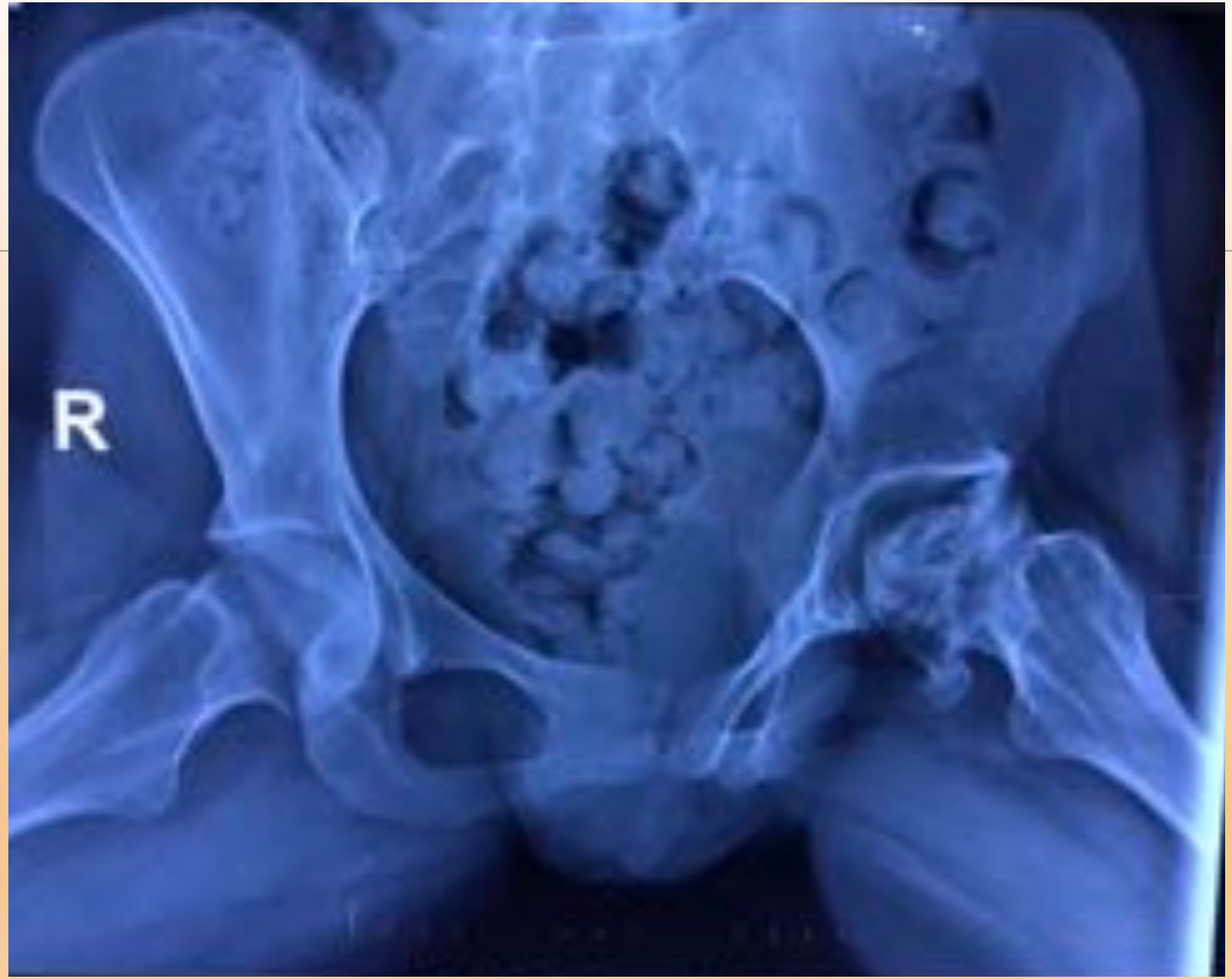


Femoro-Acetabular Impingement

Synonym

CERVICO-ACETABULAR IMPINGEMENT,

ACETABULAR RIM SYNDROME

Introduction

Abnormal contact between the femur and acetabulum which leads to labral damage and various degrees of chondral injury when hip goes into flexion.

Occurs in patients with :

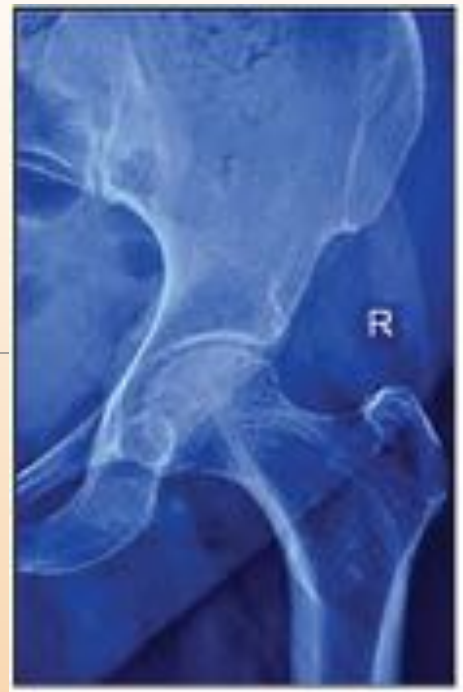
- Abnormal hip morphology
- Normal morphology but excessive range of movement

Classification
Ganz et al

Cam type

Pincer type

Mixed type



CAM impingement

Refers to an abnormal non spherical bony bump at the head neck junction of the femur usually in young athletic males.

Usually found anterolaterally.

