

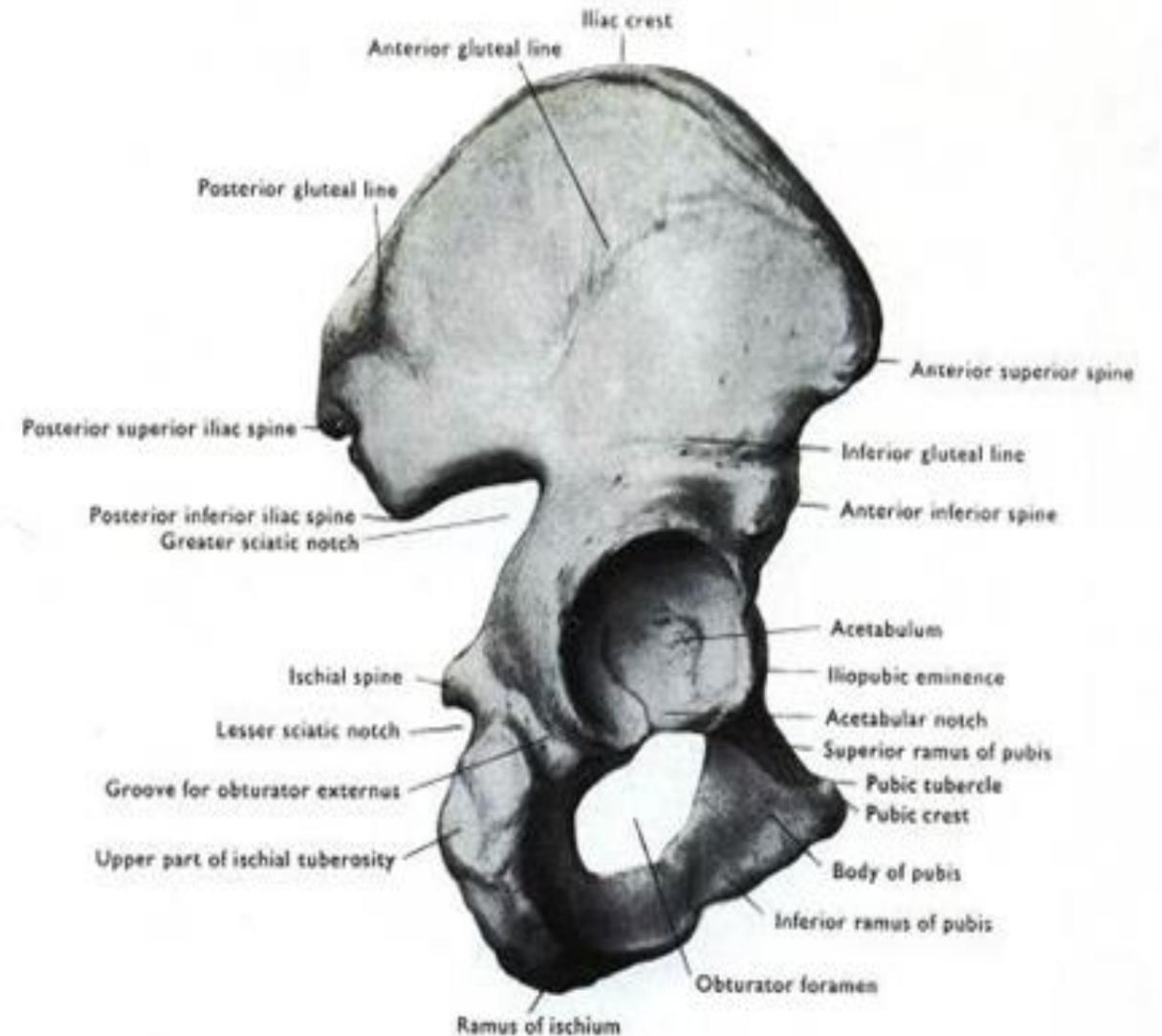
BONES OF THE LOWER LIMB

1

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The hip bone

- It consists of
 1. **The ilium** directed upwards.
 2. **The pubis** directed downwards, anteromedially.
 3. **The ischium** directed downwards, posterolaterally, the pubis is perforated by a large aperture (the obturator foramen).
- The 3 bones fuse with each other at puberty in the region of the **acetabulum**



- **Articulations of the hip bone:**

1. Above and behind: with the sacrum by means of the **sacroiliac joint**.
2. Below and in front with the other hip bone by means of the **symphysis pubis**.
3. Through the acetabulum with the head of the femur to form the **hip joint**.

