

Hip

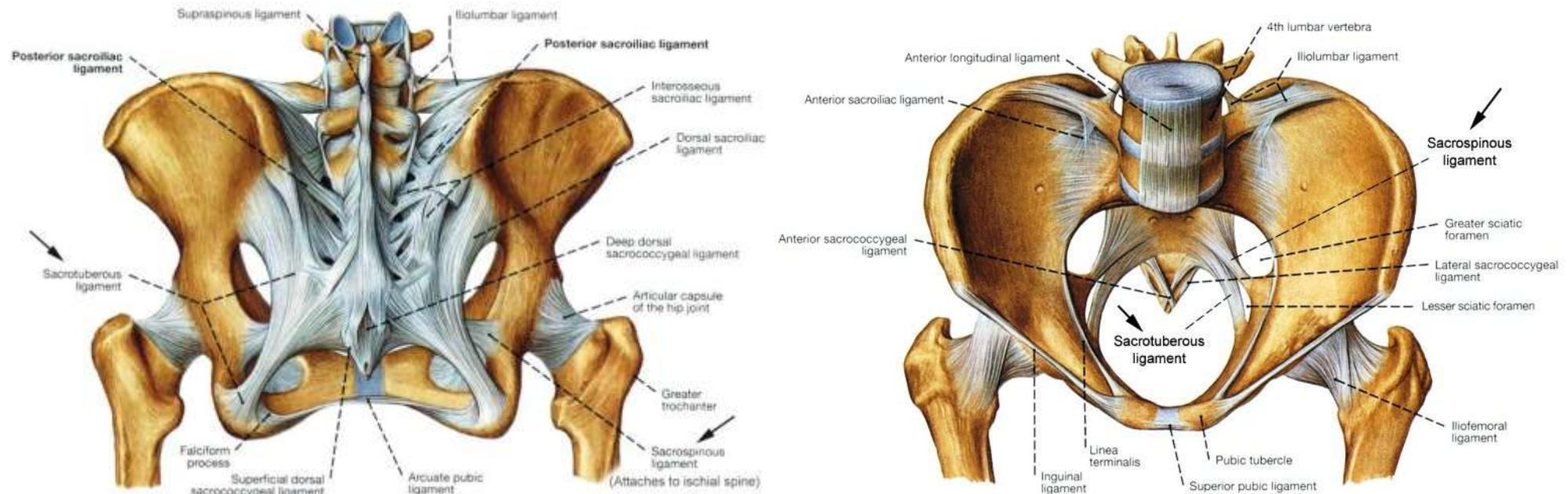


Figure 1 - Hip and Pelvis

The terms hip and pelvis are frequently used interchangeably, but strictly speaking, the pelvis is a girdle of bones and the hip is a joint. The pelvis consists of

- The sacrum (effectively 5 vertebrae fused together)
- Two innominate bones. The innominate started as three separate bones: the ilium (at the top), the ischium (at the base), and the pubis (at the front); but the three grew and fused together (this being a true example of fused bones between which no movement occurs, unlike the cranial bones).
- Between these are joints
 - Two sacroiliac joints (between the sacrum and the ilium)
 - One symphysis pubis (between the two pubic bones at the front)

Hip Joint:

Bones: innominate and femur

Joint: ball and socket

Ligaments: three ligaments wrapping around hip, ligamentum teres (from the head of the femur)

Movements – flexion/extension, adduction/abduction, rotation, circumduction.

Here would be an excellent time to explain something mentioned earlier in the structure of bones. The Haversian system are canals within the bony structure, however it is along these canals that the reinforcing ossification takes place taking the form of trabeculae (lines of force within the bone)

Muscles of the hip:

- Flexors:
 - **Rectus femoris**: from anterior ilium then down as part of quads
 - **Sartorius**: from ilium down and medial to medial side tibia
 - **Psoas**: from T12 and the side of the whole lumbar spine (anterior to TPs, down to top of femur) flexes spine and hip.
 - **Iliacus** : from iliac fossa, down to same insertion of Psoas; flexes hip
 - **Tensor fascia lata** (TFL): From anterior gluteal fossa, down to ilial tibial tract (ITT).
 - **Adductor Longus**: from pubis down to medial femur

