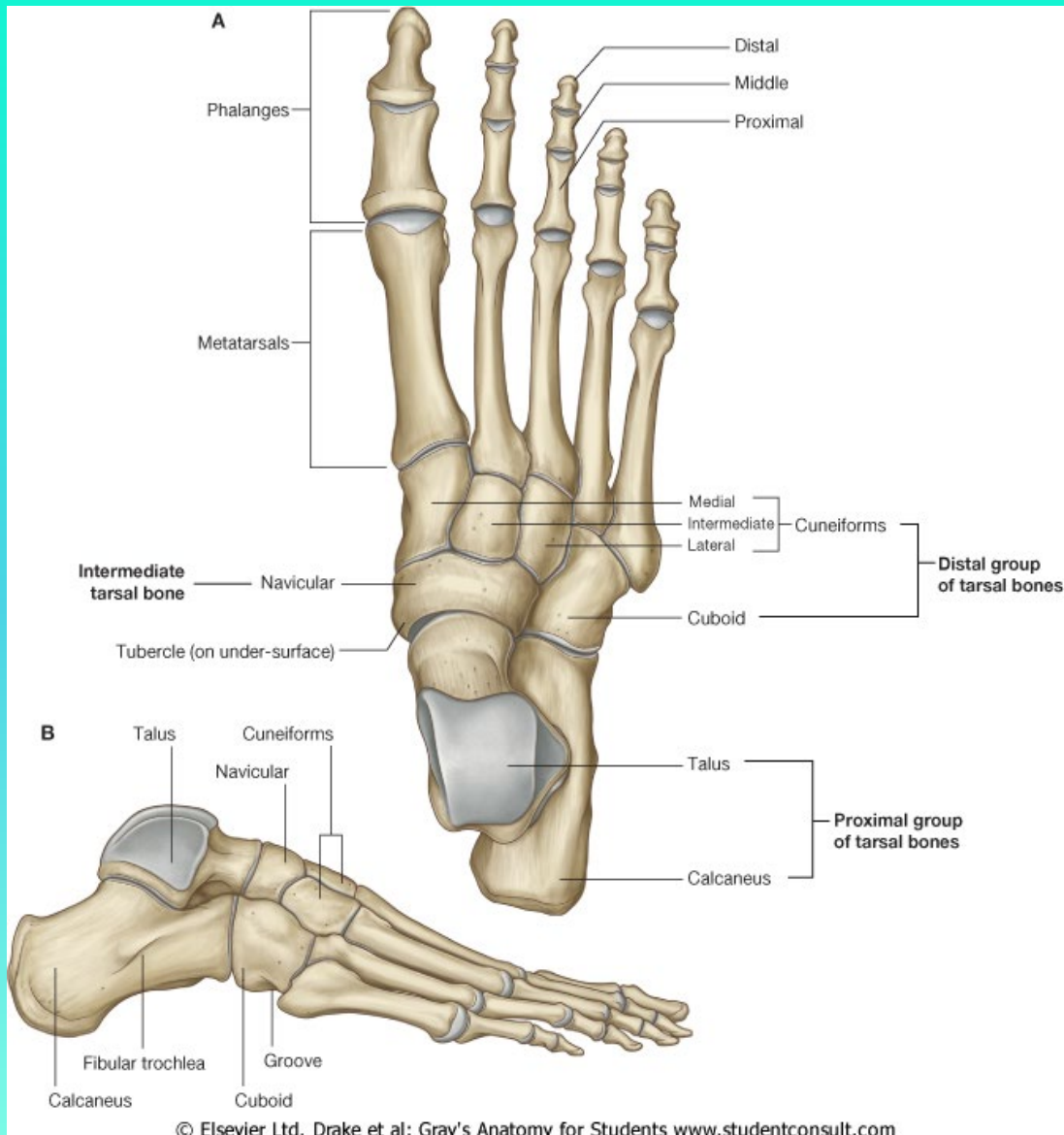
B



1. Drake et al: Gray's Anatomy for Students www.studentconsult.com

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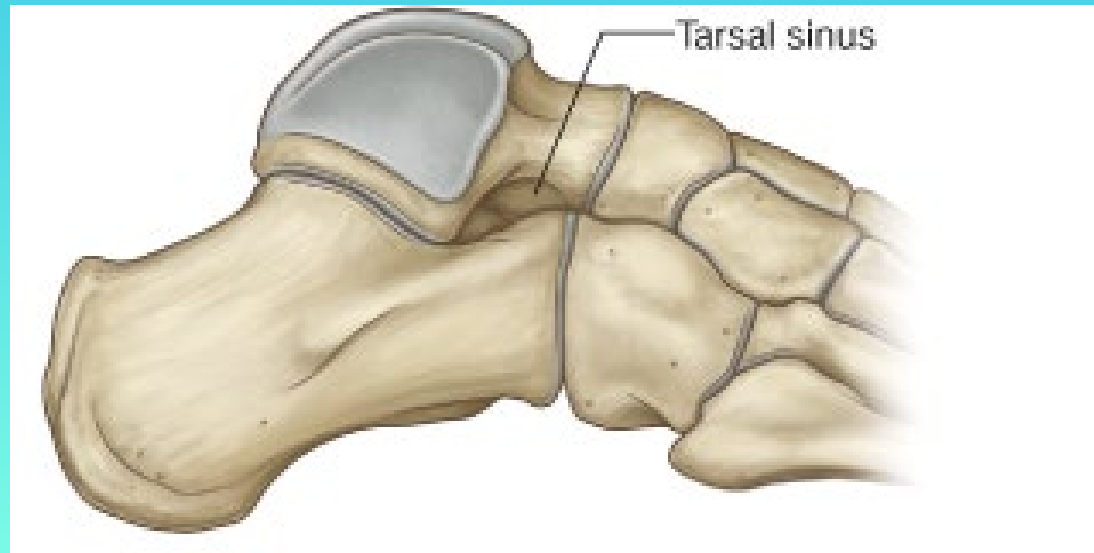
Tarsal bones استخوان های مچ پا

