

Appendicular Skeleton

Pectoral Girdle

Functions

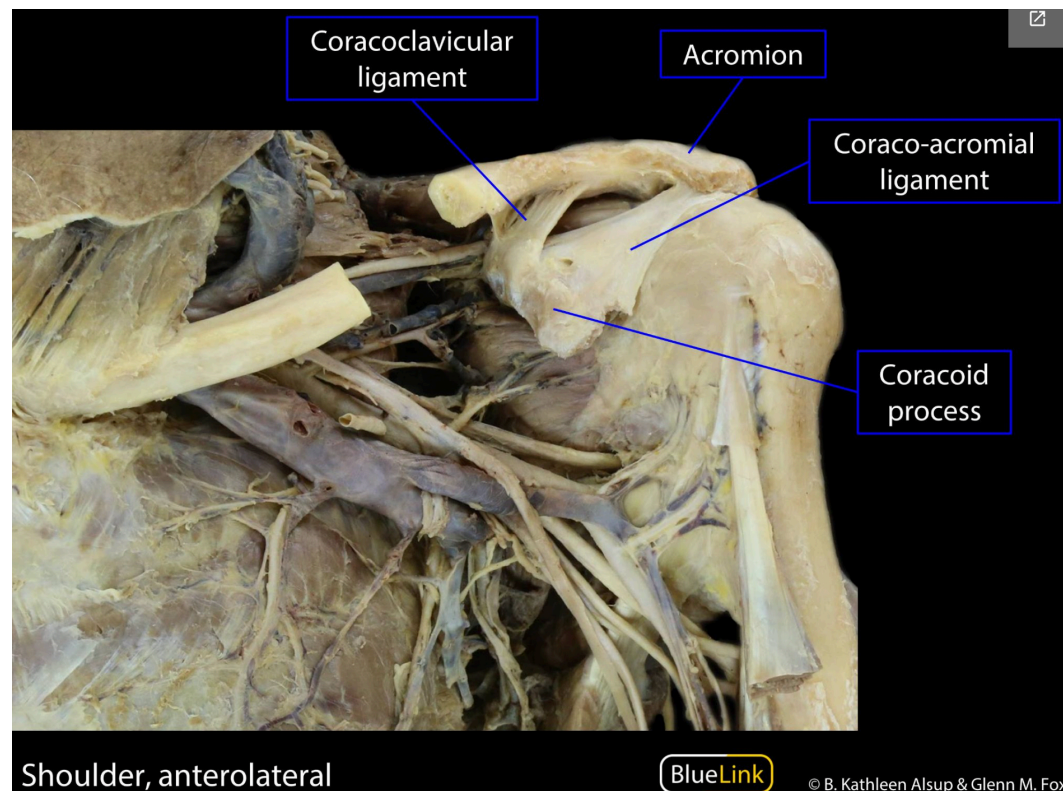
- It is where the upper limb articulates with the trunk
- Supports the upper limb

Bones

- Clavicle
- Scapula

Joints

- **Sternoclavicular Joint**
 - sternal (medial) end of clavicle (pyramidal end) with the manubrium of sternum
- **Acromioclavicular joint**
 - Acromial (lateral) end of clavicle (flat end) with the acromion of the scapula.
- Glenohumoral joint (head of humerus with glenoid fossa of scapula)



Muscles

• Anterior Muscles

- *Anterior and lateral thoracic wall:*
 - **Subclavius** - stabilize and depress clavicle
 - **Pectoralis minor**—depress; protract scapula
 - **Serratus anterior**—stabilize; hold scapula against posterior rib cage; prime mover in protraction of scapula; rotation of scapula with ABduction of upper limbs
- Anchored to ribs and pectoral girdle bones

• Posterior Muscles

- *Superficial muscles of the back:*
 - **Trapezius**—elevate, rotate up, retract (depress) the scapula
 - **Levator scapulae**—elevate the scapula; rotate down
 - **Rhomboid major & minor**—elevate and aDduct the scapula; rotate scapula down

Actions

- Either attach to the scapula or the clavicle
 - Stabilize the scapula
 - Alter the arms angle of movements
 - Scapular movements (elevation, depression, protraction, retraction)
- Classified by their location in the thorax (anterior or posterior)

Videos by Blue Link Anatomy
[Pectoral Girdle \(Scapula\)](#)
[Pectoral Girdle \(Clavicle\)](#)
[Upper Limbs and Pectoral Girdle](#)

Appendicular Skeleton

Discuss the causes of a fractured clavicle.

One of the most frequently fractures bones in the body

Most Common Causes

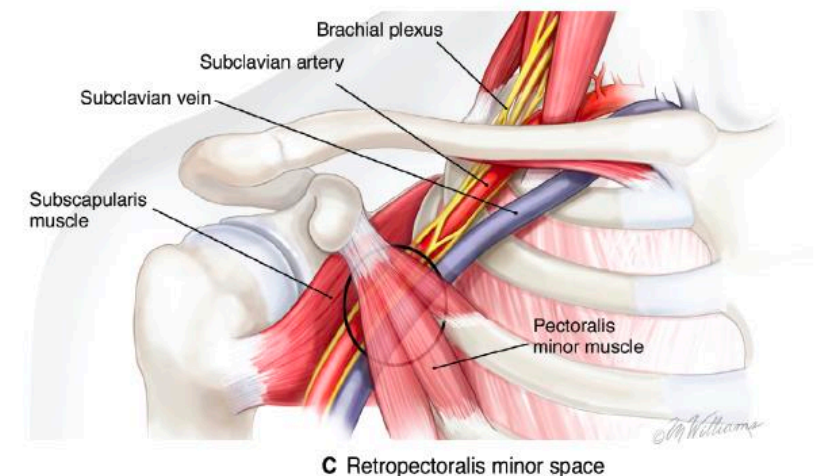
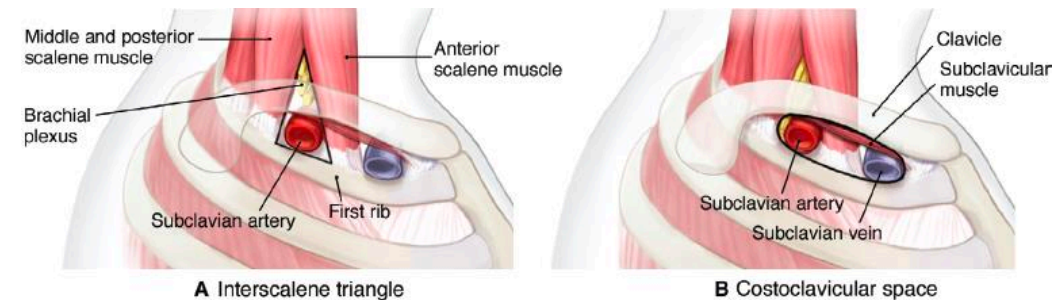
- Blow to the superior part of the anterior thorax, like from a motor vehicle crash/perhaps seatbelt injury
- FOOSH (Fall on outstretched hands); force is transmitted through the entire arm and snaps the clavicle

Location of fracture:

- Junction of the two curves ; weakest part of the clavicle (mid region)

Other:

- Even without a fracture of the clavicle, compression of the clavicle can cause damage to the brachial plexus (a series of nerves that supply the arm)
- A rare but possible consequence is damage to the subclavian blood vessels.



Source: D. J. Sugarbaker, R. Bueno, Y. L. Colson, M. T. Jaklitsch, M. J. Krasna, S. J. Mentzer, M. Williams, A. Adams: *Adult Chest Surgery*, 2nd Edition: www.accesssurgery.com
Copyright © McGraw-Hill Education. All rights reserved.