- **How to know if a hip bone is right or left?**

1. The iliac crest lies above.
 2. The acetabulum lies..... Laterally.
- The ischial tuberosity lies... below and behind

HIP BONE

Sacroiliac joint

Sacral promontory

Sacrum

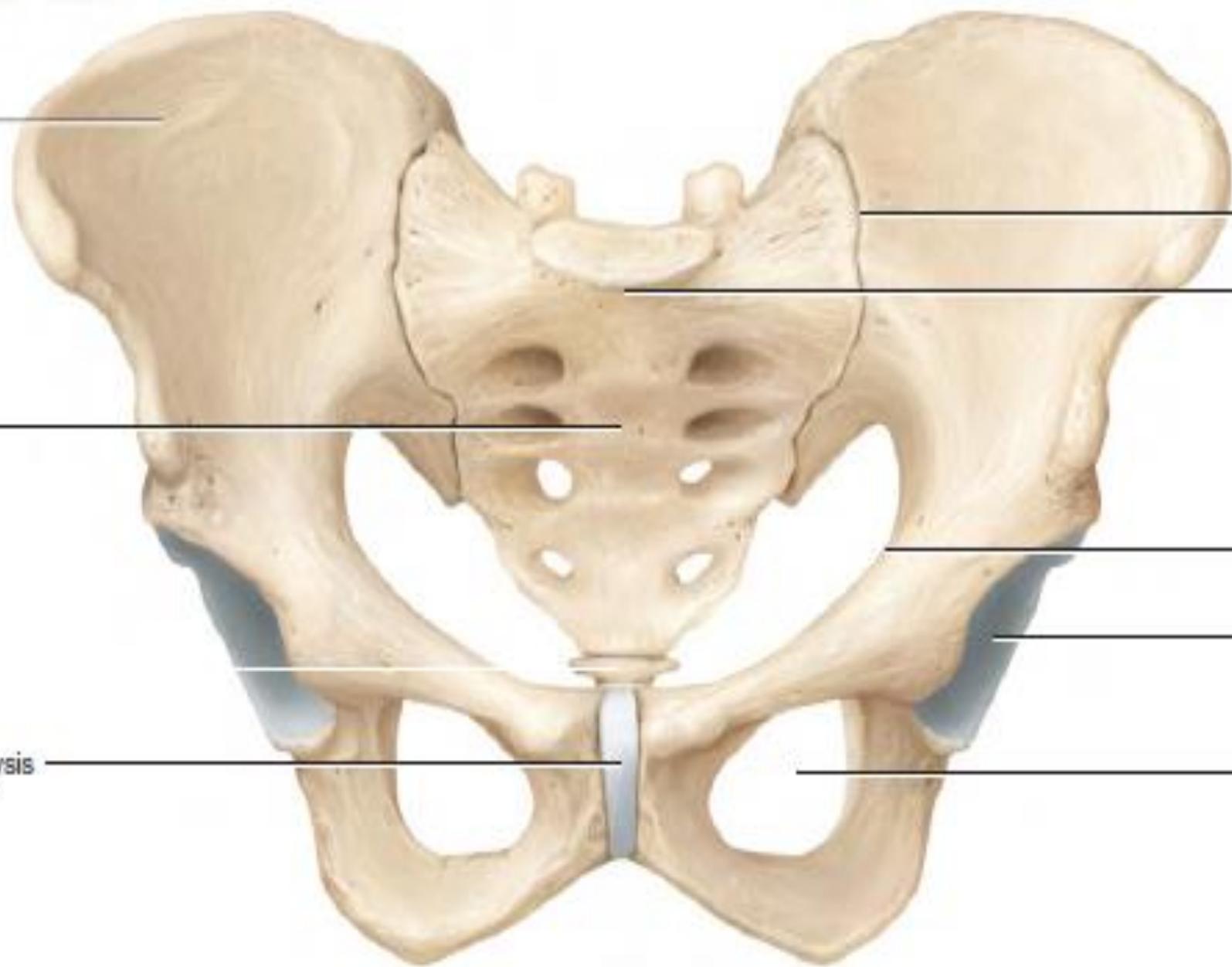
Pelvic brim

Acetabulum

Coccyx

Obturator foramen

Pubic symphysis



The ilium:

- The largest part and consists of a body and the ala of the ilium.

It has 3 borders:

- 1 Upper (called iliac crest)
- 2-Anterior.
- 3-Posterior.

• Surfaces of the ilium:

- The ilium has two surfaces
 - 1) Outer (or gluteal)
 - 2) Inner (or pelvic)

