HIP PAIN IN THE YOUNG ADULT

Mazloumi MD

- As early as 1965, Murray described the subtle “tilt deformity” of the proximal femur that he believed would lead to osteoarthritis.

- This theory that small deformities of the hip from childhood would inevitably lead to osteoarthritis was again stated in 1975 by Stulberg et al., who coined the term “pistol grip” deformity of the proximal femur

pistol grip- deformity of the proximal femur

Impingment

- In the mid 1990s, Ganz et al. refined the description of hip impingement due to femoral and acetabular deformity

- Periacetabular osteotomy (PAO), with or without femoral osteotomy

The “C sign” is suggestive of intraarticular hip pathology.

PATIENT HISTORY

- Pain that occurs with sitting for prolonged times but is minimal with standing and walking suggests hip impingement.
- Weight-bearing pain that is relieved by sitting or lying is more nonspecific, with possibilities including osteoarthritis, osteonecrosis, stress fracture, dysplasia, and inflammatory arthritis.

PATIENT HISTORY

- Pain associated with a popping or a snapping sensation can be caused by a labral tear or snapping psoas tendon or iliotibial band

PHYSICAL EXAMINATION

- The Trendelenburg test is positive for hip abductor weakness when the pelvis sags more than 2 cm during single-leg stance on the limb tested

Thomas test detects hip flexion contracture by extending affected hip while contralateral hip is held flexed

PHYSICAL EXAMINATION

- The anterior impingement test or FADIR (***Flexion ADduction Internal Rotation)*** test is performed by flexing the hip to 90 degrees, adducting across the midline, and maximally internally rotating the hip

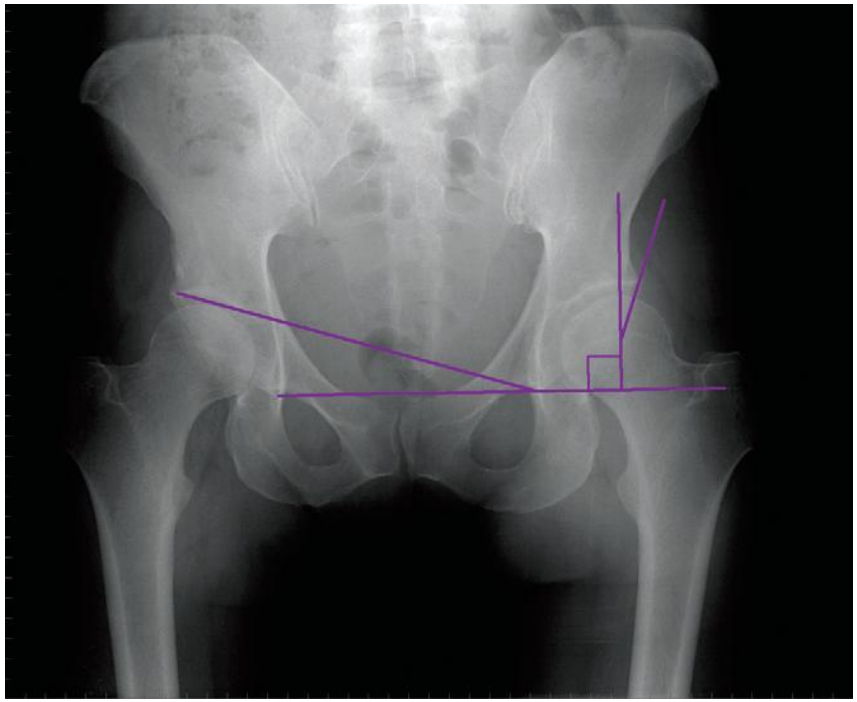
PHYSICAL EXAMINATION

Apprehension test.

