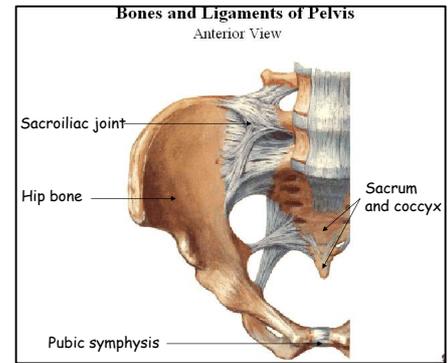


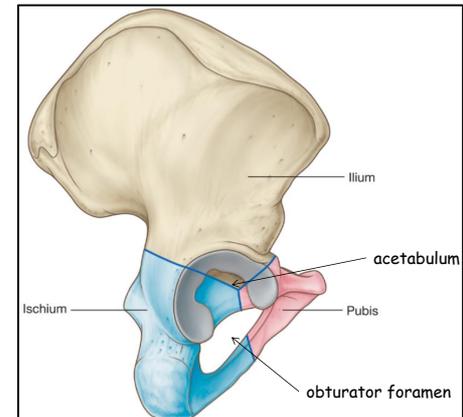
ANAT30008 LECTURE NOTES PART 2

Lecture 18 – Bones and joints of pelvis

- This is the intact bony pelvis and it is comprised of a pair of hip bones together with the sacrum and coccyx posteriorly
- There is a synovial sacroiliac joint laterally
- Anteromedially, there is a secondary cartilaginous joint called the pubic symphysis



- The hip bone is made up of 3 fused bones: **ischium**, **ilium** and **pubis**
- The acetabulum and the obturator foramen are formed by the 3 fused bones

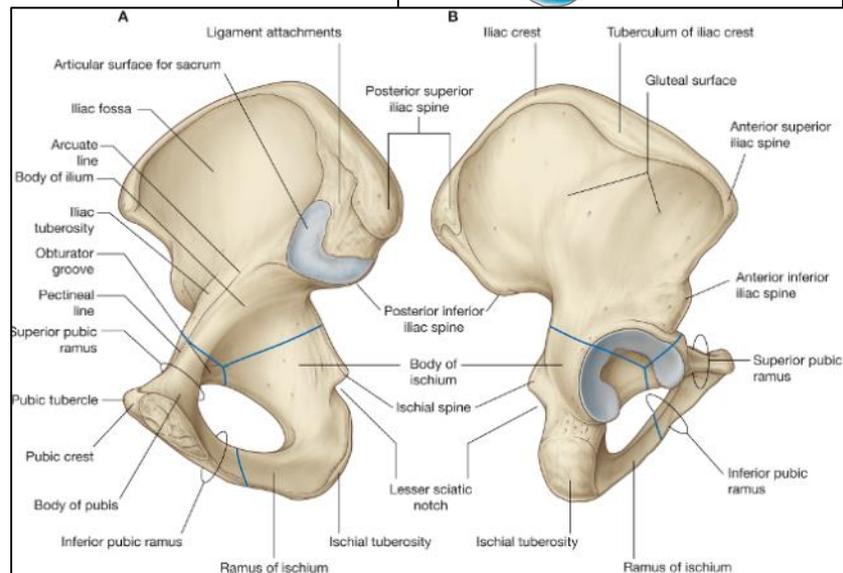


Ilium

- This is made up of the iliac crest superiorly and this extends between the ASIS and the posterior superior iliac spine
- There are also 3 surfaces
 - **Gluteal surface** gives rise to the gluteal muscles
 - **Iliac fossa** which gives rise to iliacus
 - **Sacral surface** which includes the articular surface for the sacroiliac joint

Pubis

- The pubic bone is made up of the pubic body with the pubic crest on top and 2 rami – superior pubic ramus and inferior pubic ramus
- The body of each pubic bone articulates at the midline at the pubic symphysis
- The superior surface that is the pubic crest is continuous with the pubic tubercle. This surface is also continuous with the pectineal line (lacunar ligament pans inward from the medial part of the inguinal ligament that went to the pectineal line of the pubis)

