

The role of hip arthroscopy in the athletic hip



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Many hip disorders that are now manageable using an arthroscopic technique, previously went undetected and therefore untreated.

Indications for hip arthroscopy are numerous: loose bodies, labral tears, degenerative conditions, chondral injuries, femoroacetabular impingement, osteochondritis dissecans, synovial diseases, rheumatoid arthritis and similar conditions, ligamentum teres ruptures, impinging osteophytes, medial joint OA, adhesive capsulitis, joint sepsis and unresolved hip pain. Arthroscopy is also described as a method of treatment of some extraarticular conditions such as: iliopsoas release, iliopsoas bursectomy, trochanteric bursitis treatment and piriformis release.

Labral disorders

The labrum is an avascular fibrocartilaginous rim of tissue that is attached to the rim of the acetabulum and restricts motion of the hip, particularly at the extreme range of motion. The labrum forms a seal around the joint through contact with the articular surface. Athletic activities that involve repetitive pivoting or flexion movements can cause acute labral injuries, but certain conditions where the labrum is abnormal such as aspherical femoral head, femoroacetabular impingement, slipped capital epiphysis, Legg-Calve-Perthes disease predispose to degenerative labral damage. More recently, it has



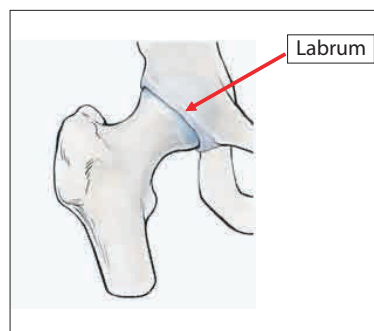
avulsed labrum

been found that labral tears in association with femoroacetabular impingement and articular cartilage damage are a possible cause of premature degenerative conditions of the hip.

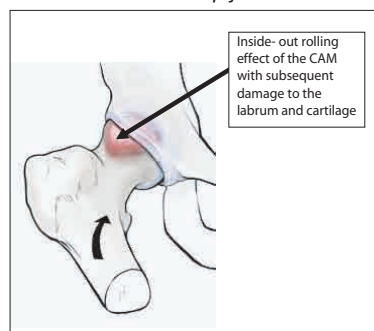
Mechanism of Femoroacetabular Impingement

A widening of the femoral neck results in decreased joint clearance, specifically with movements of flexion and rotation. This results in repetitive contact between the femoral neck and the acetabular/labral rim. Several studies have shown that femoroacetabular impingement (FAI) can cause a progressive degenerative process and lead to early osteoarthritis of the hip.

There are two distinct types of FAI.



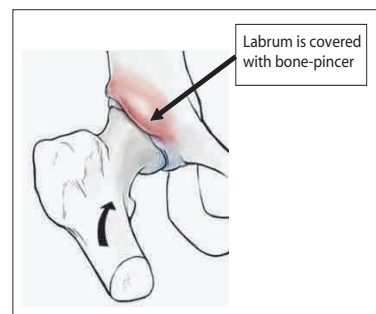
normal hip joint



CAM presentation

The first type, CAM Impingement, is more common in young, athletic men. It is due to the non-spherical portion of the femoral head impinging against the acetabular rim especially in flexion/internal rotation, resulting in tearing of the junction between the labrum and articular chondral surface.

Damage most commonly occurs in anterior-superior area of the acetabular rim, which is the main weight bearing area of the acetabulum.



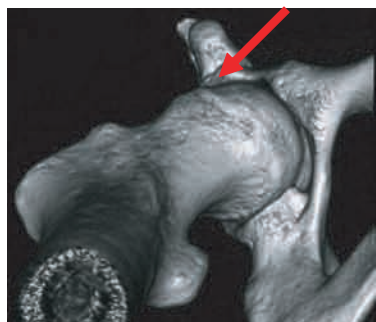
pincer presentation

The second type of FAI, Pincer impingement, is common in middle age athletic women. It is due to repetitive contact between the femoral head-neck junction and a pronounced acetabular rim. These repetitive contacts lead to degeneration of the labrum and labral cyst formation, ossification of the labrum, and delamination of the acetabular chondral surface. CAM and Pincer impingement rarely occurs in isolation. In more than 70% of FAI a combination of the two mechanisms exists, and these are classified as mixed FAI.

