

The University Of Jordan
Faculty Of Medicine
Anatomy Department



Hip Bone and Femur

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Bones of the lower limb

The bones of lower limb consists of

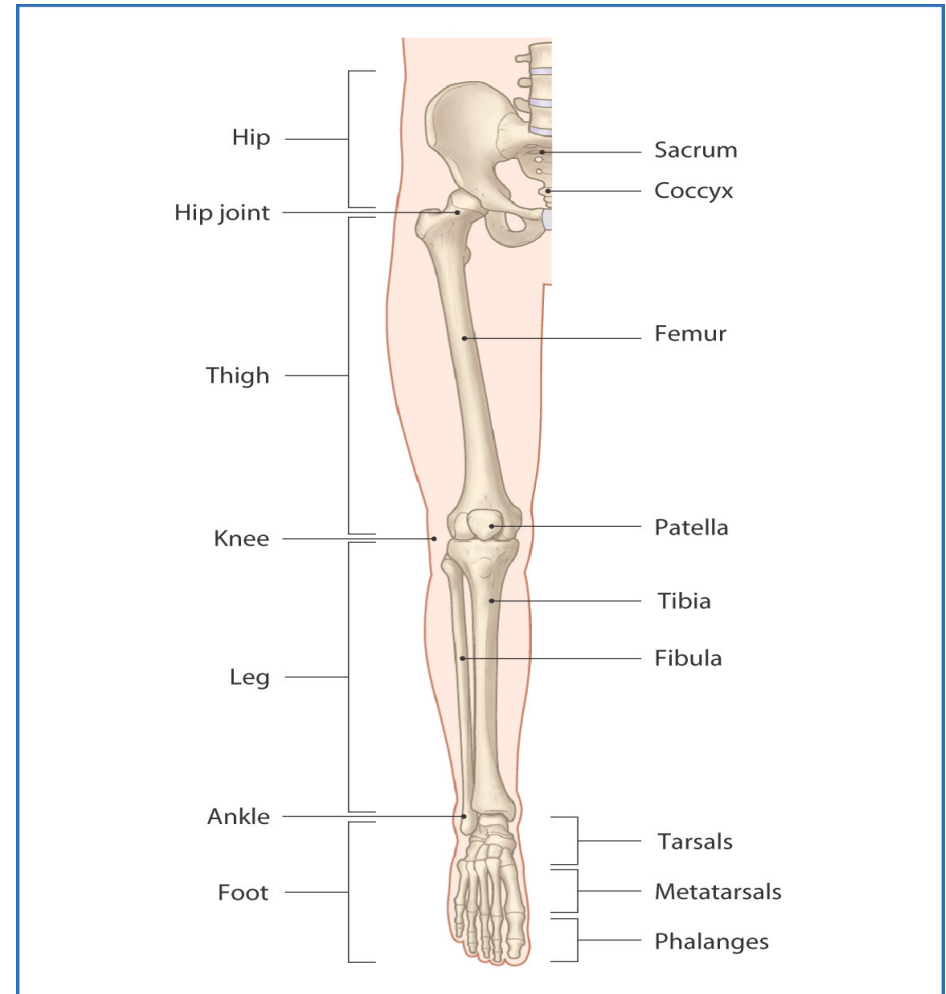
The pelvic girdle:

- Connects the lower limb to the trunk.
- It is formed of 2 hip bones & sacrum .

Bone of the thigh: The femur .

Bones of the leg: The tibia and the fibula .

Bones of the foot: The tarsal bones, the metatarsals and the phalanges .





Hip bone

Hip bone is formed of 3 bones:

1. Iliac bone : It is the upper part of hip bone .

□ It has **3 borders** :

a. Upper border called iliac crest.

The outer border of iliac crest is called tubercle of iliac crest

b. Anterior border which presents the anterior superior iliac spine (A.S.I.S) & anterior inferior iliac spine .

c. Posterior border which presents the posterior superior iliac spine & posterior inferior iliac spine .

□ It has **2 surfaces** :

a. Outer or gluteal surface which has 3 gluteal lines (Posterior , middle & inferior) .

b. Inner or pelvic surface which show iliac fossa , iliac tuberosity and auricular surface (which articulates with sacrum) .

2. Ischial bone:

The lower posterior part of hip bone & consists of :

a. Body

b. Ischial tuberosity: for muscle attachment and it is related to bursa to reduce friction during sitting

c. Ischial spine : which separates the greater sciatic notch from the lesser sciatic notches .

d. Ischial ramus which joins the inferior pubic ramus to form ischiopubic (conjoint) ramus .

Ischiopubic rami of both sides form the pubic arch

3. Pubic bone: The lower anterior part of hip bone & consists of :

a . Body :

- It articulates with the medial surface of the opposite bone to form the symphysis pubis.
- Its upper border is called **pubic crest** which ends laterally in a projection called **pubic tubercle**.

b. superior pubic ramus which has 3 surfaces :

- Pectineal surface & pectineal line .
- A smooth posterior pelvic surface.
- An inferior obturator surface which shows a groove for the passage of the obturator nerve and vessels.

c. Inferior pubic ramus :

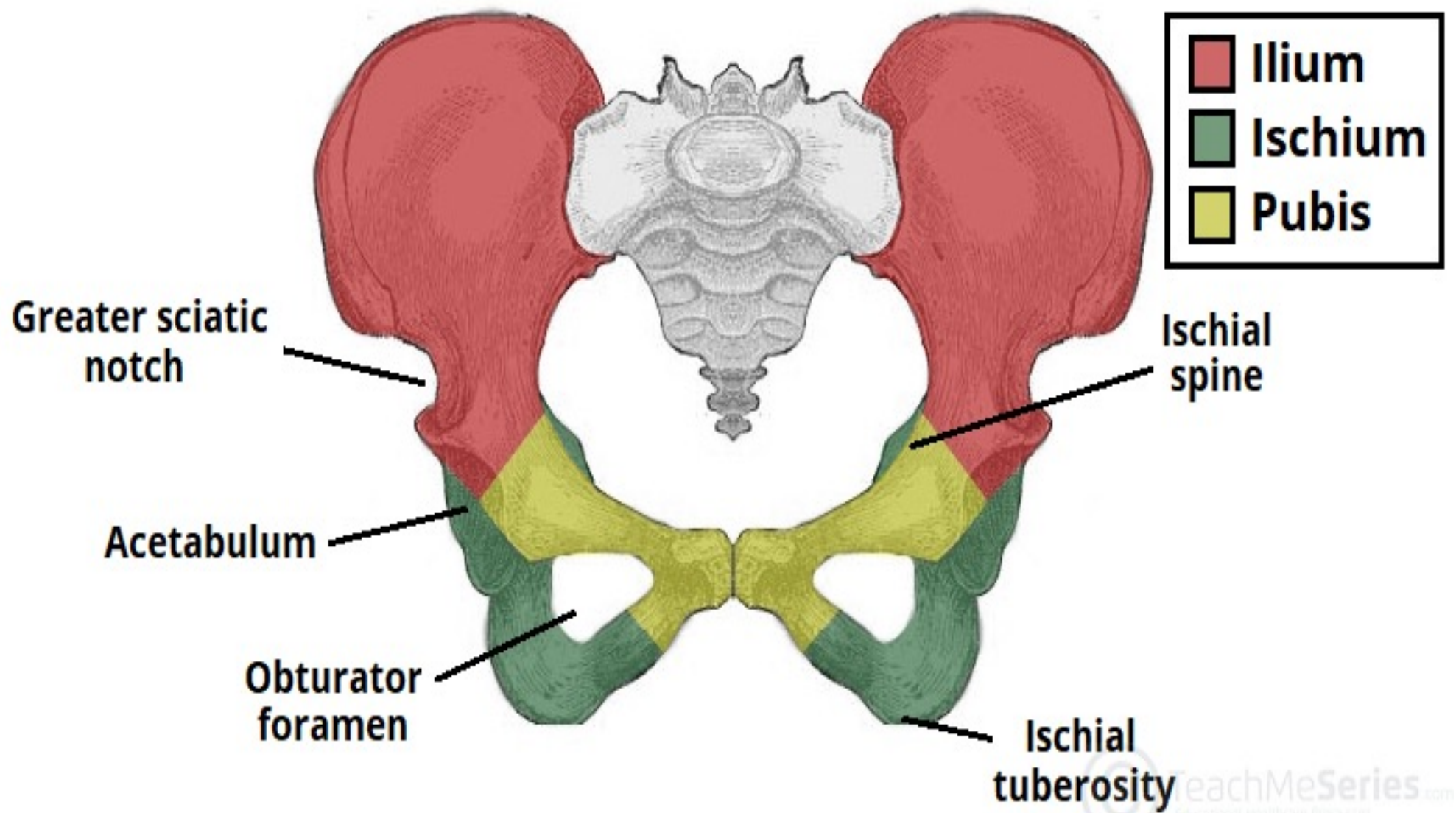
- Joins the ischial ramus .
- It has 2 surfaces : (outer and inner pelvic surface)
- It has 2 borders : Upper border forms part of obturator foramen and lower border forms the pubic arch .

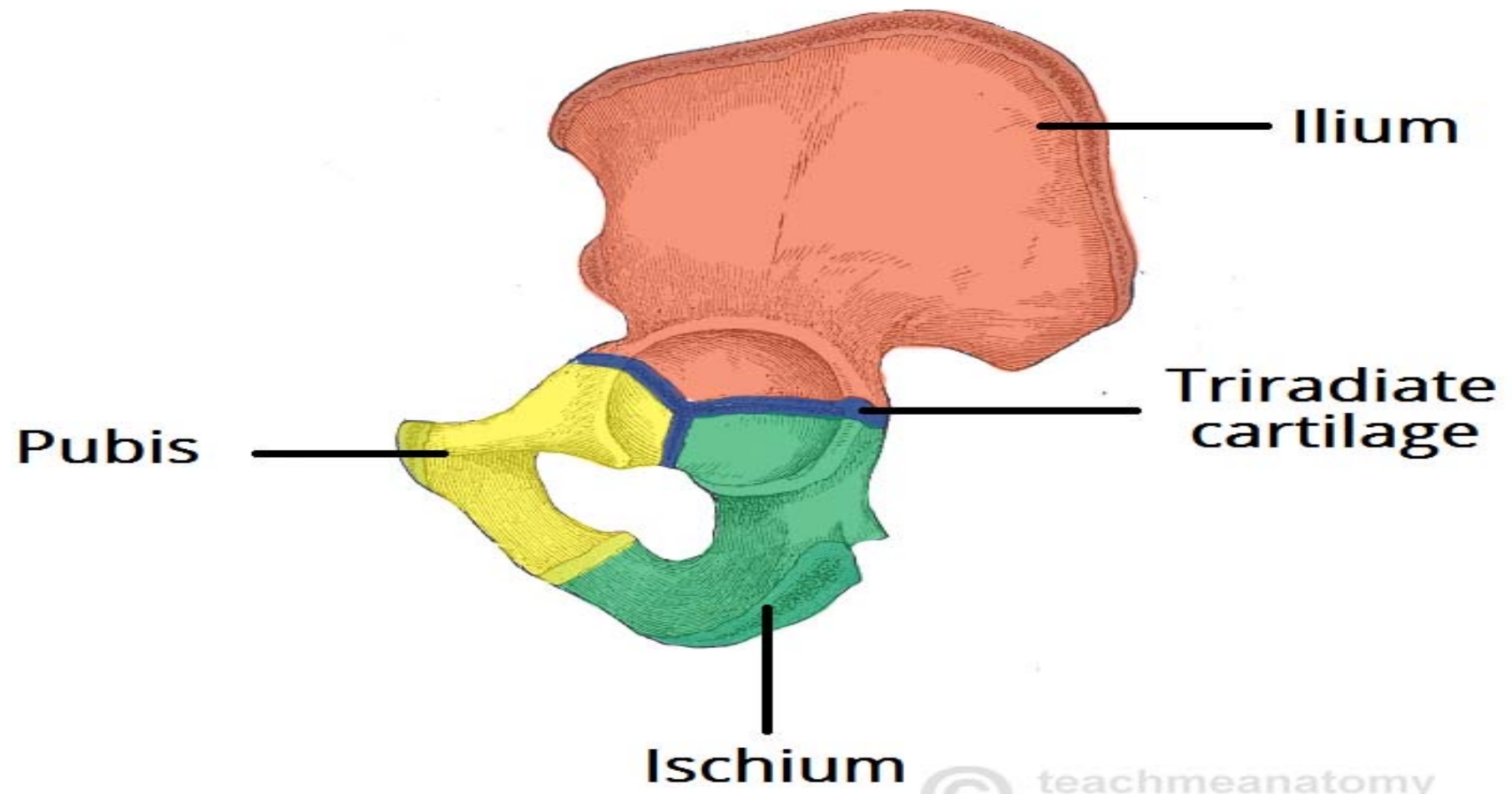
The acetabulum

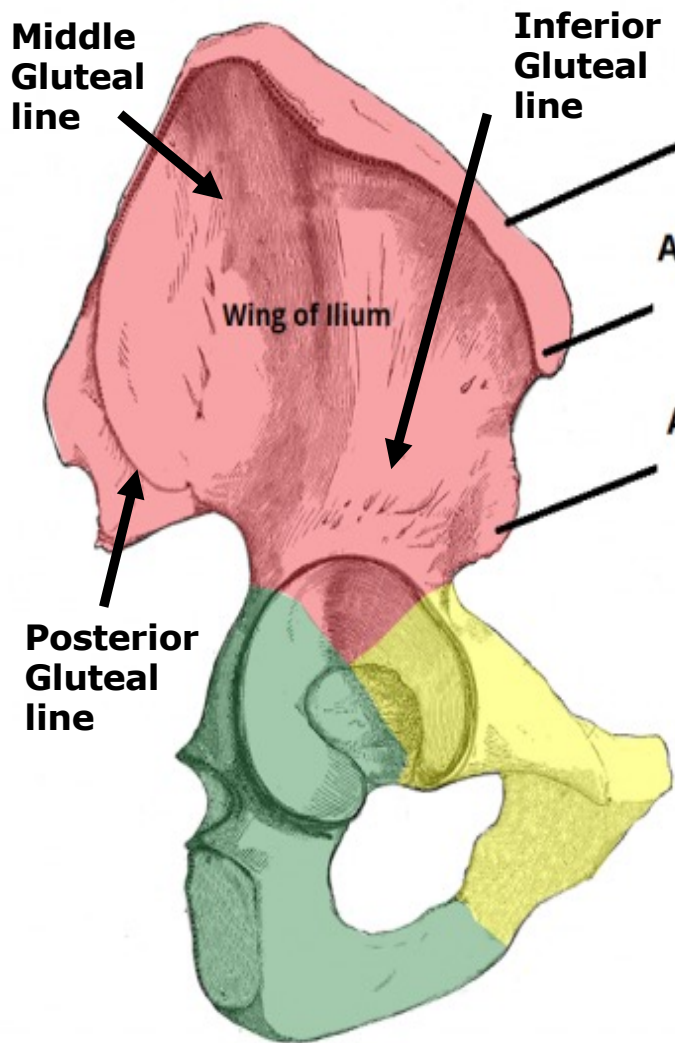
- ✓ It is a hollow depression on the lateral surface of the hip bone .
- ✓ A fibrocartilaginous lip called labrum acetabulare ,which is attached to the margin of the acetabulum to increase its depth.
- ✓ The acetabulum articulates with head of femur to form hip joint

The obturator foramen

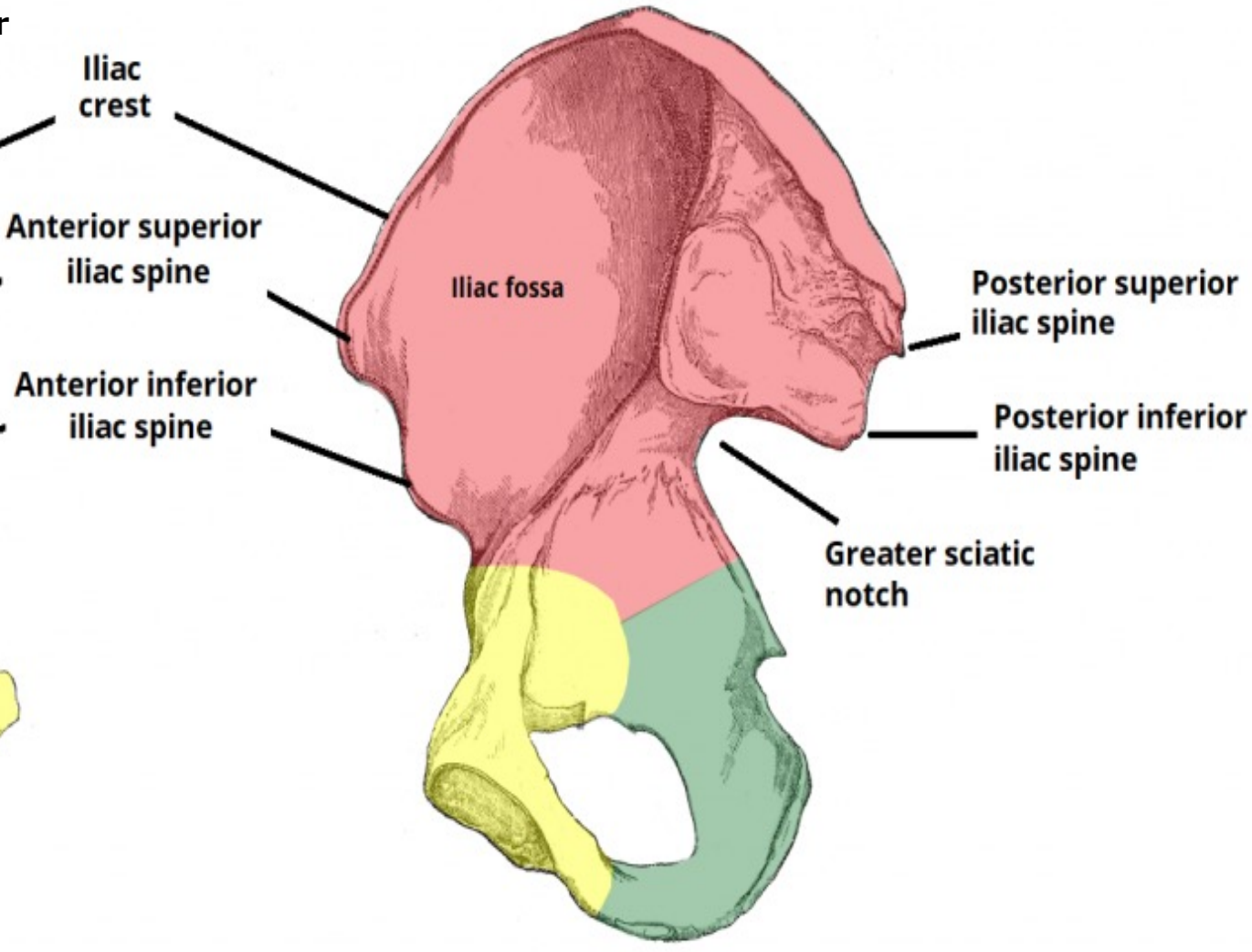
- ❖ A large opening below and in front of the acetabulum.
- ❖ It is filled with obturator membrane except superiorly .
- ❖ An obturator groove forms an obturator canal for the passage of obturator vessels and nerve.