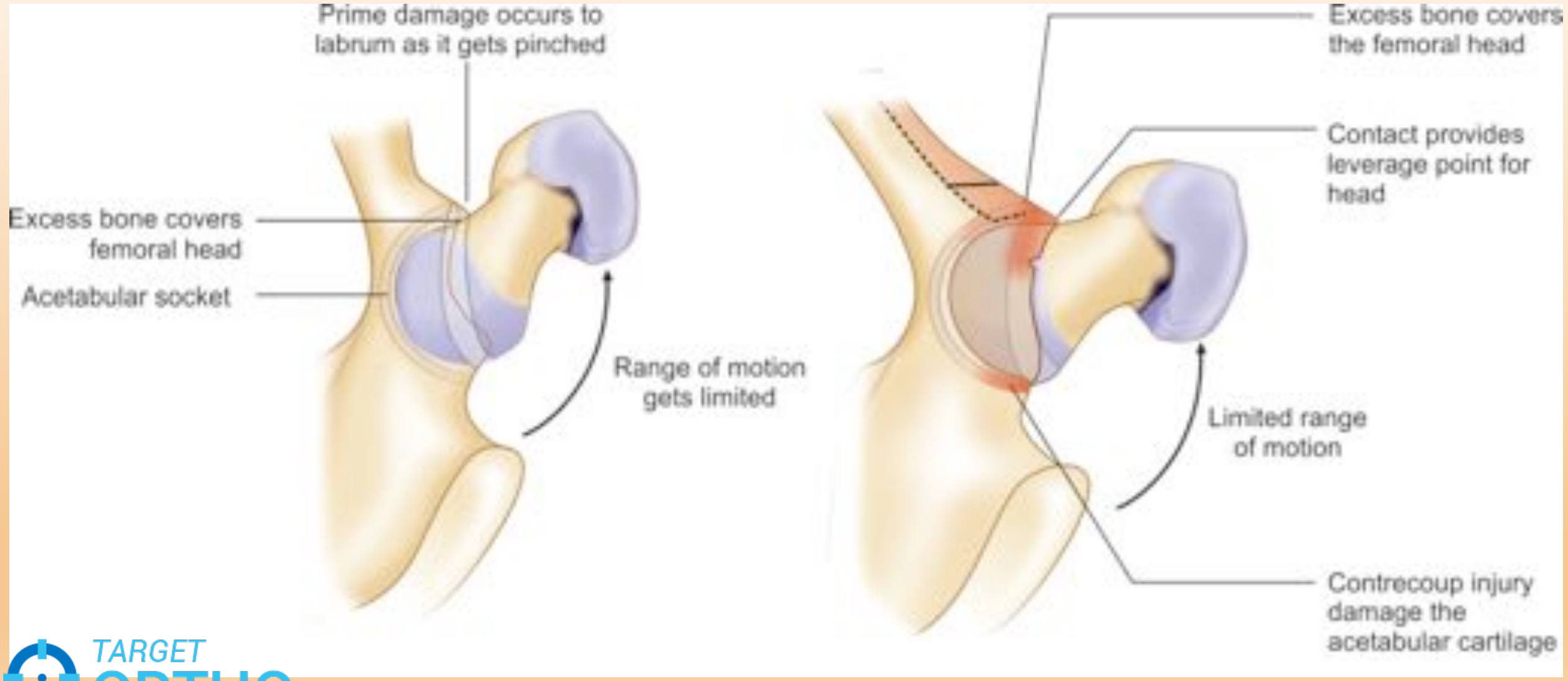
Sphericity mismatch causes shearing at the chondro-labral junction, leading to cartilage delamination and labral separation.

PINCER impingement

Refers to acetabular based disorder usually in active middle-aged women.

Impinging osteophyte mostly at the anterosuperior acetabular quadrant or problems are there in acetabular version (usually retroverted acetabulum) that lead to over coverage of femoral head.

The femoral neck impinges against the retroverted acetabulum and crushes the labrum creating intra-substance tearing and thus cartilage injuries.



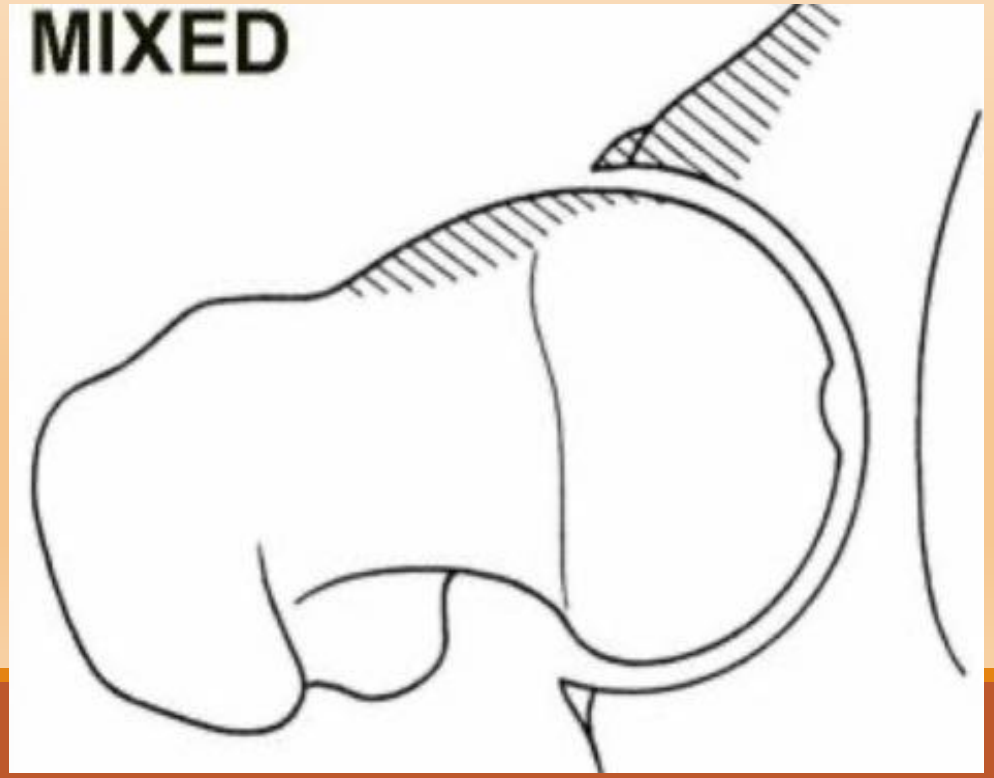
Most common ?