Appendicular Skeleton

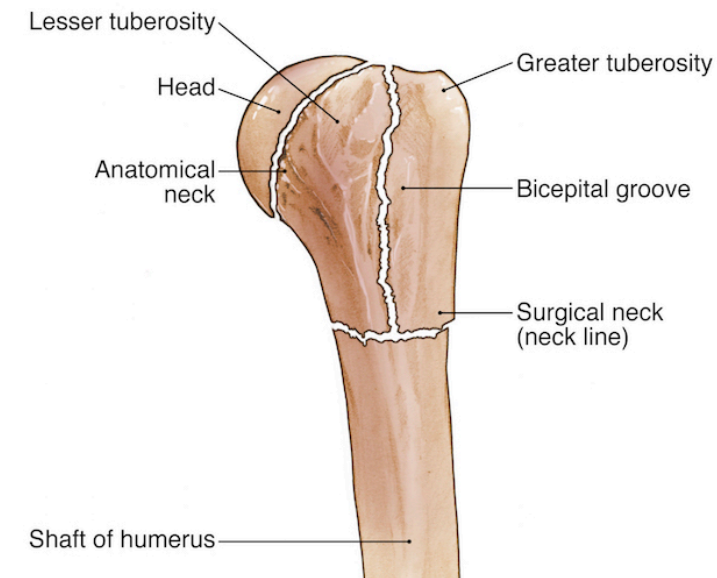
What is the difference between the anatomical neck and surgical neck of the humerus?

Anatomical Neck

- Former site of the epiphyseal plate; visible as an oblique groove

Surgical Neck

- Constriction on the humerus, just distal to the tubercles where the head tapers to the shaft. This is name the surgical neck because of the frequency with which this part of the humerus fractures.

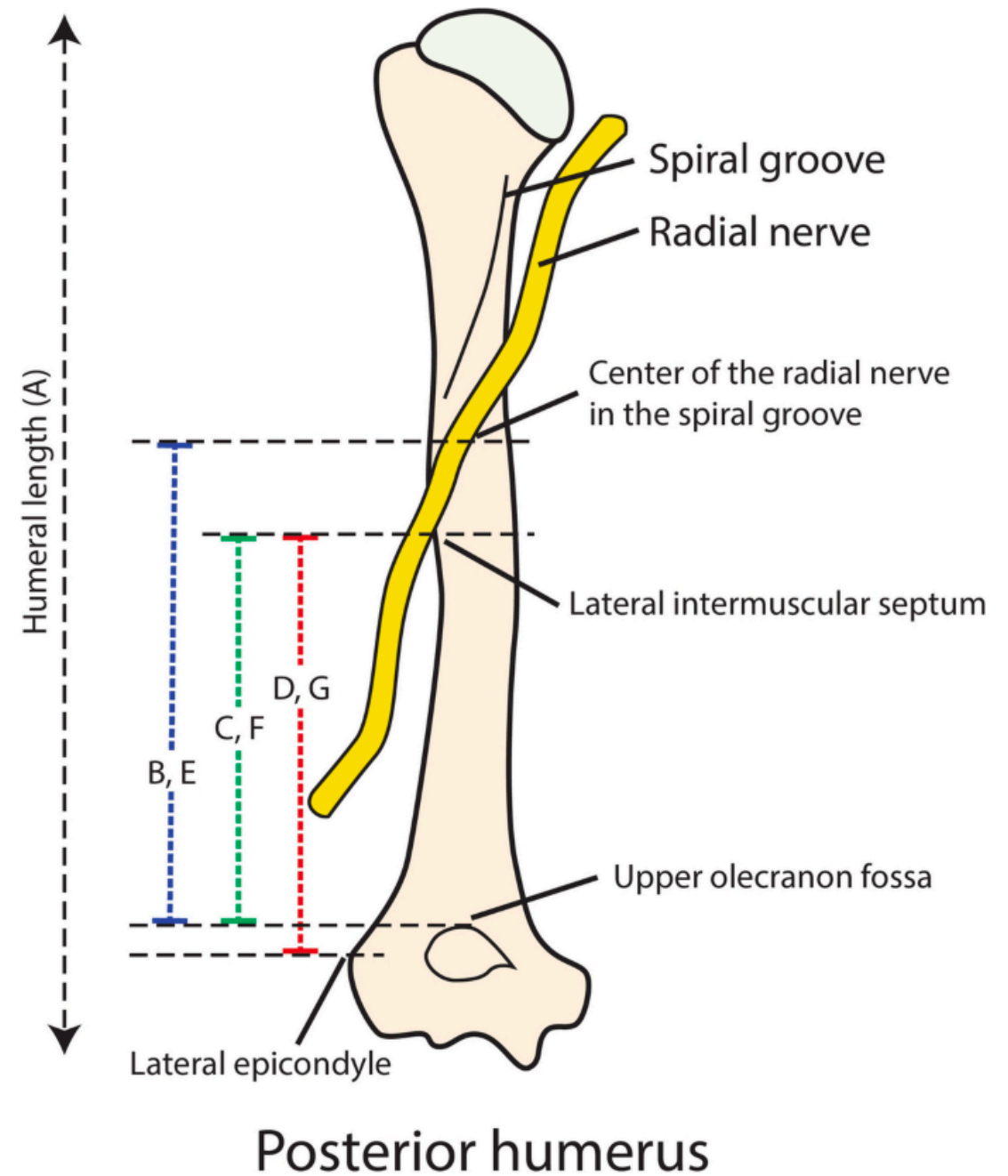


Appendicular Skeleton

What runs through the radial groove?

Radial Groove

- Runs along the posterior surface of the **humerus** and along the the deltoid tuberosity
- Structure that sits in the radial groove: **Radial nerve**

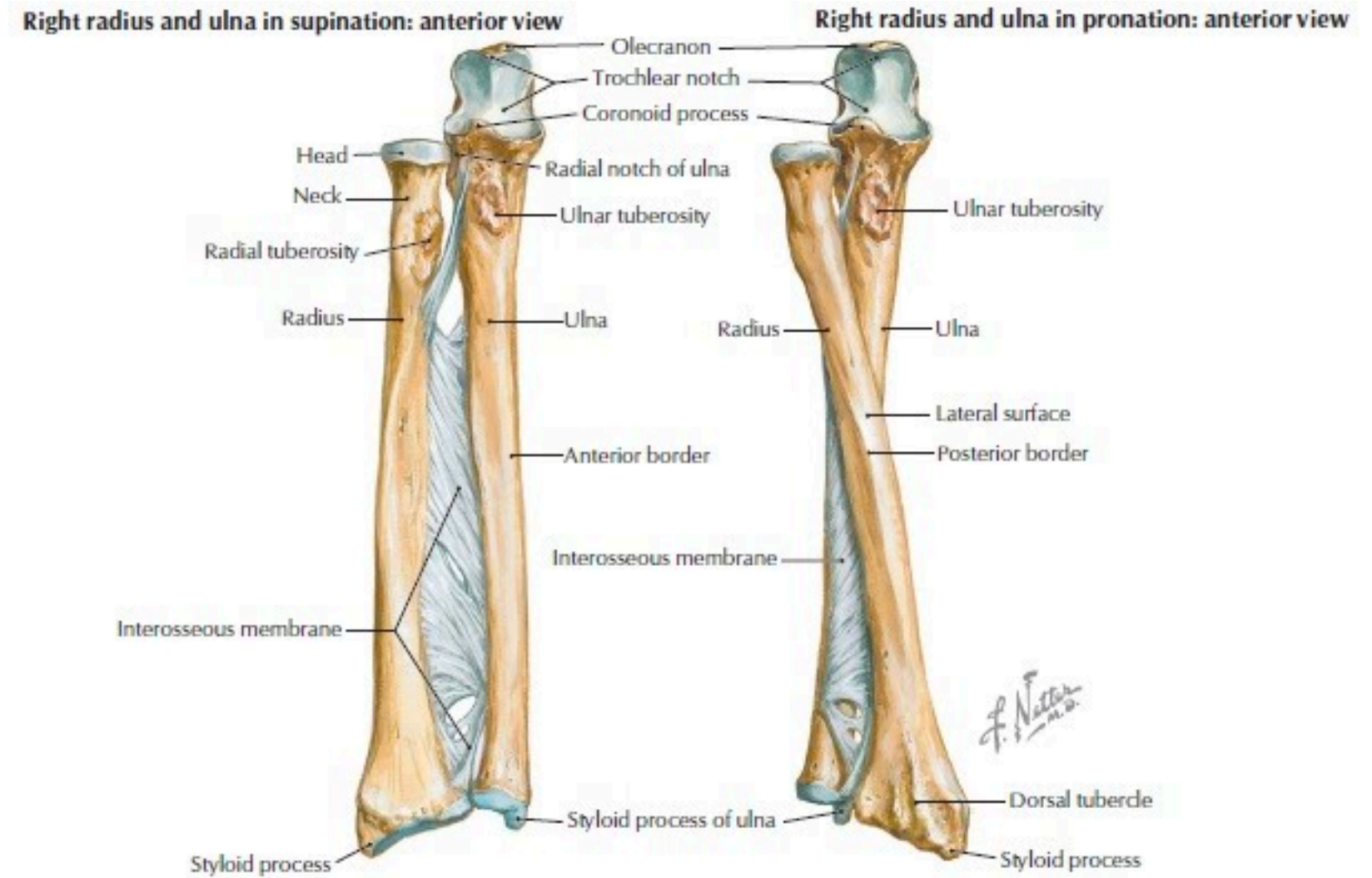


Appendicular Skeleton

What attaches to the ulnar tuberosity on the ulna?