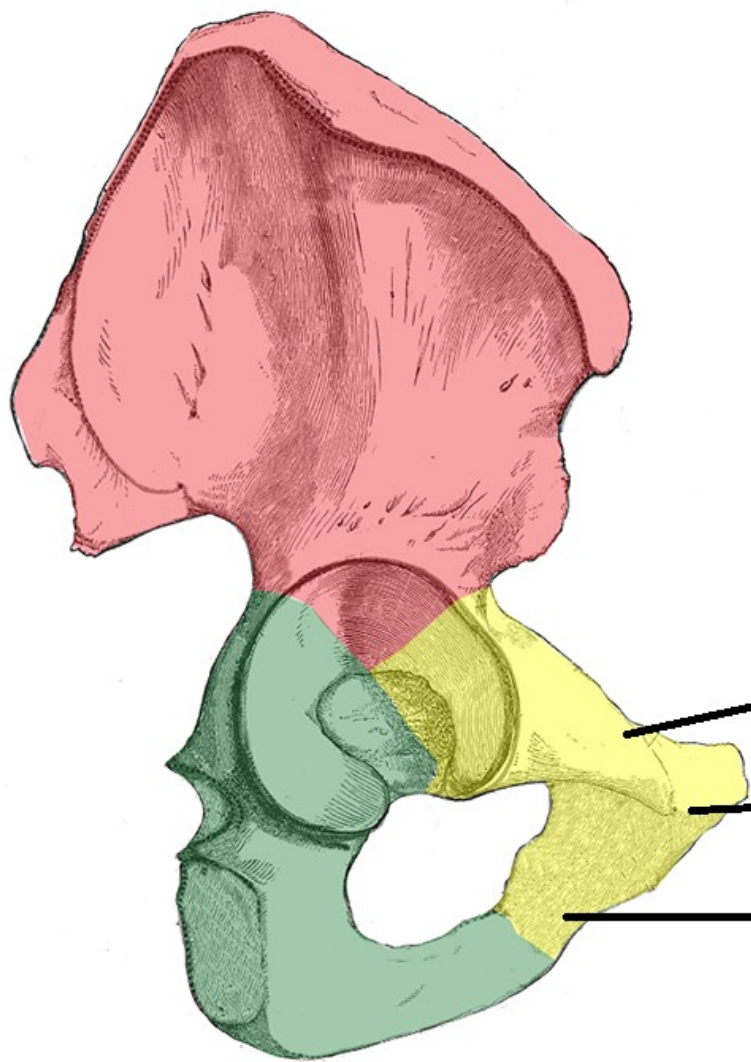




(i) Lateral View



(ii) Medial View



(i) Lateral View

**Superior
pubic rami**

Pubic body

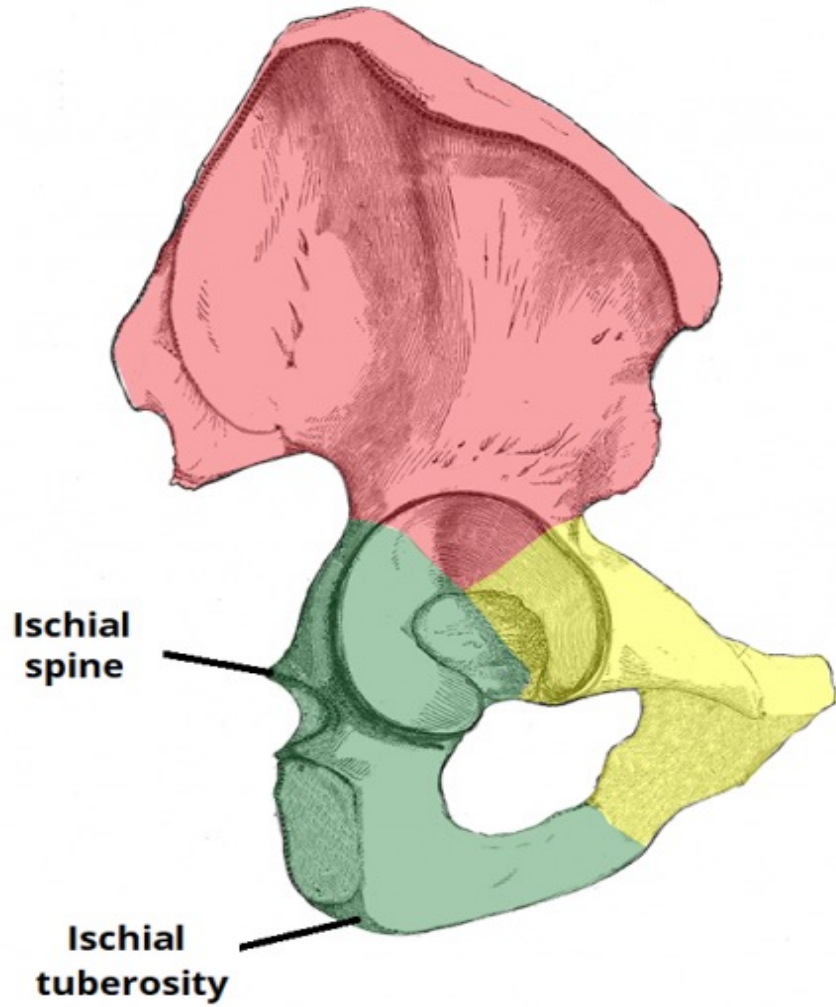
**Inferior
pubic rami**



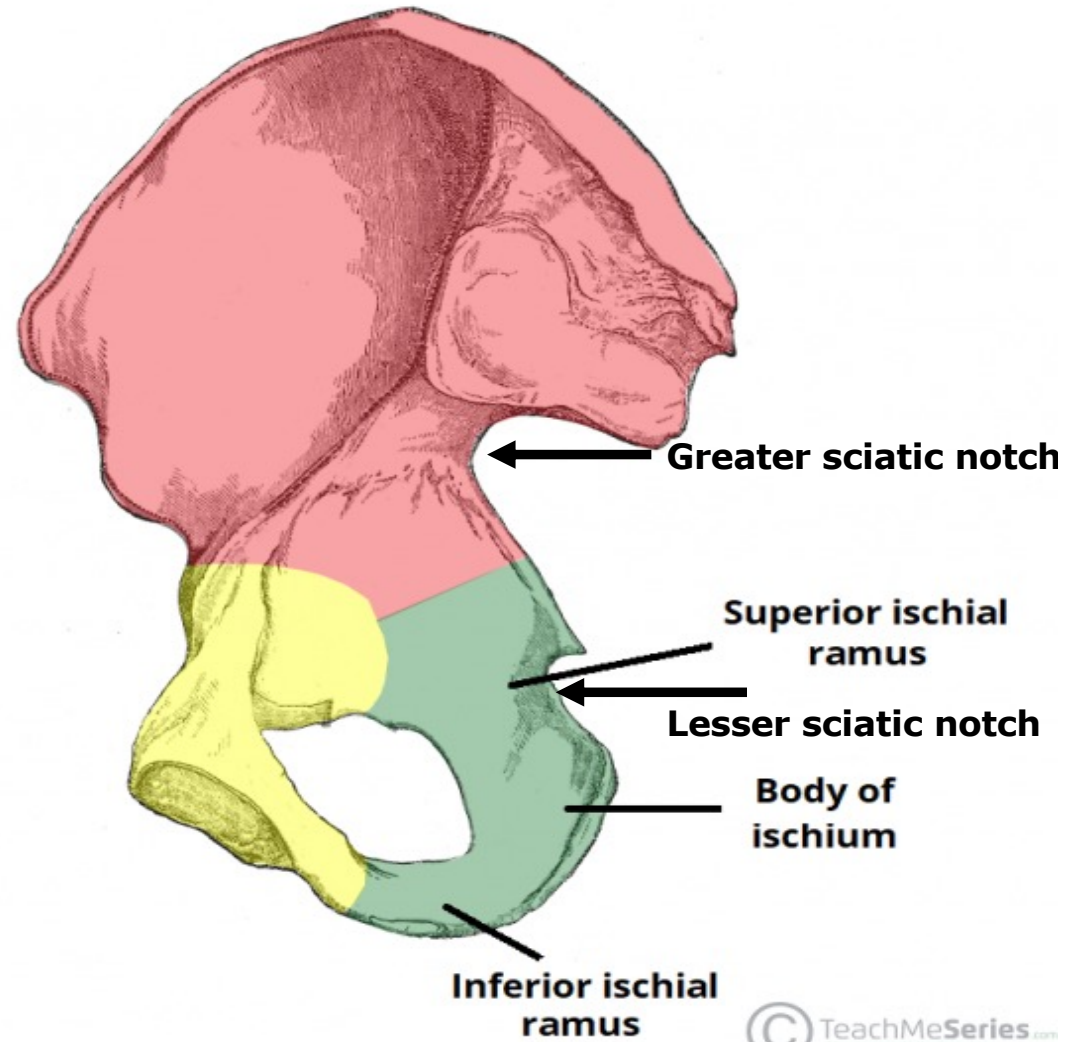
**Obturi-
fora**

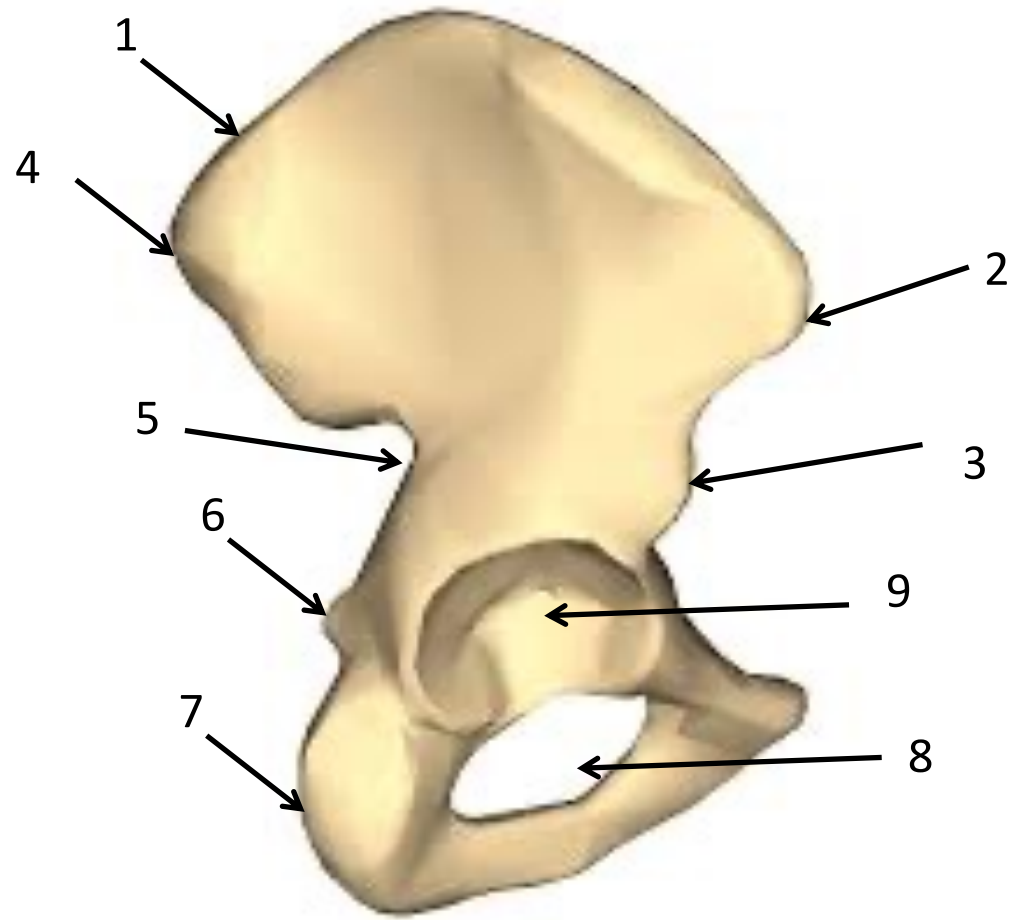
(ii) Medial View

(i) Lateral View



(ii) Medial View





Articulation of hip bone :

1. Anterior with other hip bone forming ***symphysis pubis*** .
2. Posterior with sacrum forming ***sacroiliac joint*** .
3. Lateral with femur forming ***hip joints*** .

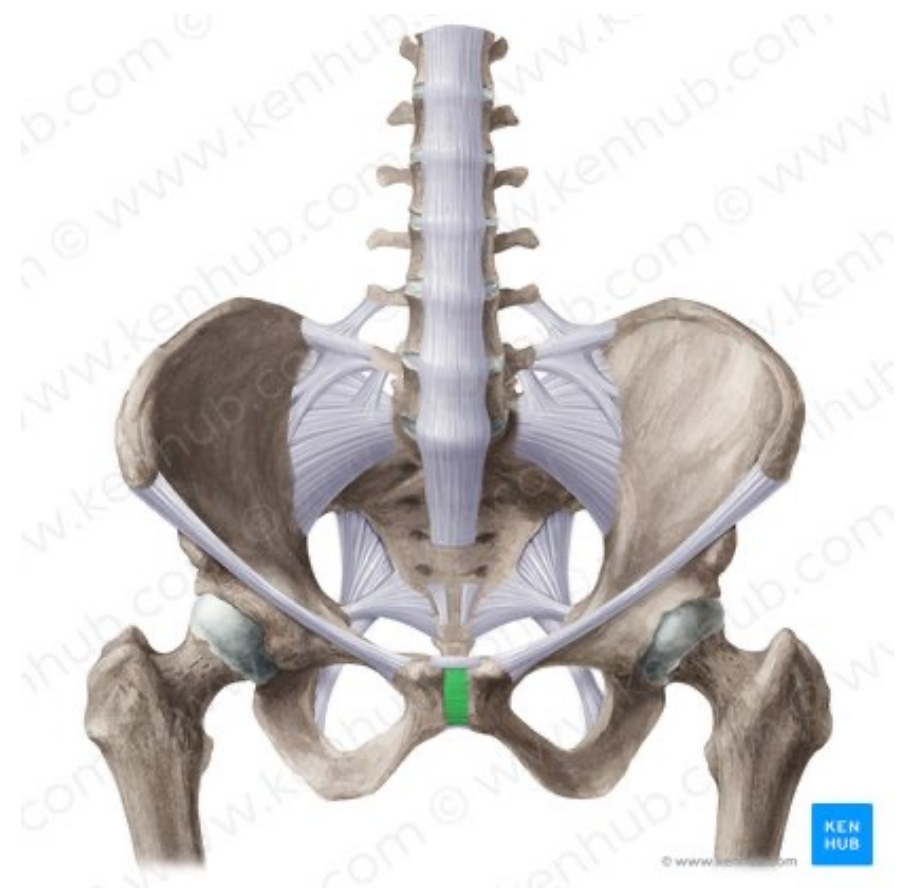
1-Symphysis pubis

Articulating bones

Right and left superior pubic rami

Type :

Secondary cartilaginous joint



2-Sacroiliac joint

Articulating bones

Auricular surface of the ilium and the sacrum

Type :

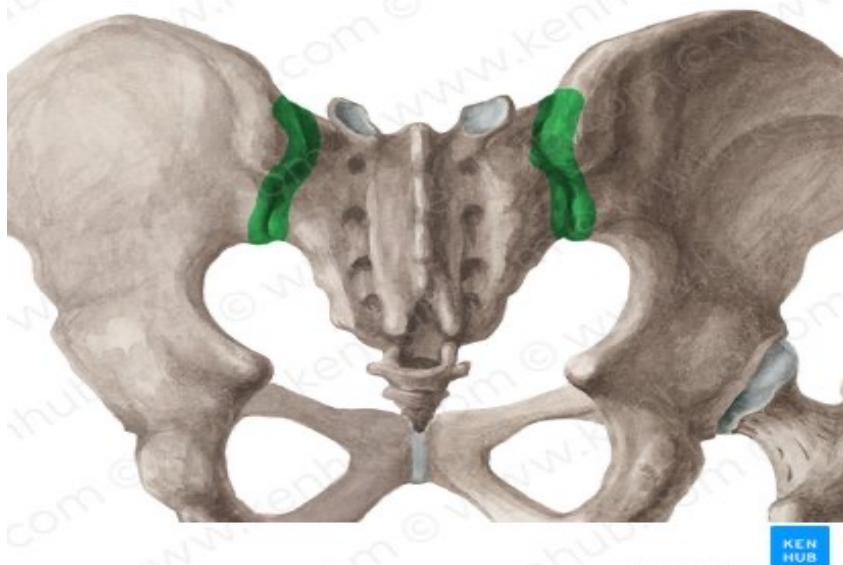
Plane synovial joint

Movement :

Gliding movement and weight transmission from axial skeleton to

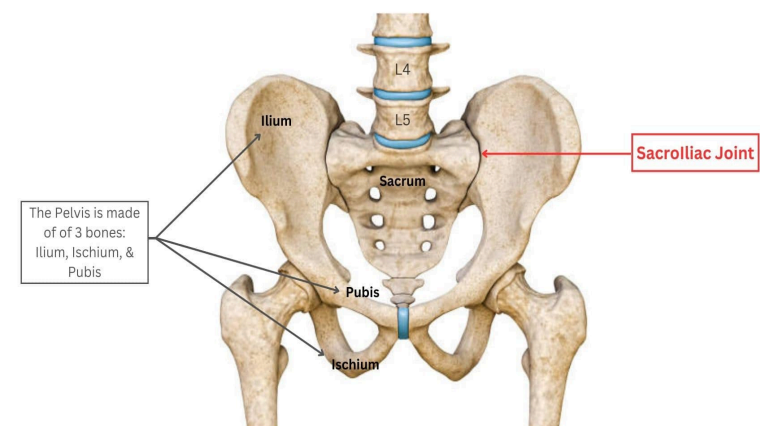


Auricular surface of the ilium



Sacroiliac Joint Anatomy

Anterior View



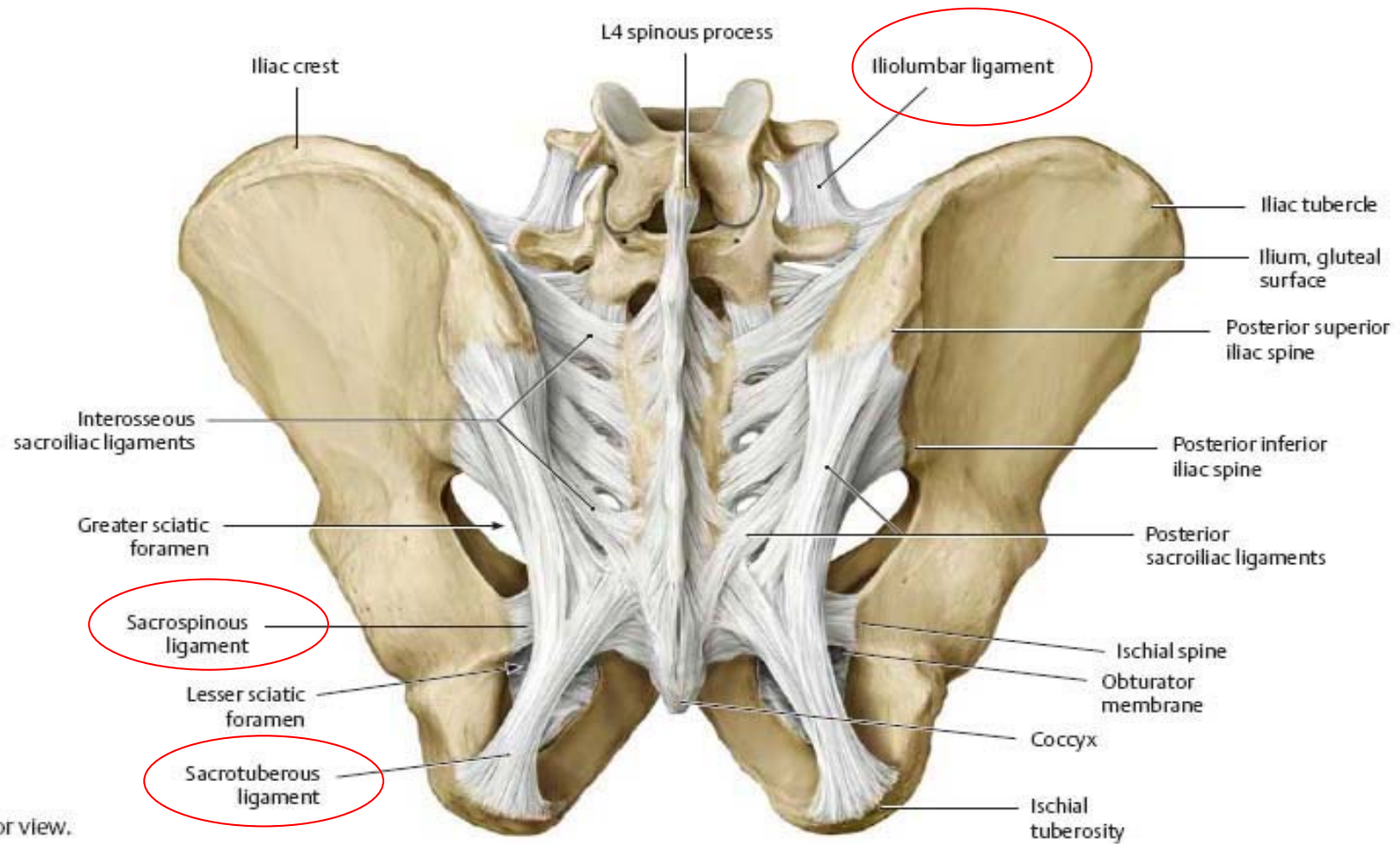
Vertebropelvic ligaments:

- 1) Iliolumbar ligament** : extends from the tip of the L5 transverse process to iliac crest.
- 2) Lumbosacral ligament** : extends from the inferior aspect of L5 transverse process to the lateral part of the ala of sacrum.
- 3) Sacrotuberous ligament ;**
It extends between posterior iliac spines, lower part of the sacrum and coccyx and ischial tuberosity.
- 4) Sacrospinous ligament:** Extends from ischial spine to the lateral margins of sacrum and coccyx.