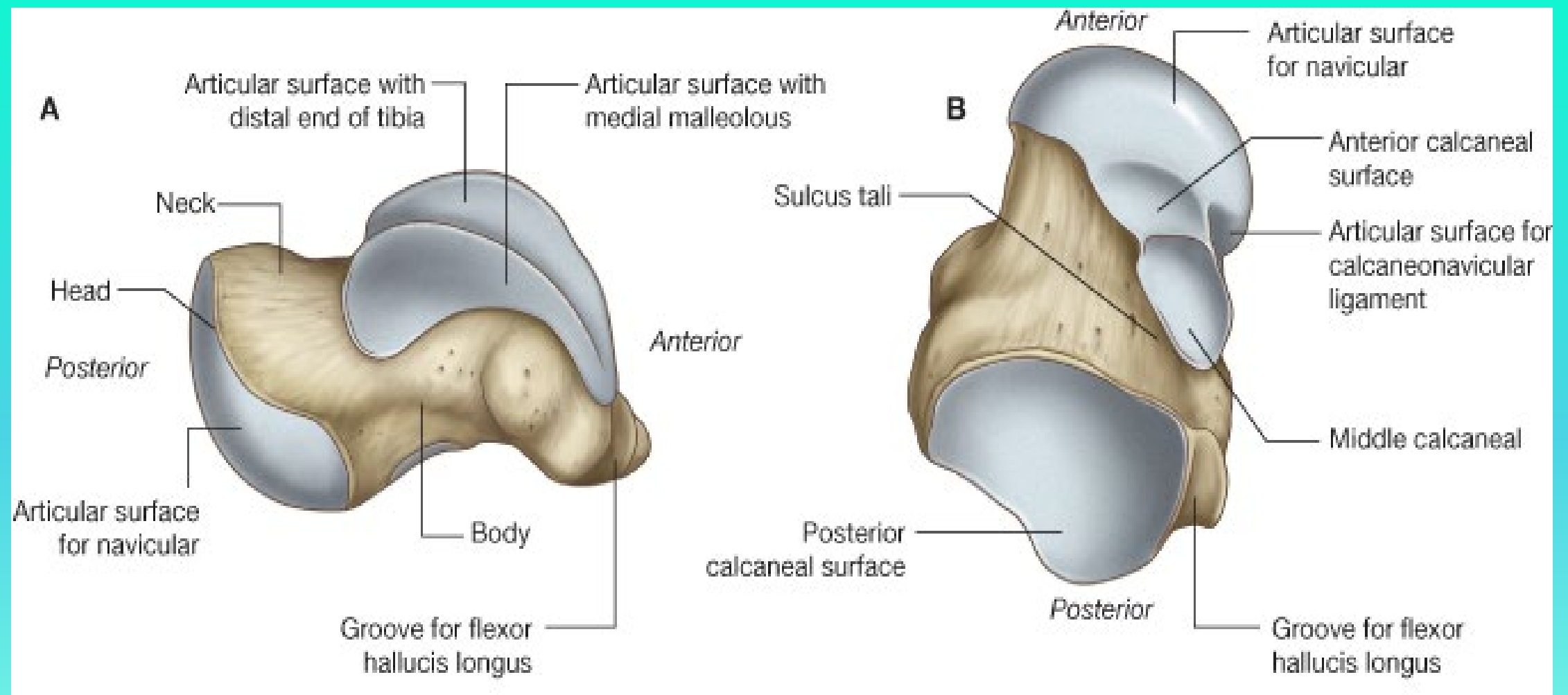


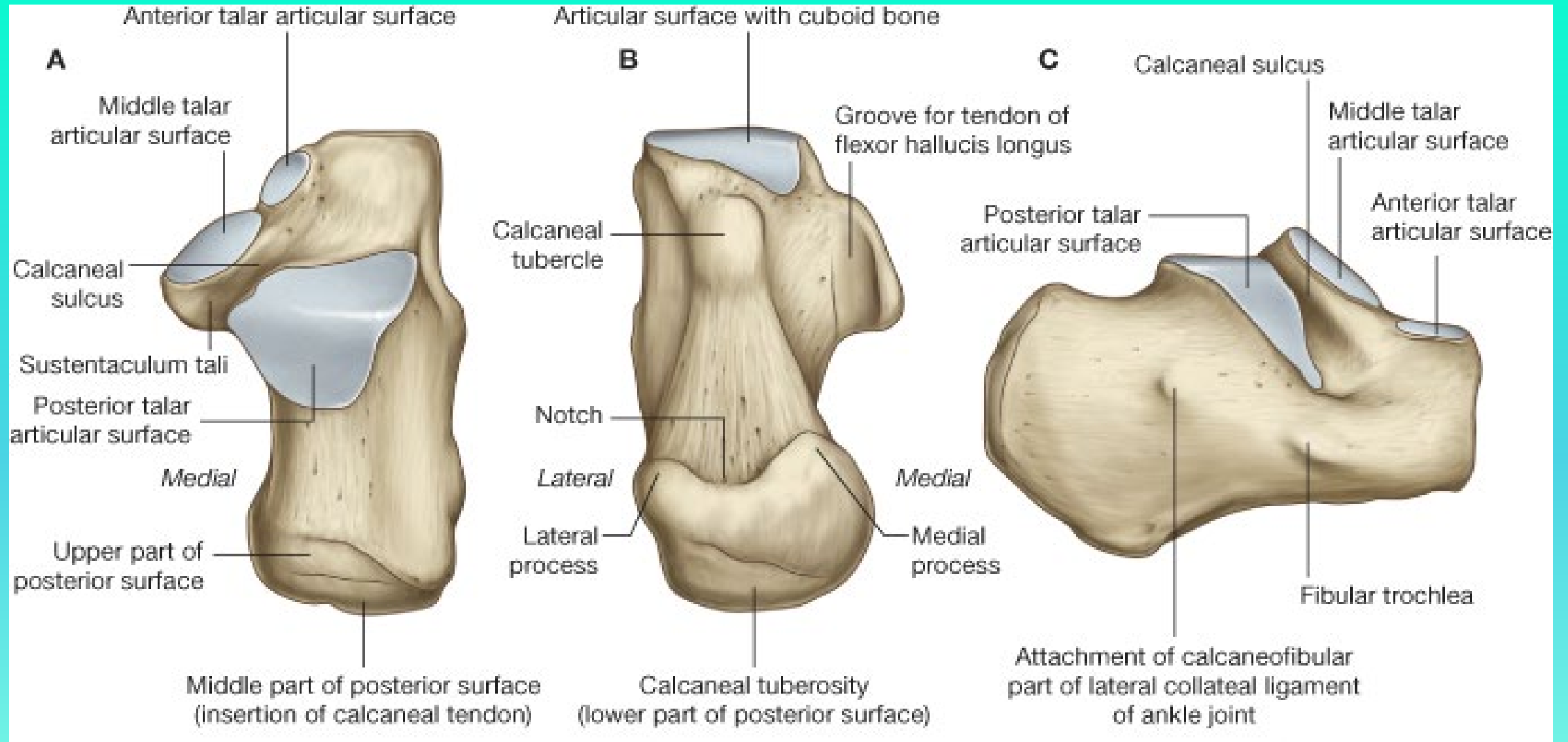
• ۷ عدد

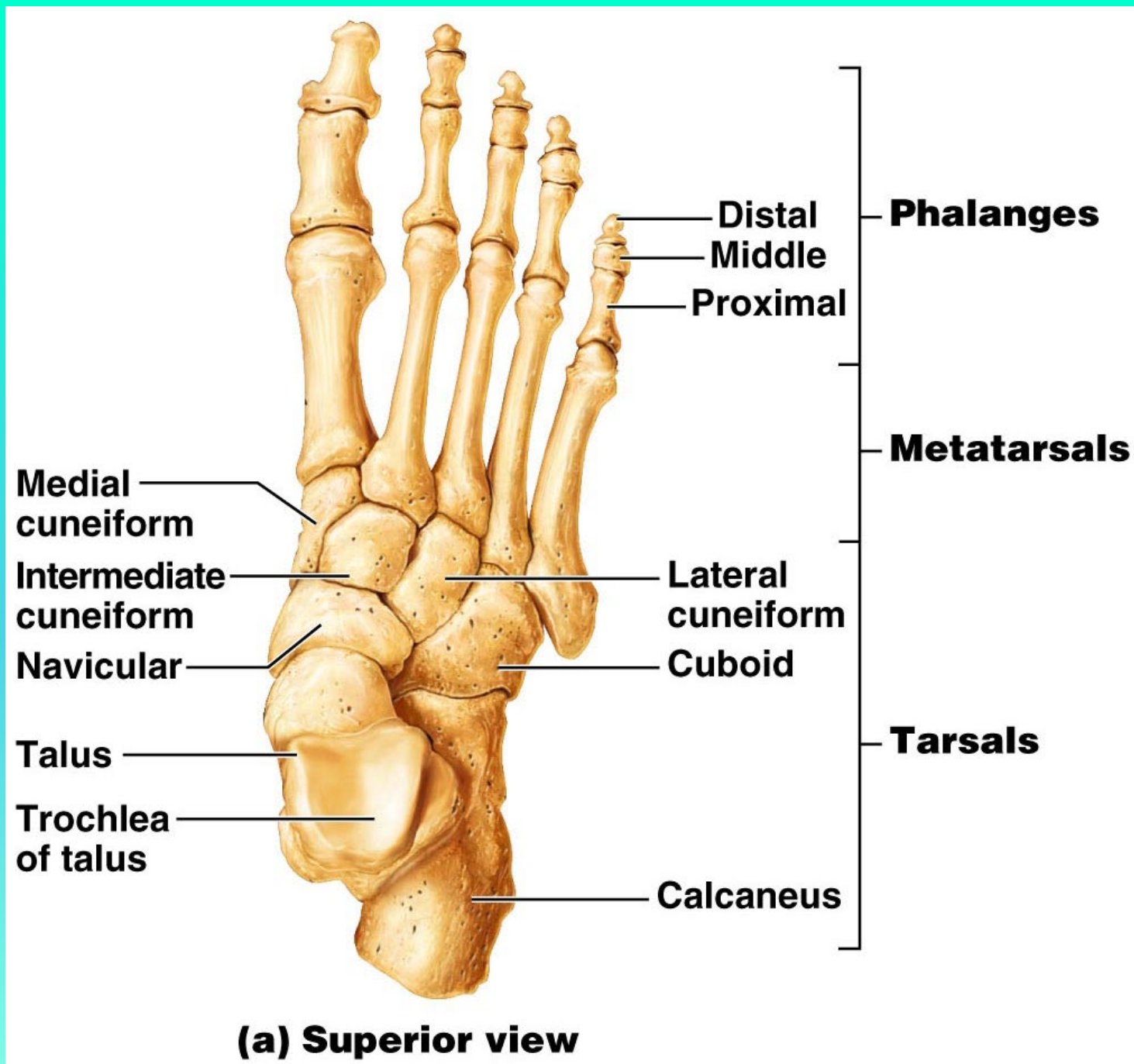
• تالوس (قاپ)