A. Mixed > Cam > Pincer

B. Pincer > Cam > Mixed

C. Cam > Pincer > Mixed

D. Mixed > Pincer > Cam



Prognosis

Natural history believed to lead to early onset hip dysfunction and arthritis

Symptoms

Healthy, active adults (Ages 25 – 50)

Athletic activities with extreme range of hip motion, (Ice Hockey, Martial Arts, Football, Track - field gymnastic, jumpers, runners)

Activity related groin or hip pain, exacerbated by hip flexion

Difficulty sitting

Mechanical hip symptoms of clicking or popping

Can present with gluteal or trochanteric pain

- due to aberrant gait mechanics

Q. Position of hip in Impingement Test?

A. Flexion Abduction External Rotation

B. Flexion Adduction Internal Rotation

C. Flexion Adduction External Rotation

D. Flexion Abduction Internal Rotation

Examination

Patient shows his hip with the grip ‘’C’’ sign

Limited hip flexion (<90 degrees), especially with internal rotation (<5 degrees)

Positive impingement test:

- pain in flexion, adduction & internal rotation of hip

IMAGING

MCQ!!

First radiological sign in cam-type FAI is anterolateral migration of femoral head

while

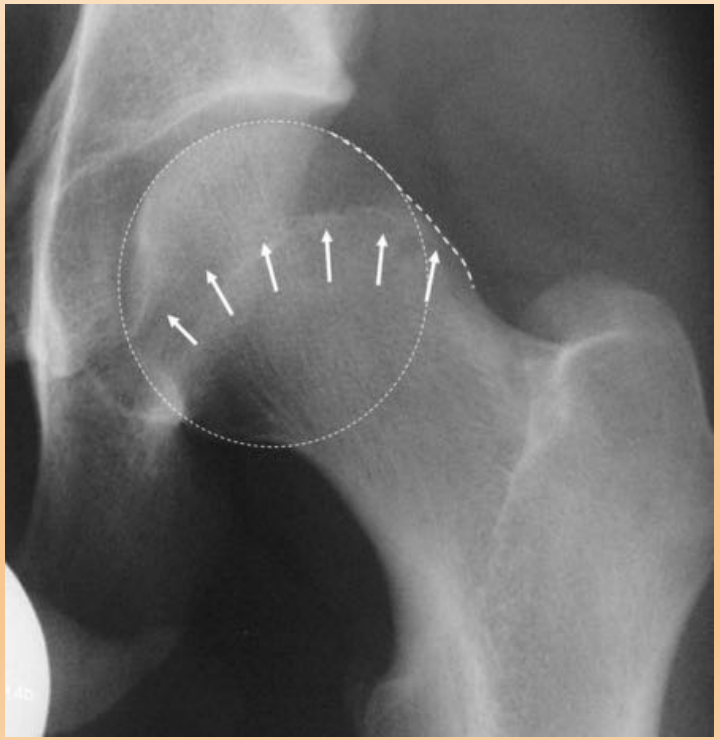
in pincer-type FAI it is posteroinferior joint space narrowing.

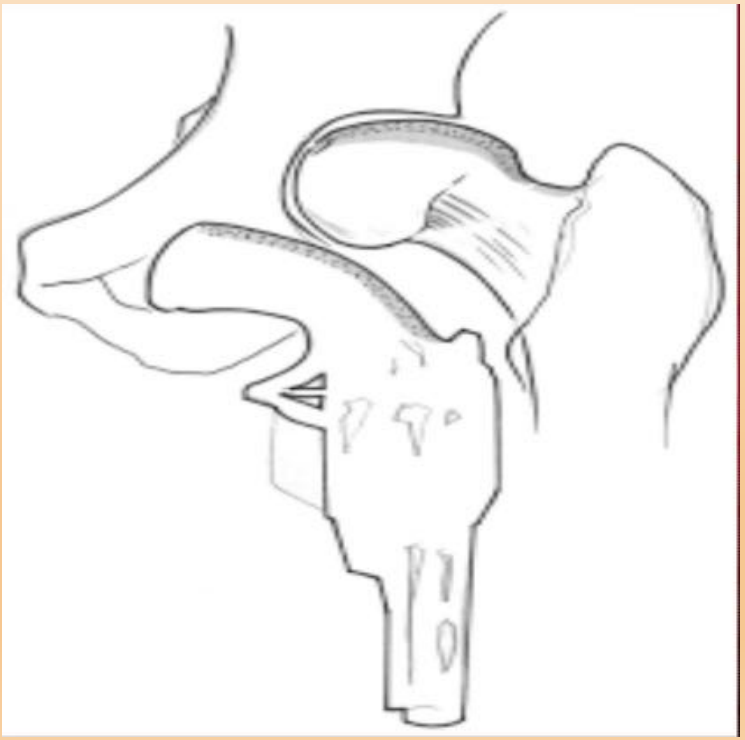
Imaging

AP X ray view & true lateral view (hip placed in 15 degrees of internal rotation)

CAM TYPE

Pistol Grip Deformity





Imaging

CAM TYPE

Alpha angle increased

Alpha angle is formed (on frog leg lateral view) by a line through the center of femoral head and neck and a second line from the femoral head center to the point where the head exits a concentric circle drawn around it