FABER (***Flexion ABduction External Rotation) test***

The inclination of the acetabulum is measured on the anteroposterior pelvic view with the Tönnis angle

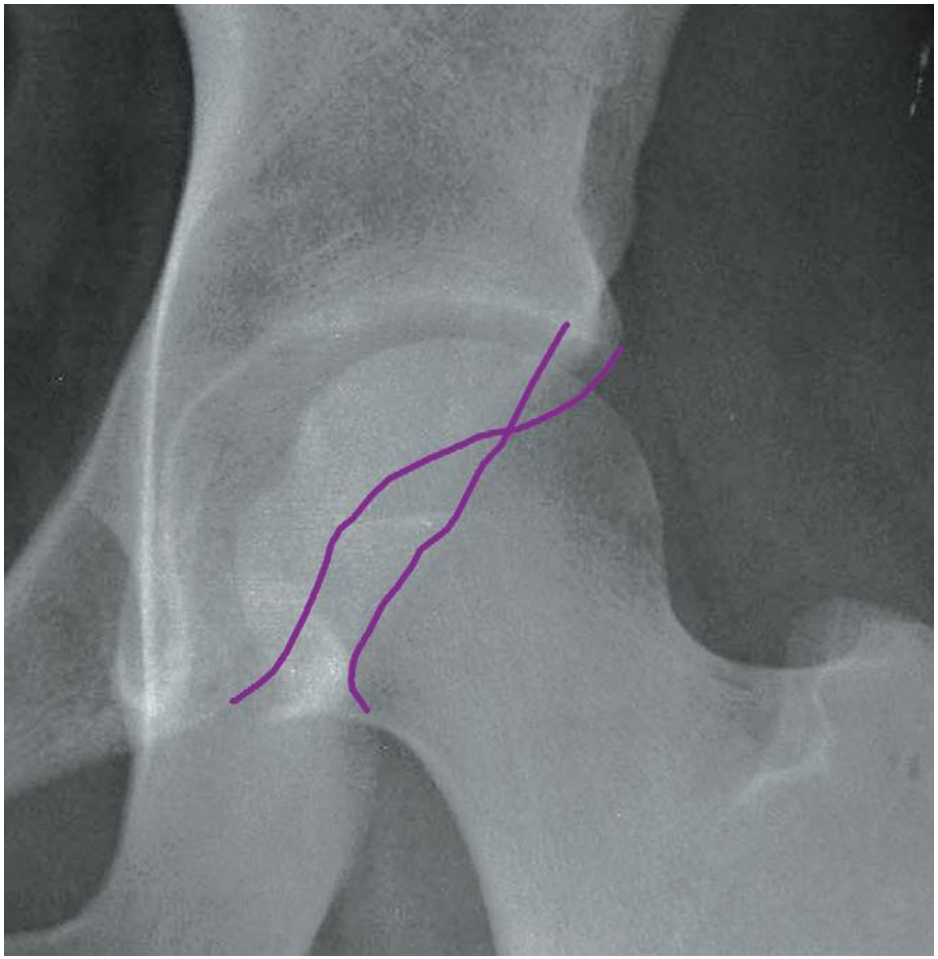
- Lateral center edge (LCE) angle of Wiberg measures arc of superolateral acetabular coverage beyond vertical line drawn through center of femoral head. Tönnis angle measures inclination of radiographic sourcil compared with interteardrop line