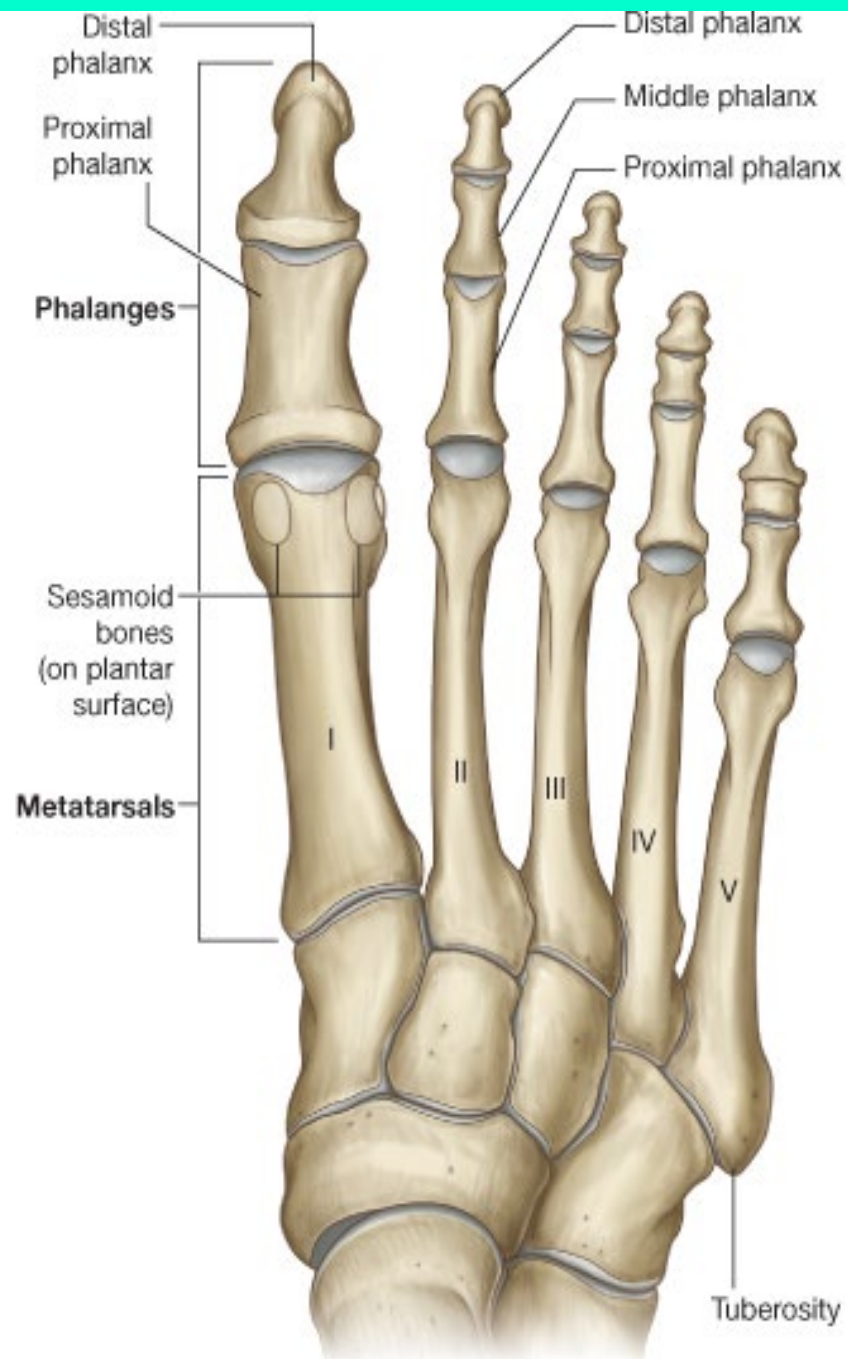
• پاشنه (کالکانئوس)