POSTERIOR

ANTERIOR

Gluteal lines

Anterior

Inferior

Posterior

Posterior
superior
iliac spine

Posterior
inferior
iliac spine

Greater sciatic notch

Body of ischium

Ischial spine

Lesser sciatic notch

Ischial tuberosity

Ramus of ischium

ILIUM

ISCHIUM

Iliac crest

Ala

Anterior superior
iliac spine

Anterior inferior
iliac spine

Body of ilium

Acetabulum

Acetabular notch

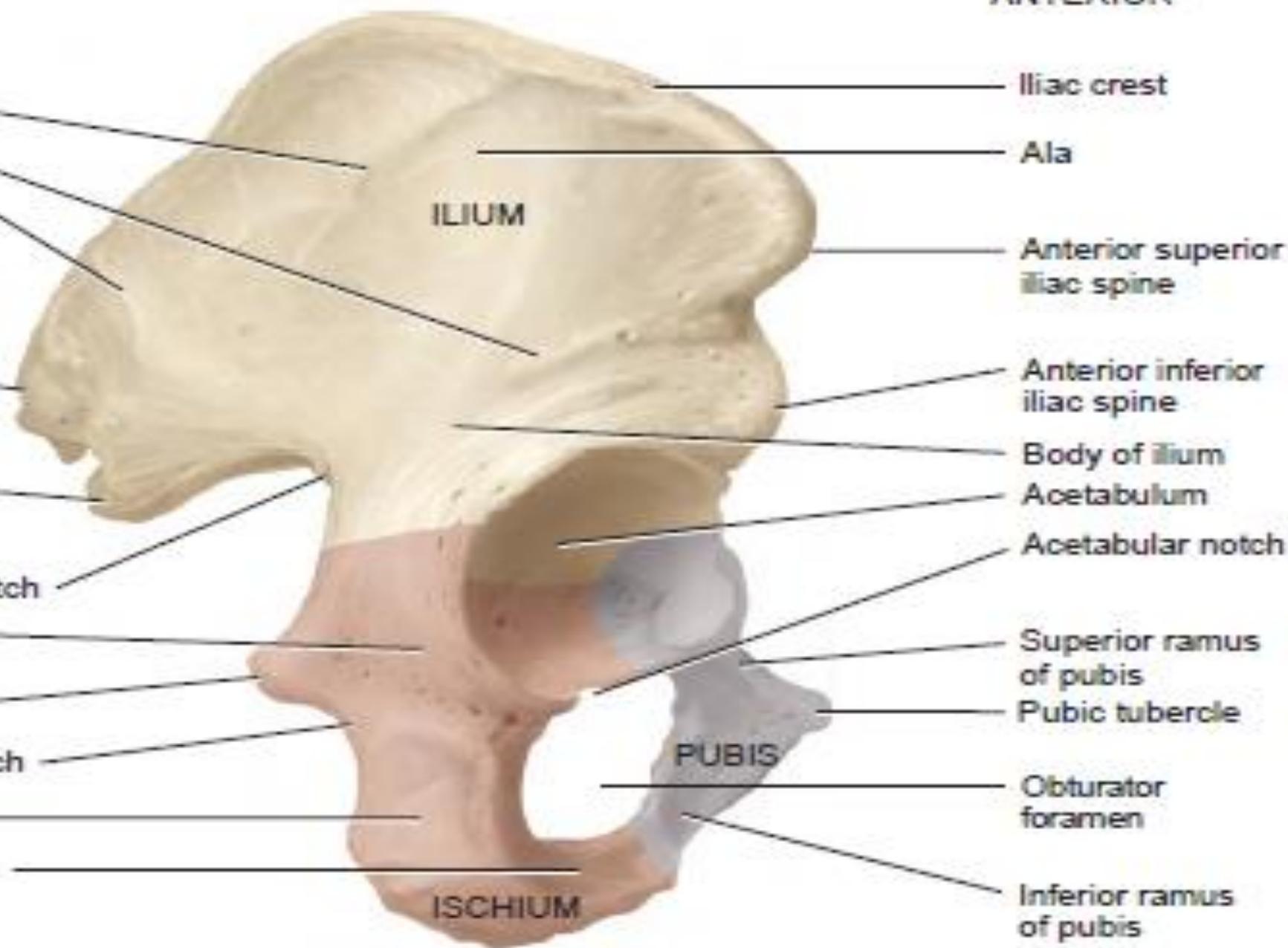
Superior ramus
of pubis

Pubic tubercle

PUBIS

Obturator
foramen

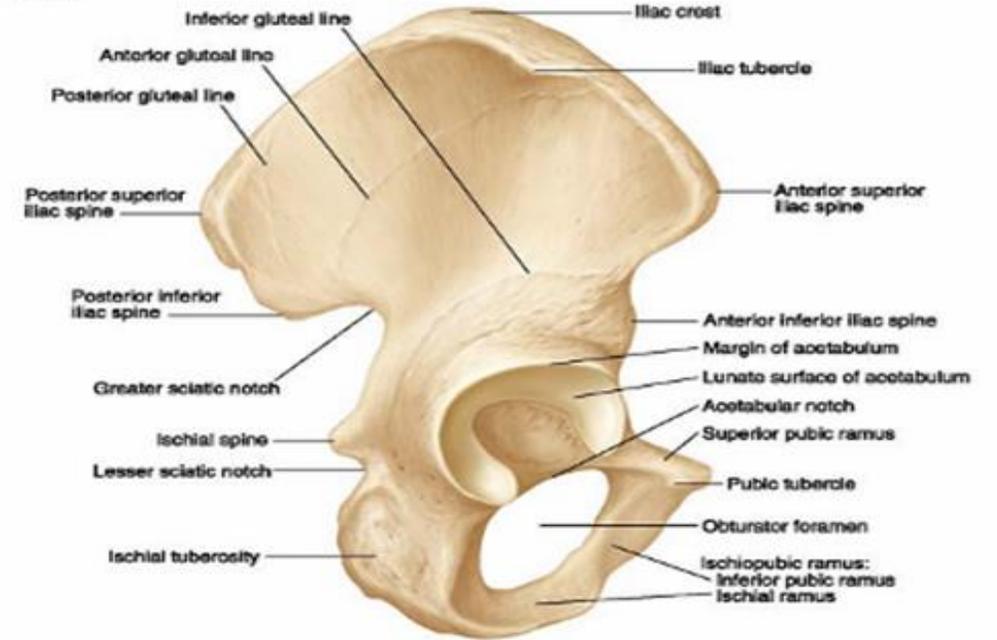
Inferior ramus
of pubis



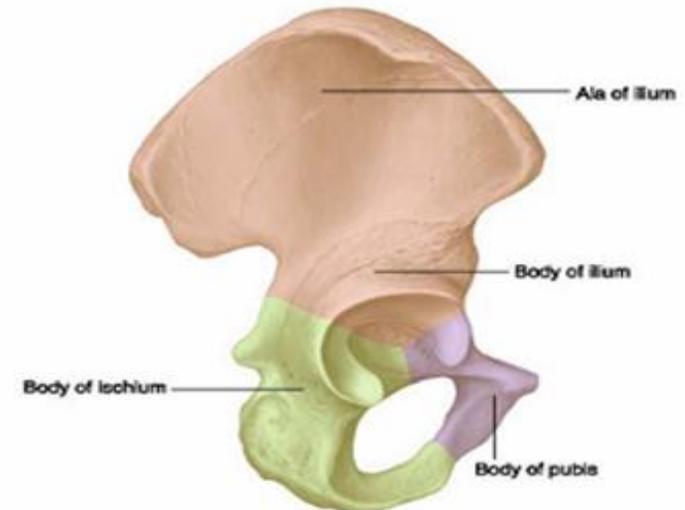
The borders

- **1- The iliac crest (= the upper border)** runs between the anterior superior iliac spine (in front) and the posterior superior iliac spine (behind).
- - A bony prominence called the tubercle of the iliac crest is found on the outer lip about 5-6 cm behind the anterior superior iliac spine.
- N.B. The highest point of the iliac crest is a little behind its middle and is opposite the level of the 4th Lumbar spine.
- **2- The anterior border** begins at the anterior superior iliac spine and end at the anterior inferior iliac spine immediately above the acetabulum.
- **3- The posterior border** begins at the posterior superior iliac spine at the level of the second sacral segment to the posterior inferior iliac spine. The posterior border then becomes deeply notched immediately above the acetabulum by the greater sciatic notch, then becomes continuous with the posterior border of the ischium which has a shallow lesser sciatic notch separated from the greater notch by the spine of the ischium.

A. Bony features



B. Parts of os coxae



- A) The outer surface is rough and contains 3 rough ridges called: the posterior, the middle and the inferior gluteal lines.

a) The posterior gluteal line begins about 5cm in front of the posterior superior iliac spine and runs vertically downwards towards the greater sciatic notch.

b) The middle or anterior gluteal line: is longer; it begins about 3 cm, behind the anterior superior iliac spine runs with a curve towards the middle of the upper border of the greater sciatic notch.

c) The inferior gluteal line: begins just above the anterior inferior iliac spine and runs with a gentle curve above the acetabulum to end at the apex of the greater sciatic notch.



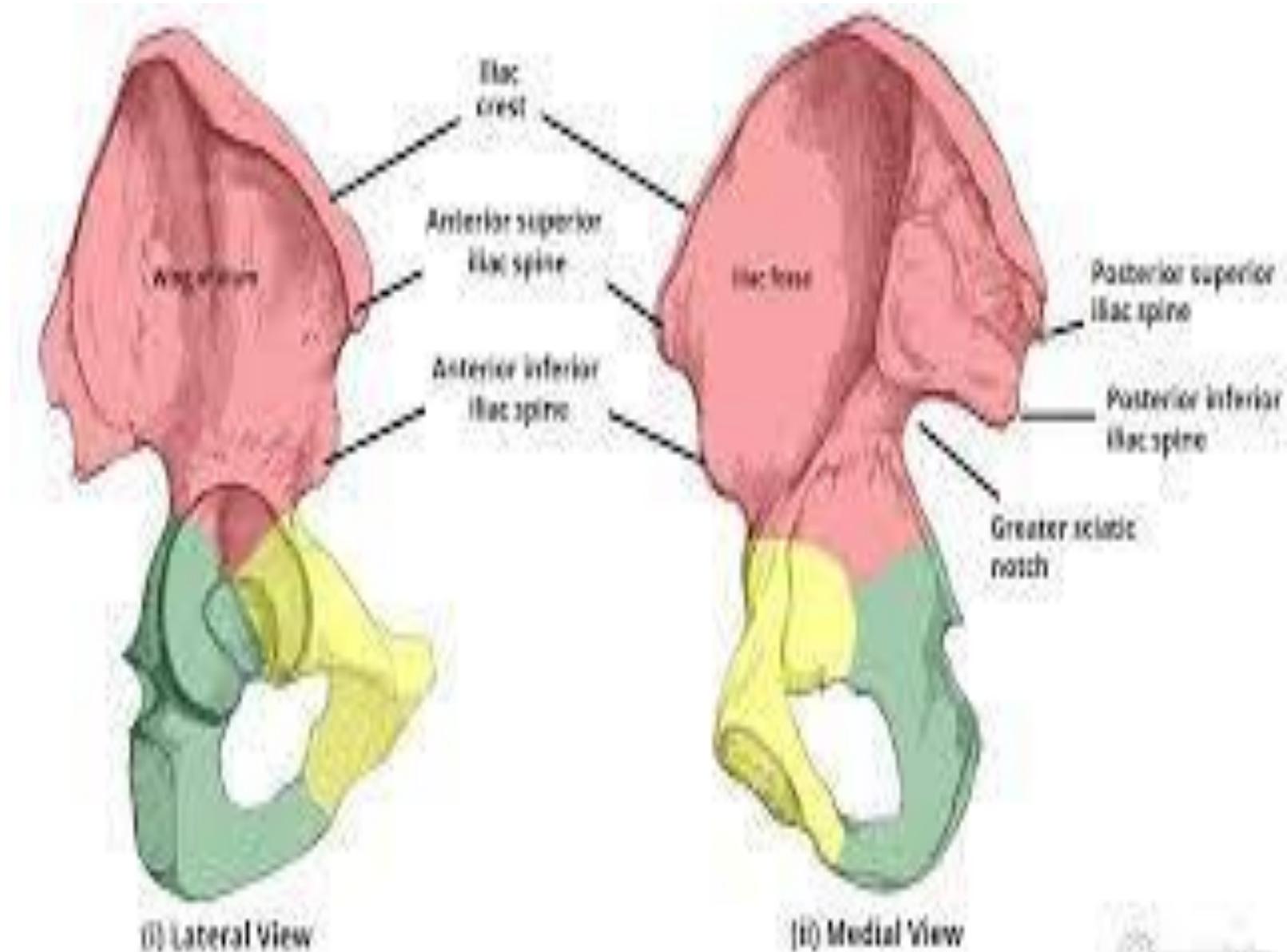
- **B) The inner (pelvic) surface shows 4 features:**