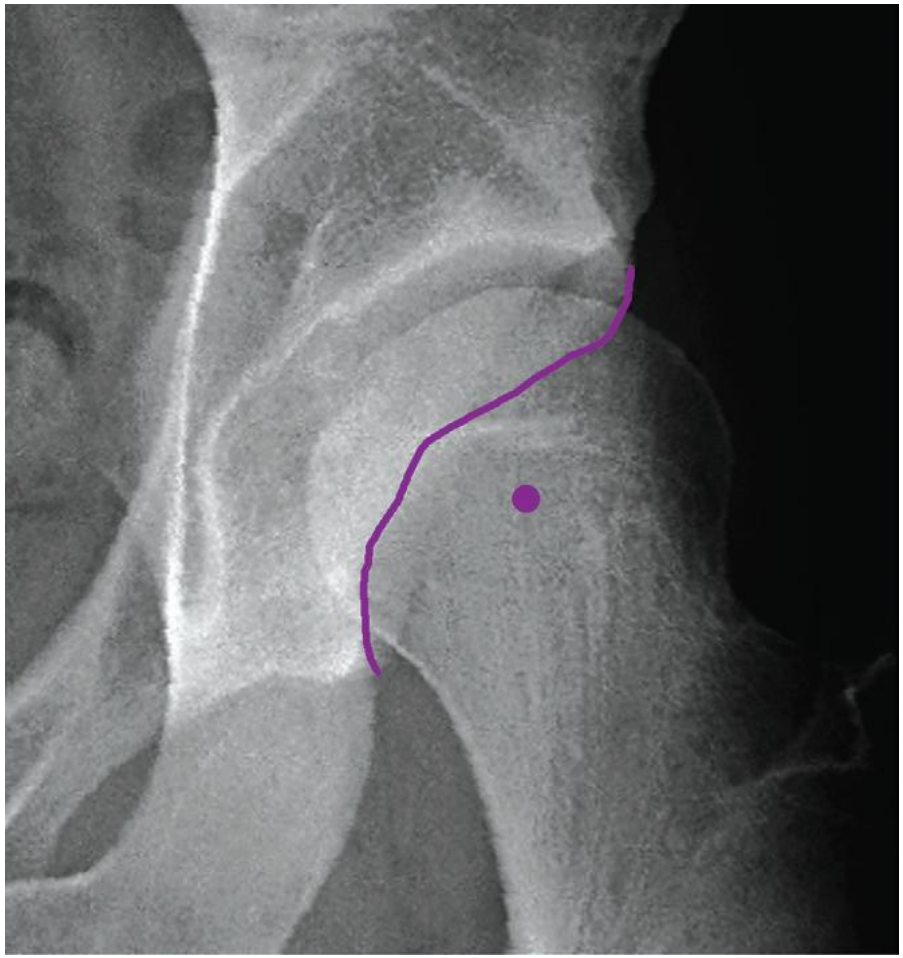
CE angle of Wiberg

- An LCE angle of less than 20 degrees is indicative of hip dysplasia with inadequate coverage of the femoral head by the lateral dome of the acetabulum. Hips with LCE angles in the range of 20 to 24 degrees have borderline dysplasia, and hips with an LCE angle of more than 40 degrees display overcoverage

Crossover sign is indicative of acetabular retroversion with anterior overcoverage of femoral head.



A positive posterior wall sign exists when the posterior wall lies medial to the femoral head center and indicates deficient posterior wall coverage