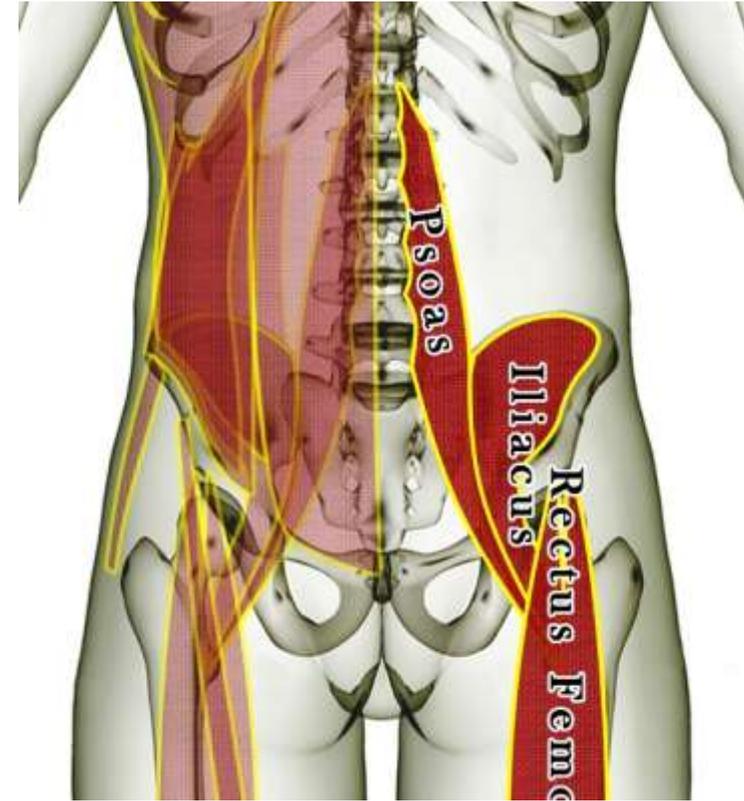
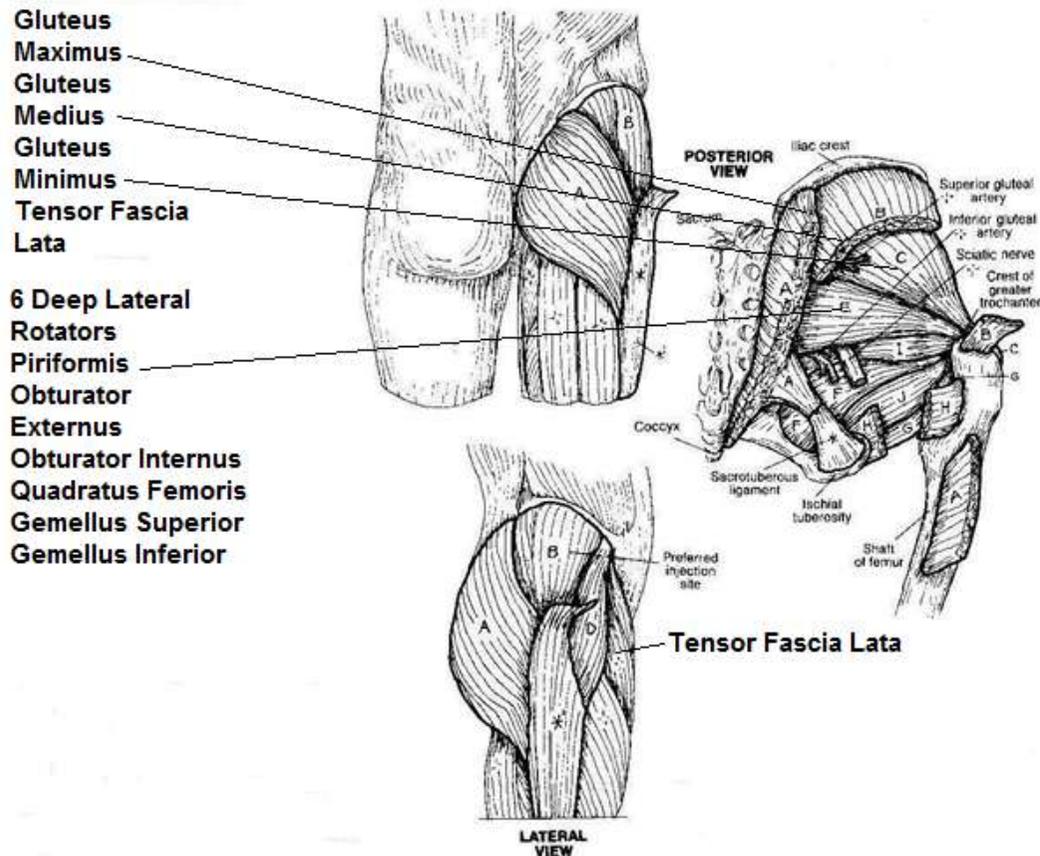


Figure 2 - Hip Flexors



Extensors:

- **Hamstrings** : from Ischium to top tibia
- **Gluteus maximus** : iliac crest, sacro-iliac ligament, and sacrotuberous ligament, down and across to the top lateral edge of femur; extends and laterally rotates hip.
 - **Adductor Magnus**: inferior pubic rami and ischium, down to medial femur just above knee joint (and across to top of femur); it extends and adducts the thigh

Figure 3 - Gluteal Muscles and Deep Lateral Rotators

Abductors:

- **Gluteus medius:** (fig. 63): from gluteal fossa at the side, down to the top of the femur; it abducts and can medially rotate femur. It lies on top of:
- **Gluteus minimus:** from gluteal fossa at side, down to top of femur; it abducts and medially rotates femur.

Lateral rotators:

- **Gluteus maximus**
- **Deep lateral rotators:** piriformis, Obturator internus and externus, gemellus superior and inferior, and quadratus femoris.

