

Highlights

- The etiology of labral tears includes trauma, femoroacetabular impingement (FAI), capsular laxity/hip hypermobility, dysplasia, and degeneration.
- Femoroacetabular impingement (FAI) represents a cause of hip pain due to progressive degenerative change that can lead to osteoarthritis (OA) in younger patients.
- In hip dysplasia an acetabular labral tear may predispose to adjacent articular cartilage disorder and hip osteoarthritis.
- The anterosuperior acetabulum represents the initial fatiguing site of the hip under both conditions (FAI and dysplasia).

The acetabular labrum is a critical structure within the hip joint. It is a significant cause of pain, and it plays an integral role in the development of osteoarthritis. The association of labral tears with developmental dysplasia and femoroacetabular impingement are discussed.

Labrum

The labrum extends nearly circumferentially around the horseshoe-shaped acetabulum blending with the transverse acetabular ligament inferiorly resting and merging with the acetabular hyaline cartilage over a 1-2 mm transition zone. In cross-section the labrum is a triangular-shaped structure with its medial base firmly anchored to the rim of the acetabulum with the apex extending laterally. The normal MRI signal is low (black) on all pulse sequences reflecting the fibrous tissue content (organized collagen). Asymptomatic intrasubstance signal alteration occurs with increasing age likely representing degeneration. To diagnose a tear, the labrum must demonstrate abnormal morphology or fluid/contrast within it and may or may not have a displaced fragment. Tears may also be associated with a para-labral cyst.

FAI

Predisposing patho-anatomy associated with FAI can be seen within the proximal femur, acetabulum or both, either due to congenital or acquired causes. The two mechanisms commonly described are known as pincer type and the cam type. Often there is a combination of two, known as the mixed type. The aberrant anatomy causes atypical stress on the hip joint and leads to associated findings of labral tears as well as cartilage abnormalities. Imaging is particularly well suited to depict the predisposing pathoanatomy, cartilage status and labral pathology.

Dysplasia

Acetabular morphology in developmental dysplasia of the hip (DDH) can be delineated by magnetic resonance imaging (MRI) more accurately than by previously available imaging methods. The acetabular morphology in hip dysplasia is not uniform. The rim in acetabular dysplasia shows a variety of pathomorphologies ranging from hypertrophy and tearing of the labrum including fatigue fracture of the rim to degeneration with ganglion formation within the labrum, the capsule or the acetabular bone. Pure lateral and pure anterior deficiency of coverage are smaller subgroups. MR imaging demonstrates an elongated labrum, focal intra-substance signal change and irregularity and fissuring of the margins in patients with acetabular dysplasia. Abnormality is also identified at the labral chondral transitional zone, where fissuring, focal clefts, chondral deficiency and subchondral cyst formation may be apparent.

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