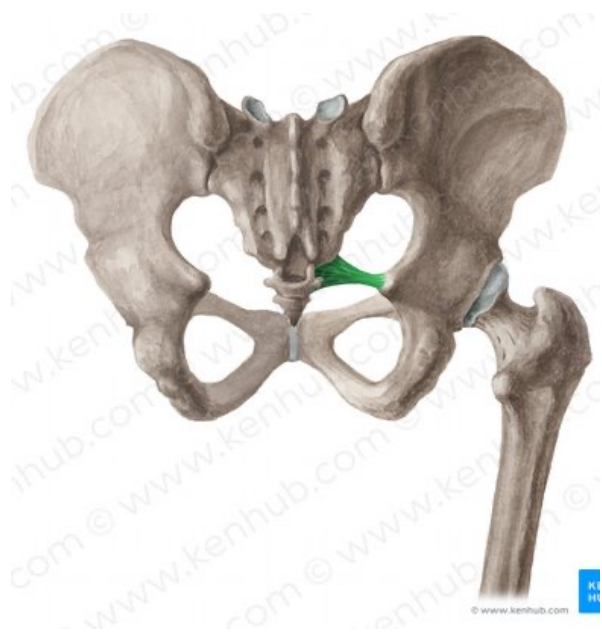
Functions of the Vertebropelvic Ligaments:

- ❖ The **iliolumbar and lumbosacral ligaments** prevent the anteroinferior displacement of L5 vertebra under effect of body weight.
- ❖ The **sacrotuberous and sacrospinous ligaments** convert the greater and lesser sciatic notches into foramina.

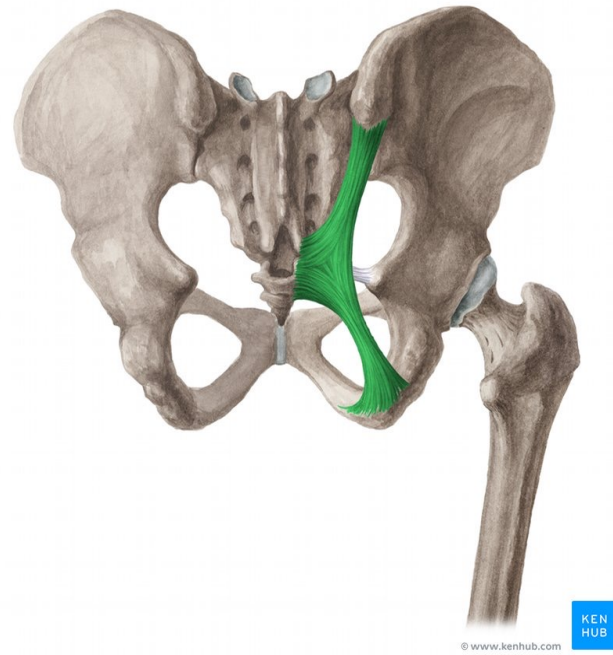
They also prevent the upward tilting of the lower part of sacrum under effect of body weight



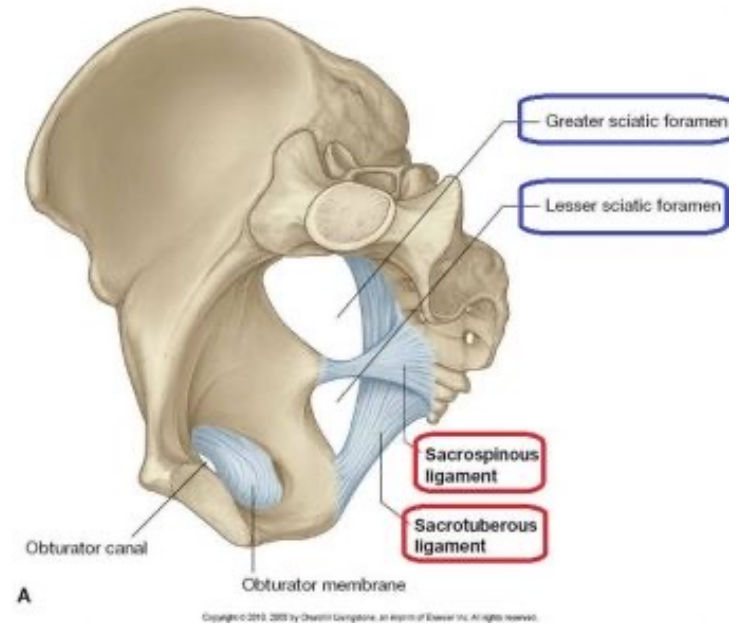
B Posterior view.



Sacrospinous ligament



Sacrospinous ligament



3-Hip joint

Articulating bones

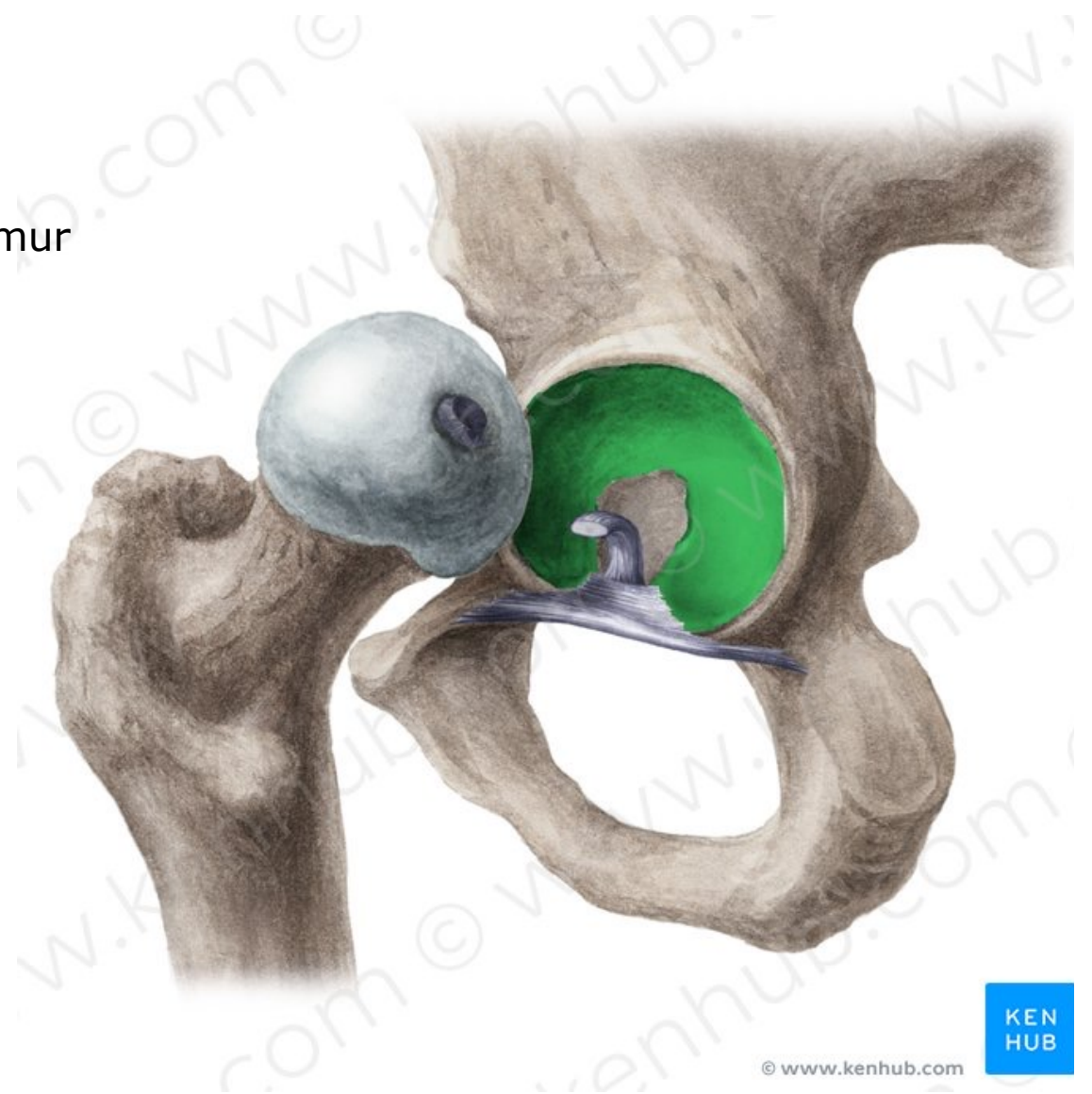
Acetabulum articulates with head of femur

Type :

Ball and socket synovial joint

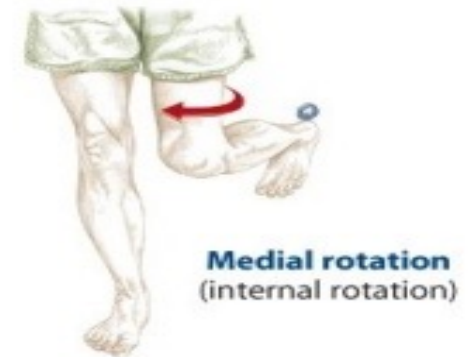
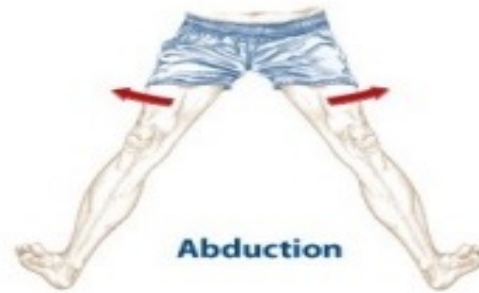
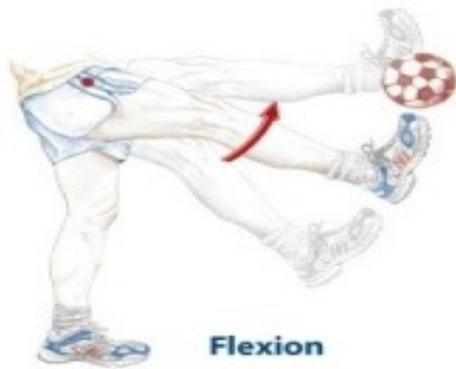
Movement :

1. Flexion and extension
2. Abduction and adduction
3. Medial and lateral rotation
4. Circumduction



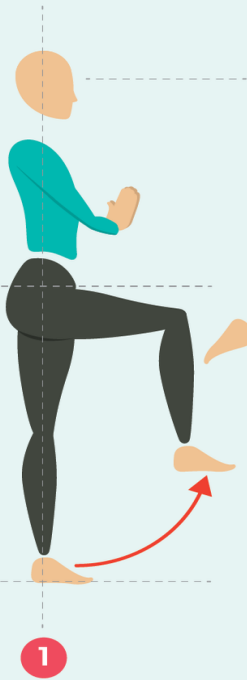
Hip

(coxal joint)



ANATOMY 101 | HIP MOVEMENTS

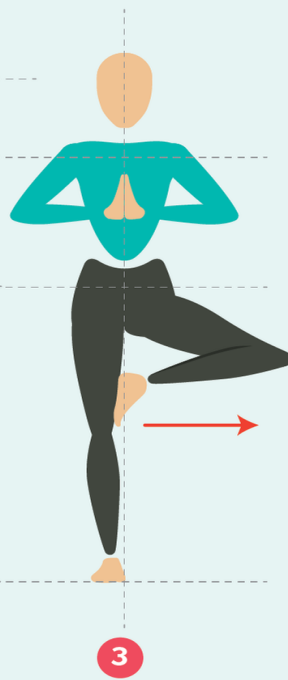
flexion



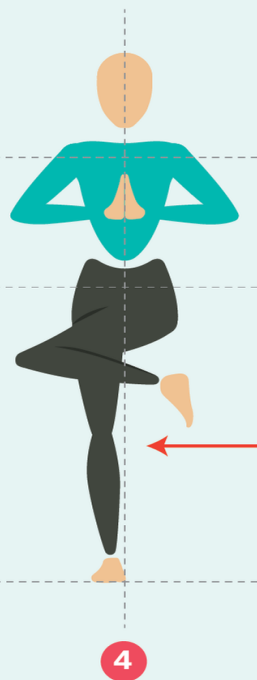
extension



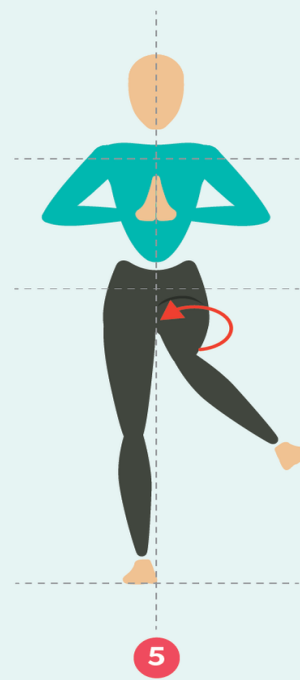
abduction



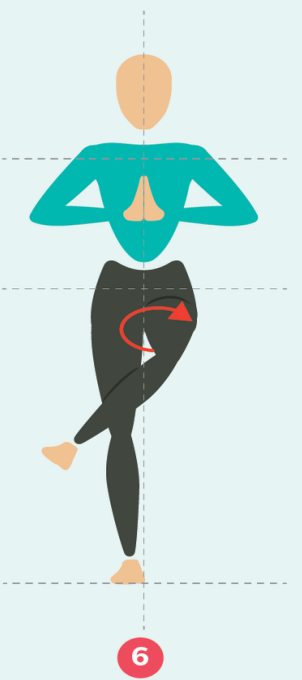
adduction



internal rotation



external rotation



Ligaments:

1- Iliofemoral Ligament :

It prevent overextension of the hip during standing

2-Pubofemoral Ligament :

It limits extension and abduction

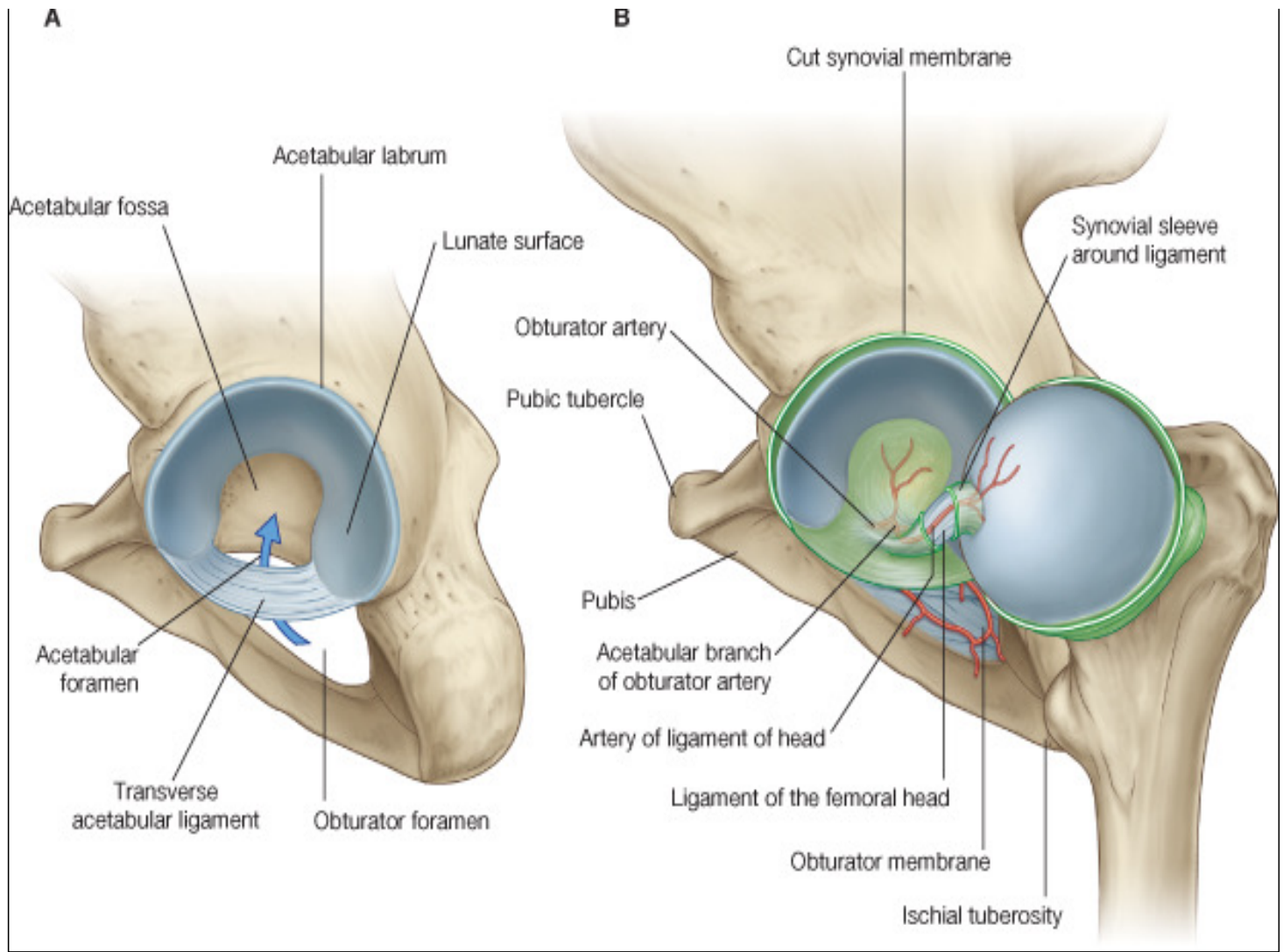
3-Ischiofemoral Ligament:

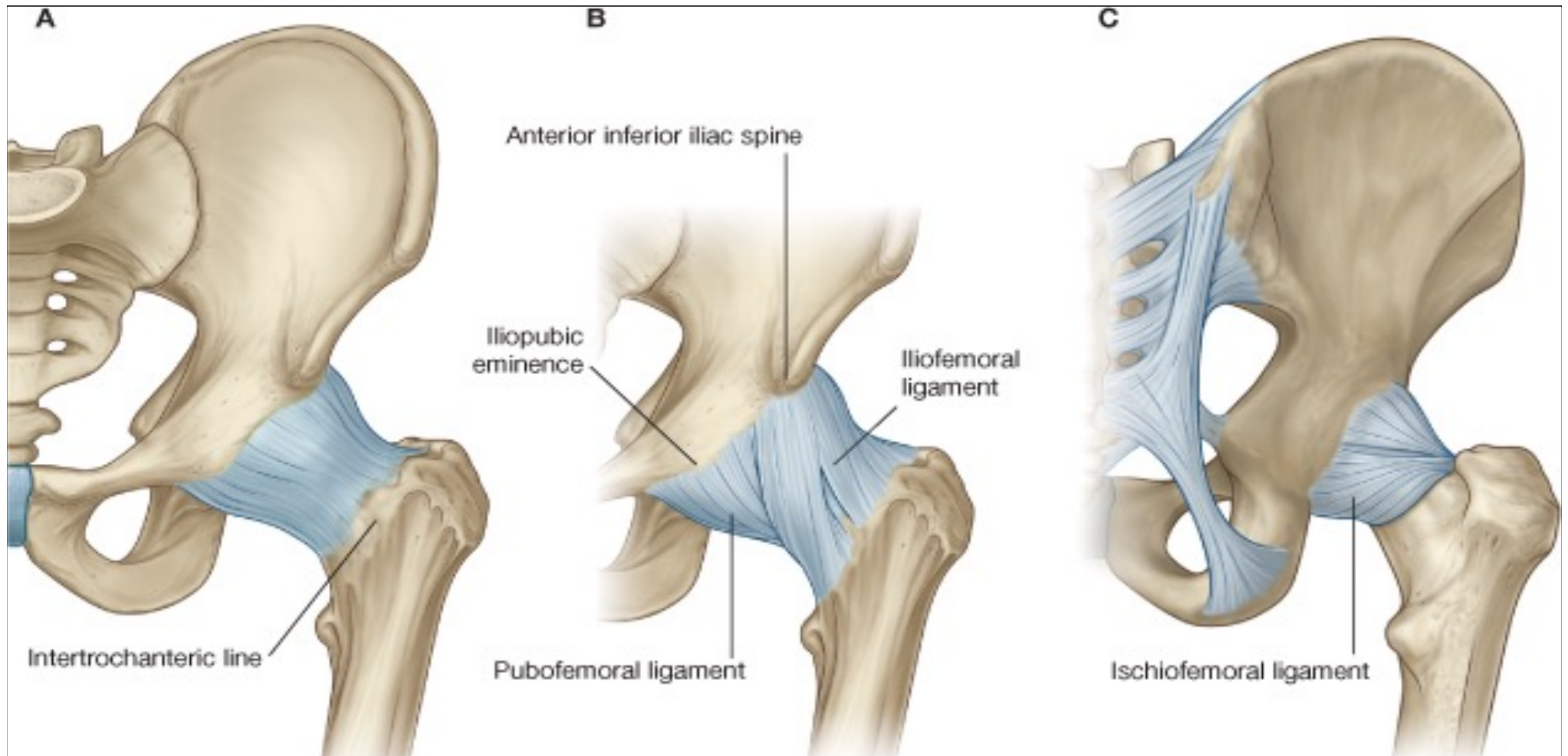
It limits extension

4-Ligament of the head of the femur :

is attached to a fovea on the head of the femur and sides of the acetabular notch.