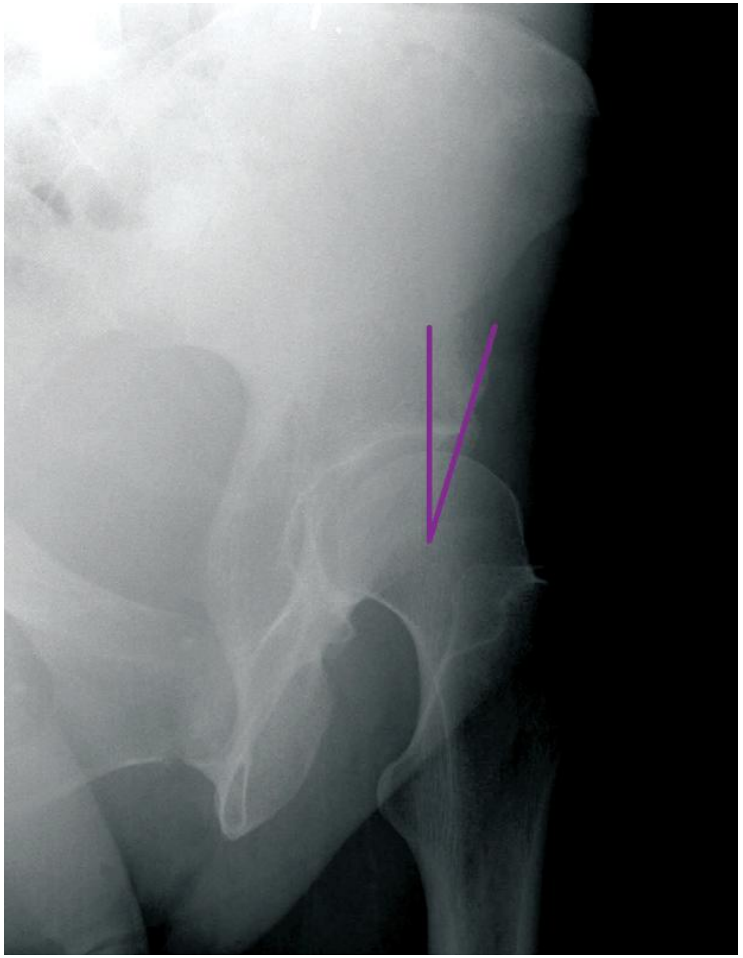


Coxa profunda

- Coxa profunda is present when acetabular fossa extends medial to ilioischial line and indicates excessive acetabular depth sometimes associated with pincer type impingement

Angle of Lequesne

- The anterior center edge (ACE) angle of Lequesne is generated on the false profile view of the pelvis to assess the anterior coverage of the hip



Dunn view

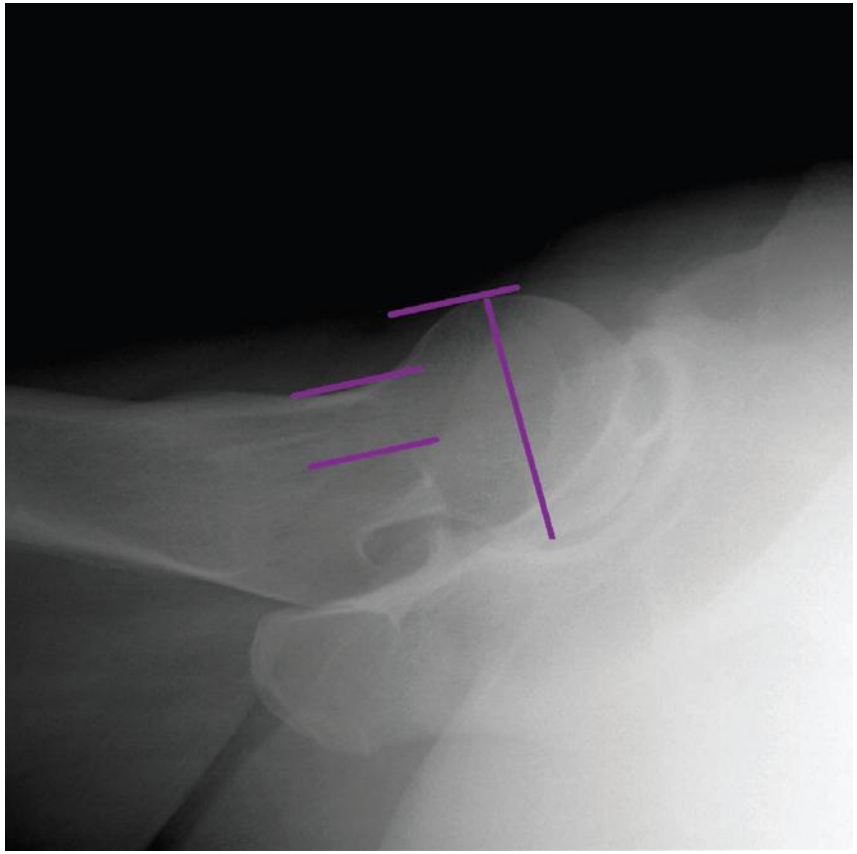
- The modified Dunn view is obtained with the patient supine with the hip in 45 degrees of flexion, 20 degrees of abduction, and neutral rotation

Normal value for the alpha angle to be 42 degrees in asymptomatic hips.

- The alpha angle is used to assess the femoral head-neck junction on the lateral and modified Dunn views
- An alpha angle of more than 50 to 55 degrees is generally considered consistent with a cam deformity of the femoral head-neck junction

The anterior head-neck offset ratio is determined from the cross-table lateral view

- The ratio is determined by dividing this distance by the diameter of the femoral head. a value of less than 0.15 has a 95% positive predictive value of diagnosing femoracetabular impingement.