Ulnar tuberosity

- Tendon of the *biceps brachii* muscle

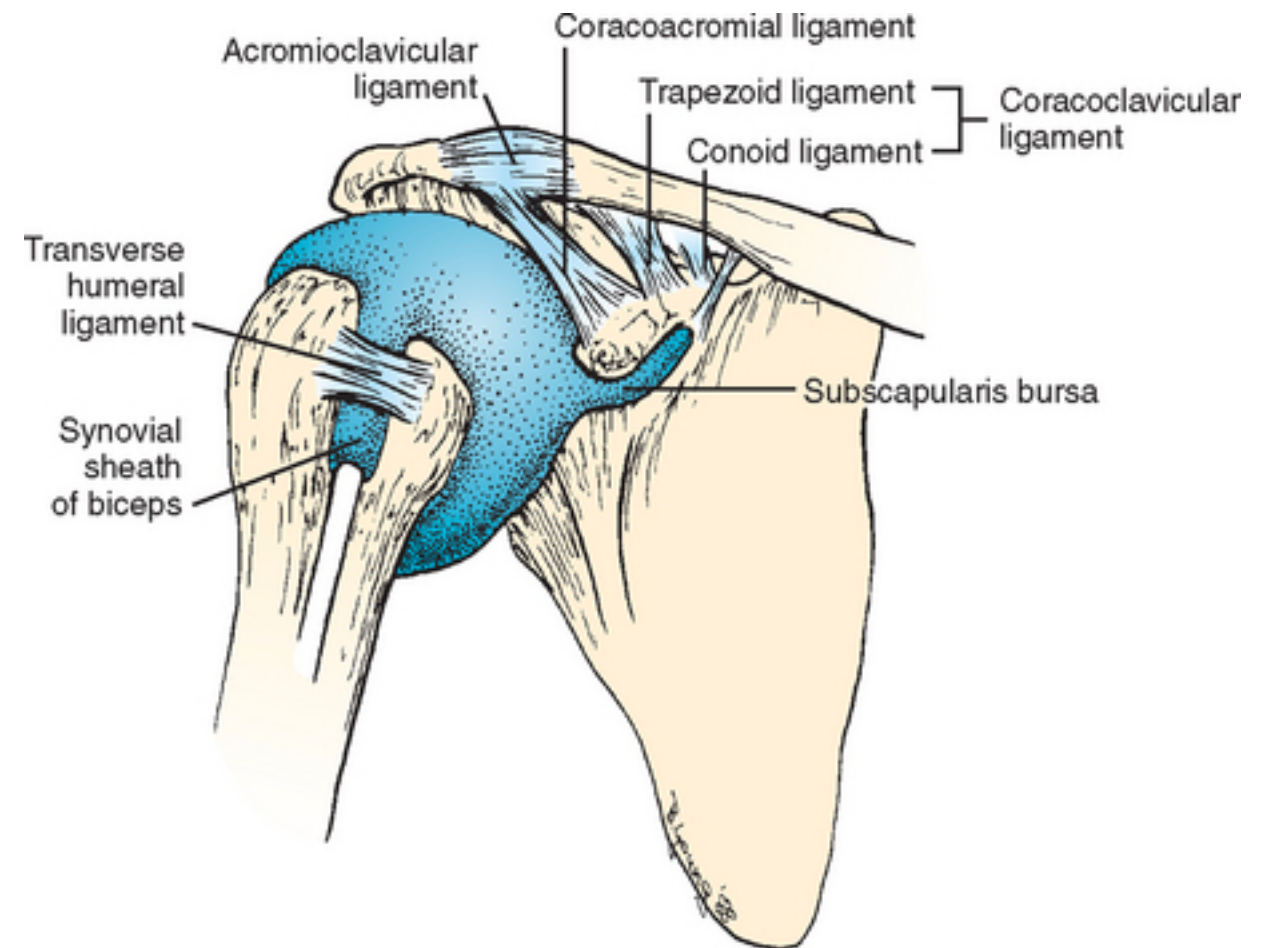


Appendicular Skeleton

What runs through the intertubercular groove on the humerus?

Intertubercular groove

- Tendon of the *biceps brachii* muscle



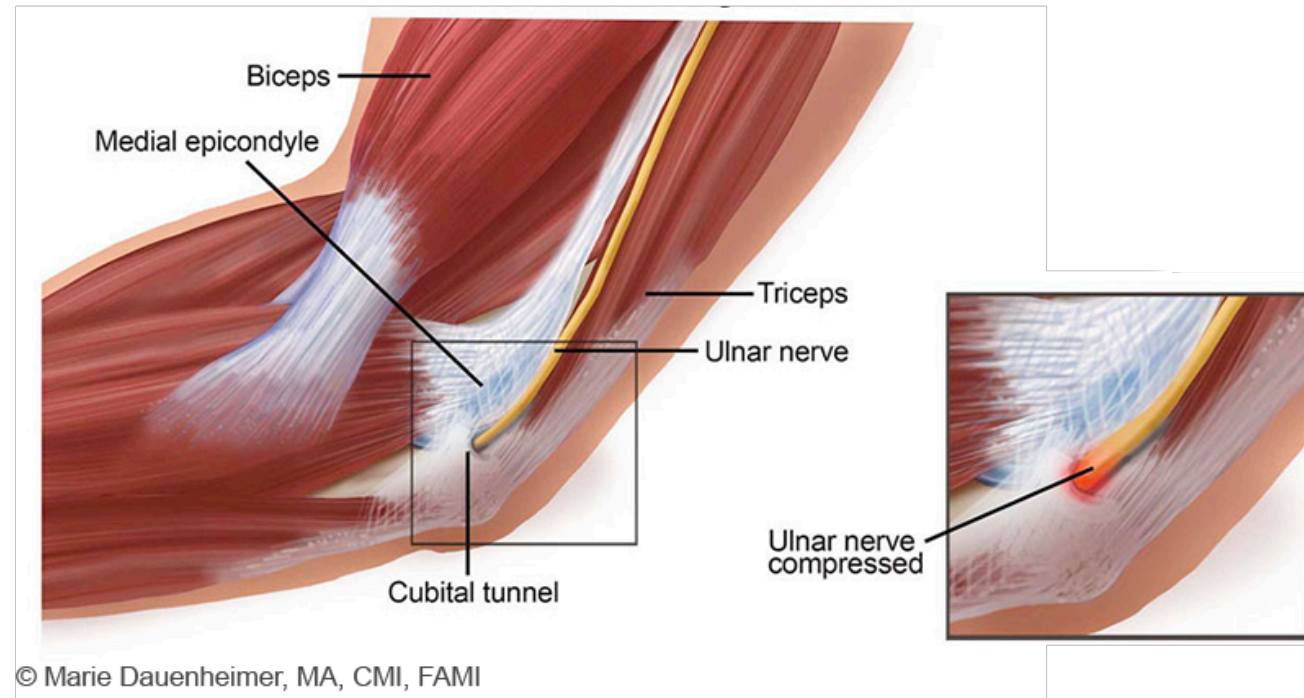
Appendicular Skeleton

What nerve can be palpated just above the medial epicondyle?