It transmits blood supply for the head

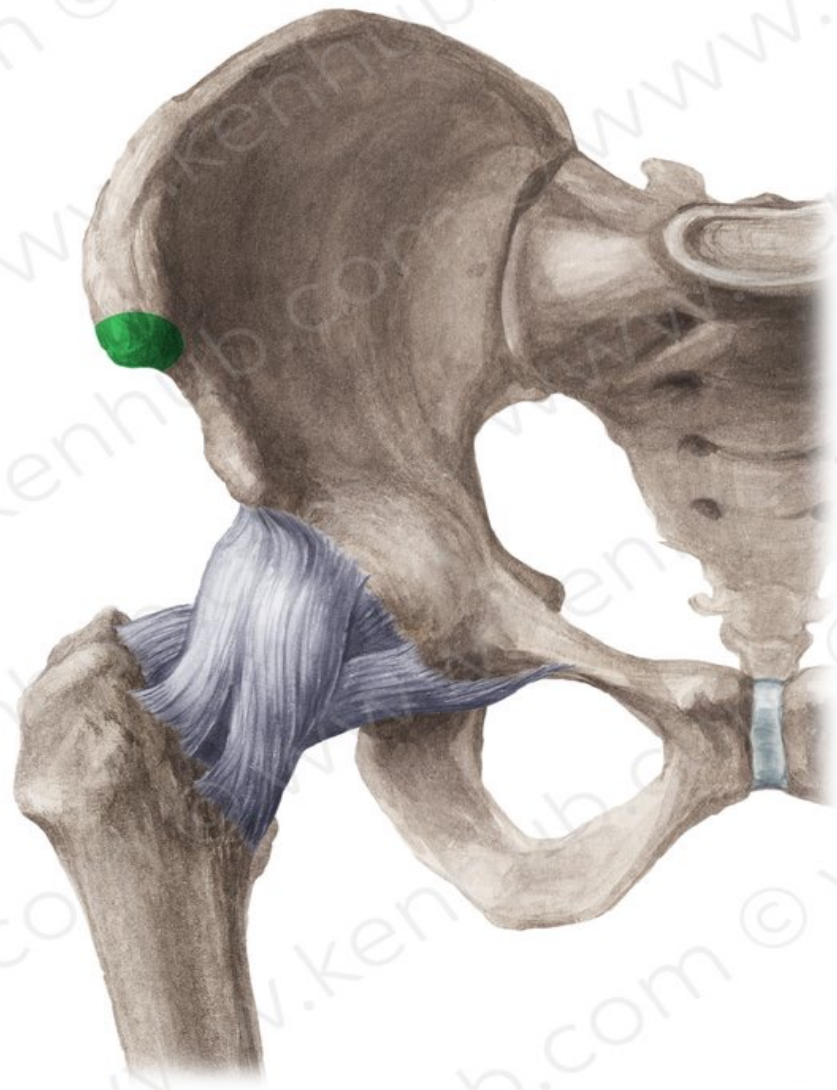




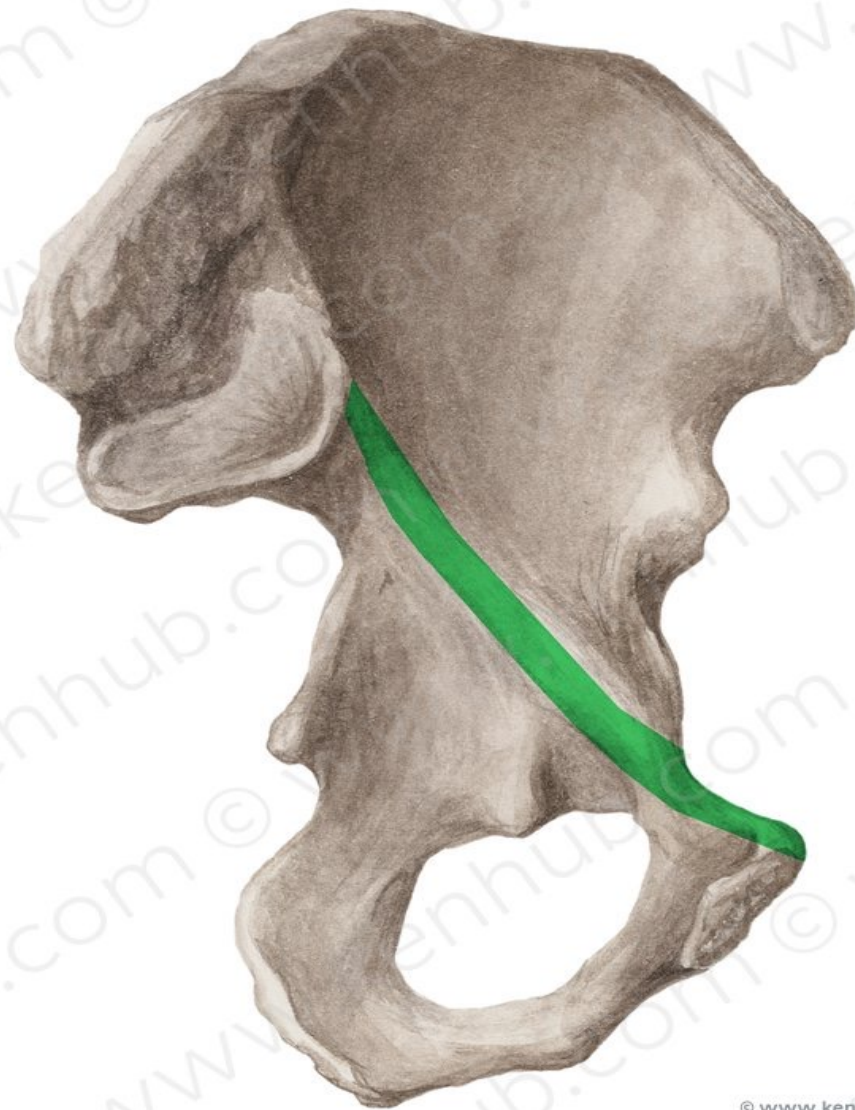


TEST YOUR KNOWLEDGE

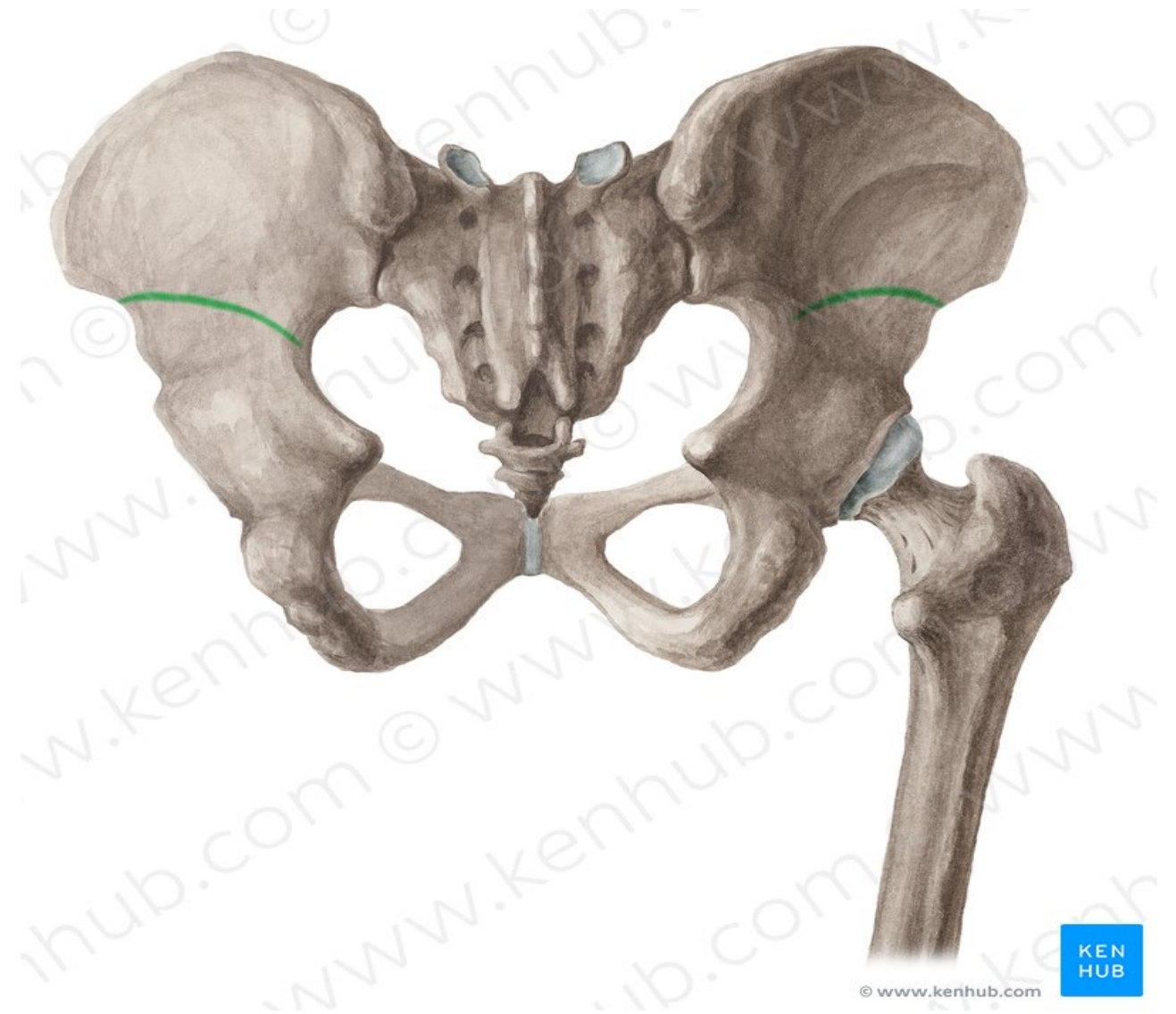
Anterior superior iliac spine



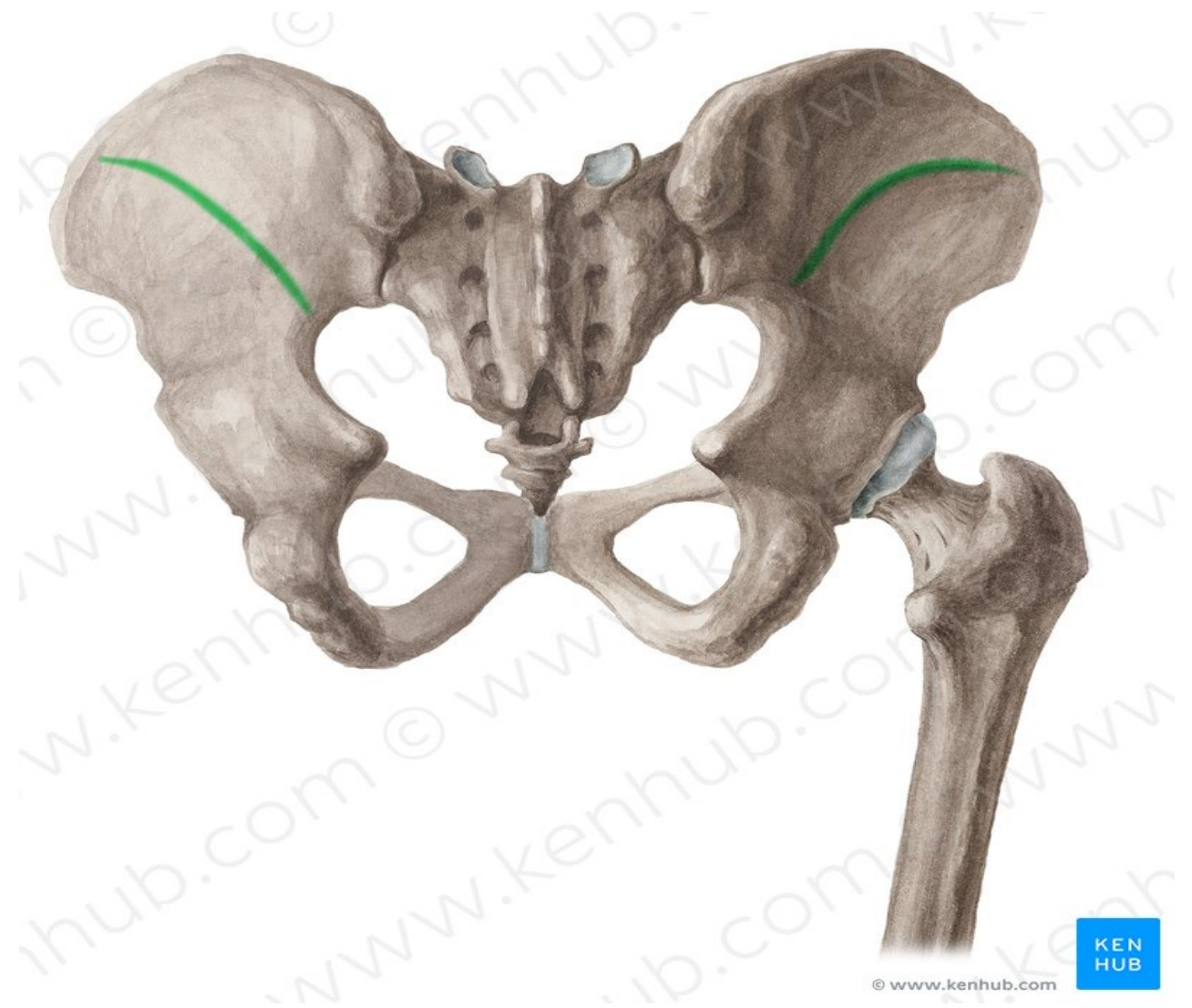
Arcuate line



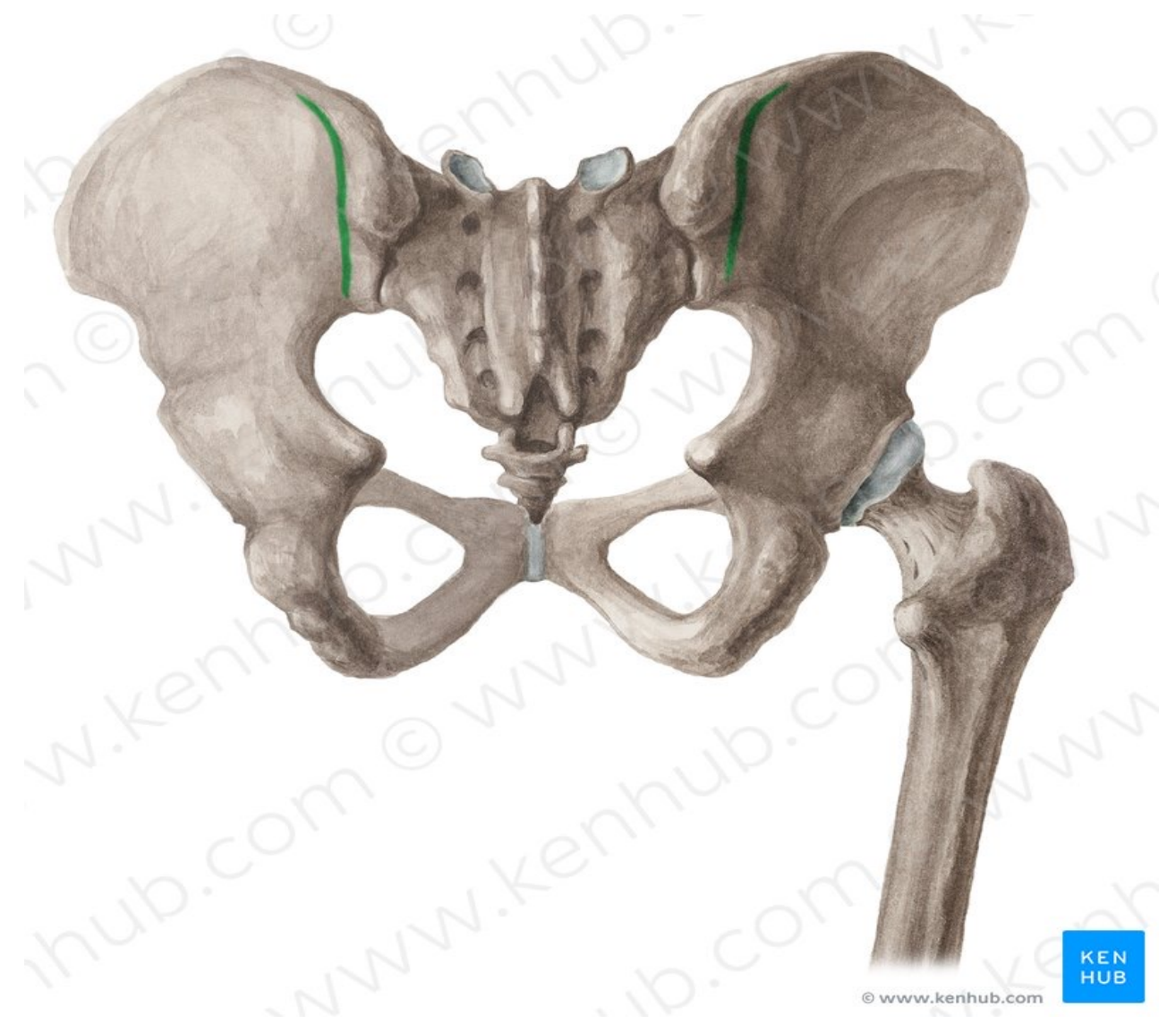
Inferior Gluteal line



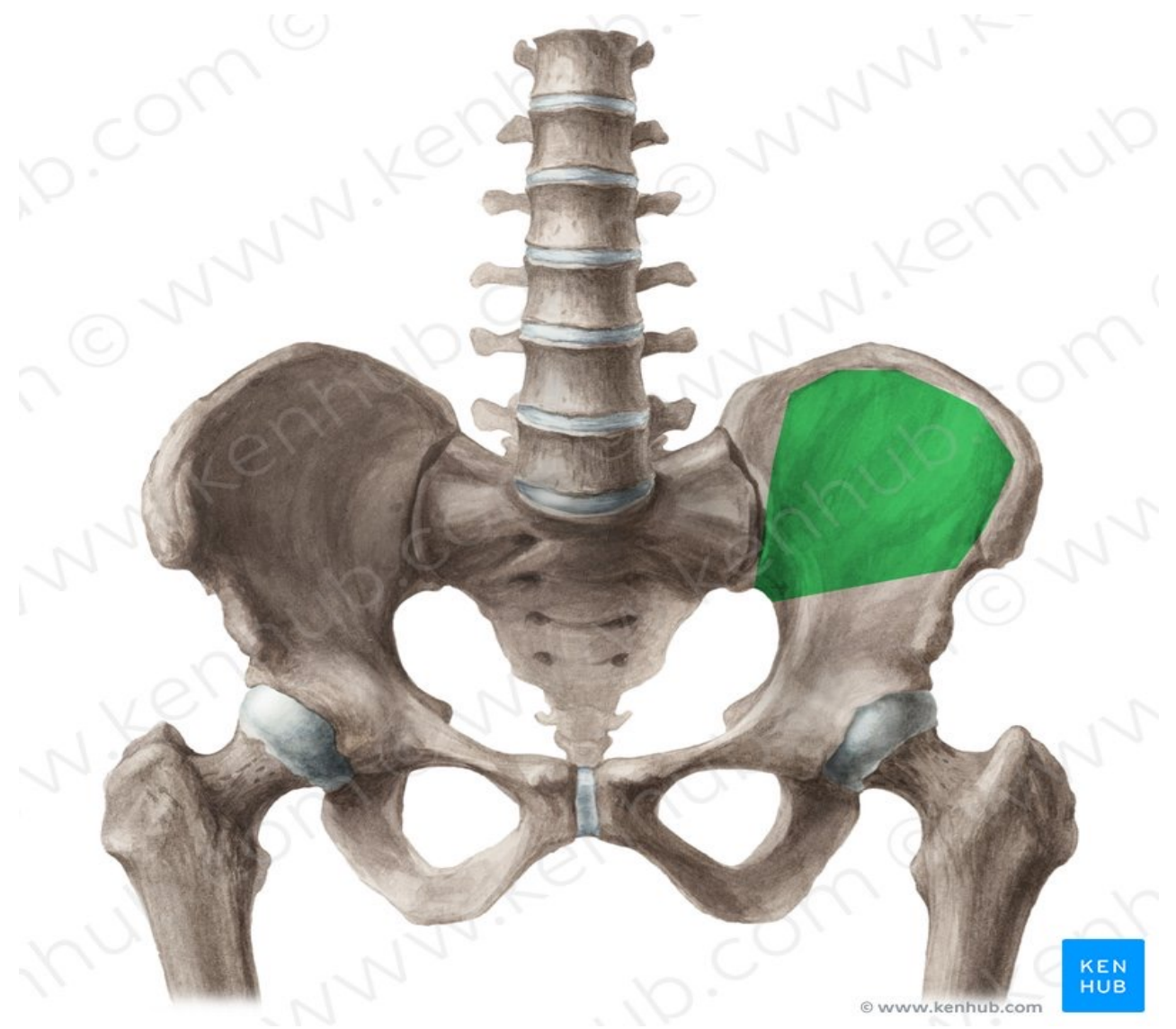
Middle Gluteal line



Posterior Gluteal line



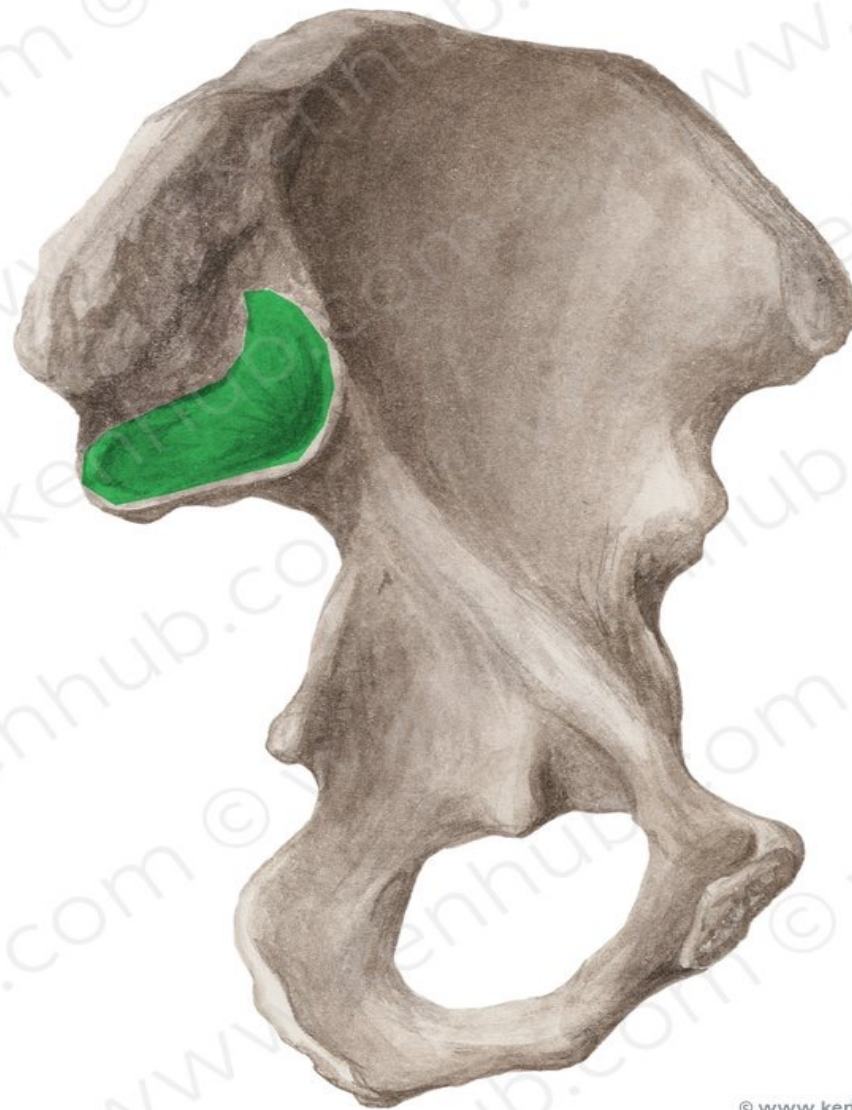
Iliac Fossa



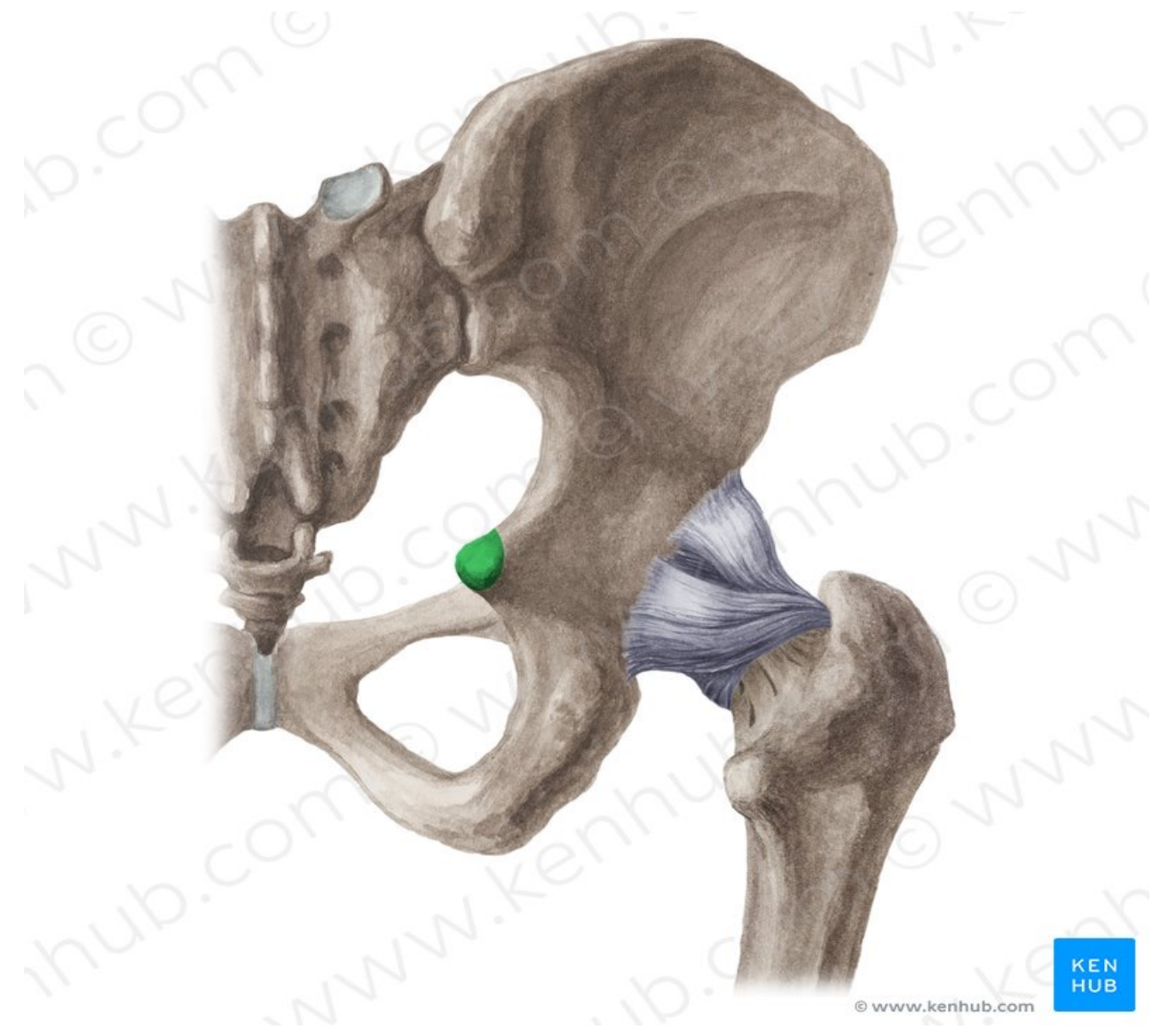
Iliac crest



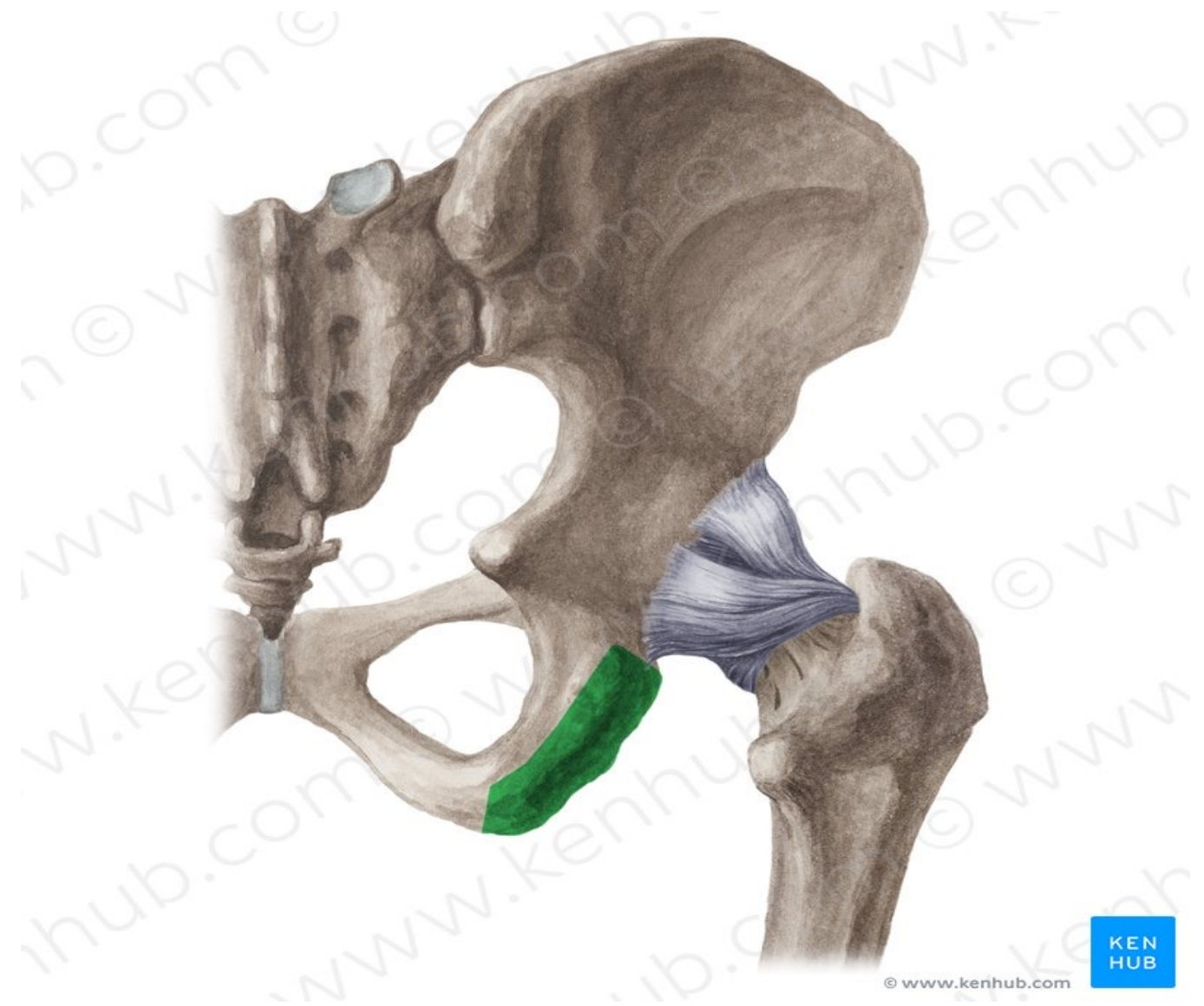
Auricular surface



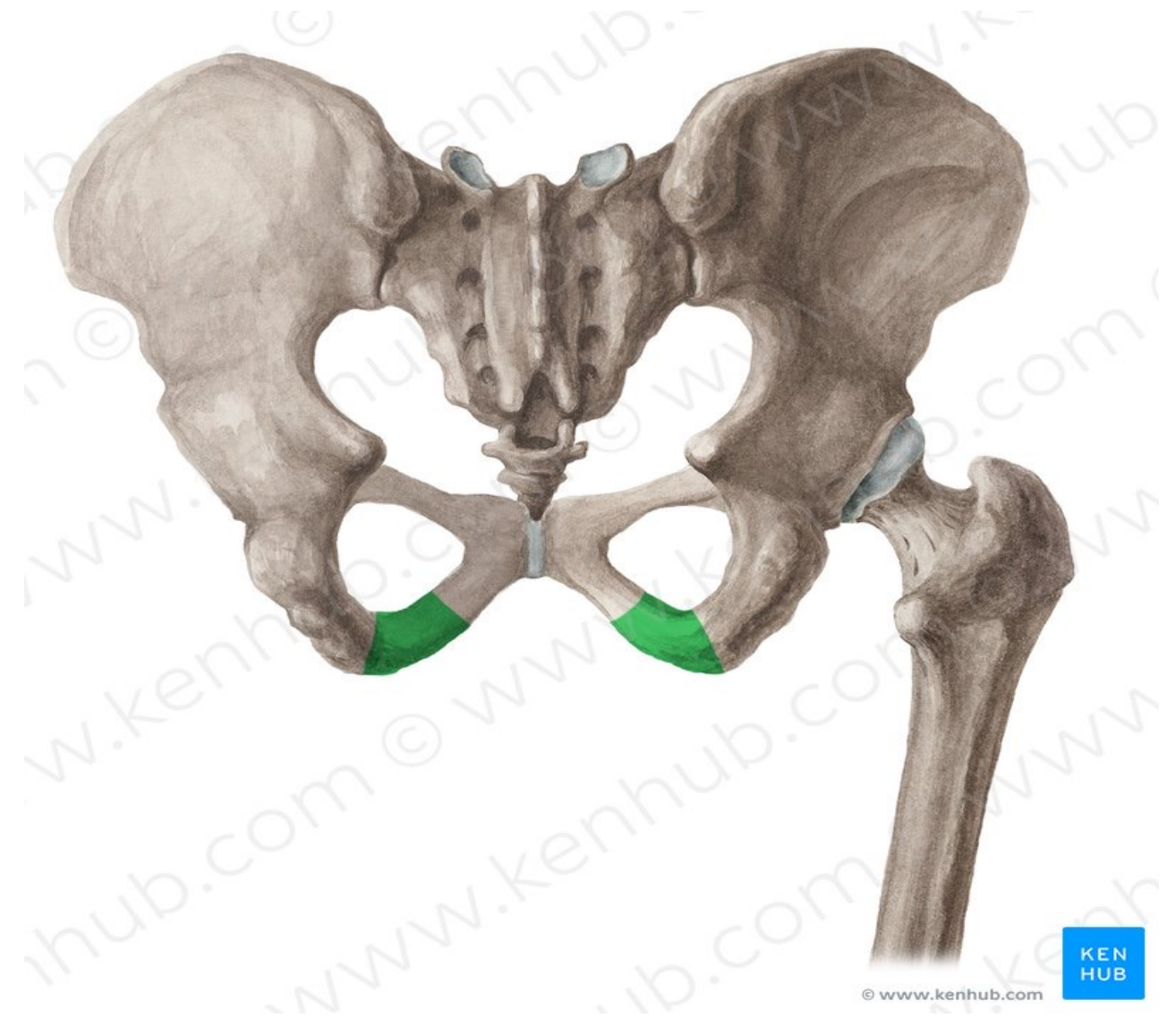
Ischial spine



Ischial Tuberosity



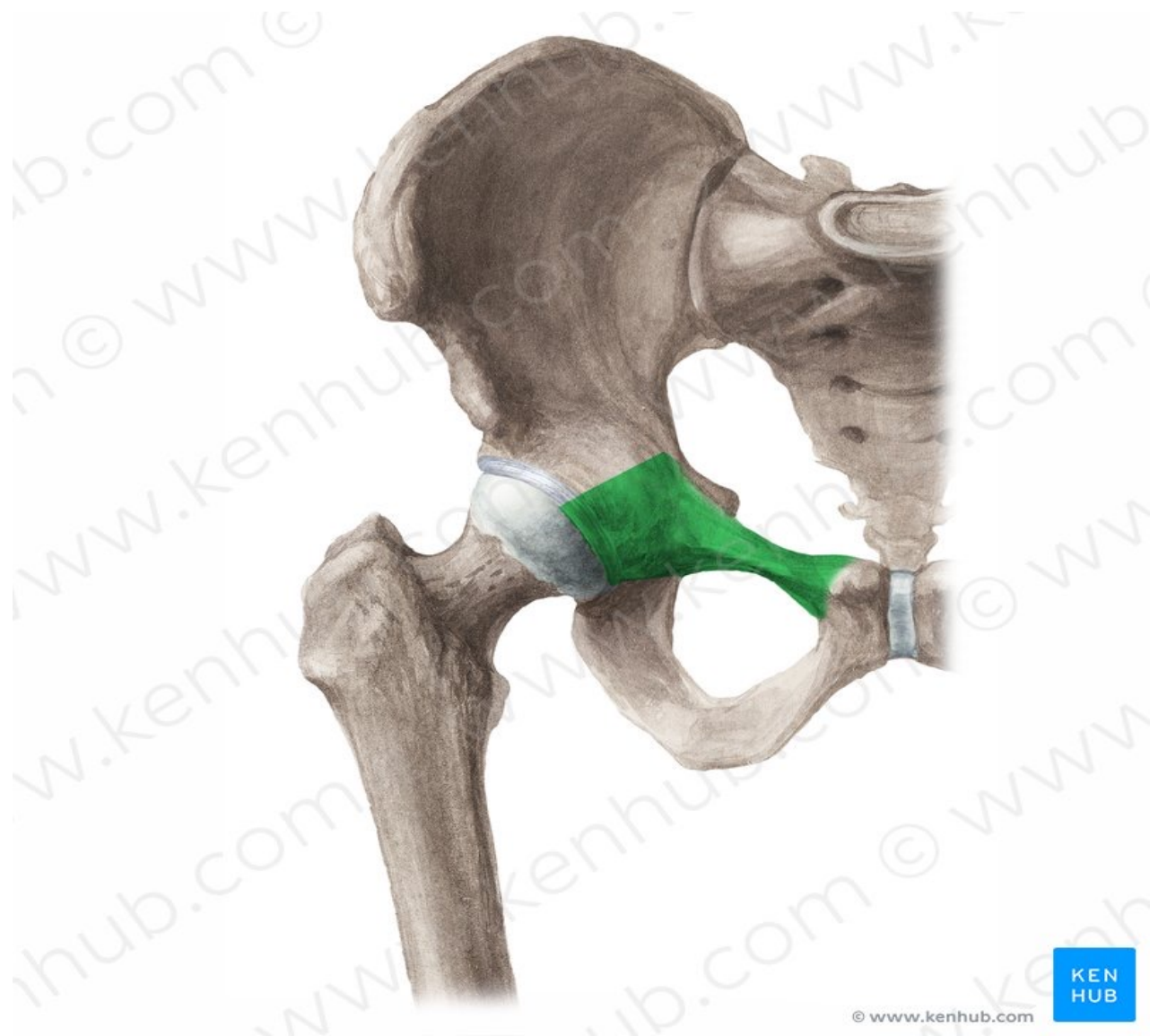
Ischial ramus



Pubic tubercle



Superior pubic ramus



FEMUR

It is the longest & strongest bone in the body. It has :

1. Upper end: consists of

- **Head** (show fovea) and **neck** .
- **Greater trochanter** (Its medial surface shows **trochanteric fossa**)
- **Lesser trochanter**
- **Intertrochanteric line** (anterior) & **intertrochanteric crest** (posterior) between greater and lesser trochanter.