Tönnis grading system

- Grade 0: no signs of osteoarthritis
- Grade 1: sclerosis of the joint with minimal joint space narrowing and osteophyte formation
- Grade 2: small cysts in the femoral head or acetabulum with moderate joint space narrowing
- Grade 3: advanced arthritis with large cysts in the femoral head or acetabulum, joint space obliteration, and severe deformity of the femoral head.

Imaging

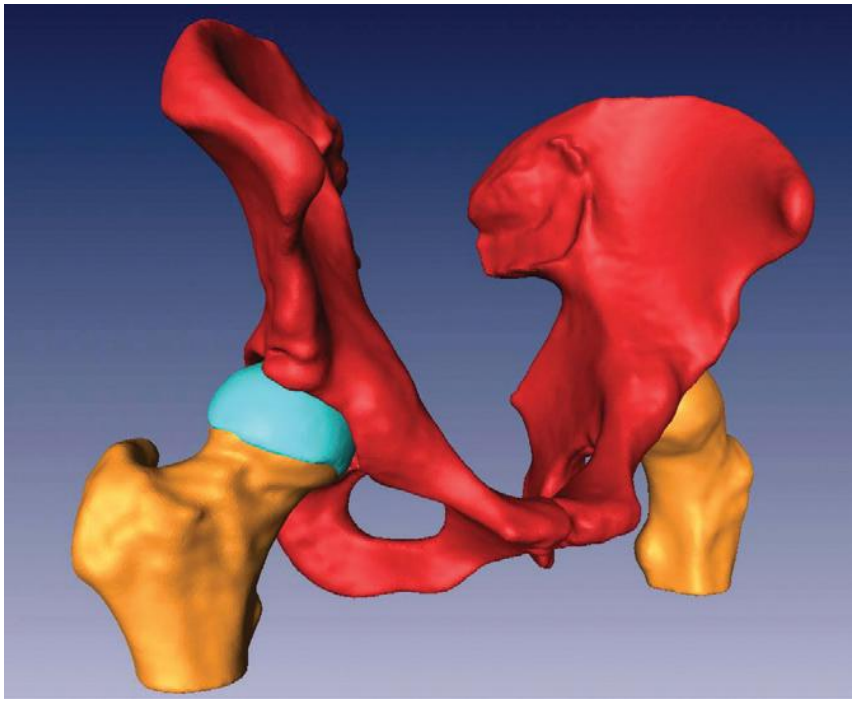
- Sclerosis seen at femoral head-neck junction is indicative of impingement

Imaging

- Impingement cyst is seen at anterolateral head-neck junction in patient with combined cam and pincer impingment