Medial epicondyle

- Ulnar nerve

Cubital Tunnel Syndrome

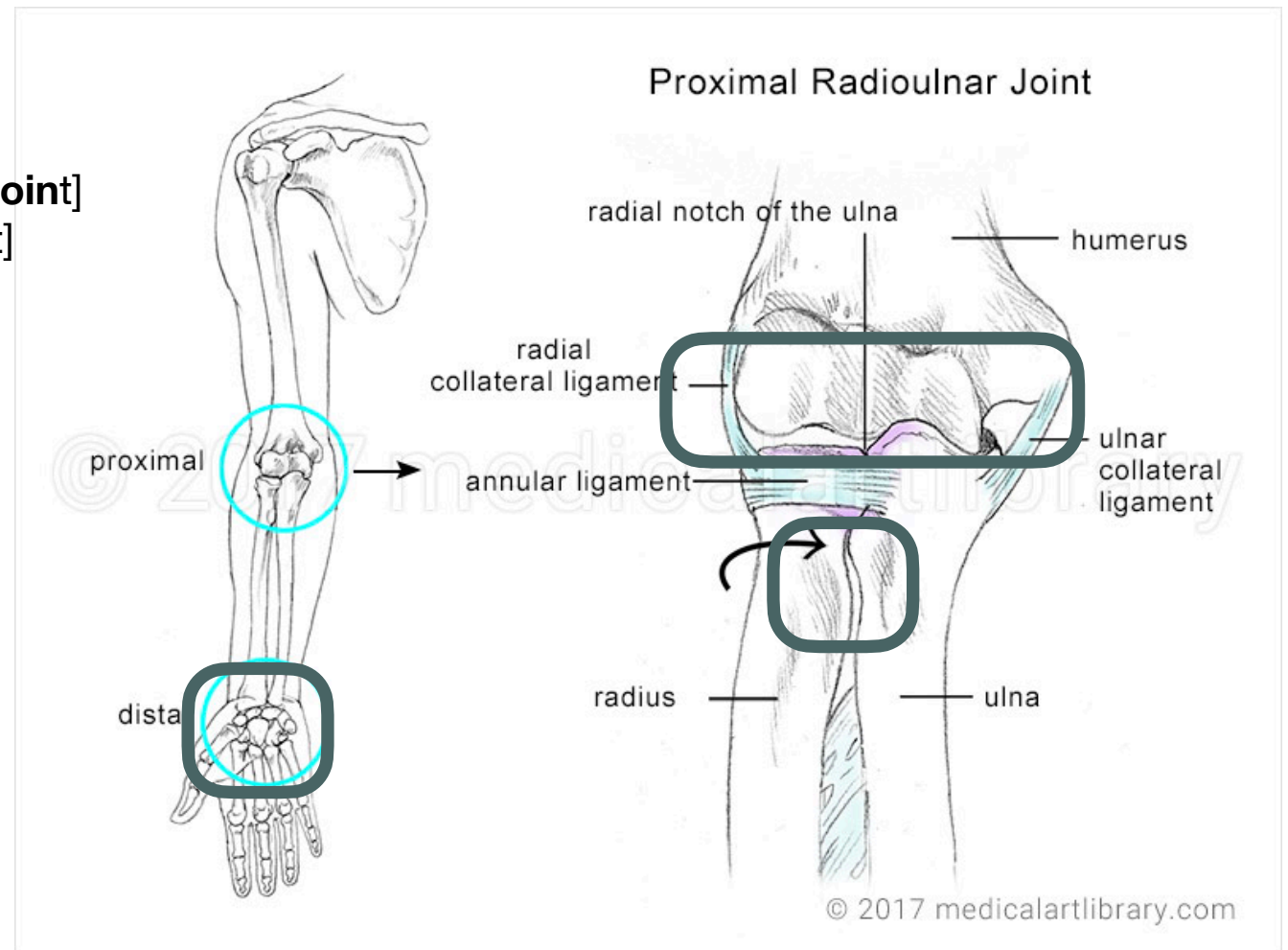


Appendicular Skeleton

What are the three places the ulna and radius articulate with each other?

Ulna & Radius articulate with each other at three places

1. Ulna, Radius, Humerus [**Elbow joint**]
2. Head of the radius + Ulnar notch [**proximal radioulnar Joint**]
3. Head of the ulna + Radial Notch [**Distal radioulnar Joint**]



Appendicular Skeleton

What is the interosseous membrane? Where is it found?

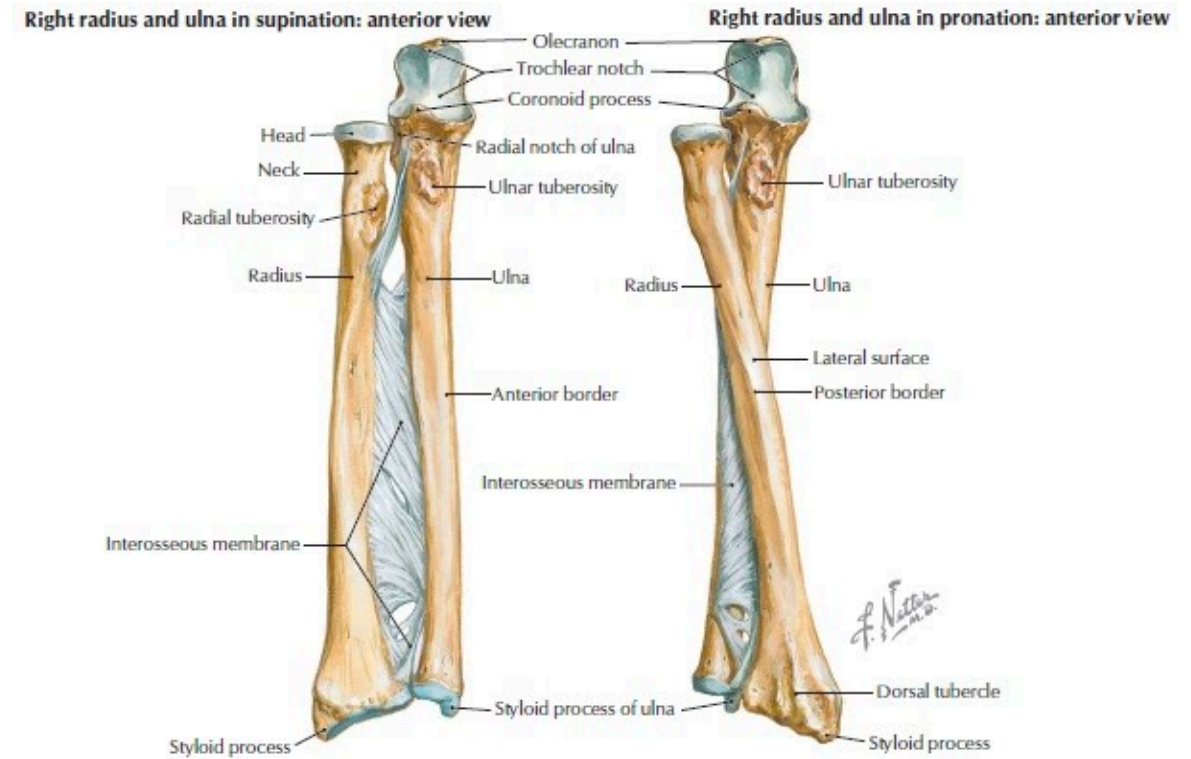
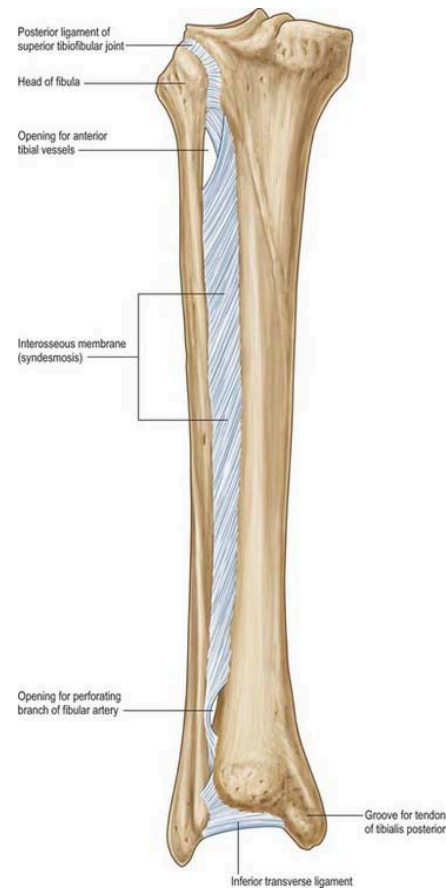