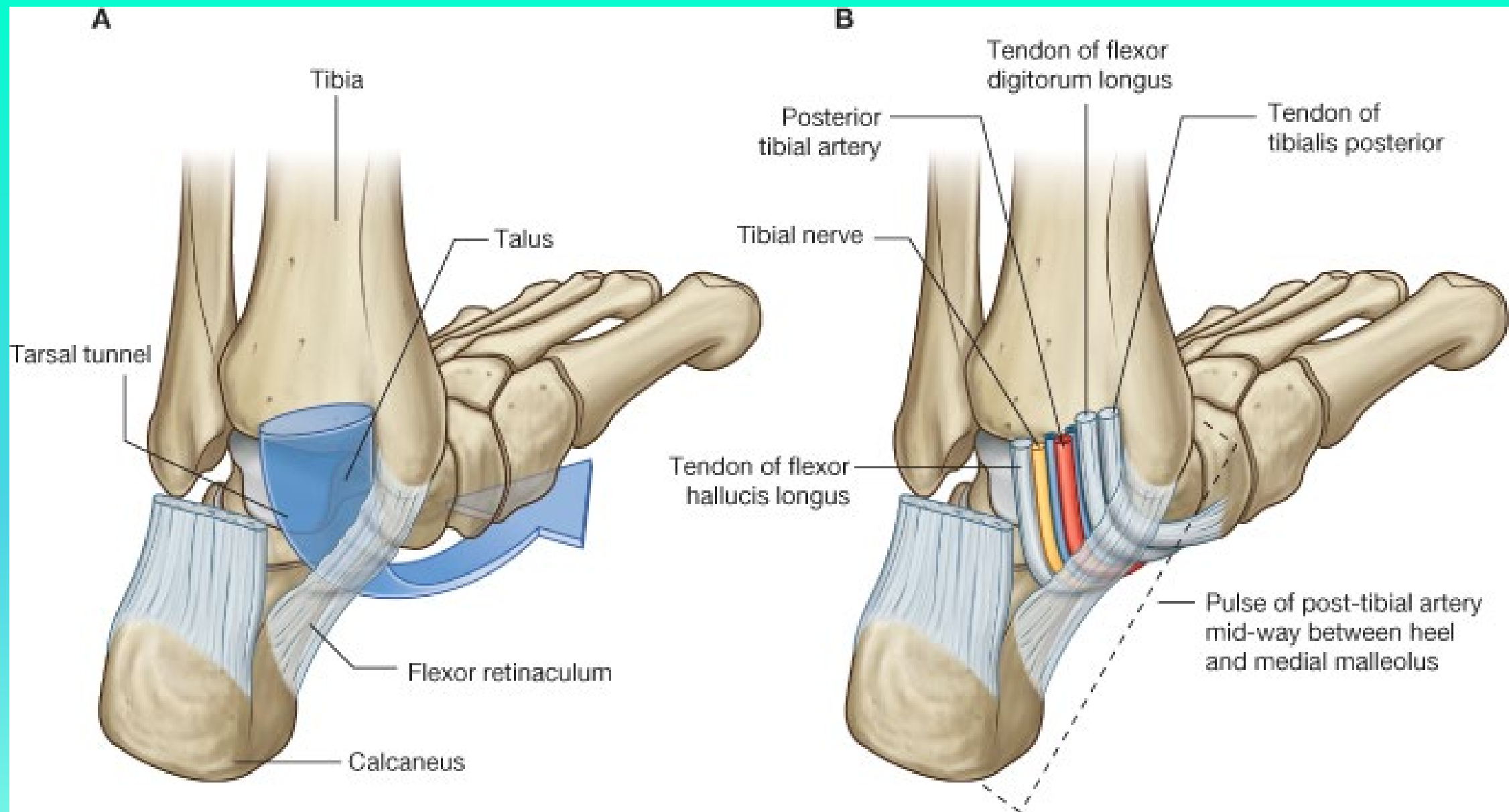


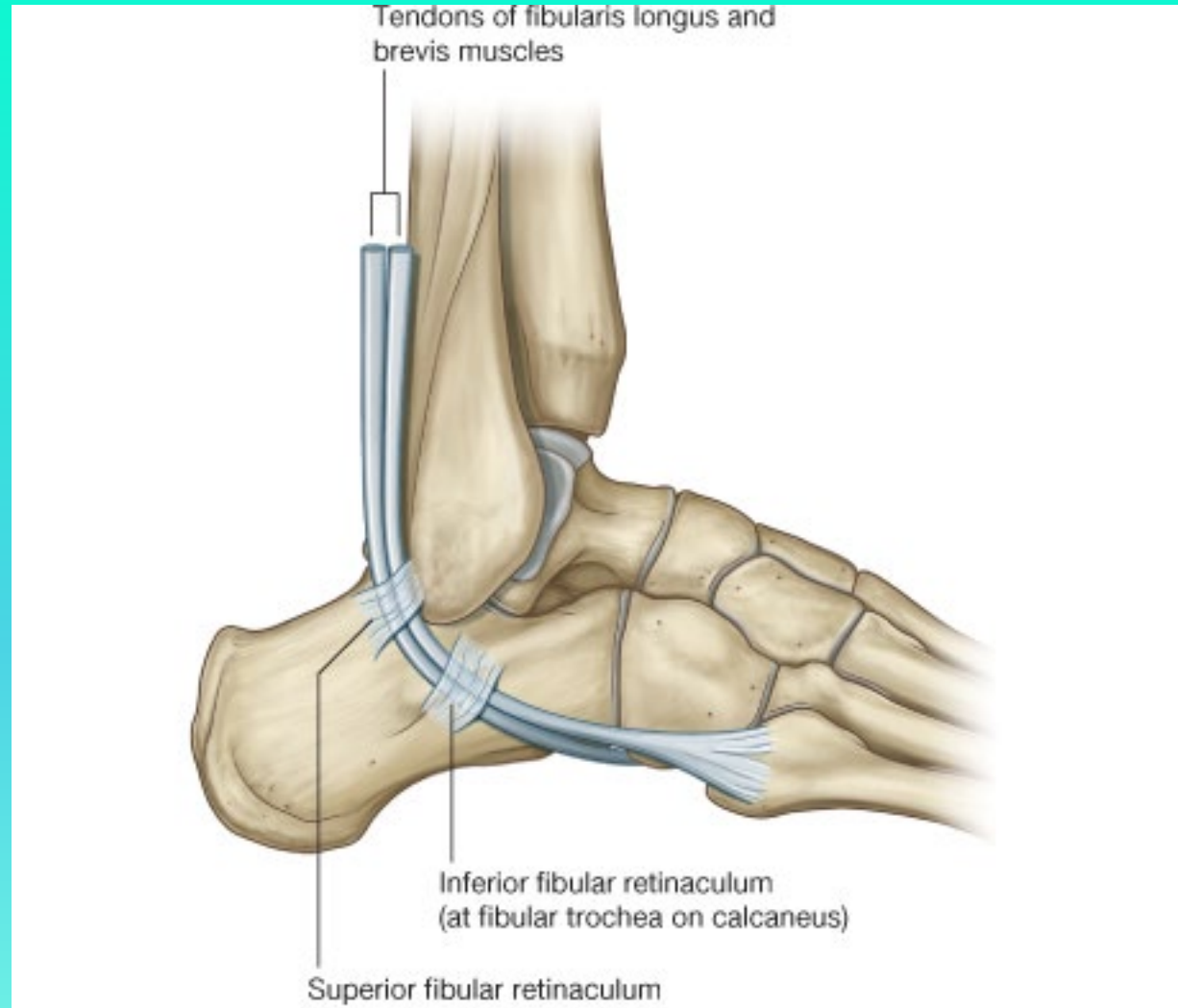


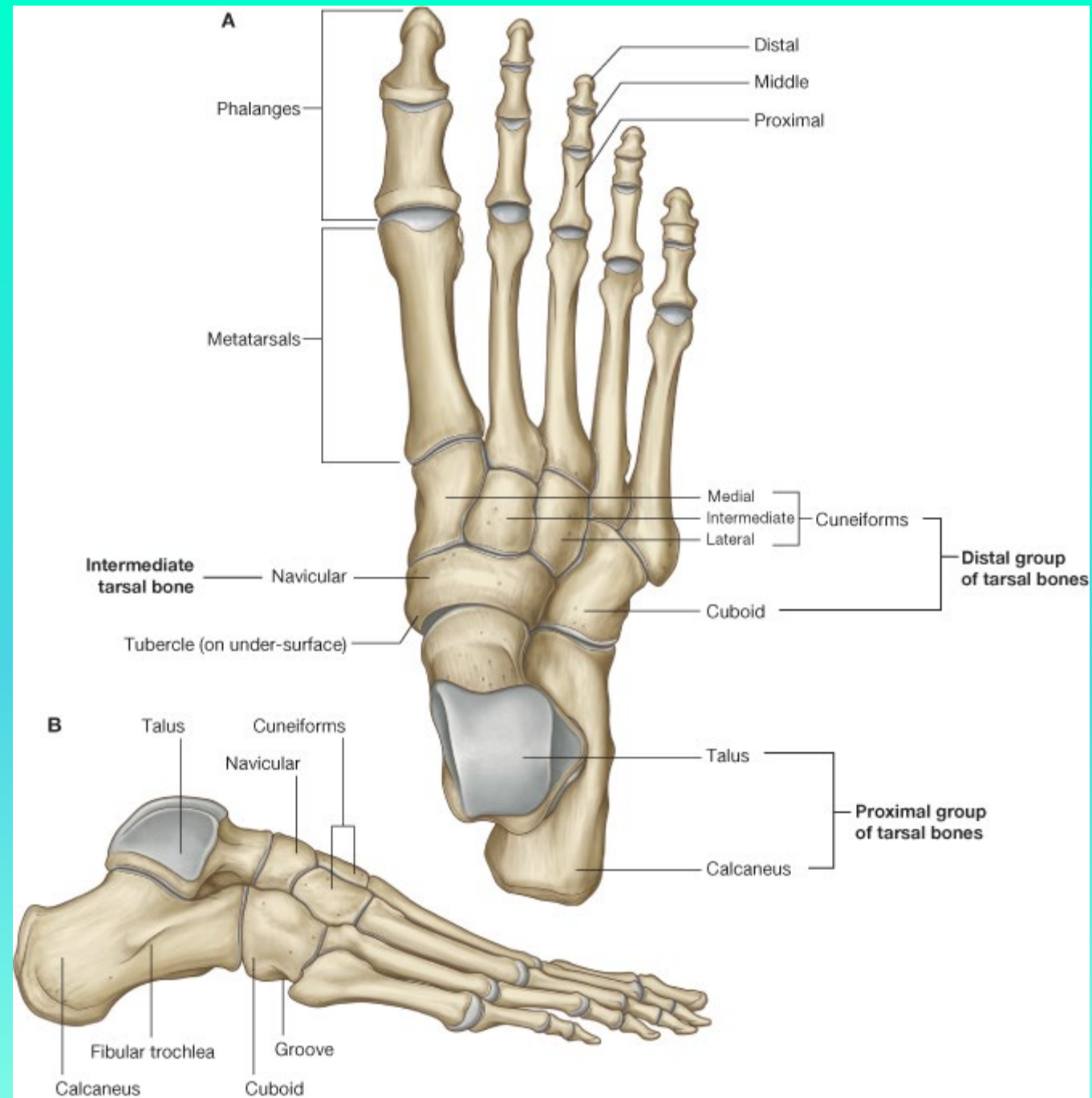