- **Intertrochanteric line** makes a spiral turn medially, to form the *spiral line*
- The angle between neck and shaft is 125 degree .

2. Shaft: It presents

- * **Anterior surface** convex smooth anteriorly .
- * **Posterior surface** show
 - A. Gluteal tuberosity** (lateral)
 - B. Pectineal line** (medial)
 - C. Spiral line** (medial)
 - D. Linea aspera** (has a medial & lateral lips)
 - E. Medial & lateral supracondylar ridges**
 - F. Popliteal surface** of femur.

3. Lower end: It has

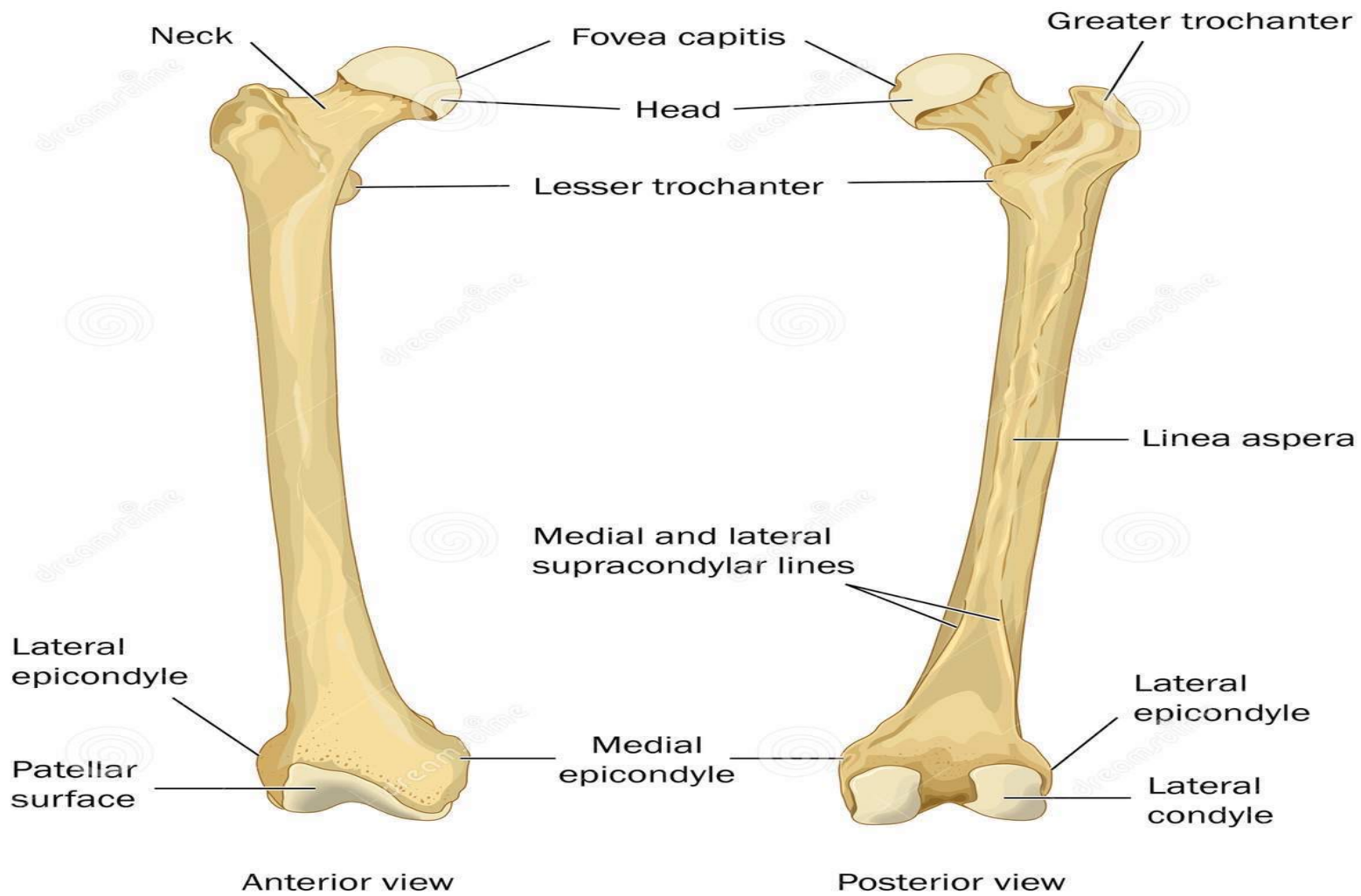
* **Medial and lateral condyles :**

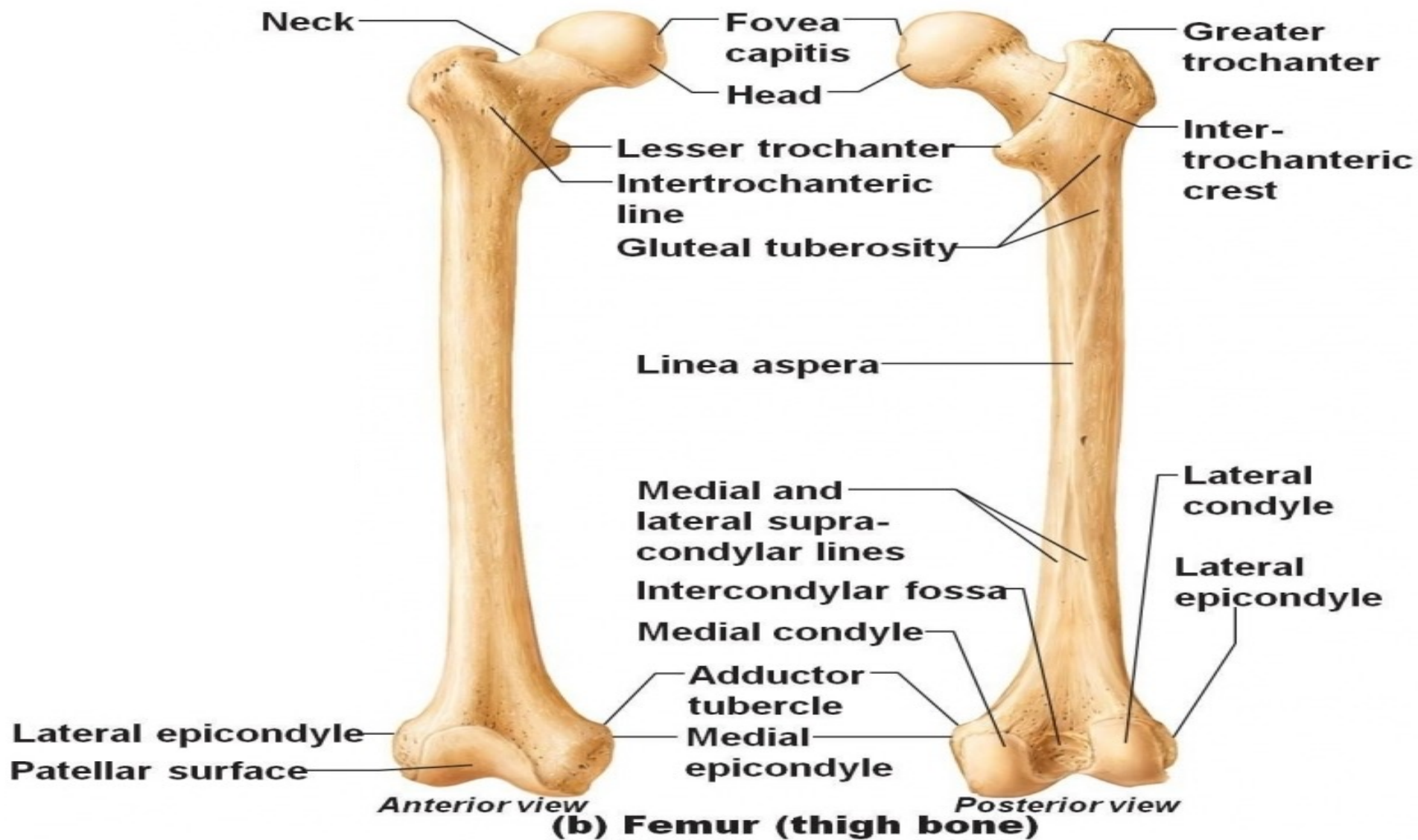
The Lateral condyle more prominent , and show popliteal groove

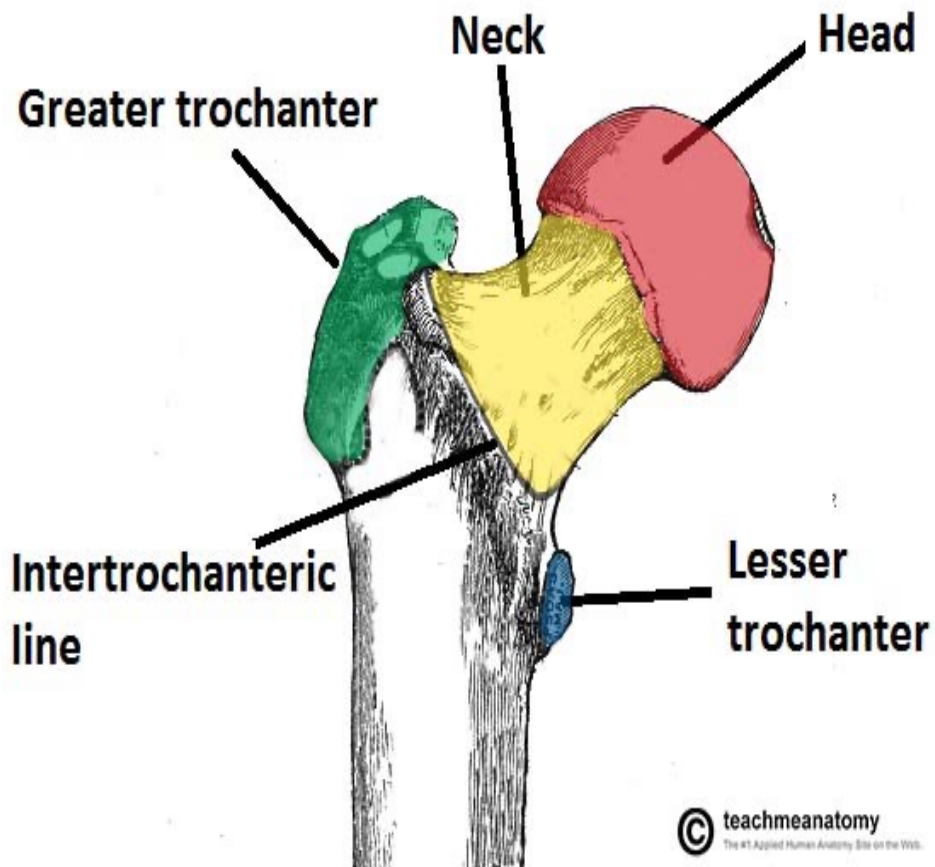
The two condyles are fused anteriorly to form a ***patellar surface*** and separated posteriorly to form an ***intercondylar fossa***.

* ***Medial and lateral epicondyles***

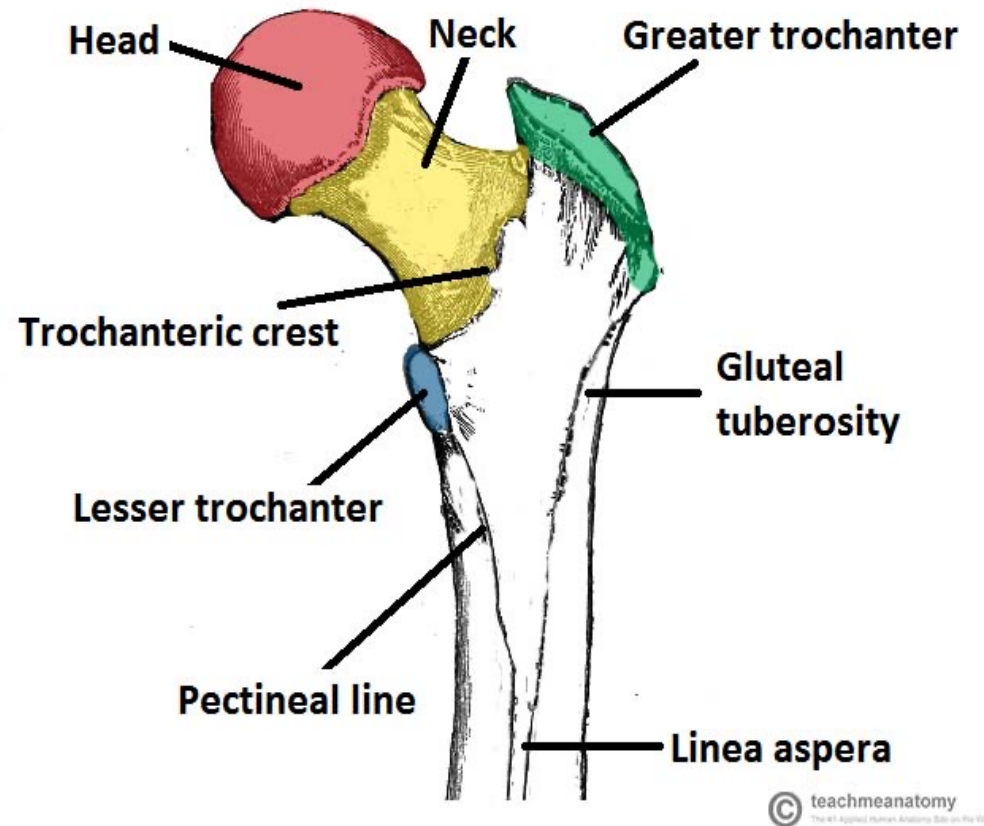
* ***Adductor tubercle*** is prominence present at the lower end of the medial supracondylar line.