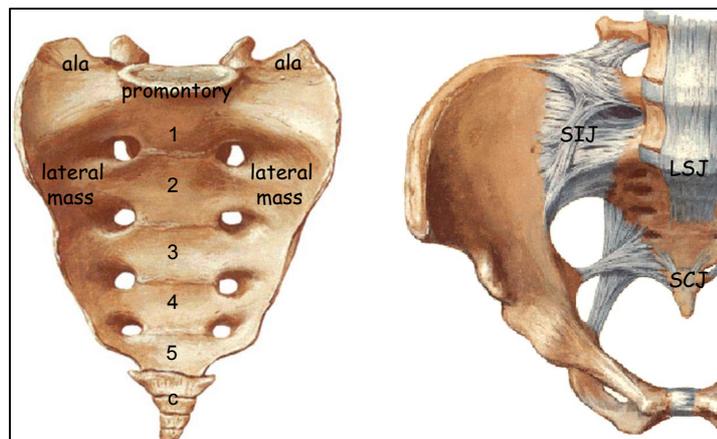


Ischium

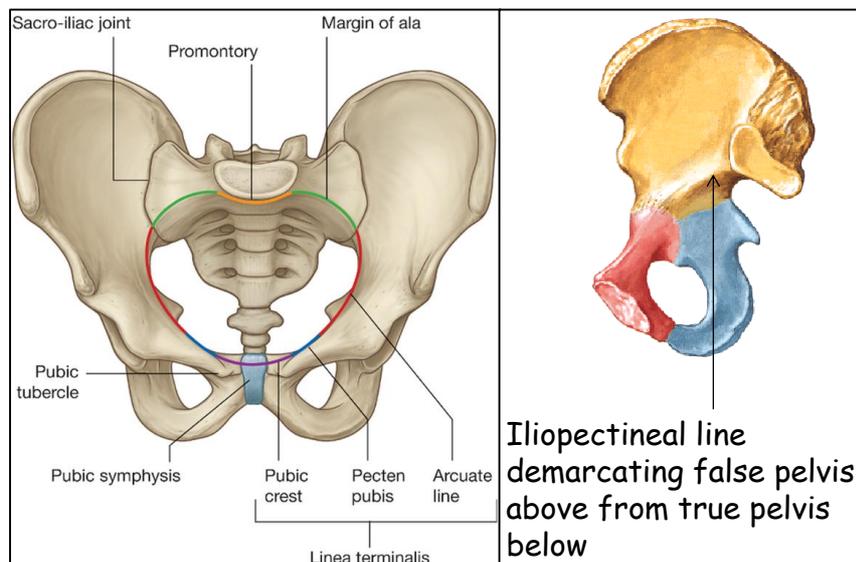
- This is made up of a body and single ramus
- 2 bony features of the ischium
 - The **ischial tuberosity** – this gives attachments to the hamstrings group
 - **Ischial Spine** – this separates the greater sciatic notch above from the lesser sciatic notch below
- Acetabulum forms the socket of the hip joint and this is formed by the union of ischium
 - During development we have a tri-radiate cartilage inserted here separating the 3 bones *but ultimately they fuse)
- Obturator foramen – this is part of the wall of the pelvis
 - This is a large opening bounded by the rami of the pubis and the ramus of the ischium

Sacrum

- This is a triangular bone made up of 5 fused vertebrae and they are original transverse processes.
 - Original transverse processes fuse together to form a lateral mass and the superior surface of the lateral mass is called the **sacral ala**
 - Sacral ala** = the top of the fused transverse processes of the sacral vertebrae that come together
- The Superior surface also has a midline prominence called the **sacral promontory**. The sacral ala sits on either side of this
- Sacrum articulates above with the lumbar-sacral joint above, below with the coccyx via the sacrococcygeal joint and laterally with the ileum on either side of the sacroiliac joint