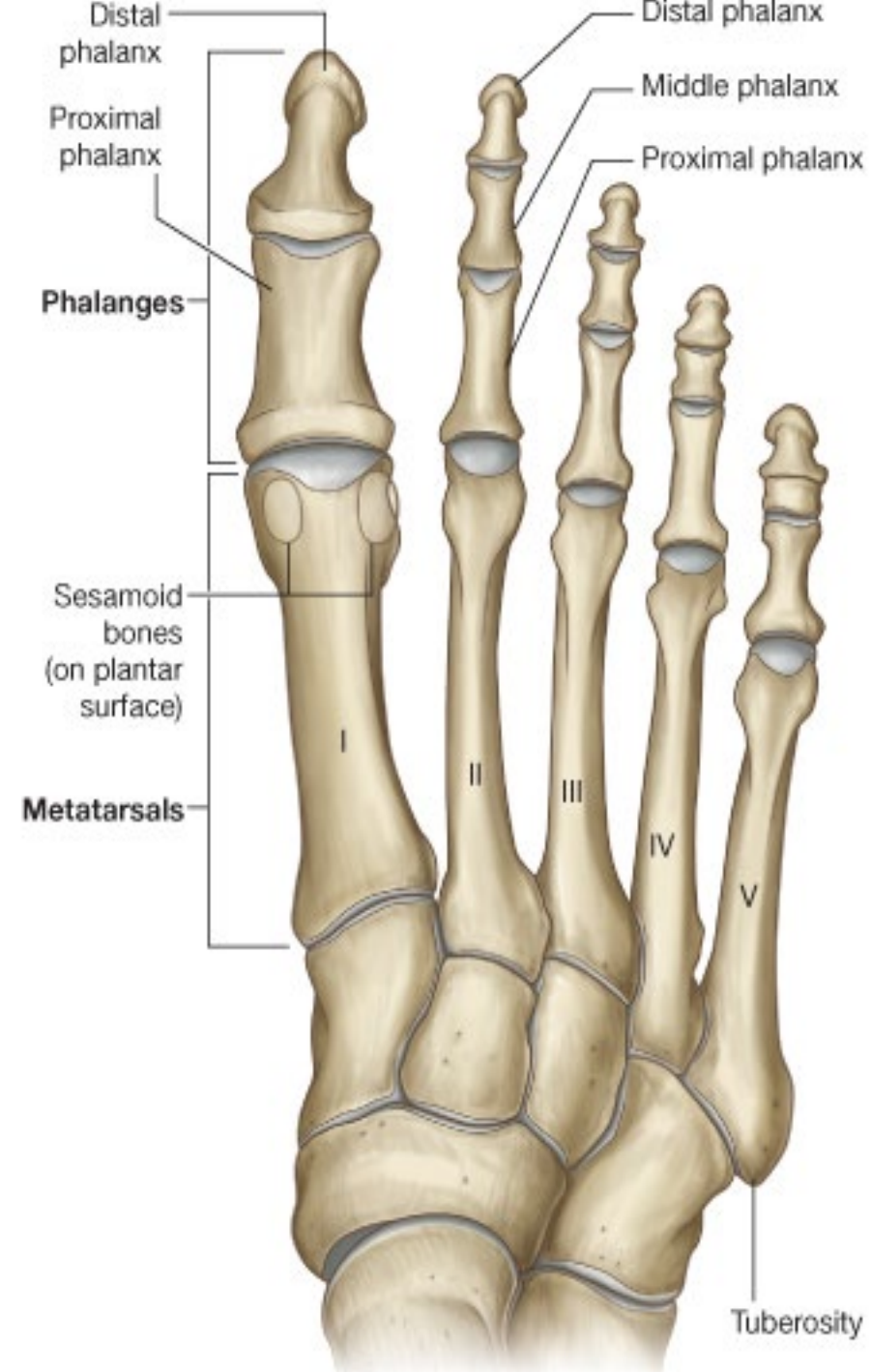


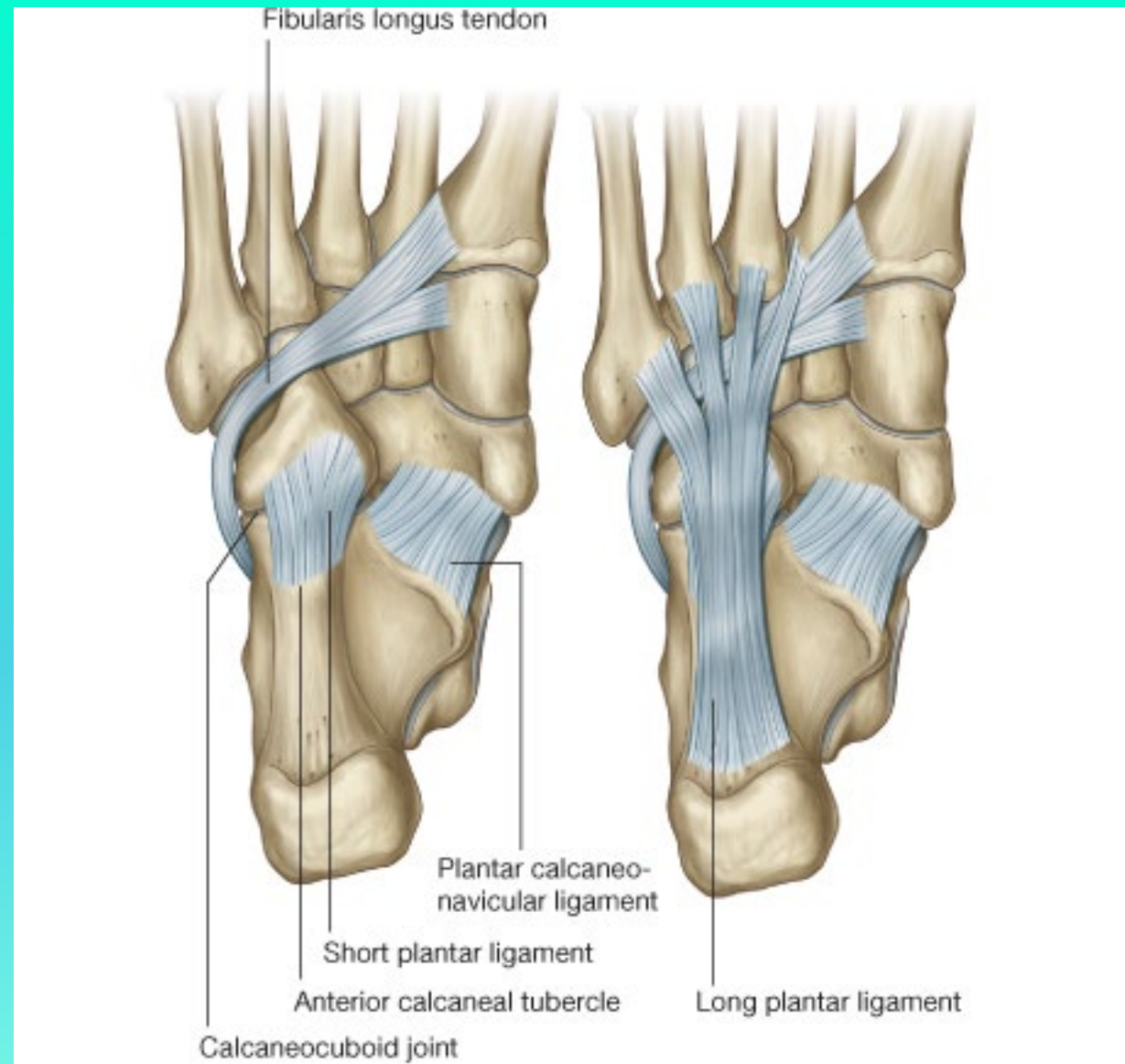


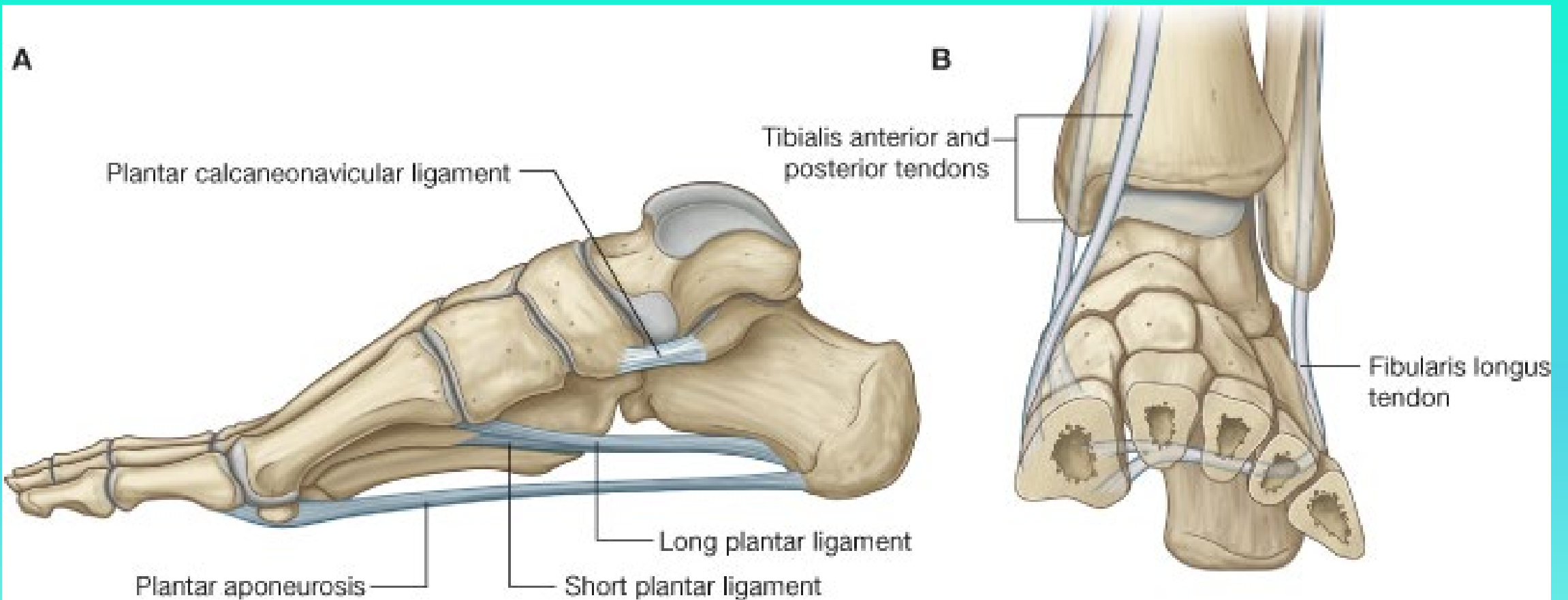