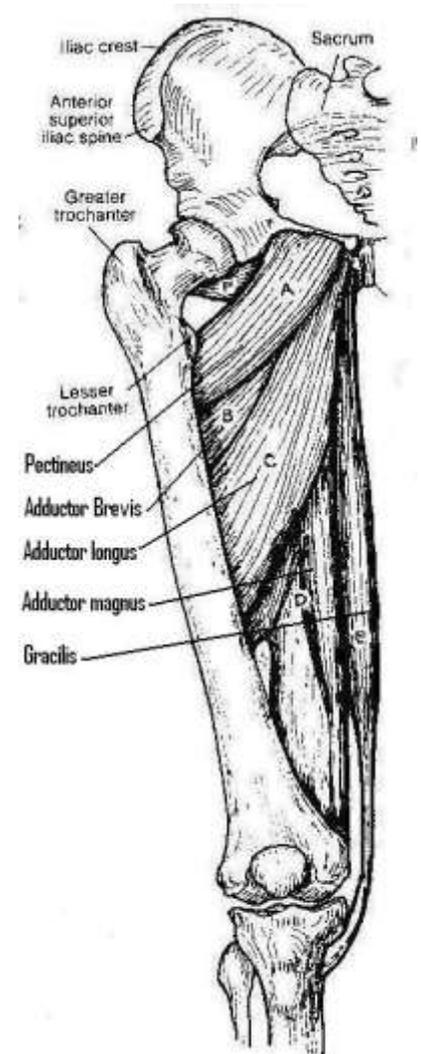
Medial rotators:

- **Gluteus medius and minimus, TFL**

Adductors:

- **Pectineus,**
- **Adductor:**
 - Brevis
 - Longus
 - Magnus
 - Gracilis : from points on pubic bone, down across to femur (except for gracilis, which passes down to top of medial tibia)

Figure 4 - Adductors Muscles



Problems affecting hip

Osteoarthritis: generally regarded as a 'wear and tear' problem. Pain controlled with drugs, else joint replaced



Figure 5- Osteoarthritis of Hip (also showing a normal one)

Fractures: frequently of ring of pelvis and femoral head (between ball and shaft of femur), repaired surgically with reinforcing bar, or joint replaced; usually in older people



Fracture in ring of pelvis

Figure 6 - Fracture of Neck of Femur



Slipped epiphysis: this only occurs in young, growing, people. The upper femoral epiphysis is a sheet of cartilage between the neck and the ball of the femur; it presents as a potential line of weakness. This weakness can manifest with the head of the femur slipping back and down; repaired surgically. Here it can be seen on the right of the picture

Figure 7 - Slipped Epiphysis



Congenital dislocation of the hip:

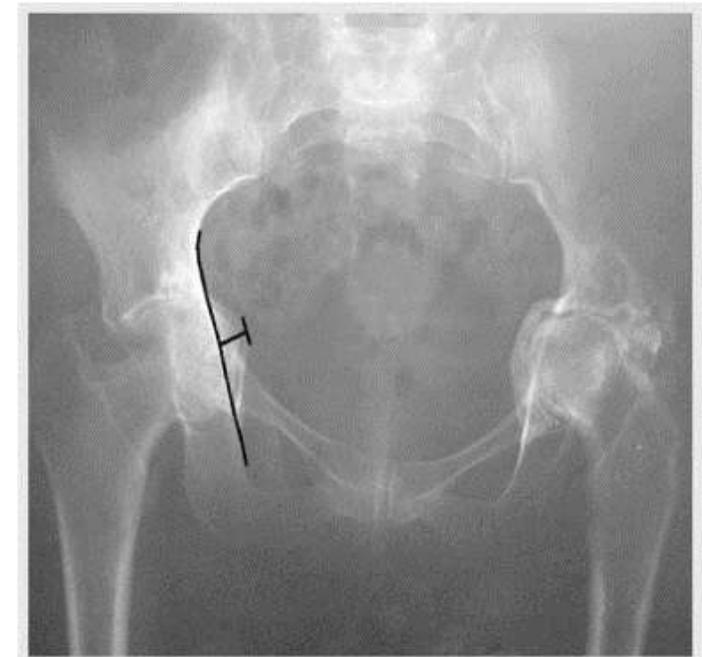


Figure 8 - Congenital Dislocation of the Hip

Abnormally shallow hip socket at birth with varying degrees of severity. This can cause mobility later in life if left undiagnosed. Treated by maintaining a forced abduction of the hips (via a brace) to 'push' the femoral head into the acetabulum and force it to deepen

Protrusio acetabuli: abnormally deep socket at birth. The deeper it is the less bone between the hip socket and the pelvic cavity. It can result in fractures. Can require bone grafts or joint replacement.

Figure 9 - Protrusio Acetabuli



Sotelo-Garza and Charnley method.

Pubic Diastasis



Pubis diastasis is an abnormal widening of the pubic symphysis. It usually follows a difficult birth of a child