- Iliac crest** and **iliac fosse** project up of the **pelvic brim**
- Everything above the pelvic brim is called the **false pelvis or greater pelvis** (including iliac crest and iliac fosse)
- Everything below the pelvic brim is called the **true pelvis or lesser pelvis**
- The line delineating the false pelvis from the true pelvis is the **iliopectineal line**. This is basically the continuation of the pectineal line of the pubis
- This is part of the posterior abdominal wall as the iliacus starts within here
- The false pelvis is really considered part of the posterior abdominal wall and it forms a protection for the abdominal viscera (and has nothing to do with the pelvic contents)
- The true pelvis (including the sacrum and the coccyx) sits between the pelvic inlet and pelvic outlet
- Tracing along the pelvic brim:
 - Pelvic inlet is bounded by the pubic crest anteriorly. Then it follows the pectineal line of the pubis. There is an arch of the pelvic inlet called the arcuate line of the ilium. Then we get to sacral ala and into the sacral promontory

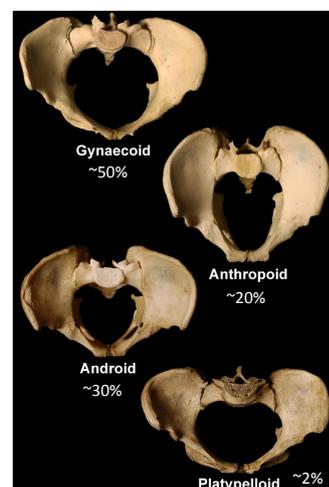


Iliopectineal line demarcating false pelvis above from true pelvis below

Pelvic types (based on shape of inlet)

- They differ in shapes
- Females – pelvic inlet is oval in shape and wider transversely – this is the widest transverse diameter of the pelvic cavity – important for child birth
 - Gynaecoid** – classic female pelvic inlet
- Male
 - typical pelvic type is **android**
 - anthropoid** is also a common variant
- There are also other ways that male and female pelvis can differ [diagram]

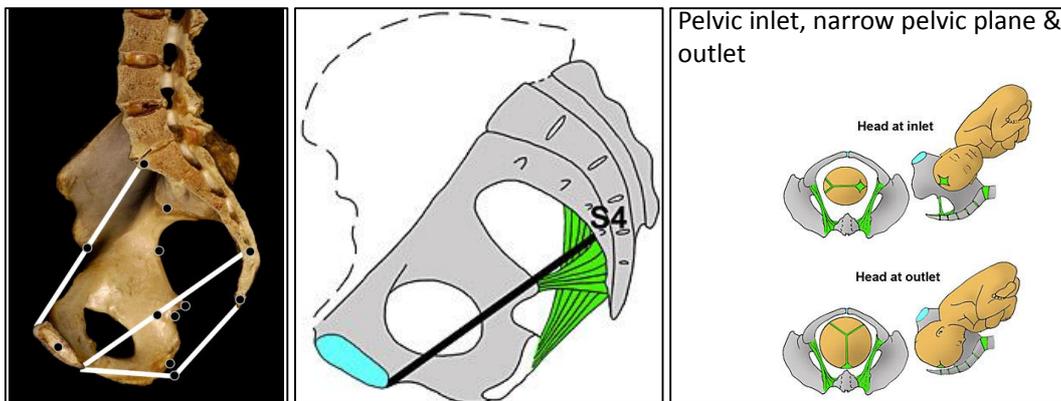
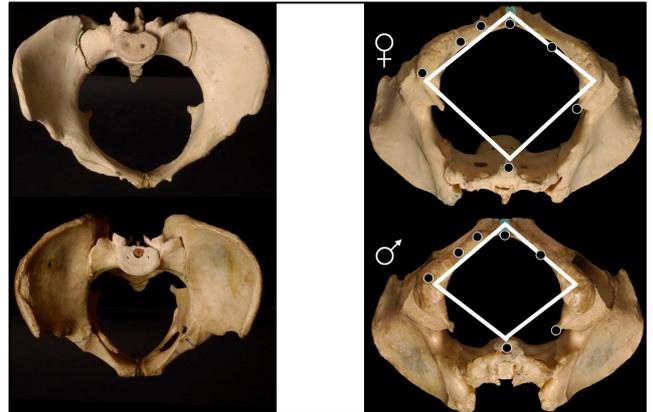
	male	female
general structure	thick and heavy	thin and light
shape of inlet	heart shaped	transverse oval
greater sciatic notch	narrow inverted v	almost 90deg
subpubic arch	acute angle	obtuse angle
acetabulum	large	small
obturator foramen	round	oval