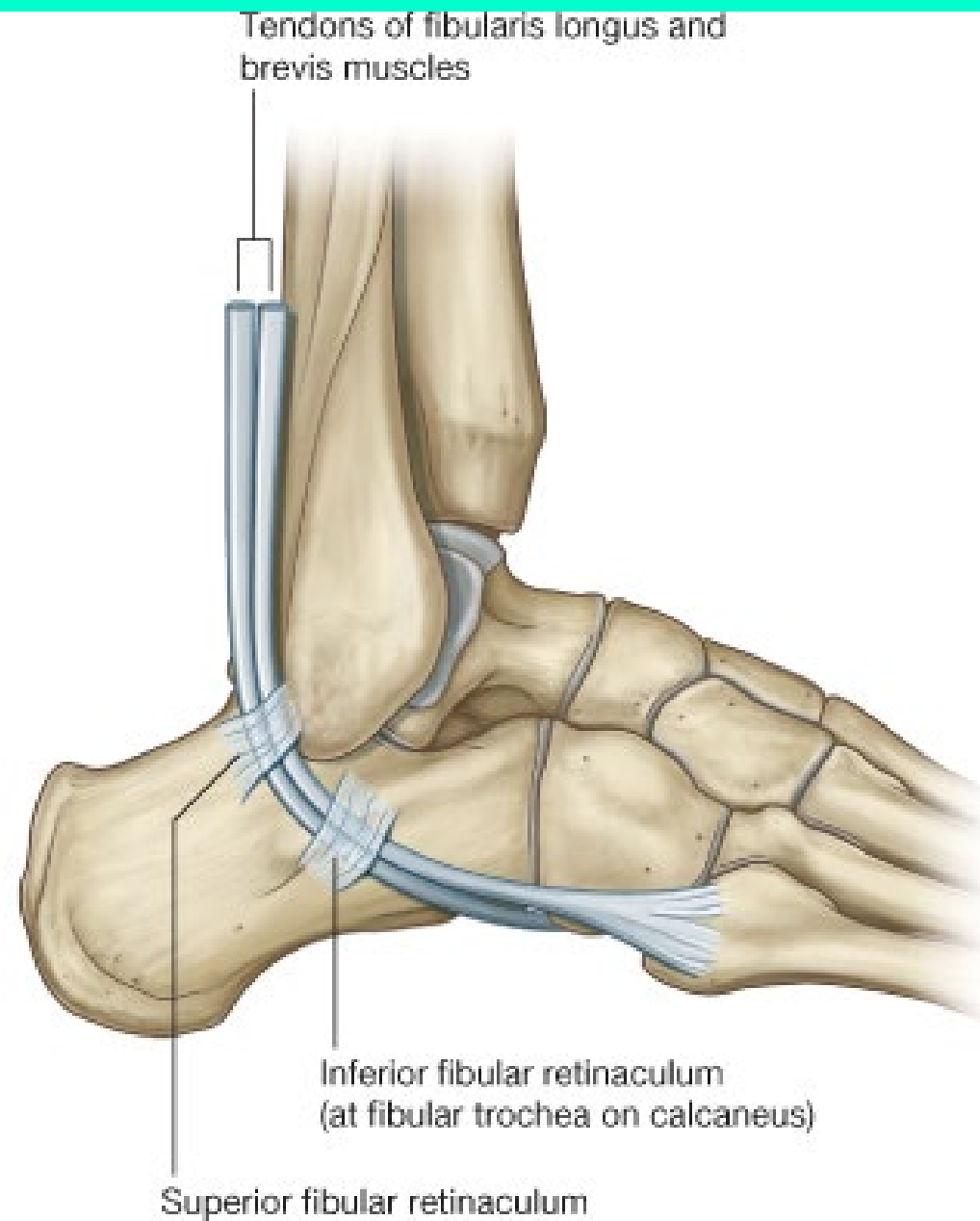


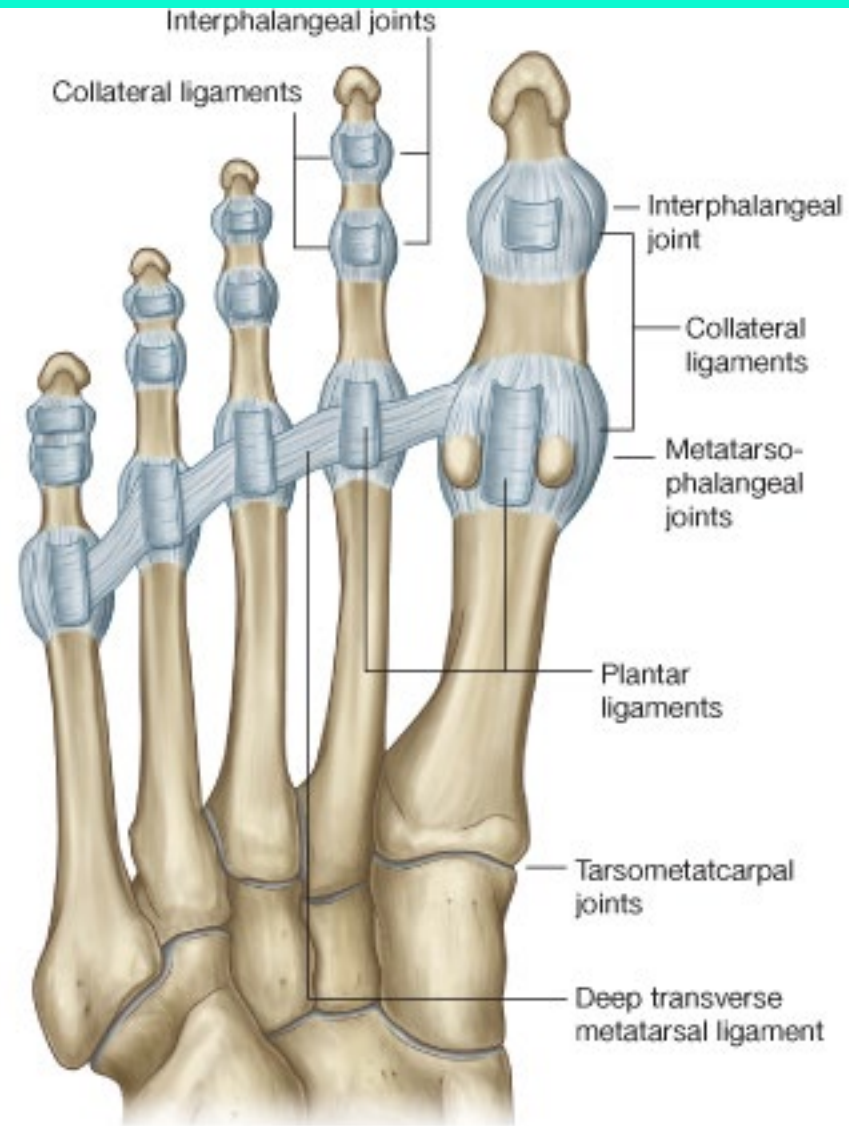


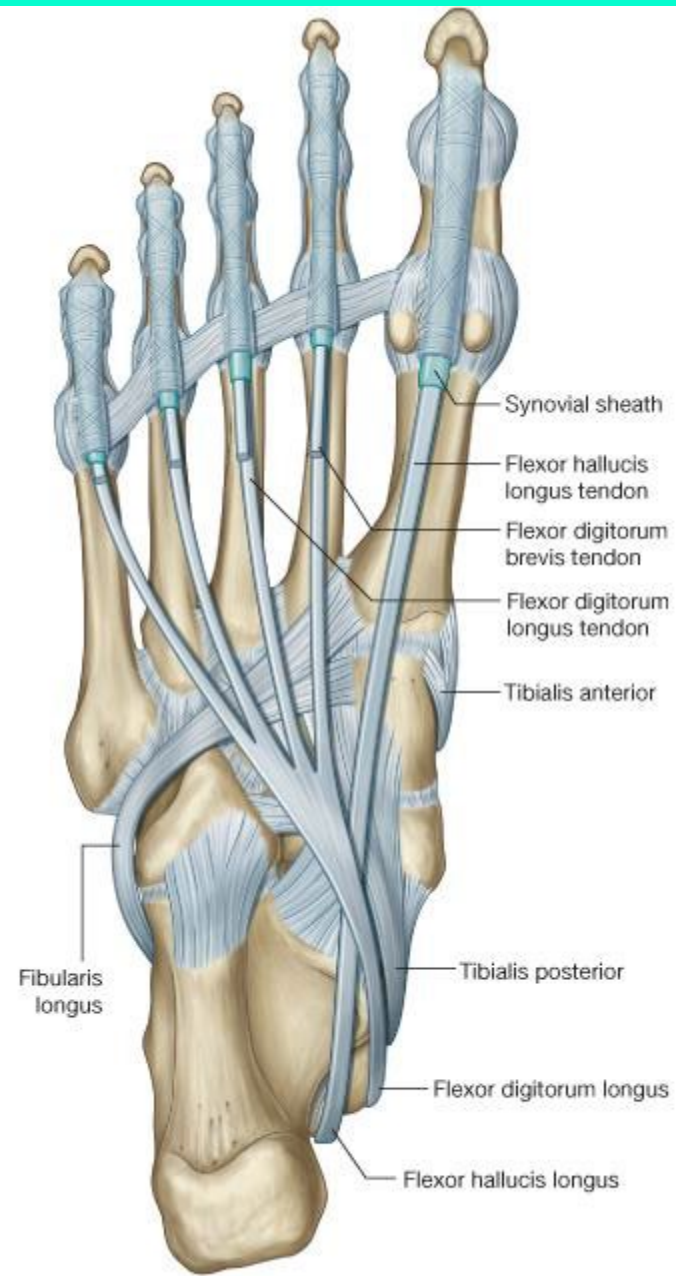