> 50-55^{o} indicates Cam deformity

Imaging

CAM TYPE

Head neck offset ratio

If the ratio is <0.17, a cam deformity is likely present

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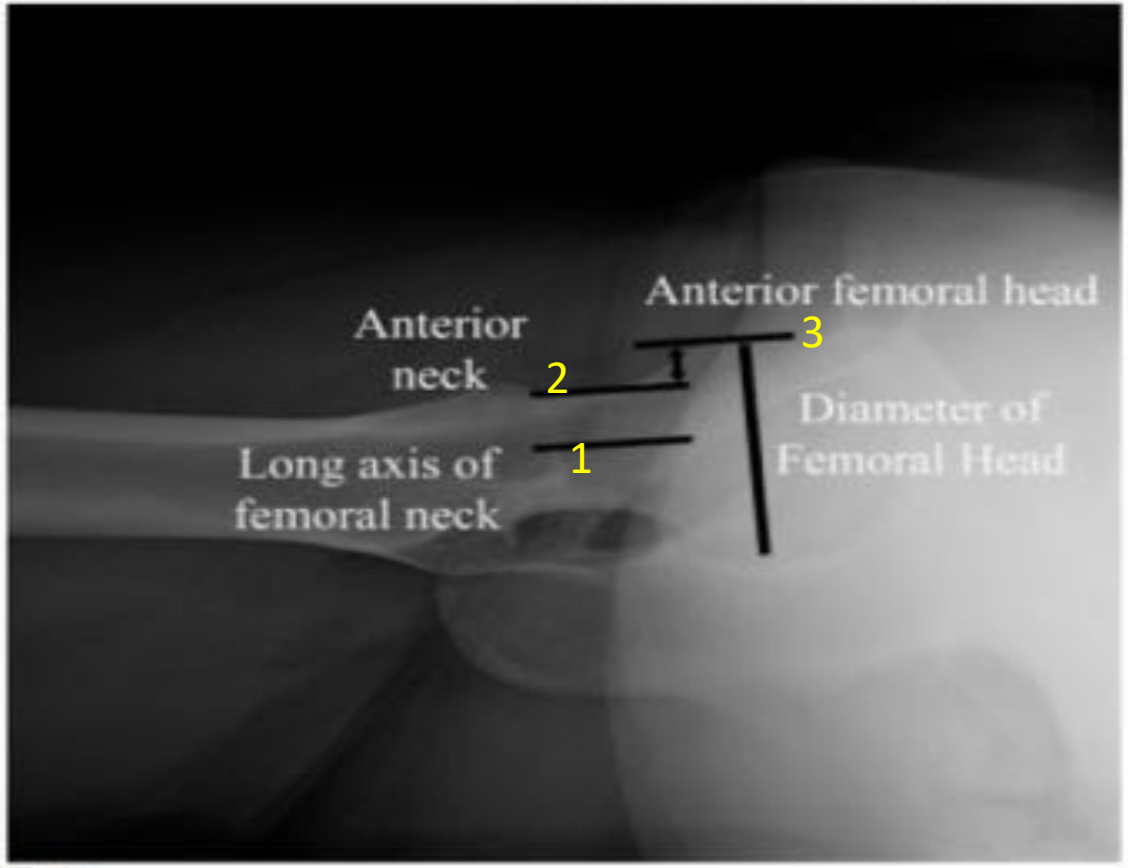


Fig. 19

The technique for calculating the head-neck offset ratio. Three parallel lines are drawn, with line 1 drawn through the center of the long axis of the femoral neck, line 2 drawn through the anteriormost aspect of the femoral neck, and line 3 drawn through the anteriormost aspect of the femoral head. The head-neck offset ratio is calculated by measuring the distance between lines 2 and 3 and dividing by the diameter of the femoral head[3]. If the ratio is <0.17, a cam deformity is likely present.

Imaging

AP X ray view & true lateral view (hip placed in 15 degrees of internal rotation)