FIGURE 7-16 Radius and Ulna of the Forearm

Interosseous Membrane

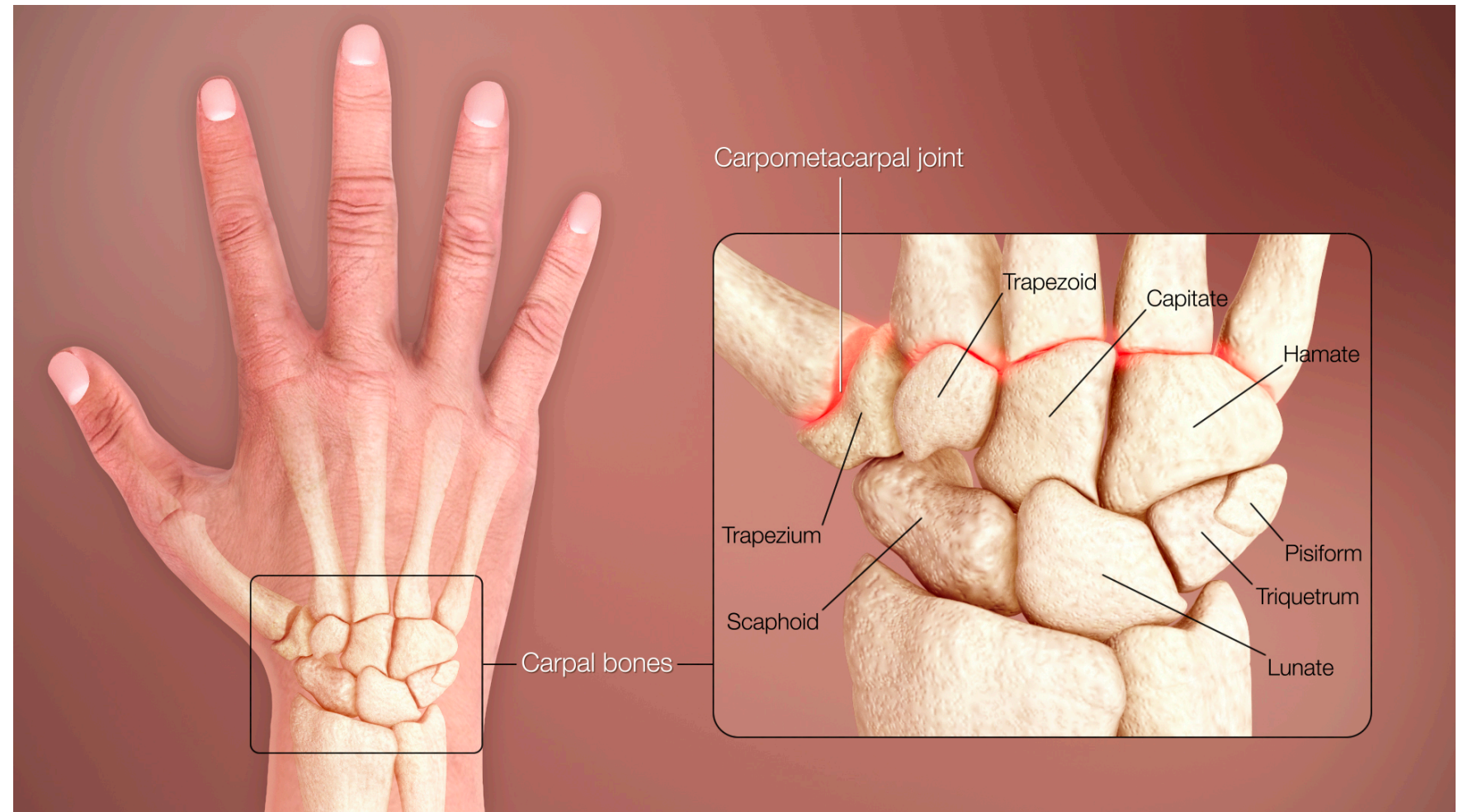
Definition: Broad flat, fibrous connective tissue, rather a “joint,” specifically a ***syndesmosis***.

Location: found between the shafts of the forearm bones (ulna and radius) and the lower leg (fibula and tibia) bones.

Function: site of attachment for the deep muscles of the forearm and the lower leg.

Appendicular Skeleton

What are the clinically notable carpal bones?



Carpal Bones

Definition: These are the bones of the hand. Mnemonic:

Largest bone: Capitate

Most frequently dislocated: Lunate

Most frequently fractured: Scaphoid

Appendicular Skeleton

Describe carpal tunnel syndrome. What structures are involved?

Carpal Tunnel

Flexor retinaculum: strong fibrous bands that cover the carpal bones (this space under the F. retinaculum is the “carpal tunnel.”)

Structures that pass through the carpal tunnel:

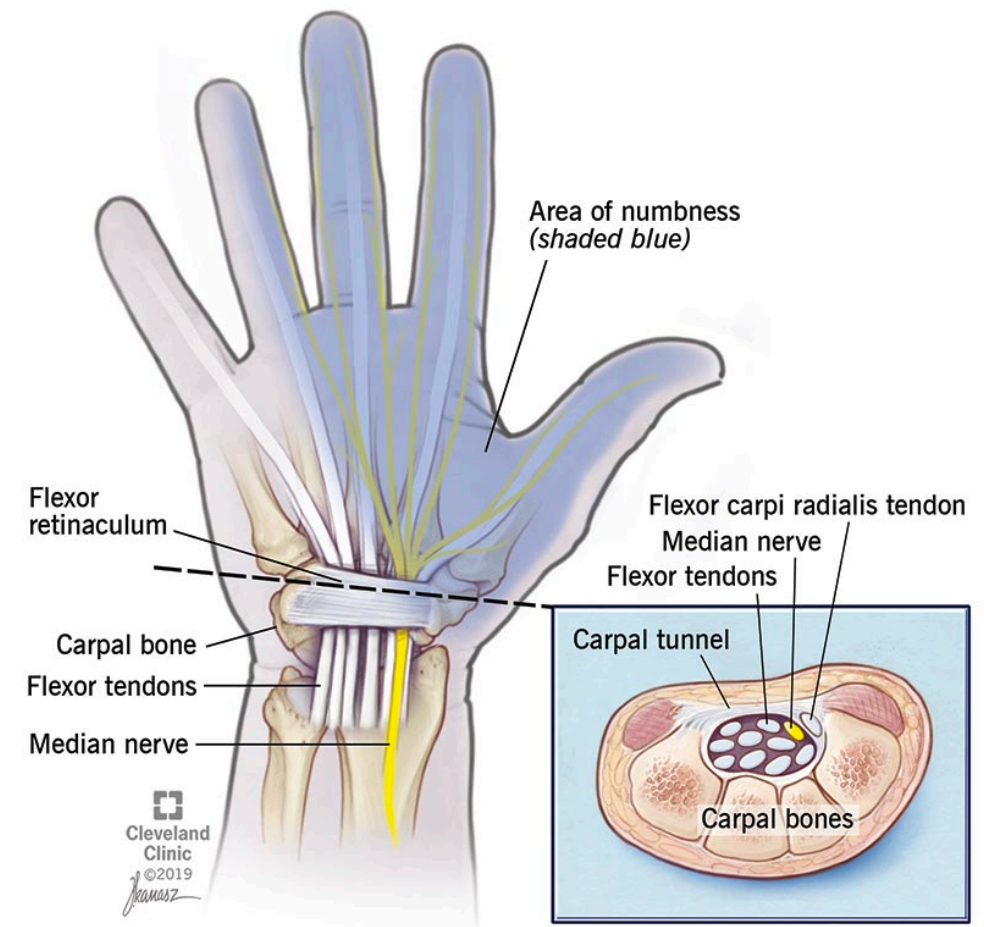
1. Flexor tendons of the digits and thumbs
2. Median nerve

Carpal Tunnel Syndrome

Narrowing of the carpal tunnel due to factors such as inflammation.