1. A large concave iliac fossa in front.

2. A rough iliac tuberosity . behind and above.

3. An auricular (articular) surface behind and below.

4. A smooth pelvic part below.



The pubis

- consists of a body and two rami (superior and inferior).
- **The body:** is triangular and articulates with its fellow at the symphysis pubis and has 2 surfaces:

1-Anterior (or femoral) surface looks downwards and forwards (towards the thigh) it is rough and gives attachment to muscles.

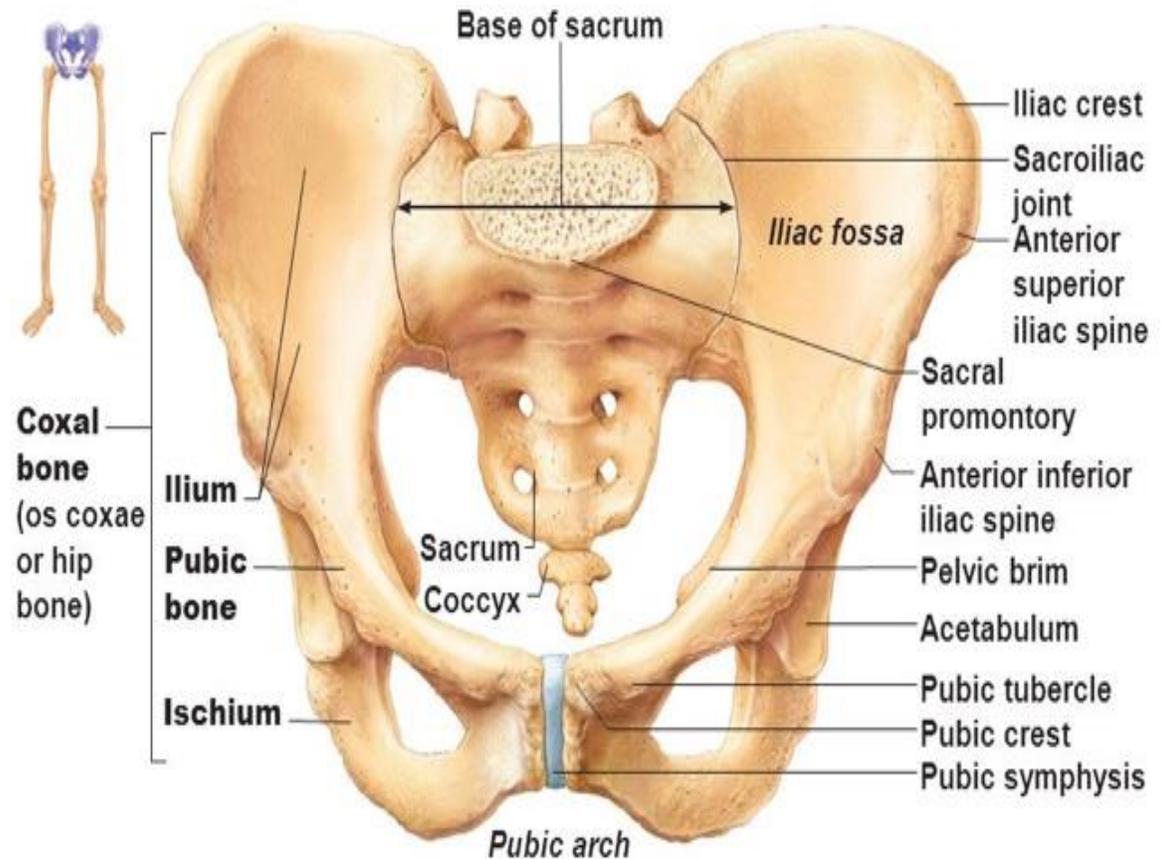
2-Posterior (or pelvic) surface: is smooth and forms the anterior wall of the pelvic cavity.

The body has 3 borders → upper, lateral, medial

1-The upper border of the body is called the pubic crest; it is about 2.5 cm long and ends laterally in a projection called the pubic tubercle

2-The lateral border is very sharp and forms part of the boundary of the obturator foramen.

3-The medial border joins the other side at the symphysis pubis.



Animation: Rotatable pelvis

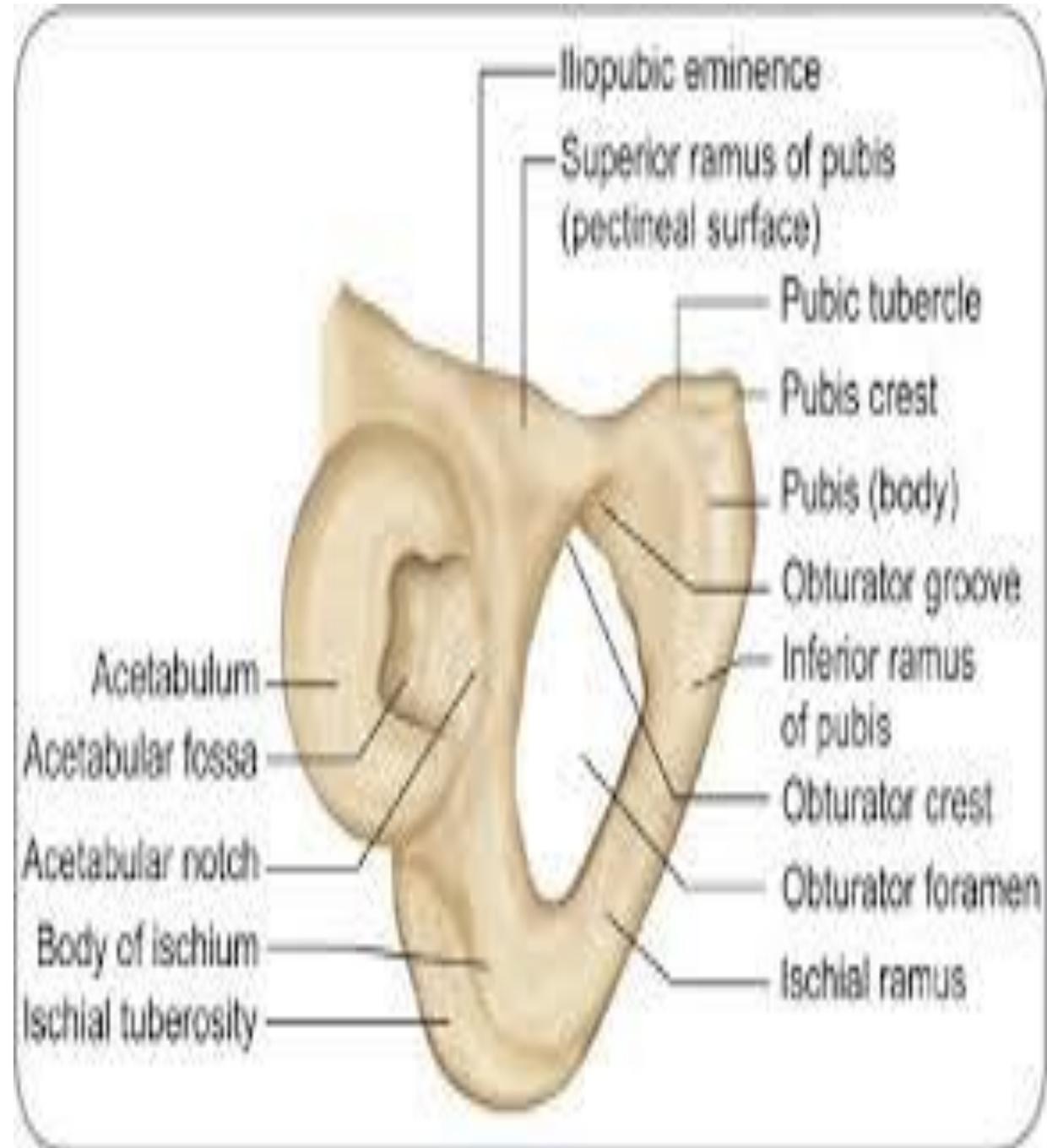
The superior ramus:

The superior pubic ramus is nearly horizontal and triangular in cross section; it has 3 surfaces

1-The pectineal surface: extends from the pubic tubercle to the iliopubic eminence. It is bounded behind by the pectineal line and inferiorly by the obturator crest

2- Inferior surface (obturator surface): has obturator groove

3-The pelvic surface: is continuous with the pelvic (posterior) surface of the body



The inferior ramus: It has two surfaces:

1- femoral rough outer surface

2- pelvic smooth inner surface.

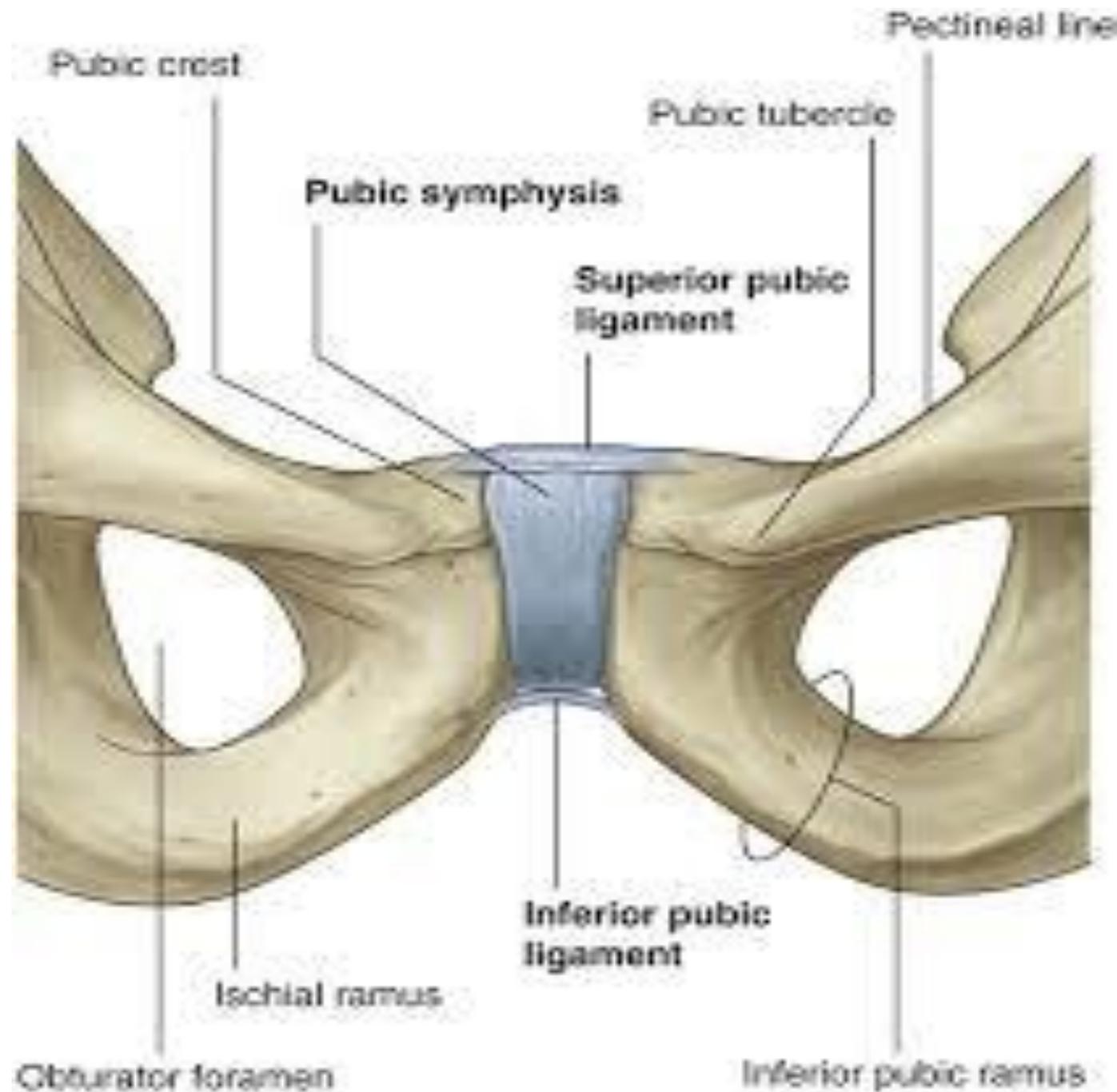
It has two borders: superior and inferior.

The **superior border** forms part of the obturator foramen

while the **inferior border** forms part of the pubic arch. Below

the pubic symphysis, the inferior pubic rami diverge to form the

pubic arch.



The ischium

consists of a body, a tuberosity and one ramus.