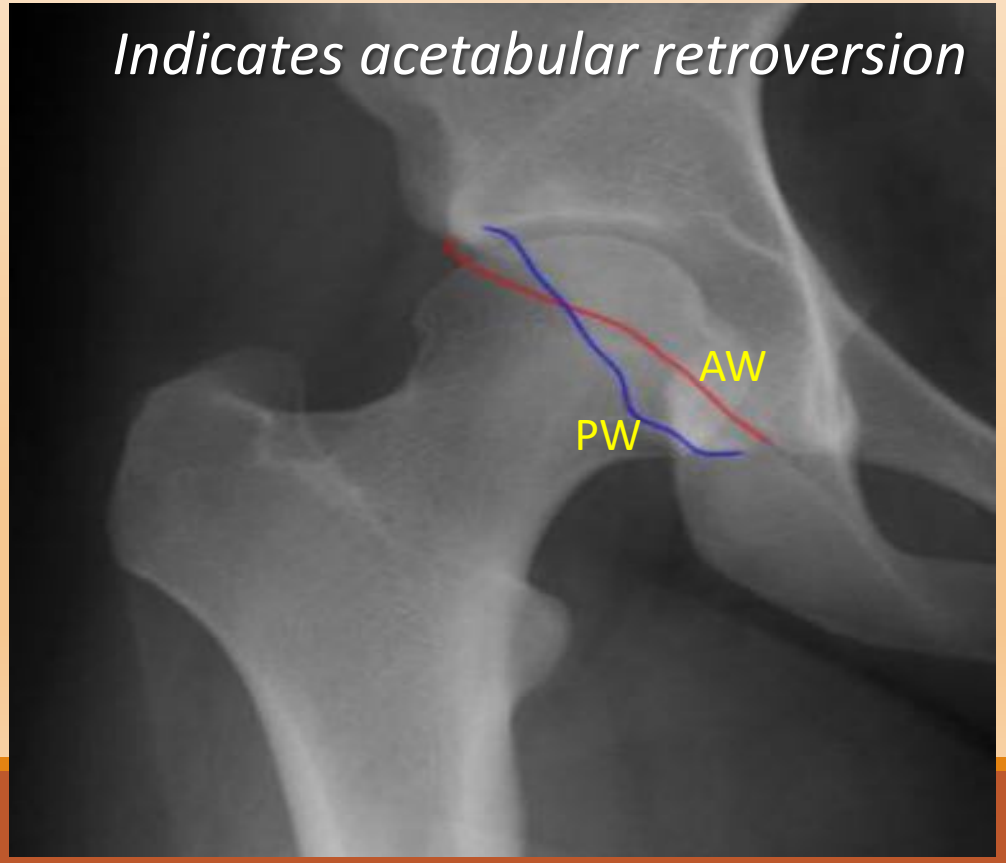
PINCER TYPE

Imaging

PINCER TYPE

Cross over sign

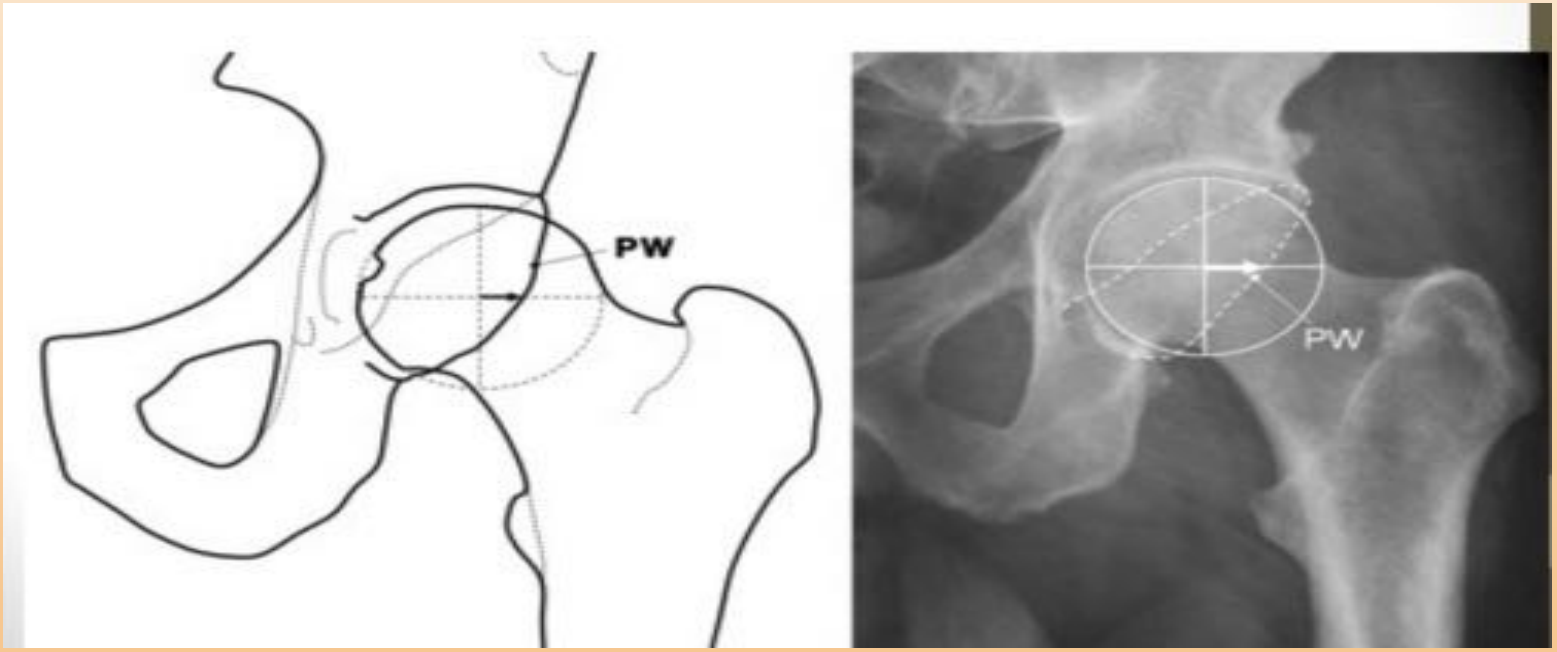
Anterior wall shadow (that is normally medial) crosses lateral to the posterior wall shadow on AP hip X-ray!



Imaging

PINCER TYPE

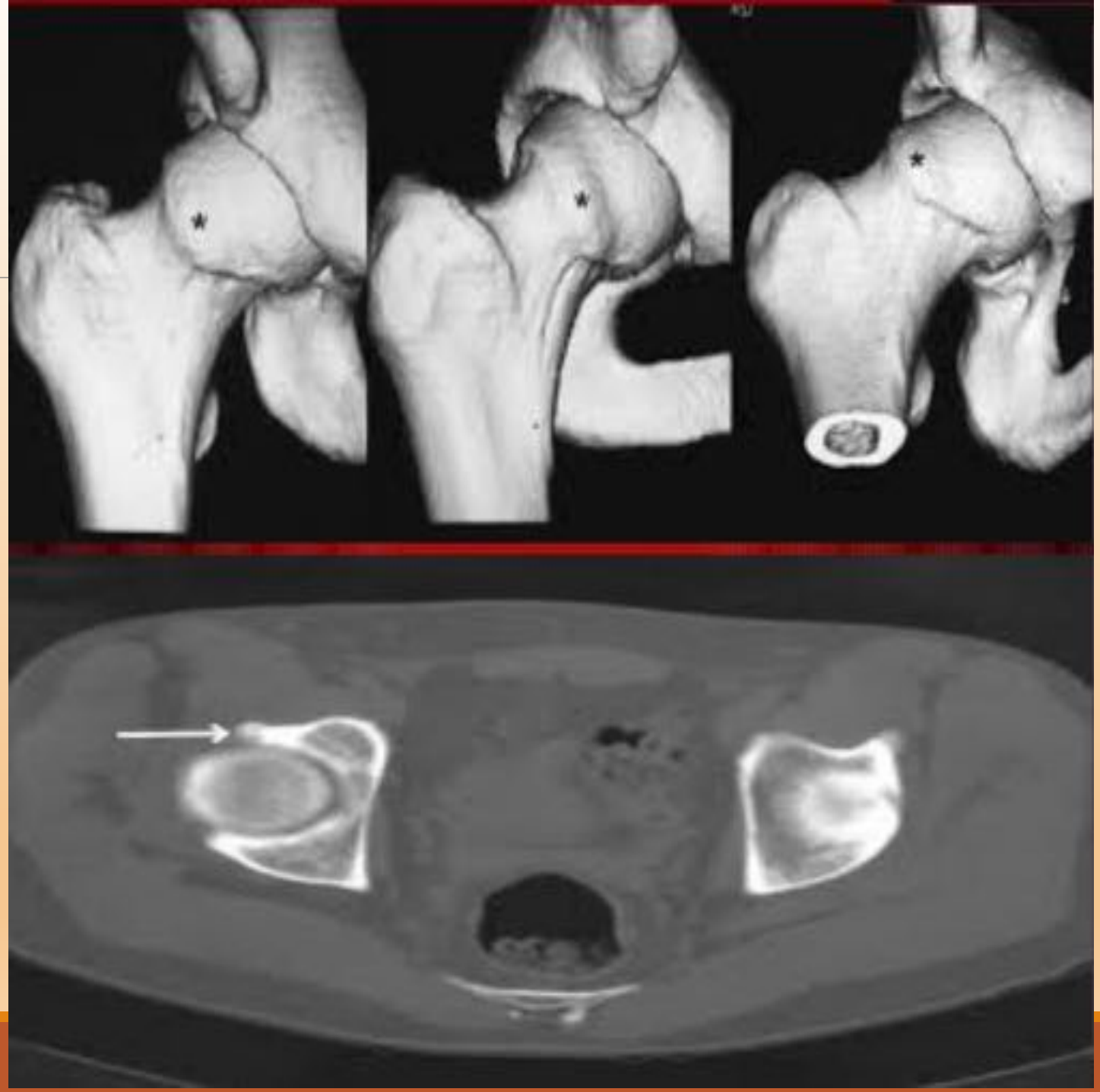
Posterior Wall sign



The posterior wall sign: Normally the center of the femoral head lies medial to the posterior wall. When it lies lateral to the posterior wall, the posterior wall sign is said to be positive and implies a retroverted acetabulum. The sign also reflects how much posterior wall coverage exists