It is not as often an overuse injury as much as people think it is.

Mostly due to edema like in endocrine disorders (diabetes, Cushing's, thyroid) and pregnancy.



Appendicular Skeleton

Describe a newborn pelvis.

The newborn pelvis is made of three bones, separated by cartilage:

By age 23 these bones fuse together.

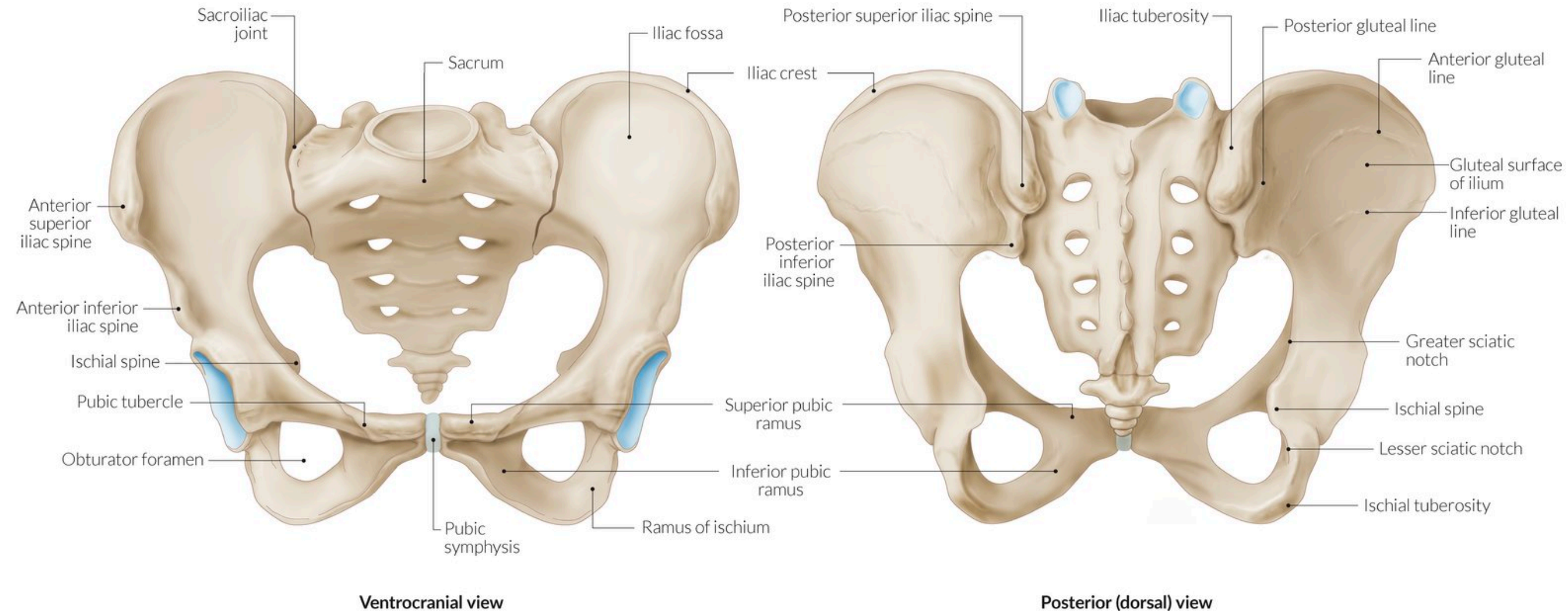
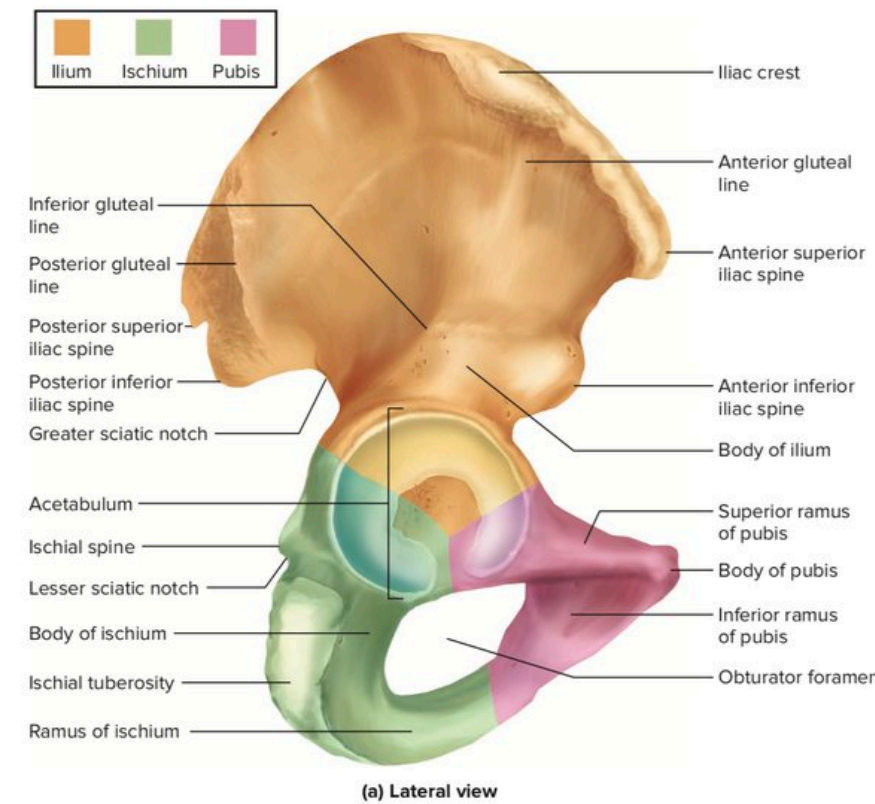
1. Superior ***Ilium***
2. Inferior and Anterior ***Pubis***
3. Inferior and Posterior ***Ischium***



Appendicular Skeleton

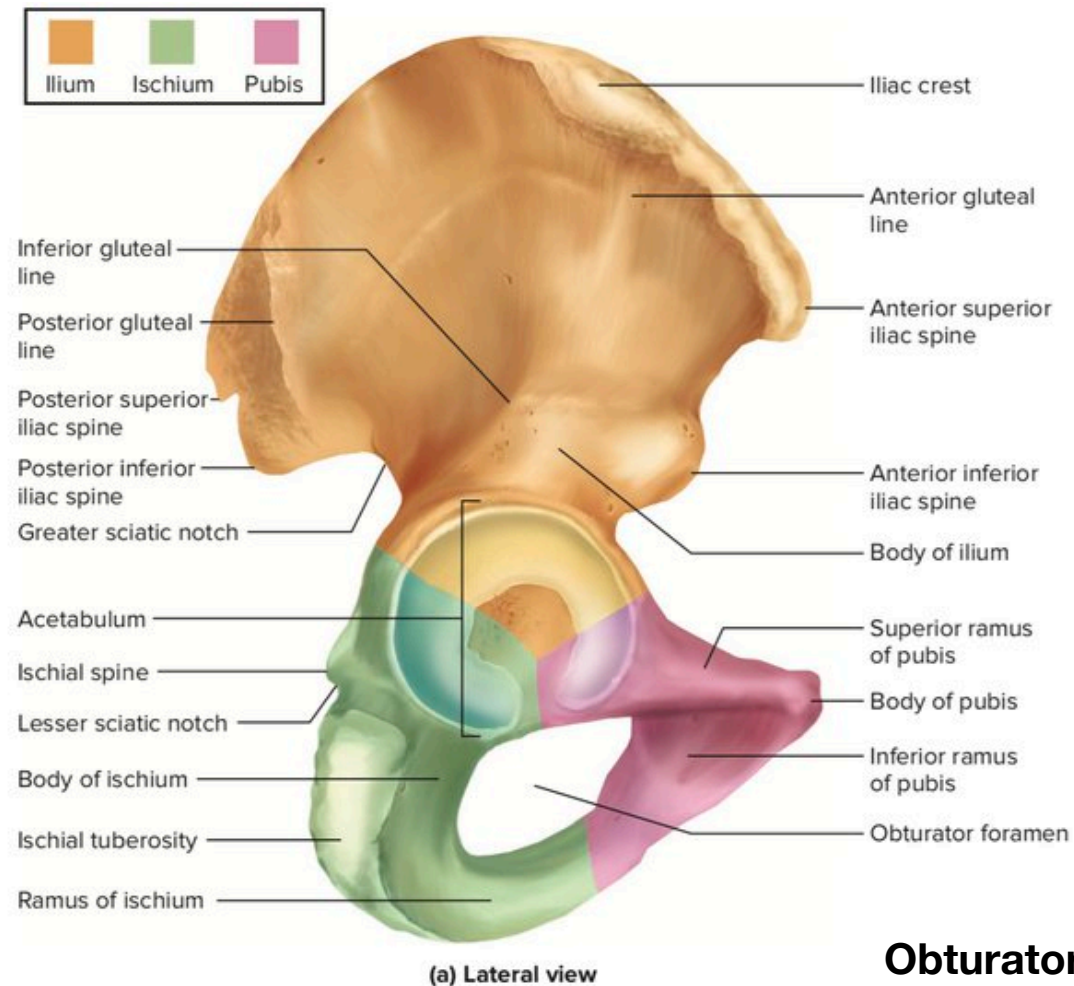
What structure passes through the greater sciatic notch