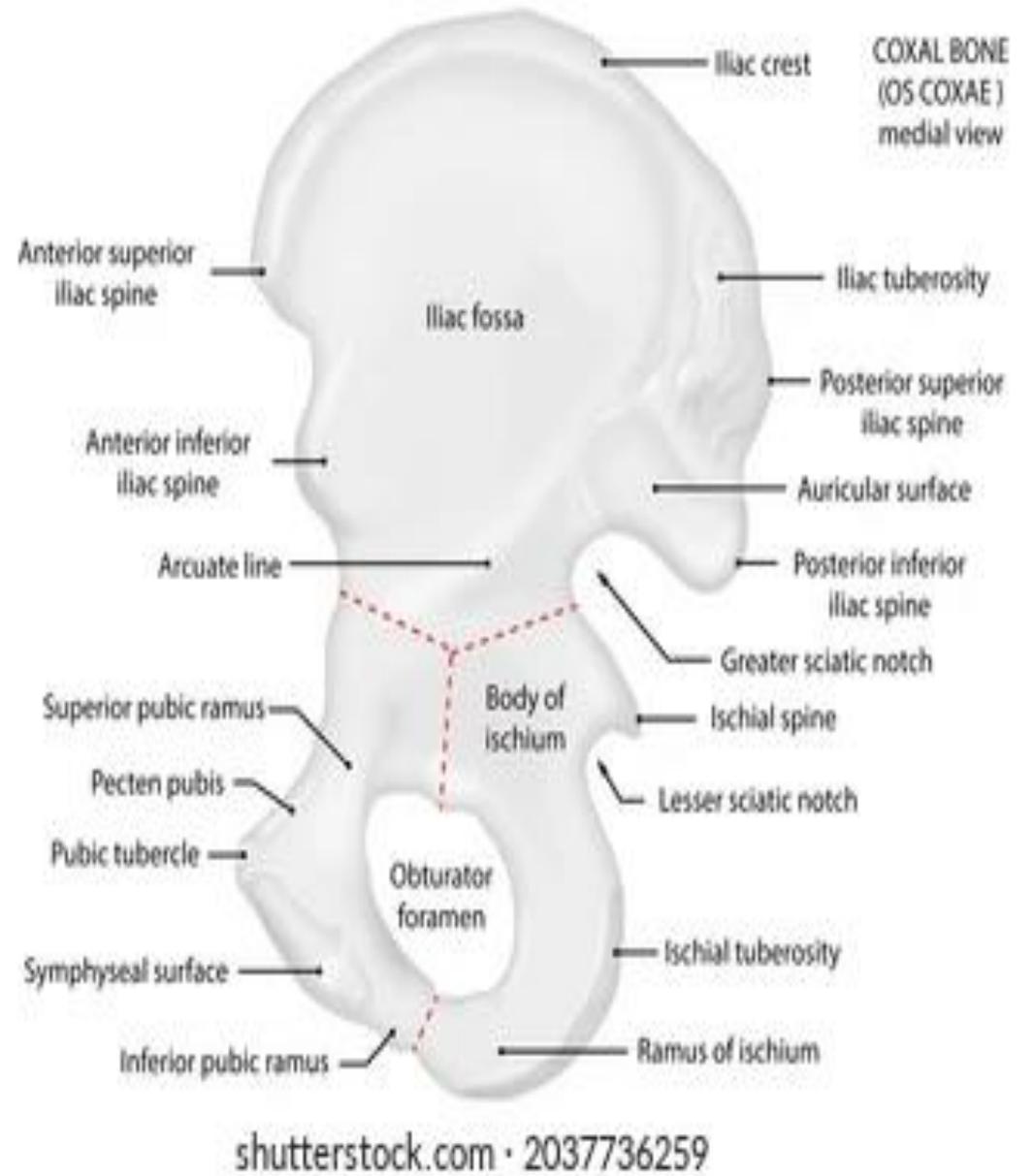
The body: is continuous below with the ramus and both form part of the wall of the obturator foramen.

the body is continuous above with the posterior border of the ilium forming the lower part of the greater sciatic notch; then projects to form the ischial spine and then forms the lesser sciatic notch.

The ramus: is continuous in front with the inferior ramus of the pubis to form the ischiopubic or conjoint ramus;

Ischial tuberosity:

Is a very strong piece of bone which projects from the inferior pole of the body of the ischium



Femur

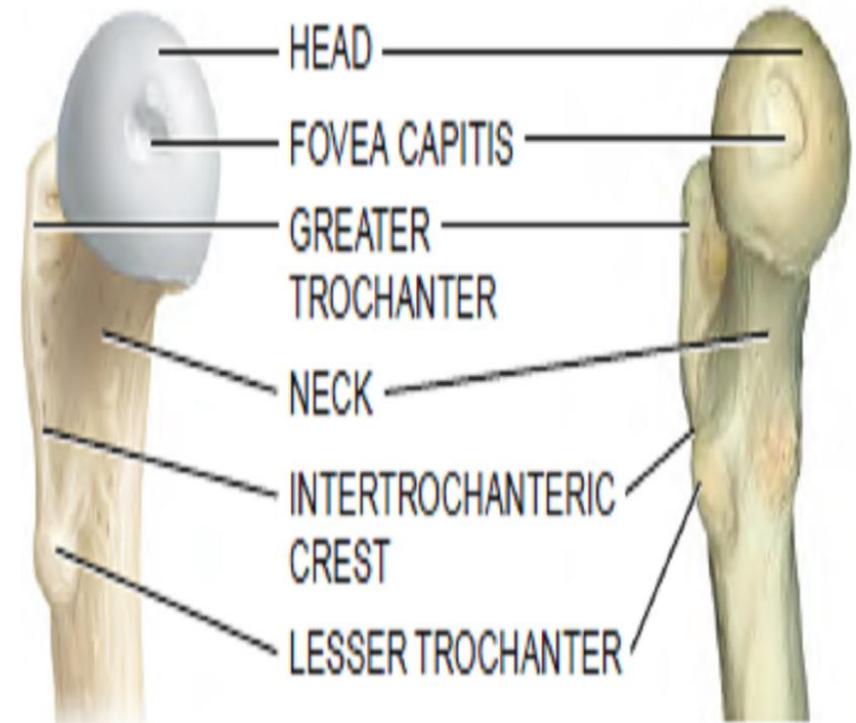
It is formed of upper end, shaft and lower end.

UPPER END •

It consists of head, neck, • greater trochanter, and lesser trochanter.