Imaging

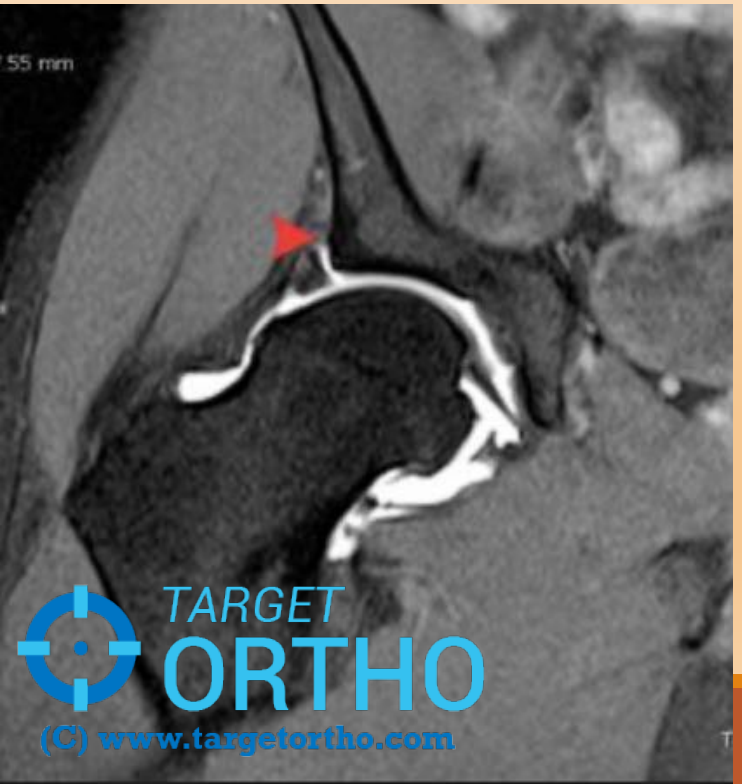
CT more efficient for bony structures, free intraarticular loose bodies

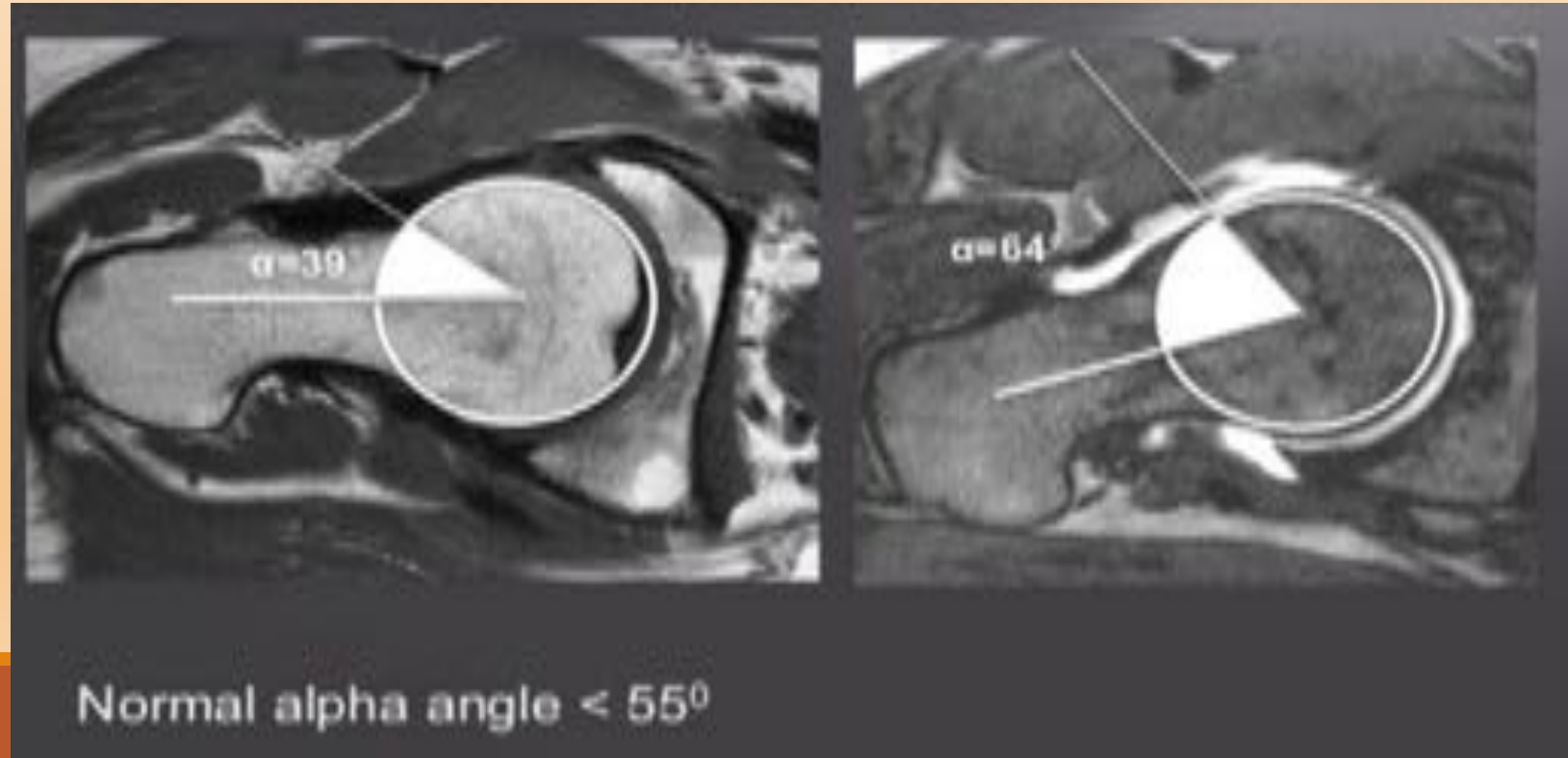


MRI & MRA

Best modality to evaluate for articular cartilage and labral damage

Can assess anatomy of femoral head/ neck junction abnormalities





Management

Conservative Treatment: The aim is to improve the symptoms

- Rest or modification of activities
- Avoid excessive motion activities
- NSAIDS and physiotherapy