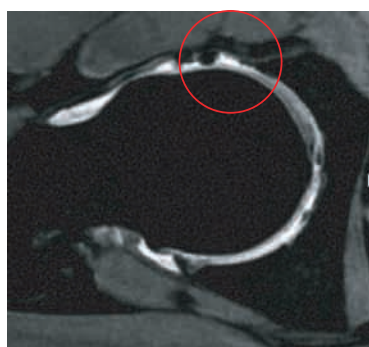
FAI affects young and middle-aged active adults who typically present with groin pain and little or no history of trauma. Characteristic symptoms of intra-articular hip joint pathology include relatively well-tolerated straight-line activities but difficulty with torsional/twisting activities, discomfort with prolonged hip flexion (eg. sitting), "catching" moving from flexion to extension (eg. raising from sit position) and pain on an incline or stairs. Clinical examination reveals some restriction of movement of the hip especially in flexion with adduction and internal rotation.

Following clinical examination and history, radiographic examination is essential to confirm presence

of intra-articular pathology. Plain X-rays of the hip should be carefully assessed for underlying abnormalities. I found essential to perform AP X-ray of the pelvis, Frog view of the hip as well as Dunn lateral views (45, 90 flexion, 20 abduction). Plain X-rays should be used to assess all necessary radiographic indices in order to exclude/confirm any deviation from the normal osseous anatomy (neck/shaft angle, Tonnis angle, CE angle, femoral offset, cross-over sign of acetabular version). Following plain X-ray examination, patient should be assessed with Magnetic resonance imaging (MRI) which should be performed in combination with intra-articular gadolinium arthrography. This expensive and very sophisticated study should be performed by experienced radiologists who are familiar with the specific protocol. If the plain X-ray examination reveals presence of osseous abnormalities, 3D-CT examination of the hip is indicated.



3D reconstruction of the hip with presentation of the CAM on the anterior aspect of the femoral neck



MRI arthrogram: CAM and subsequent distortion of the labrum anteriorly

Conservative management

This is aimed at altering the activity of the patient, avoidance



CT presentation of the CAM, calcified labrum and Pincer

of circumstances that may cause impingement, and therapy to correct any loss of joint mobility and restore core stability. The long term outcomes of conservative treatment remain unknown.

Operative treatment

Correct patient selection is the key to a successful outcome. Selection criteria include type of pathology, clinical circumstances, proper patient education, and an informed consultation so that the patient may have reasonable expectations of the outcome.



arthroscopic labrum repair

The aim of surgery is to improve the clearance of the hip movement and to alleviate the buttressing of the proximal femur against the acetabular rim. It is important to address both the underlying cause as well as subsequent damage to the labrum.

Arthroscopy is performed by placing a camera in the joint through small stab incisions with the leg under traction in order to distract the joint. The labral lesions are addressed with debridement or repair while the chondral damage is debrided and the subchondral bone treated by a microfracture technique to stimulate a new covering.

The ligamentum teres may require debridement in case of full or partial rupture. The peripheral or outer compartment can then be approached without traction and after assessment of the cause of impingement adequate decompression may be performed. The patient is usually discharged on crutches the following day but full return to sport may take as long as 3 – 6 months.



arthroscopic decompression of femoral neck/head junction,



after decompression of the pincer, residual chondral defect can be treated with microfracture treatment

Conclusion

Labral tears in association with femoroacetabular impingement or as an isolated condition are a well documented entity but remain a poorly diagnosed condition. There are many conditions presenting with the pain in groin area but labral tears of the hip should be included in any differential diagnosis. These patients should be examined by a specialist orthopaedic surgeon with knowledge of femoroacetabular condition and hip arthroscopy. Early diagnosis can be made from the clinical presentation, relevant history and proper radiological investigations in order to prevent further damage. It is believed that this is a pre-arthritic condition that may be the initiator of the process of arthritis.