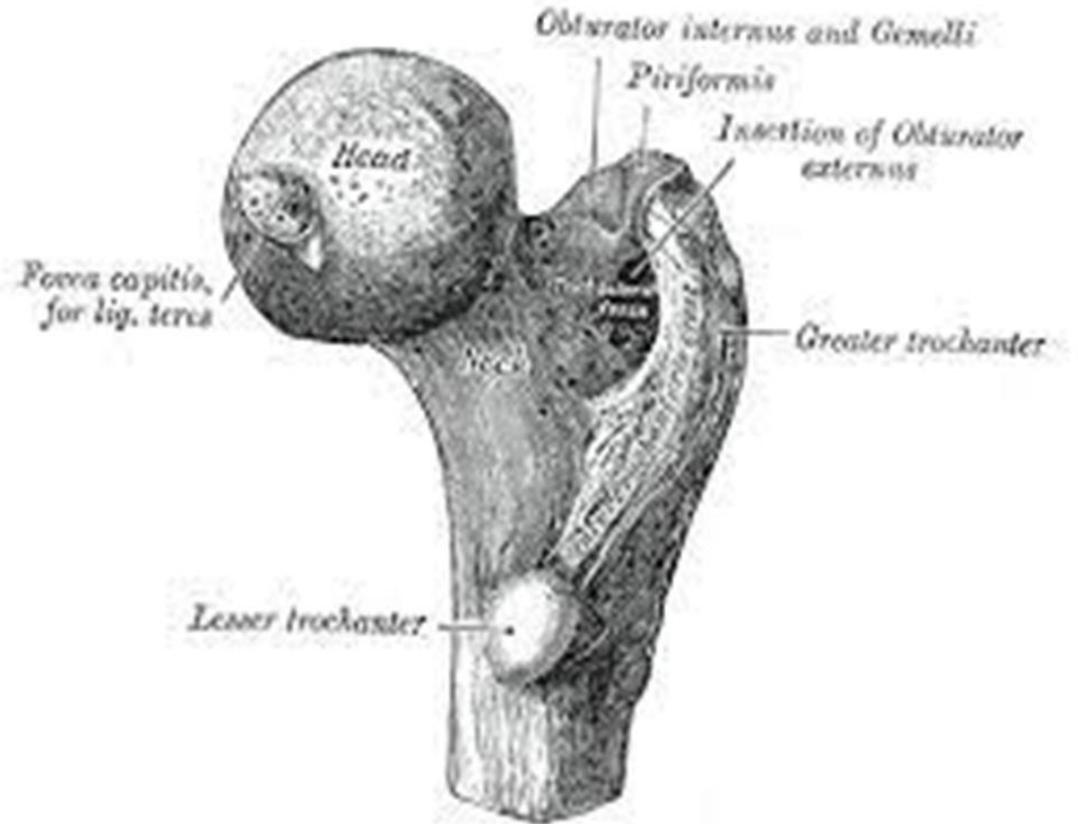
1. Head: •

- -Articulates with the acetabulum of the hip bone.
- -Has a small, pit shaped depression called the fovea capitis where the ligamentum teres is attached.



2. Neck:

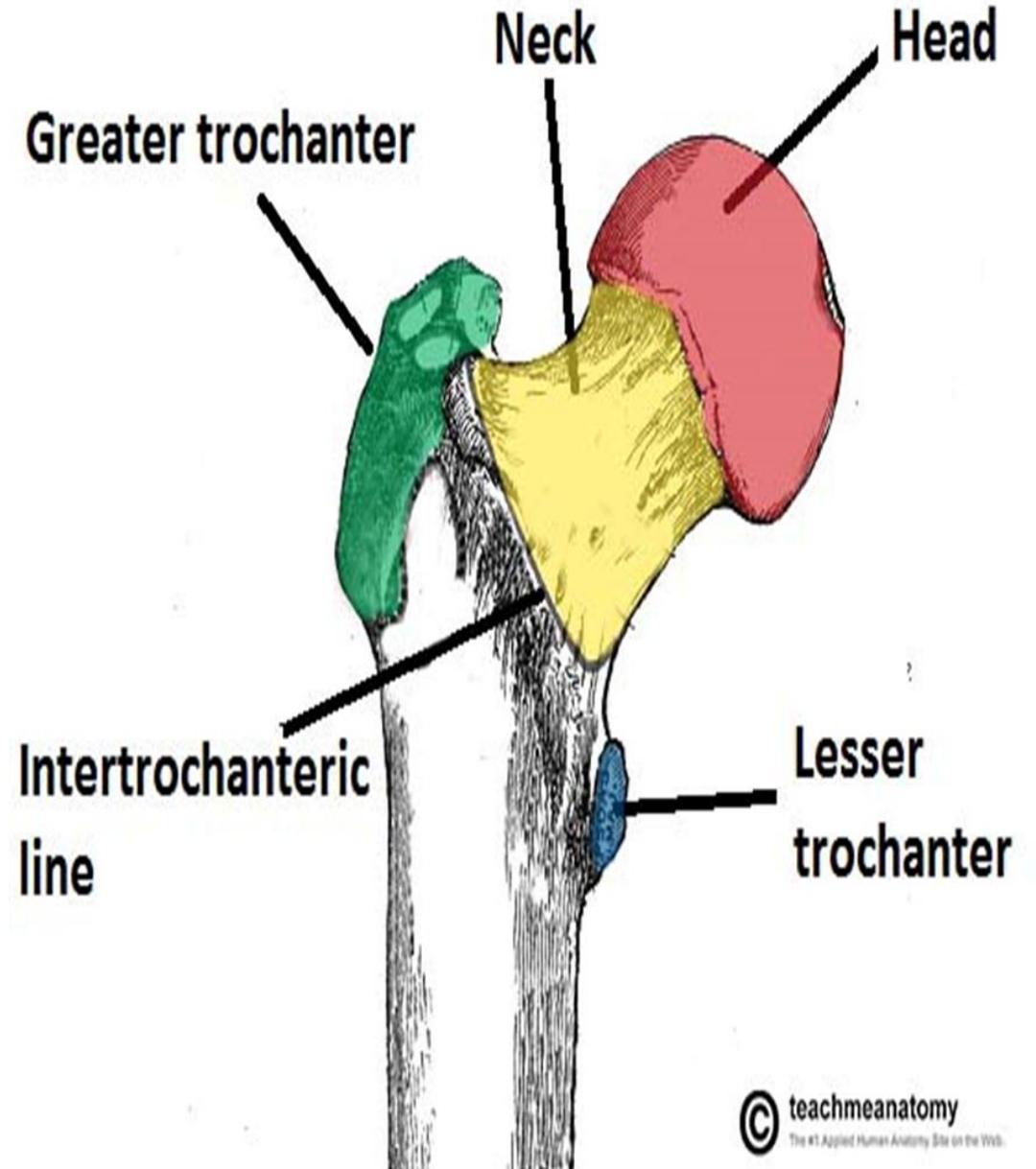
- -Is 5 cm long and connects the head with the shaft.
- -It forms an angle of about 110 – 120 with the axis of the shaft