Sciatic Nerve Passes through the greater sciatic notch.



Appendicular Skeleton

What is the obturator foramen?

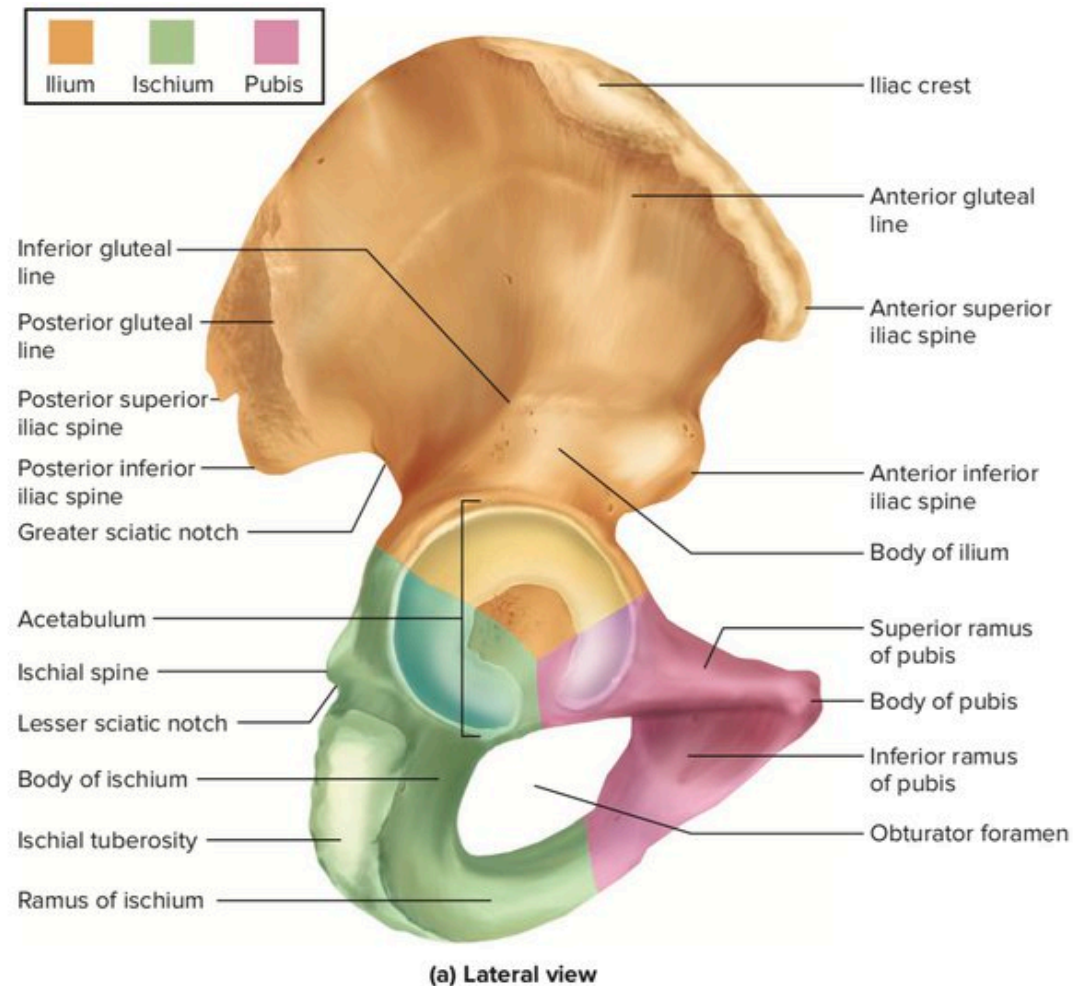


Obturator Foramen:

- Largest foramen (hole) in the body
- Formed by two structures: ramus and pubis
- Holds: nerves and blood vessels
- Completely enclosed by a fibrous obturator membrane

Appendicular Skeleton

What is the acetabulum? What structure articulates (forms a joint) here?

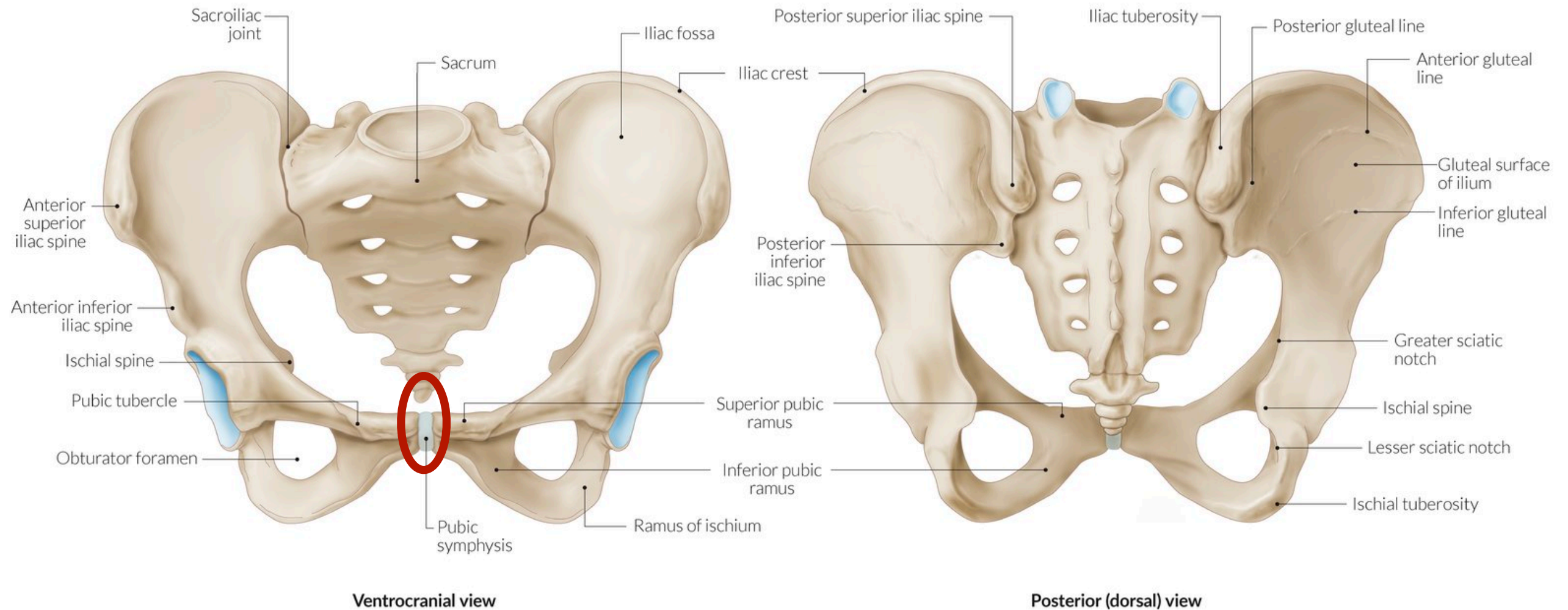


Acetabulum

- Socket for the head of the femur
- Formed by the fusion of all three bones (Ilium, ischium, pubis)

Appendicular Skeleton

What is the pubic symphysis?