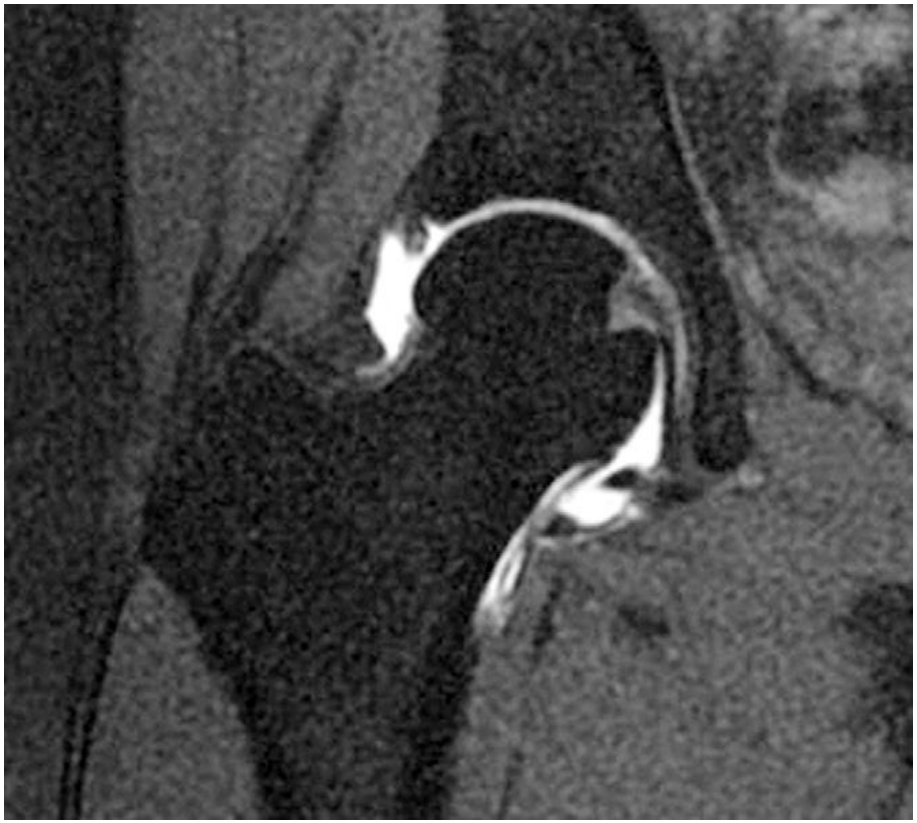
Imaging

- CT of pelvis with three-dimensional reconstruction shows acetabular overcoverage and direct surgical correction. (Courtesy of Christopher Peters, MD.)



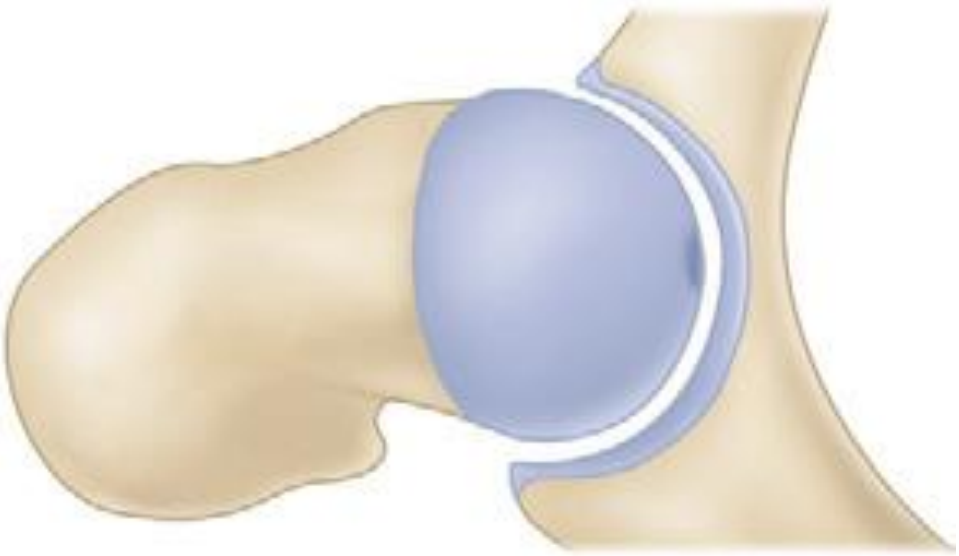
Imaging

- MR arthrogram shows gadolinium tracking into labral chondral junction, indicating a labral tear.