- There is variation in the **general structure, shape of inlet, angulation of the greater sciatic notch, in the sub-pubic arch, the size of the acetabulum** and the **size of the obturator foramen**
- The width of the acetabulum when compared to the width of the pubic bone is a particularly reliable index of male and female differences. In the female, the distance from acetabulum to pubic symphysis is greater than the width of the acetabulum. In the male it is about the same

Pubic inlet/outlet

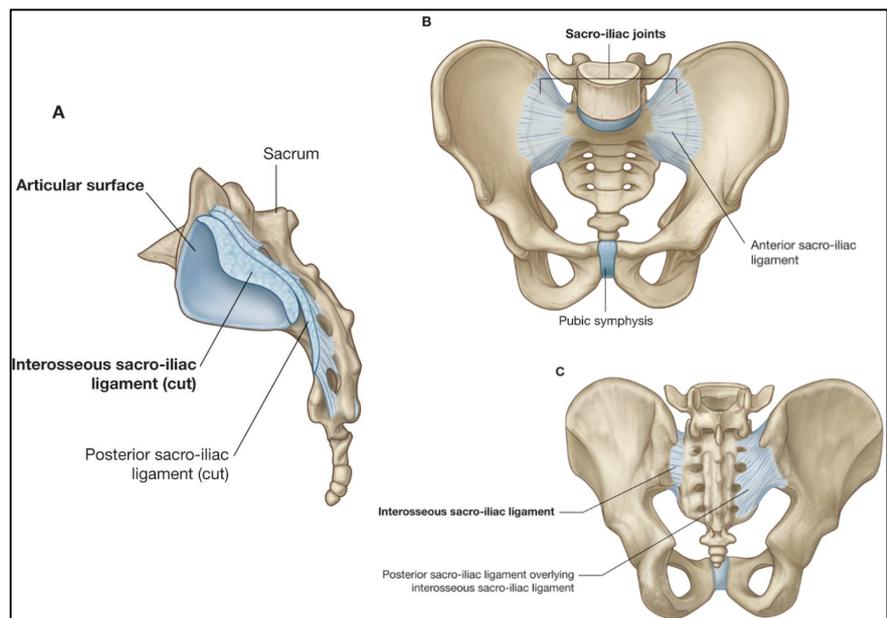
- Pelvic outlet is diamond shaped
- This is defined as extending from the **pubic symphysis** anteriorly to the **tip of the coccyx** posteriorly, and either side are the **ischial tuberosity's**
- There are variations in dimension between male and female but diamond shape is conserved



- Babies need to go in through the inlet and out through the outlet
- Plane of least dimension passes through the ischial spine, S4 and base of pubic bone (this is where the babies head goes through)
- During child birth, the babies head rotates constantly and flex to presents its narrowest part of the body (which is the head) to the narrowest opening of the pelvis

Joints of the pelvis

- The joints of the pelvis comprise of a pair of **synovial joints** laterally (**sacroiliac joints**) and **secondary cartilaginous joints** in the midline (**pubic symphysis**)
- The sacroiliac joint is a synovial joint
 - Articular surface is an ear shaped surface/ auricular surface of the posterior part of the ala of the sacrum and ear shaped surface of the ilium



- Most important part of the sacroiliac joints are the supporting structures
- Sacroiliac ligaments attach directly anteriorly between the sacrum and the ilium – this is called the anterior sacroiliac ligament
- Sacroiliac ligaments behind are called posterior sacroiliac ligaments
- These anterior and posterior sacroiliac ligaments pass across the front of the anterior and posterior parts of the joint reinforcing the capsule