Pubic Symphysis

- Anterior pelvic joint
- Absorbs the weight of the upper body
- Made of fibrocartilage, sandwiched between two layers of hyaline cartilage
- Amphiarthrosis (meaning permits a very small amount of movement under normal circumstances).

Appendicular Skeleton

Differentiate between the true and false pelvis. Include borders and contents.

True Pelvis vs. False Pelvis

Def: bony part of pelvis (**BELOW** pelvic brim)

Def: bony part of pelvis (**ABOVE** pelvic brim)

Boundaries

Anterior: Pubic Bones
Posterior: Sacrum, Coccyx
Inferior: Ilium & Ischium

Contents

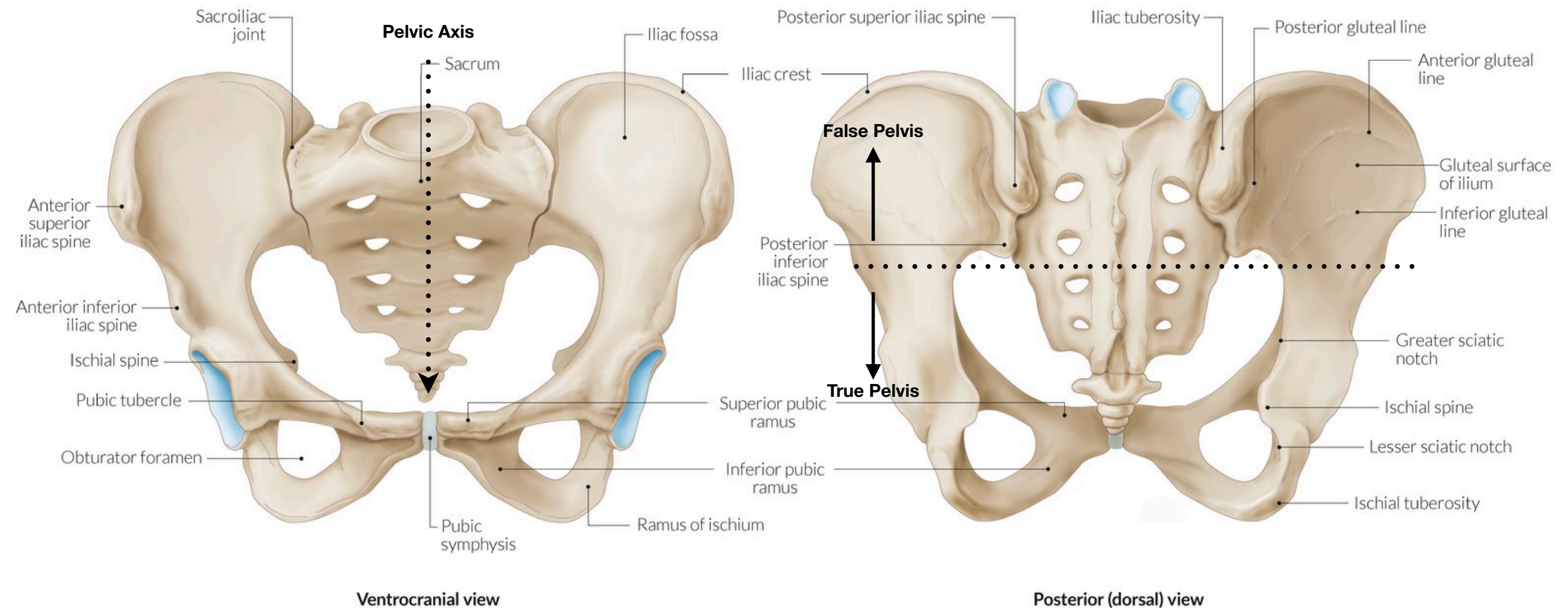
Rectum
Bladder
Vagina (females)
Cervix of uterus (females)
Prostate (males)

Boundaries

Anterior: Abdominal Wall
Posterior: vertebrae
Lateral: upper portion of hip bones (ilium)

Contents

Superior Bladder
Lower Intestines
Uterus
Ovaries
Uterine Tubes in females



Appendicular Skeleton

Differentiate between the male and female pelvis.

Female Pelvis vs. Male Pelvis

Female

General Structure: Light & thin;
smoother

Pelvic Inlet: wide, round or oval

Acetabulum: smaller

Pubic arch: greater than 90°

Obturator foramen: oval

Coccyx: movable, less curved anteriorly

Male

General Structure: heavy and thick

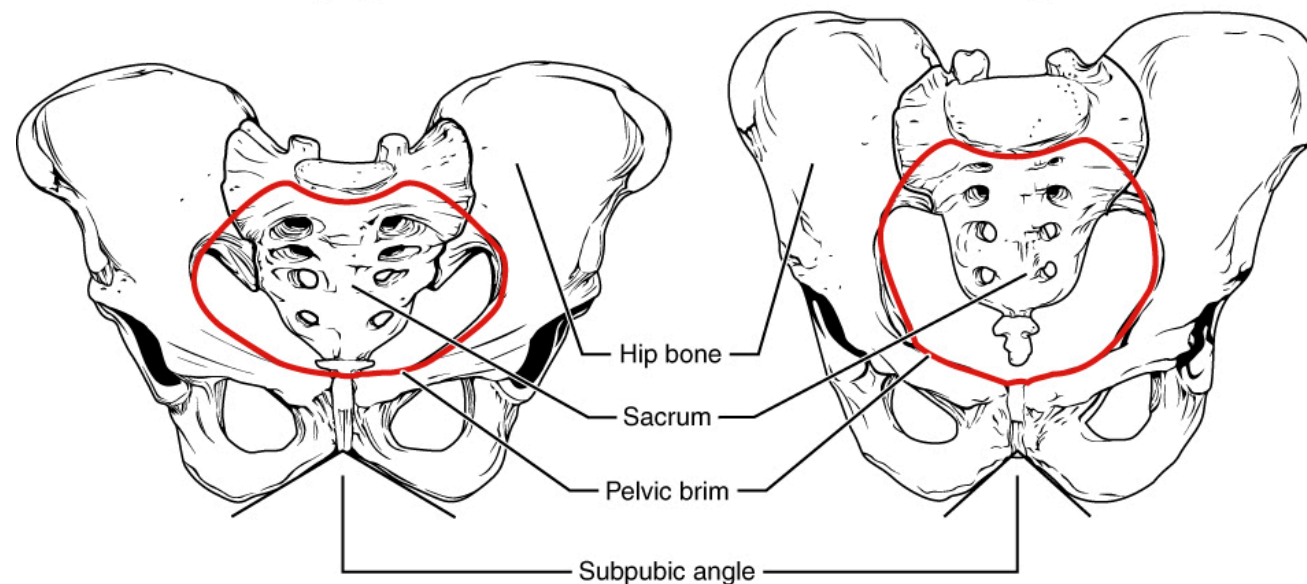
Pelvic Inlet: narrow, heart-shaped

Acetabulum: larger

Pubic arch: less than 90°

Obturator foramen: round

Coccyx: less movable, curved anteriorly



Appendicular Skeleton

Name the arches of the foot. What are the functions?

Structures that form arches: Ligaments and tendons; fully formed by 12-13 years of age

Functions of the arches of the foot

1. Support weight of the body (ball carries 40% of the weight; heel carries 60% of the weight)—Compare to high heels (ball=80%; heel =20%)
2. Provide ideal weight distribution
3. Provide leverage when walking

Arches

A—B Transverse

Location: Between medial and lateral aspects of the foot

Bones that form this arch: navicular, 3 cuneiforms, bases of 5 tarsals

Longitudinal

A—C (Medial Longitudinal)

Location: originates at calcaneus, rises through the talus, descends through the navicular, 3 cuneiforms and heads of the 3 medial metatarsals

Arch is so high the medial foot doesn't touch the ground when walking.

B—C (Lateral Longitudinal)

Location: originates at calcaneus, rises at the cuboid, descends to the heads of the 2 lateral metatarsals

Medial Longitudinal arch

Anterior Transverse arch

Lateral Longitudinal arch