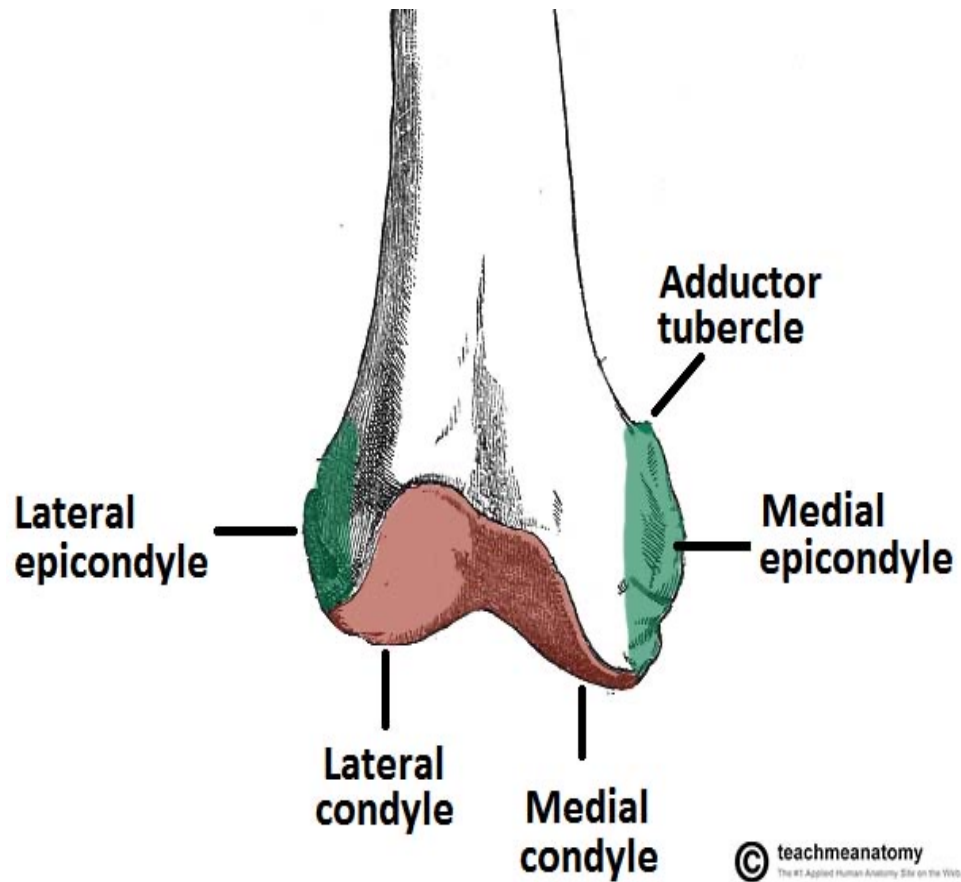




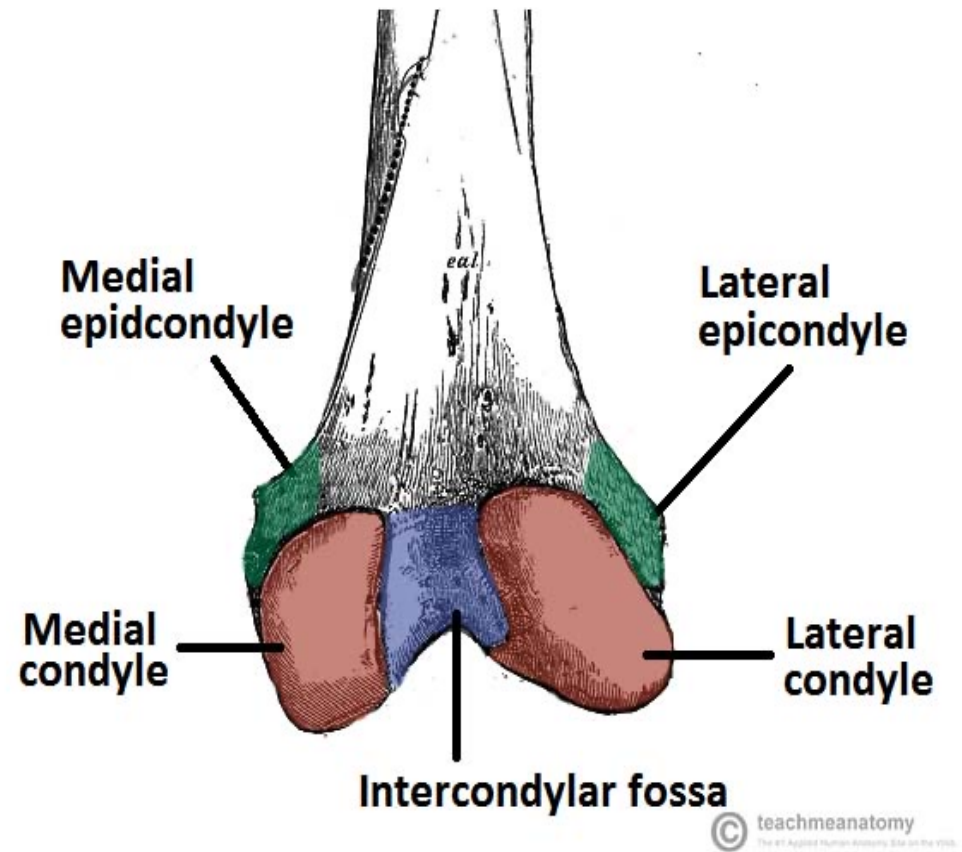
Anterior View



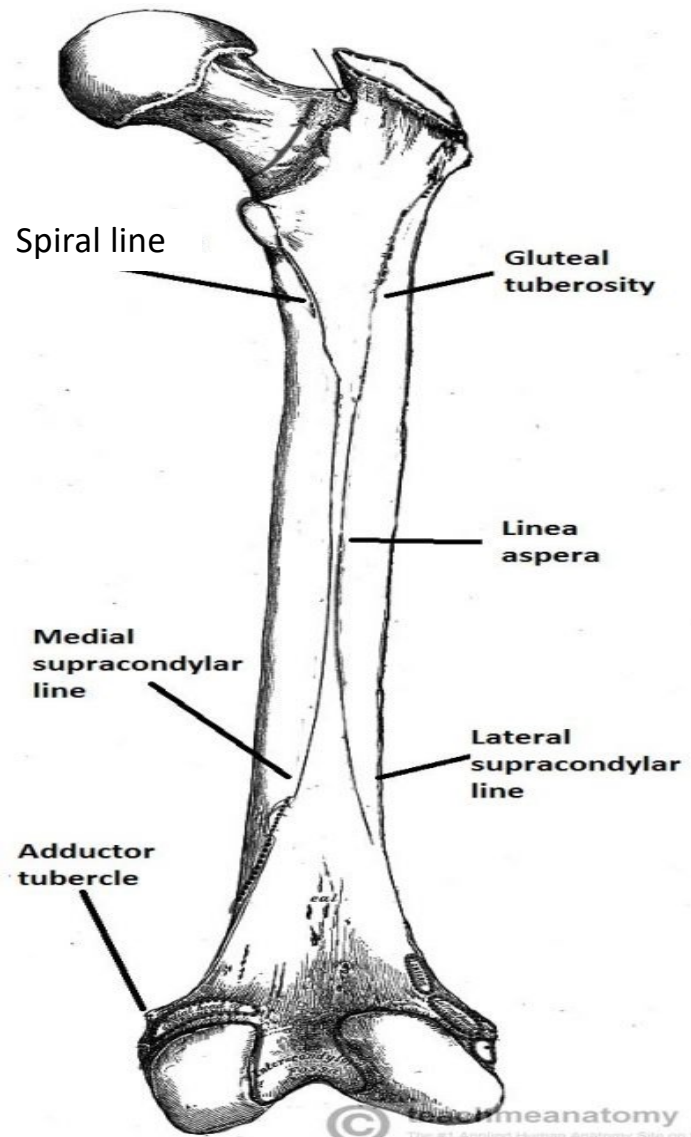
Posterior View

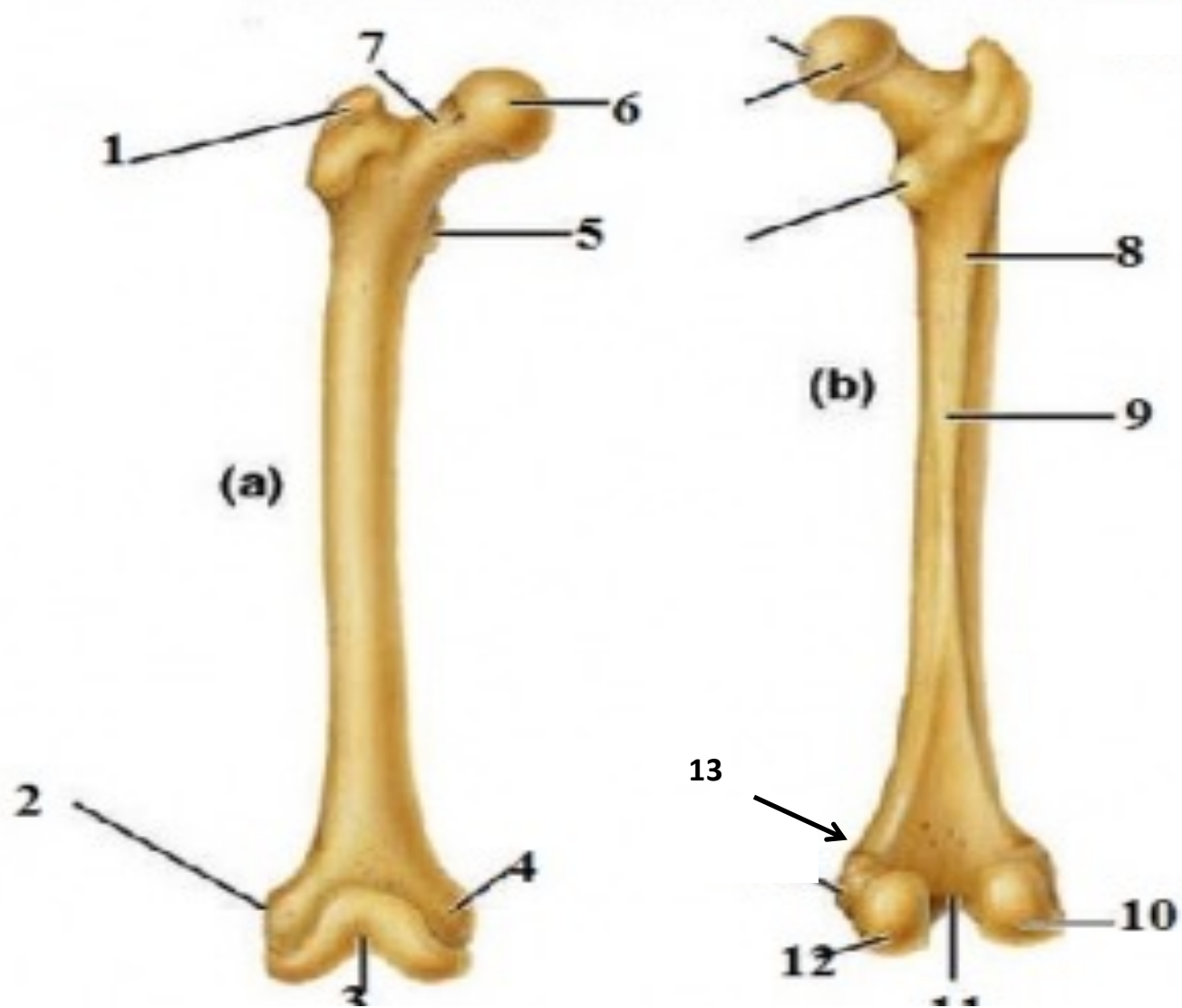


Anterior View



Posterior View







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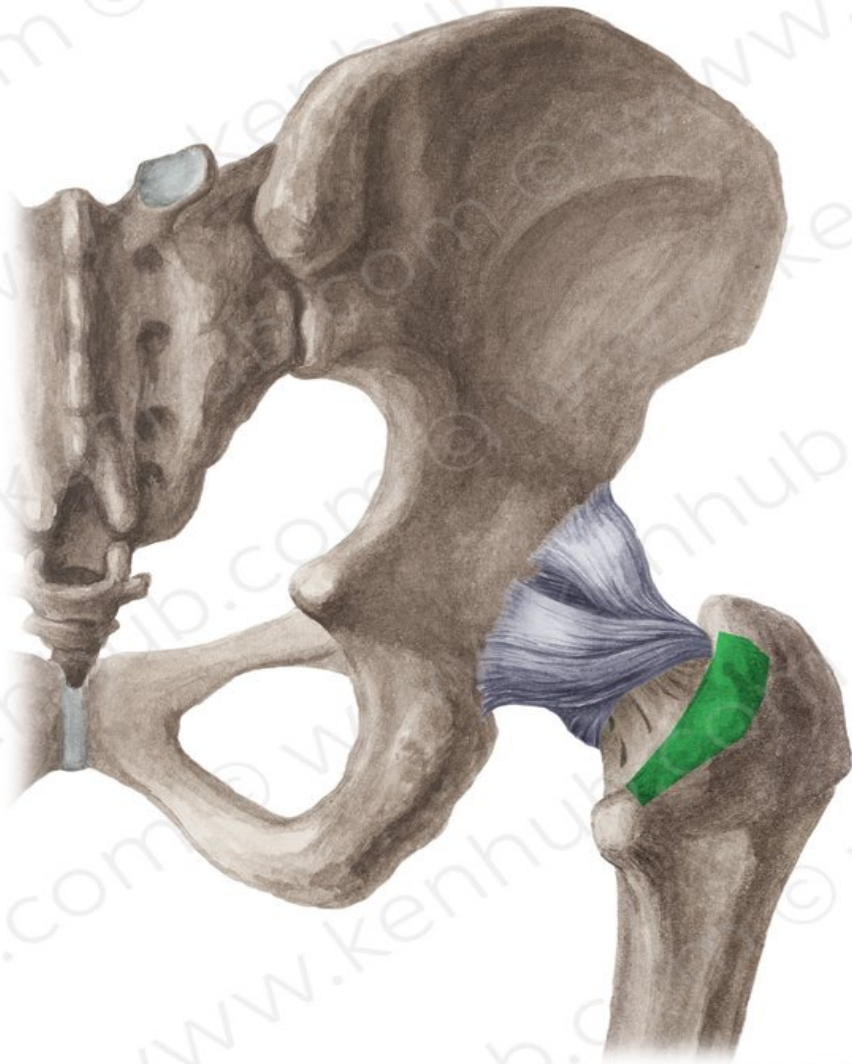
Intercondylar fossa



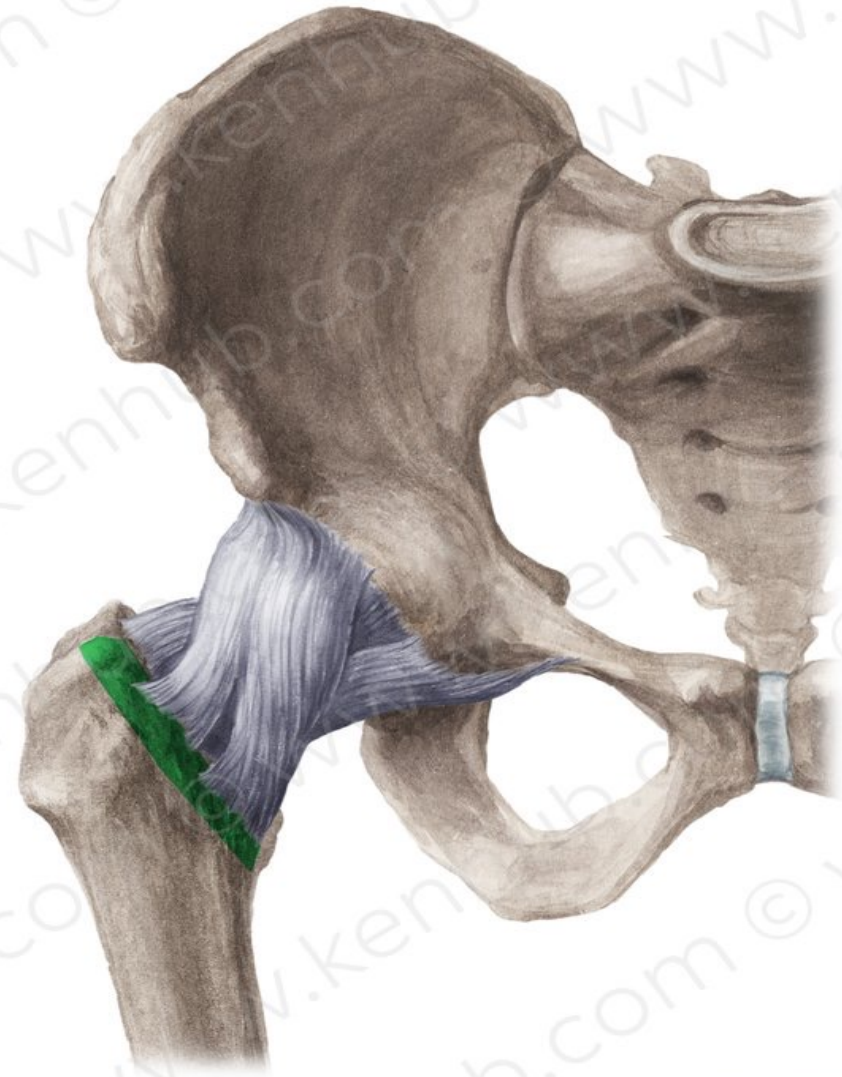
- 1-Linea Aspera**
- 2-Medial supracondylar line**
- 3-Lateral supracondylar line**