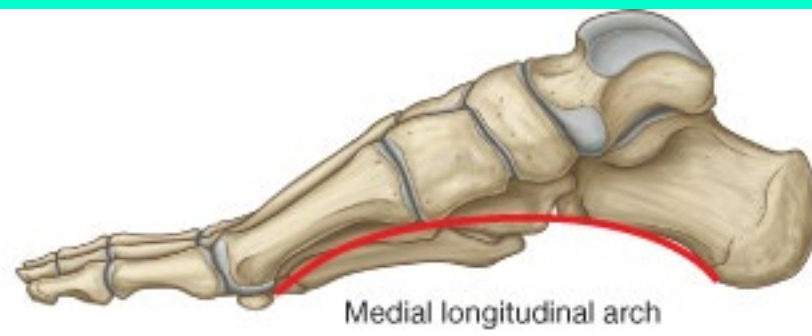










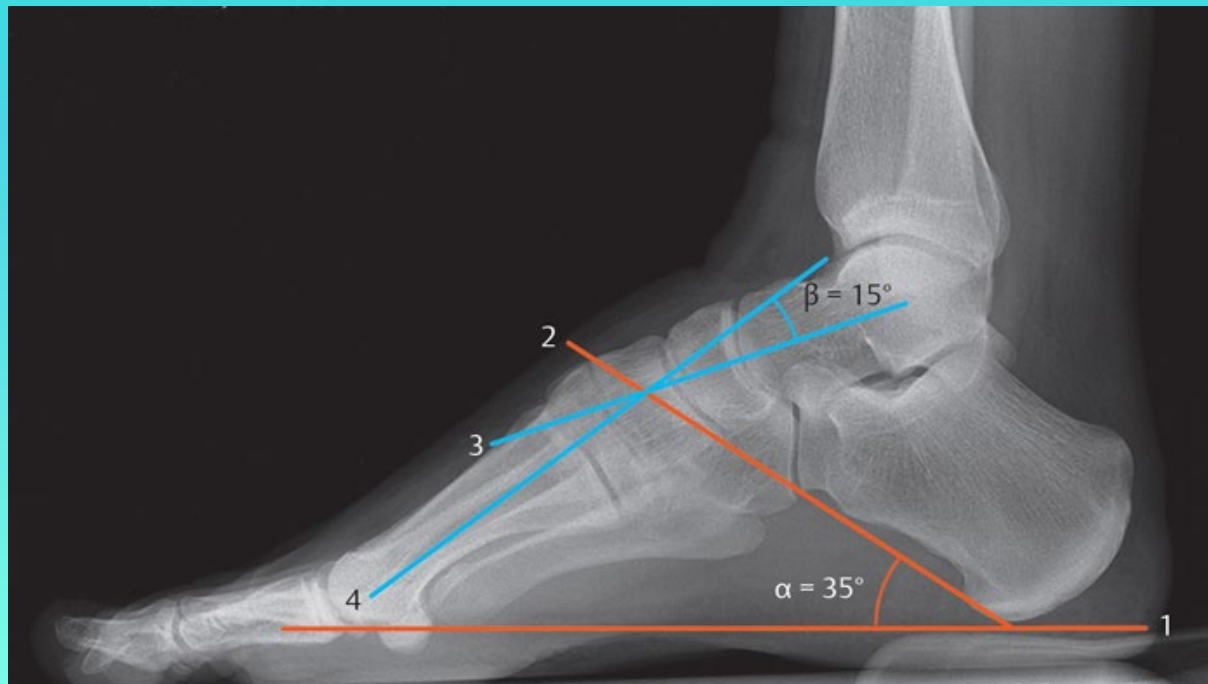