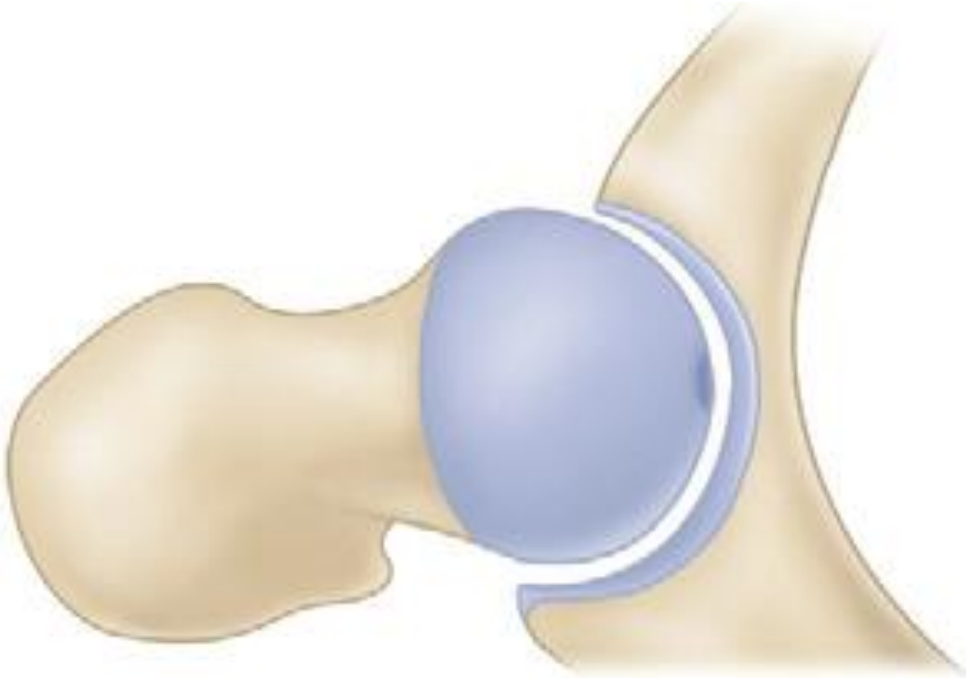
Cam type

- Cam impingement occurs when prominent head-neck junction contacts acetabular rim during hip flexion.



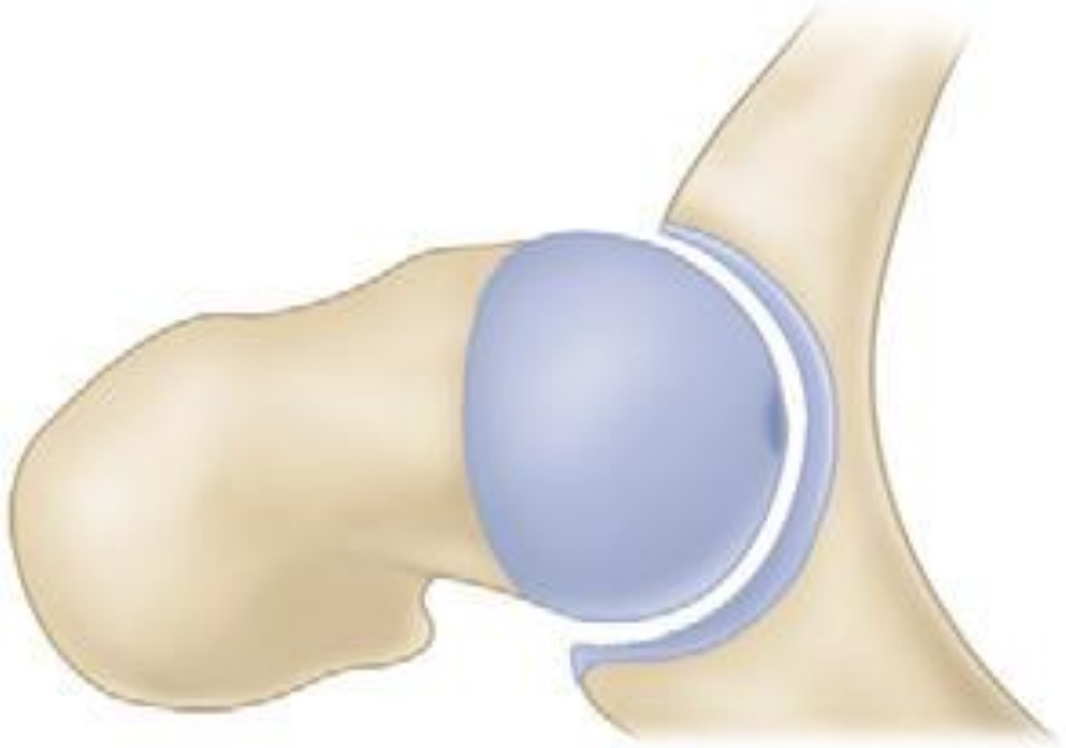
Pincer type

- Pincer impingement occurs when acetabulum has localized or global overcoverage leading to contact of acetabular rim with femoral head-neck junction during normal hip motion



Combined type

- Combined cam and pincer femoroacetabular impingment



Operation

- Delamination of articular cartilage secondary to impingement injury