3. Greater trochanter: •

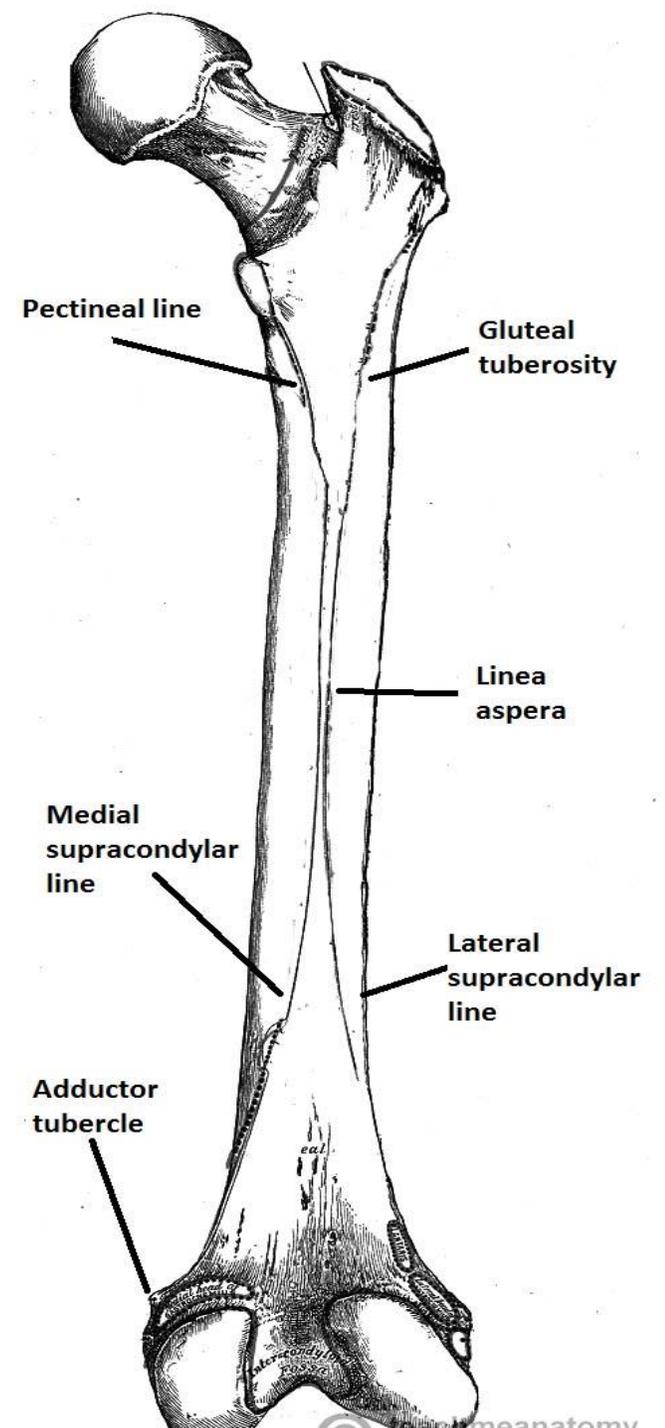
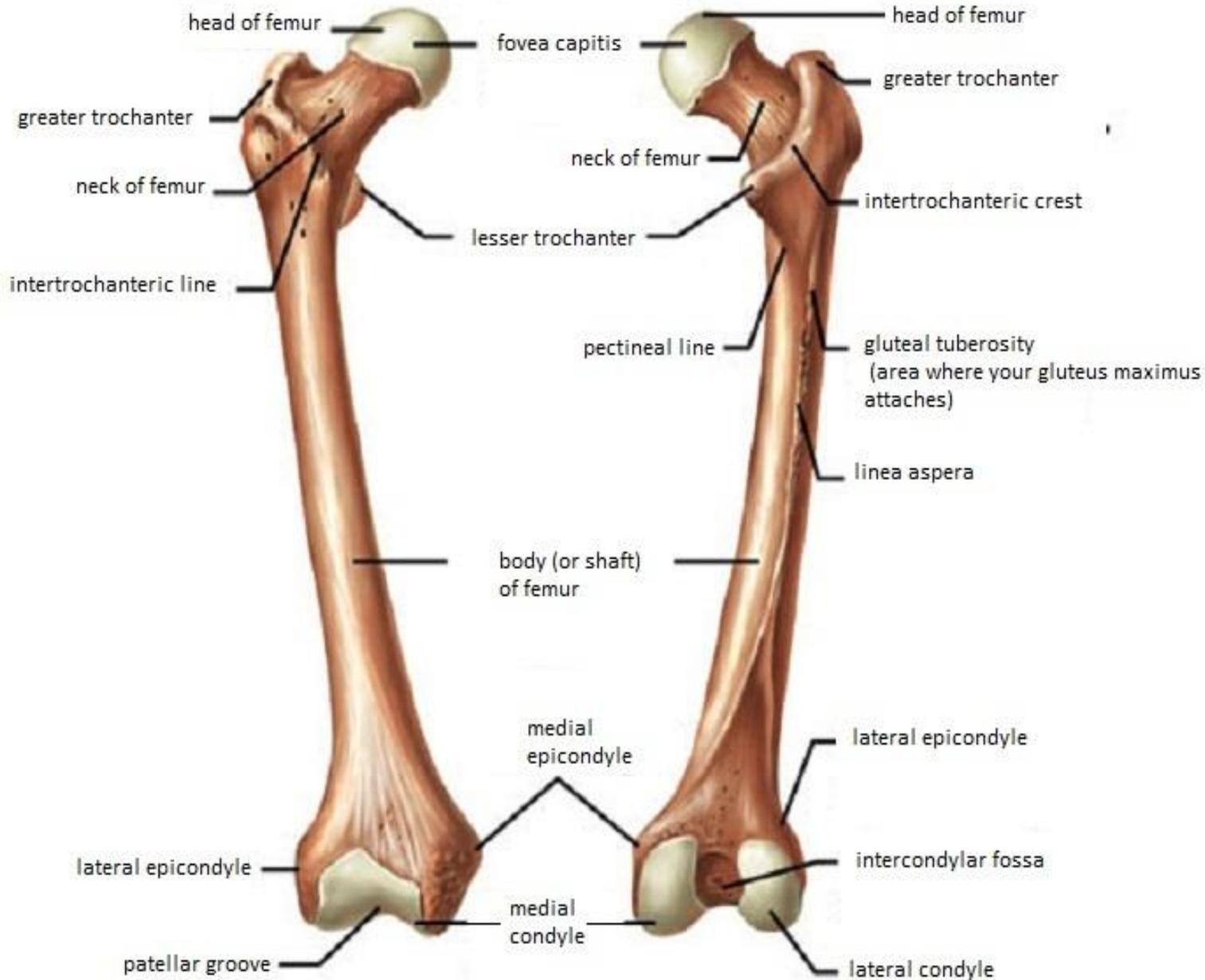
- The top of the greater trochanter lies at the level of the pubic crest.
- Its medial surface has deep depression called the trochanteric fossa.

- **4. Lesser trochanter:** is a small pyramidal process projecting postero-medially



- **Shaft:**

- The shaft of the femur is smooth and rounded on its anterior surface but posteriorly has a ridge, the **Linea aspera**, to which are attached muscles and intermuscular septa.
- The margins of the linea aspera diverge above and below. The medial margin continues below as the **medial supracondylar ridge** to the adductor tubercle above the medial condyle. The lateral margin becomes continuous below with the **lateral supracondylar ridge**.
- The Linea aspera diverge superiorly to the gluteal tuberosity laterally and spiral line medially .
- The shaft becomes broader toward its distal end and forms a flat, triangular area on its posterior surface called the **popliteal surface**.



Lower end of femur: •

- It has the following features: •
- -Medial and lateral condyles: for articulation with the tibia
- -Medial and lateral epicondyles: the only part of the femur that can be felt at the knee
- -Intercondylar fossa or notch
- -Patellar surface: the smooth surface above the condyles on the anterior side that articulates with the patella
-

How to know if a femur is left or right?

1. The head lies above and medially
2. The shaft is convexanteriorly
3. linea aspera Posteriorly.