Surgical treatment : The aim is to correct the cause of F.A.I. , improve hip motion

- Open surgery
- Hip arthroscopy

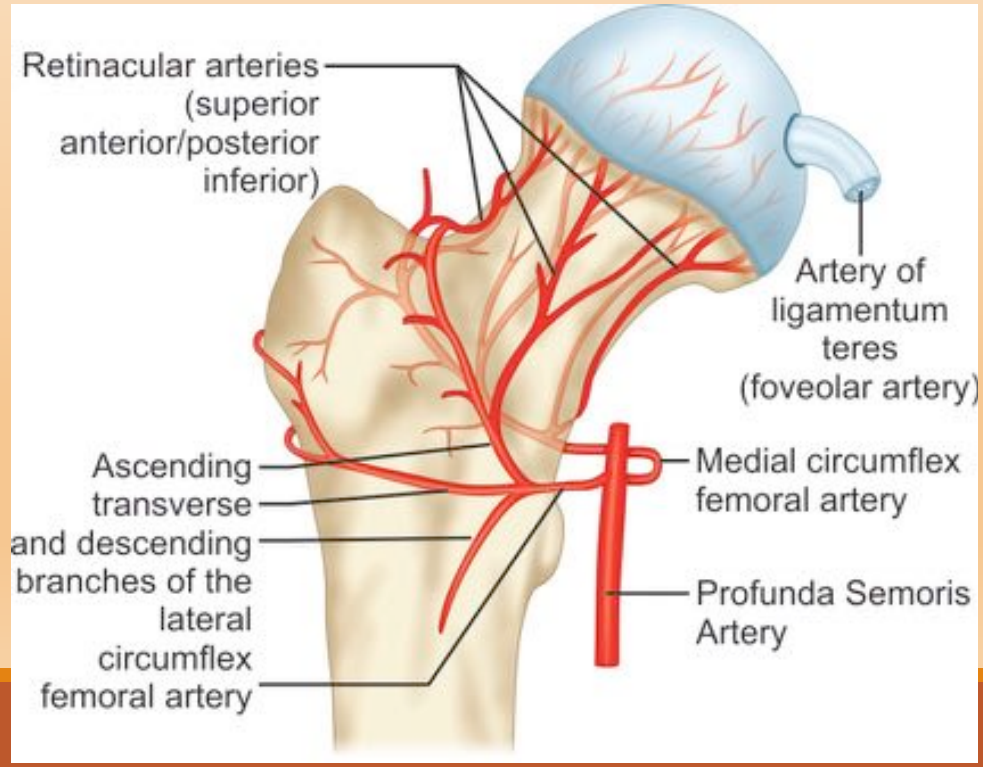
Open Surgery

Dislocation of the femoral head with care to it's blood supply.