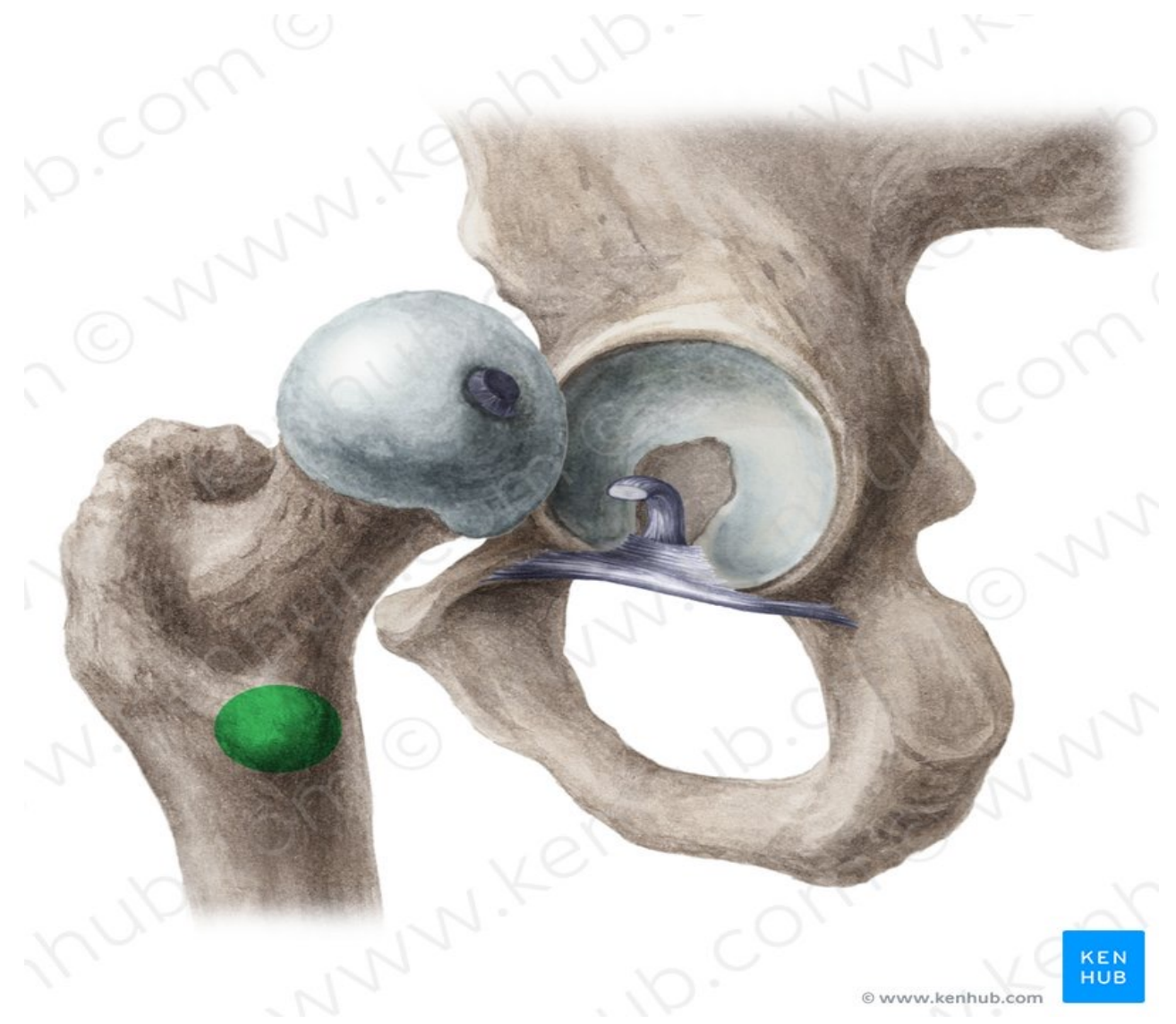
Intertrochanteric crest



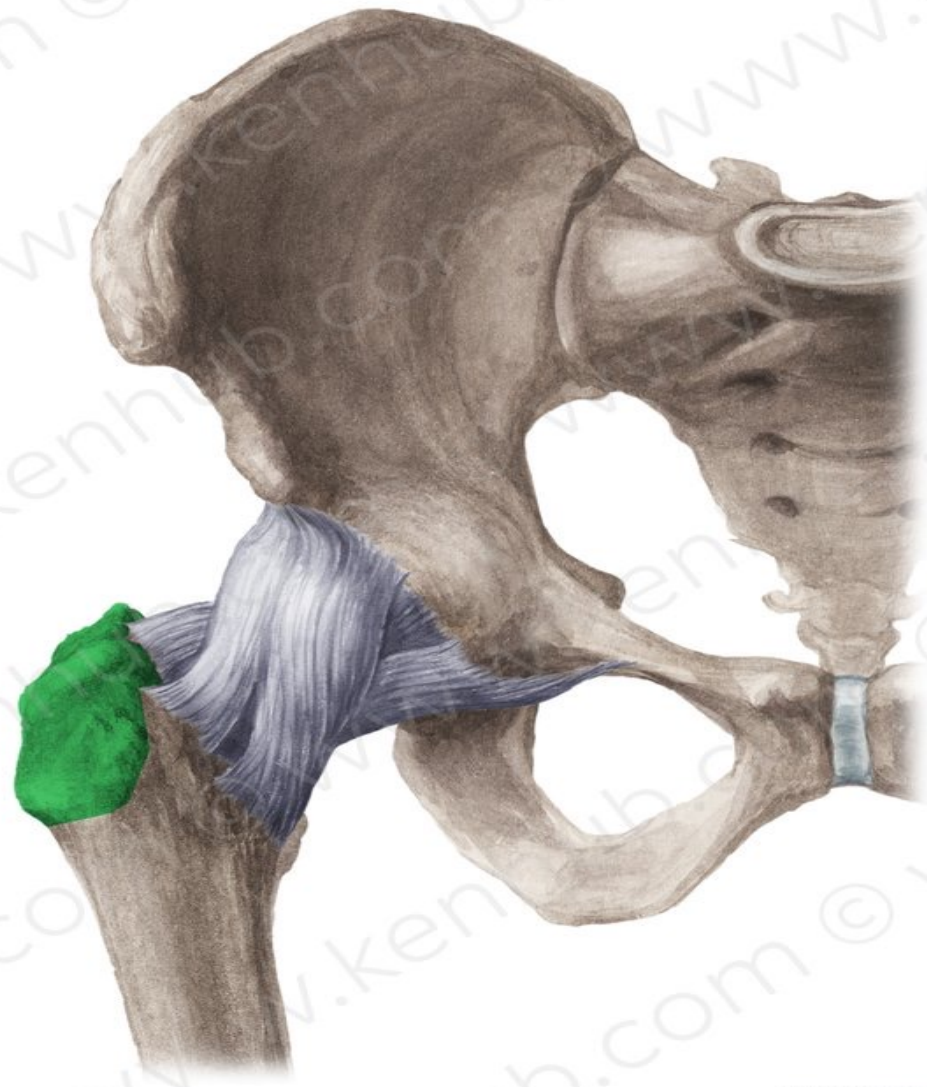
Intertrochanteric line



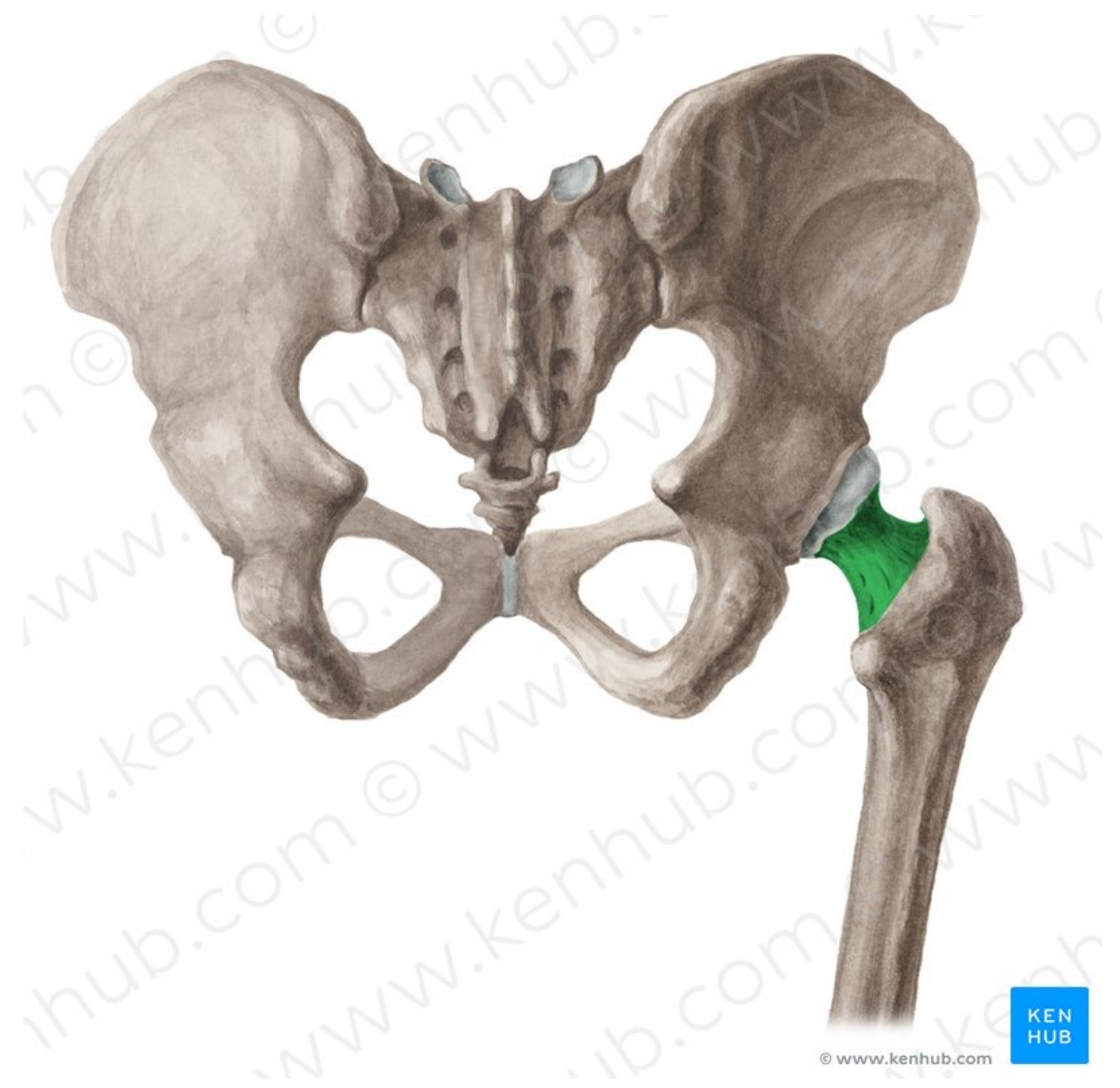
Lesser Trochanter



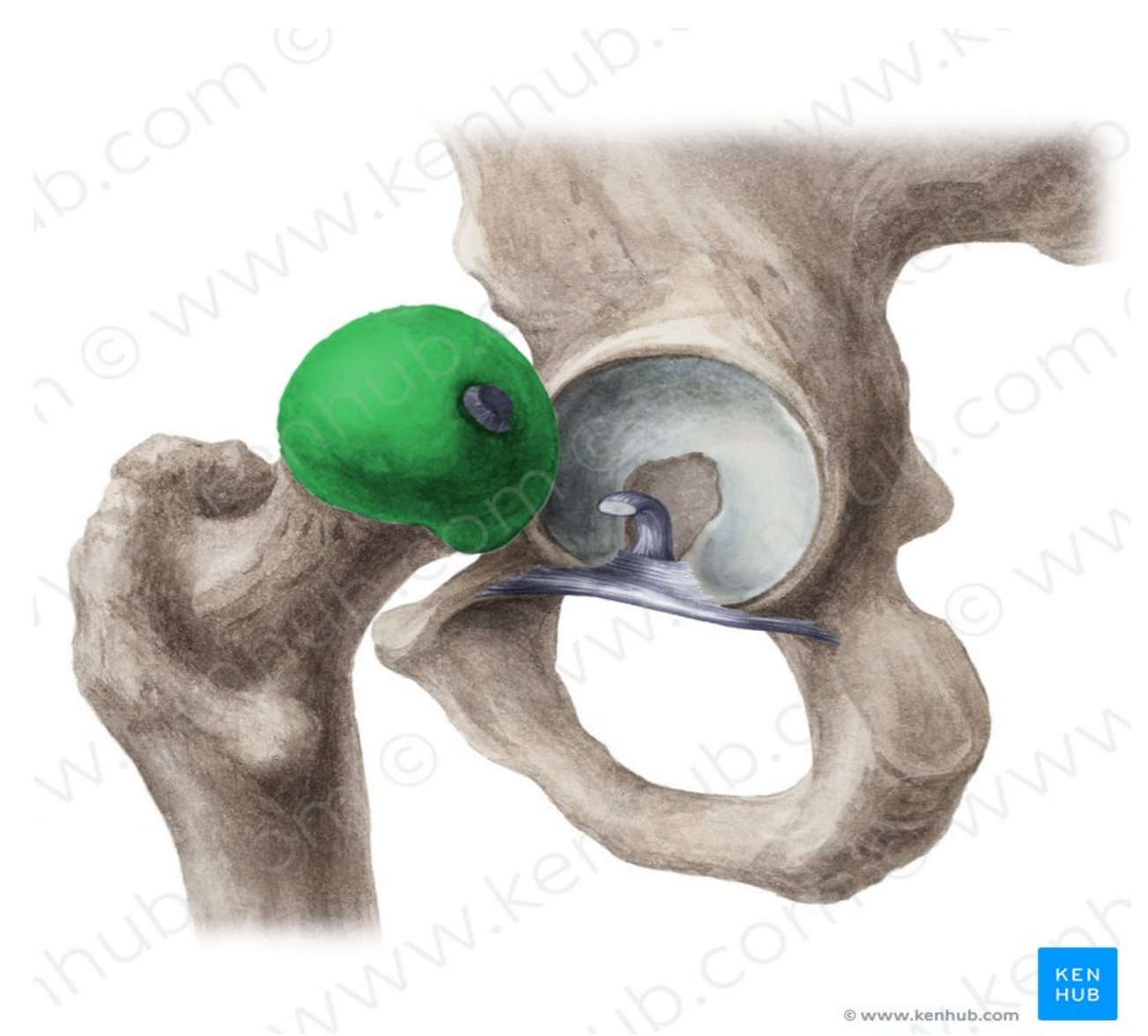
Greater Trochanter



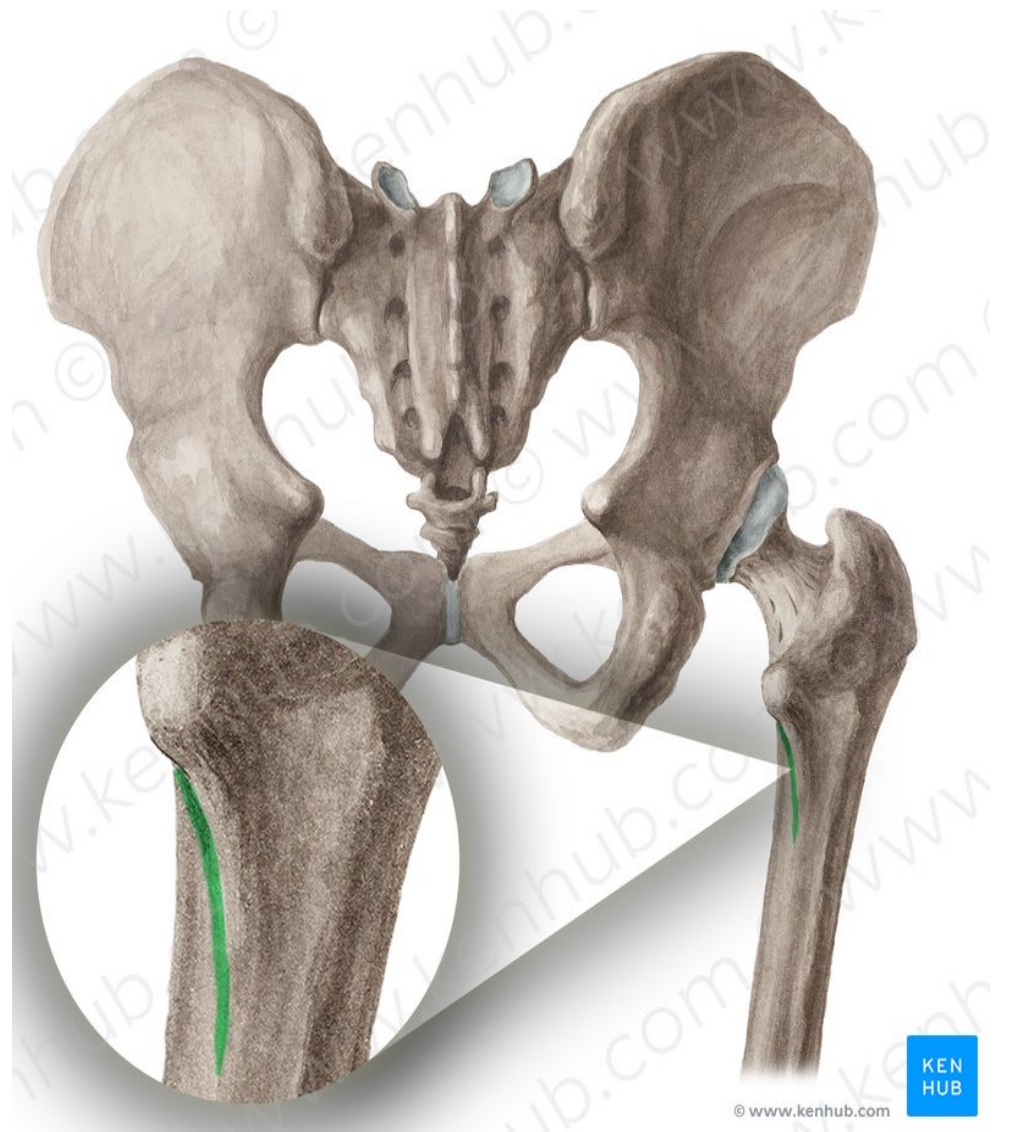
Neck



Head



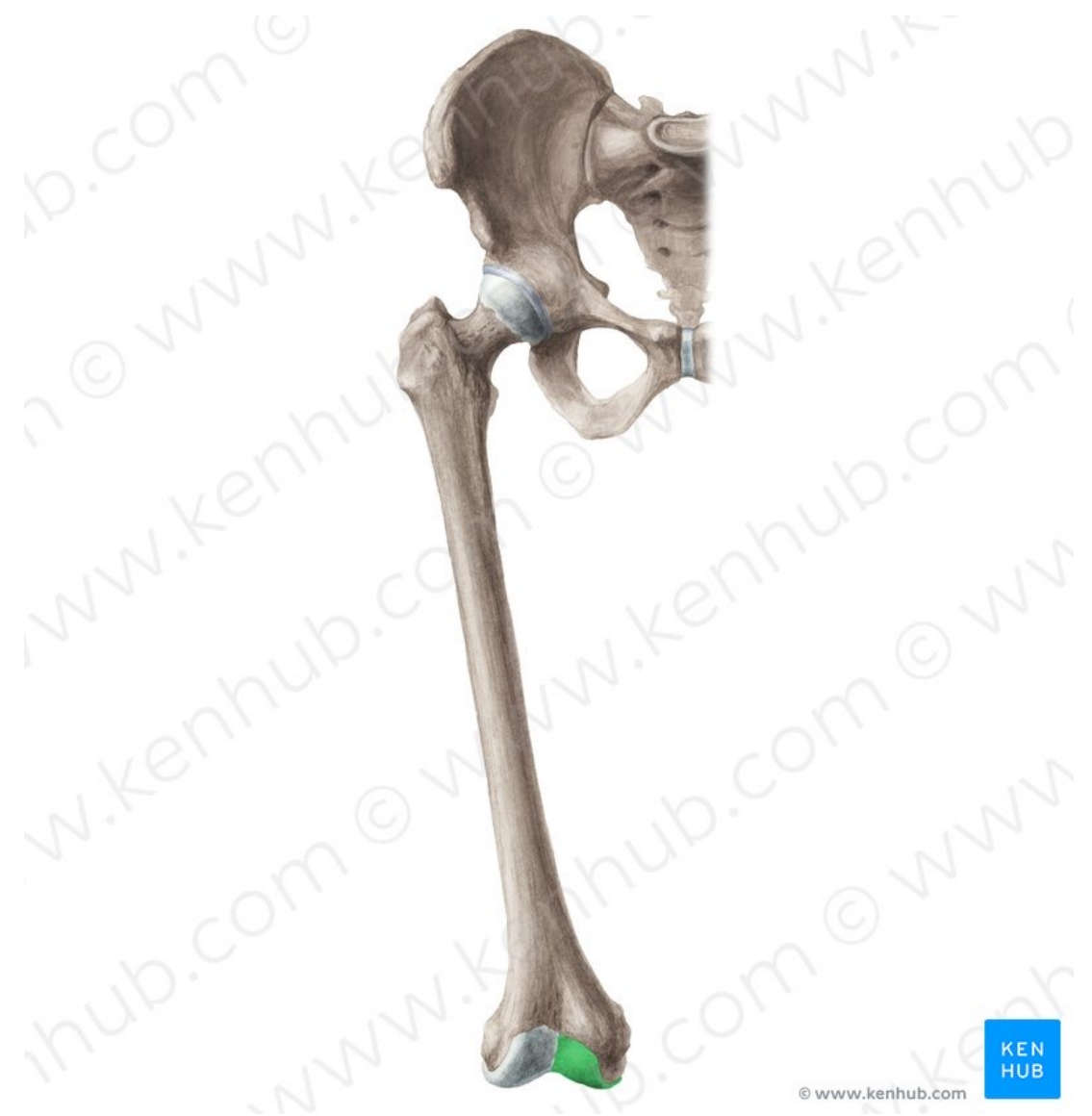
Spiral line



Adductor tubercle



Medial condyle



Lateral condyle





THANK YOU