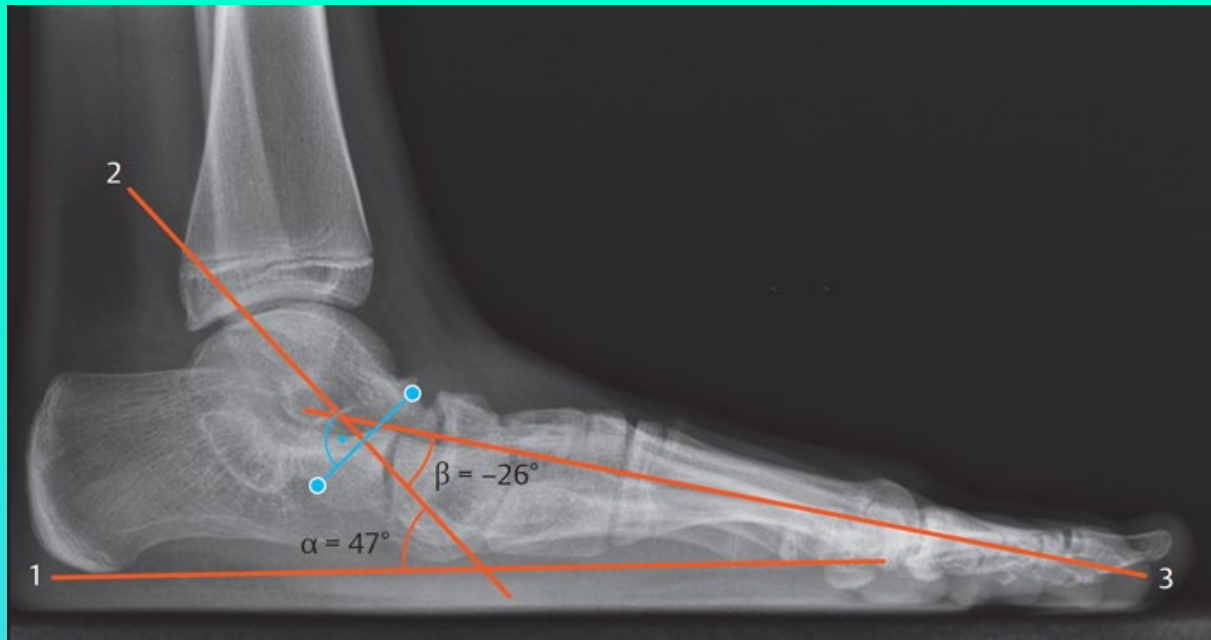


Pesplanus



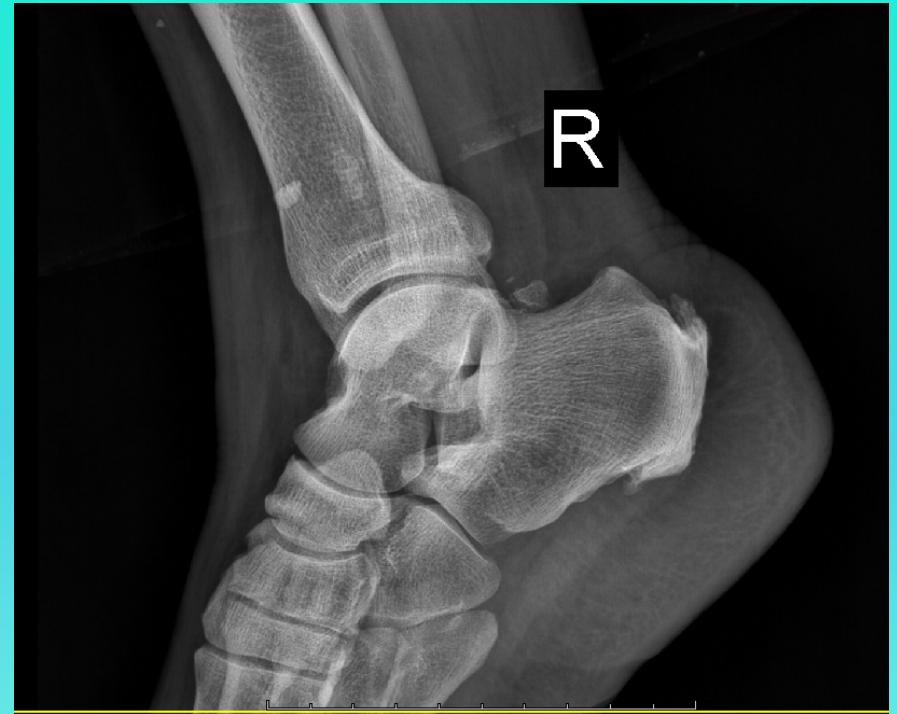
Not-Pesplanus





spur





Hallux valgus