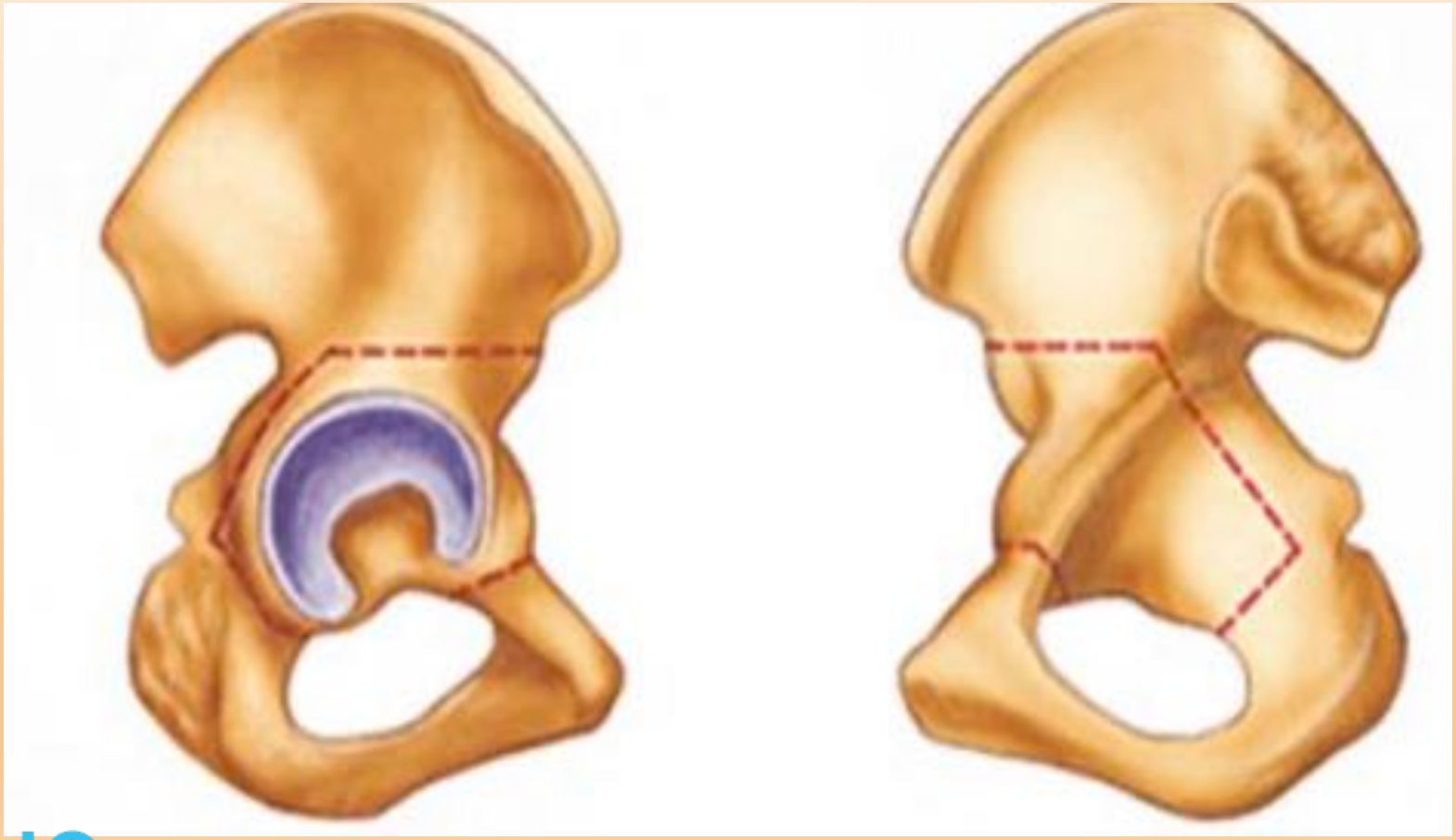
?? Approach

Osteoplasty of the (''cam'') head – neck junction (not to resect over 30% of the antero – lateral quadrant of the neck). Risk of neck fracture.

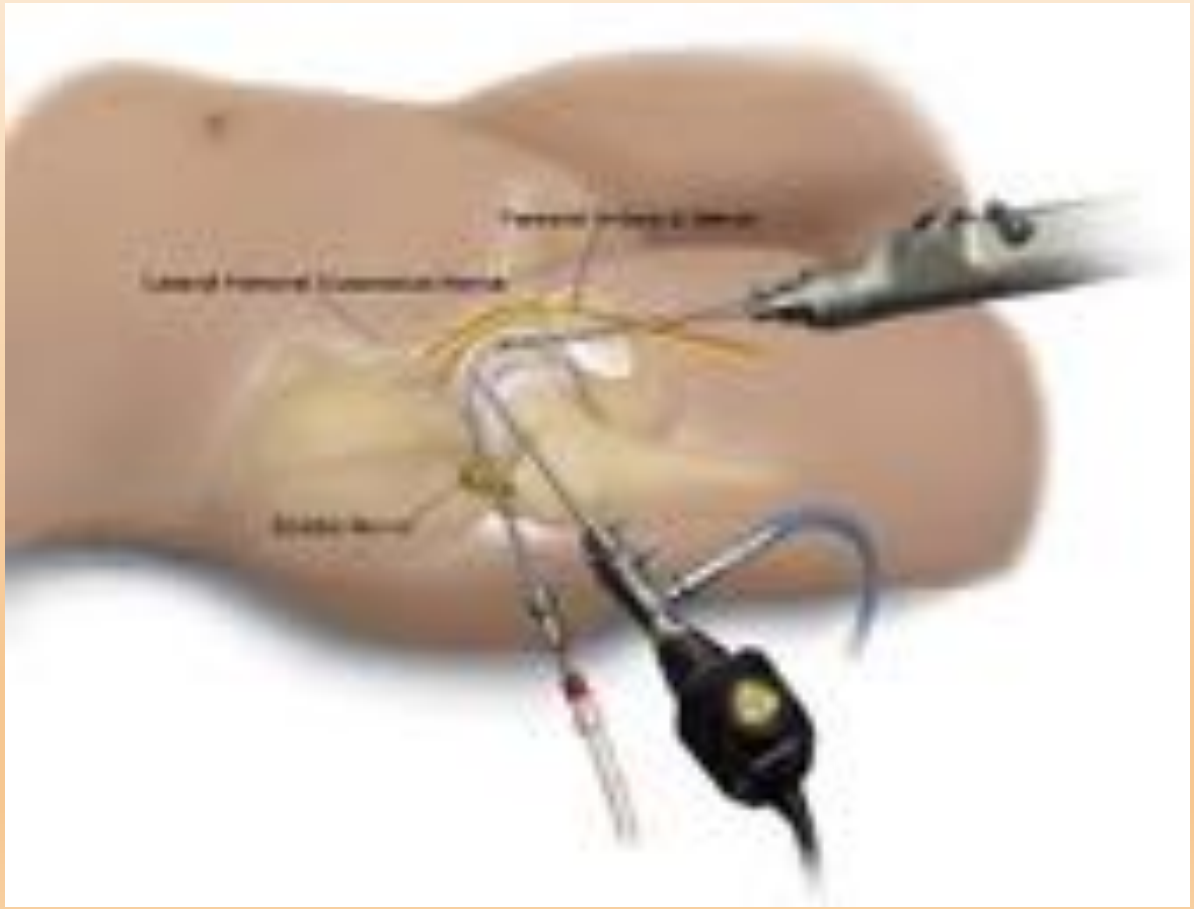
Resection Osteoplasty of the (''pincer'') acetabular rim, reorientation of the acetabulum (osteotomy)

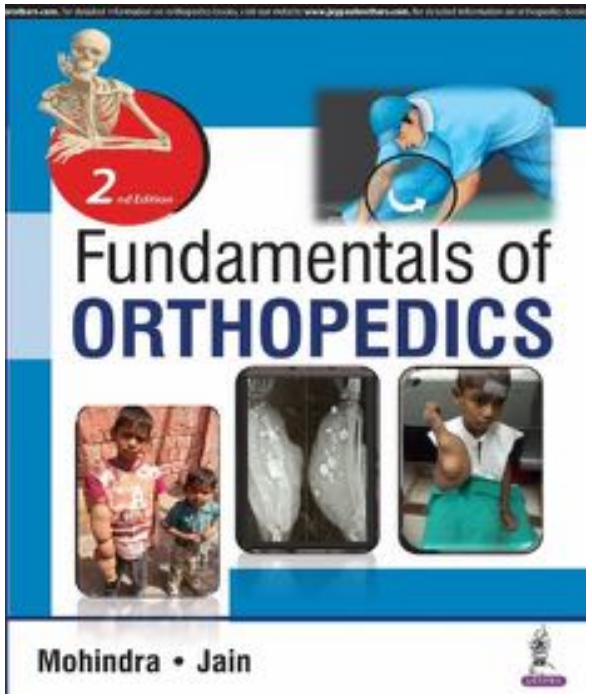


Re orientation (Ganz) Osteotomy for Pincer



HIP ARTHROSCOPY





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