

# Hip Pain

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## Femoroacetabular Impingement

I have written to you in the past about the topic of FAI. You will have noticed that in recent times more of your patients have been presenting with radiographic diagnoses of FAI or ‘cam’ impingement. This is because the condition is being recognized much more frequently now. This newsletter is an update on the latest information regarding this common and often problematic condition.

**FAI** was first described by Ganz (2003), and he suggested bony abnormalities present from childhood could ultimately lead to degenerative hip disease. FAI is present in 20% to over 30% of the general population, and may be a ‘normal variation’, not causing symptoms in many people. For this reason it is a clinical & radiological diagnosis, not one based on radiology alone. In one study of pain-free subjects (mean 60yo) the prevalence of cam lesions was 20% in males & 5% in females (5). In a separate study of asymptomatic 21-50 year-olds, the prevalence of cam deformities was 14% (6). Significantly, in symptomatic 18-50 year-olds, the prevalence was 87%. The prevalence in the symptomatic athletic population was even higher. It was 95% (cam or pincer) in a population of symptomatic NFL players, and 72% in male & 50% in female soccer players (6). It is speculated that the reason people with FAI develop symptoms is due to activity levels (loading due to sport) or occupations / postures that regularly position the hip in an impingement position. While

FAI is now accepted as a cause of early onset OA (4<sup>th</sup> to 5<sup>th</sup> decade of life), there is concern that it may be causing significant joint damage as early as the 2<sup>nd</sup> to 3<sup>rd</sup> decades of life (2).

### Types of FAI

1. Cam impingement. An aspherical femoral head, or an anterolateral ‘bump’ on the femoral neck, leads to impingement



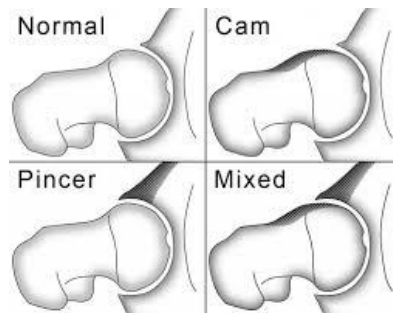
between the neck and acetabulum or outer joint chondral cartilage, with hip flexion &/or internal rotation. Initially, damage occurs at the margin of the acetabulum & articular cartilage, with the labrum often spared. Later stage disease affects the labrum. The term ‘cam’ comes from cam shafts, where the offset nature of the cam increases compression with increased rotation. This lesion is sometimes called a ‘pistol-grip deformity’ or ‘Ganz lesion’. Occasionally the lesion will be posterior, and cause pain on extension combined with external rotation. The male to female incidence of cam lesions is said to be 3:1 (2).

2. Pincer impingement. This is where the acetabulum is overly deep, is retroverted, there is an os acetabuli, or there is over-growth of the anterior acetabulum. This results in impingement



between the femoral neck and anterosuperior acetabular rim & labrum, leading to labral breakdown and eventually acetabular changes. This is said to be more common in middle-aged females, although in one report it was said to be equally prevalent in males and females (2).

3. Combined cam and pincer impingement.



associated pains and conditions are common, such as lateral hip pain due to gluteal tendinopathy or trochanteric bursitis (67%). Anterior thigh pain is described in 35% of cases, buttock pain in 29%, and knee pain in 27% of cases. Sometimes the patient will describe mechanical sensations such as catching, stabbing, locking, or painful clicking. Pain may radiate, most often to the anterior or medial thigh and knee

### Examination

In general, clinical examination will reproduce symptoms in 98% of cases of intra-articular pathology, but with poor specificity for defining the nature of the complaint (6). The ‘anterior impingement test’ or FADIR (flexion, adduction, internal rotation) is positive in 88% of patients with FAI (5), but is also not specific, as the pain may be due to several other conditions that also cause pain around the hip. The most significant finding on ROM testing is said to be loss of internal rotation range (1,2). Loss of flexion range is also significant but not as specific. The FABER test (flexion, abduction, external rotation) has high specificity for hip pathology, but again this may be unrelated to FAI. Functional tests for FAI include gait analysis, which may reveal an antalgic or Trendelenburg gait, single leg squat - where there may be pain or loss of control, & full squat reproducing pain and / or limitation.

### Pathogenesis

There are several possible causes of FAI. Genetics & paediatric hip diseases have been quoted as possible sources. Developmental factors may also play a role. There is mounting evidence that high-impact athletic activity during periods of maximum growth may play a role in the development of cam-type FAI. For instance, a cam lesion was found in 56% of elite soccer players compared to 18% of controls (1). In basketballers, a prevalence of up to 89% has been found. A missed or subclinical slipped capital femoral epiphysis (SCFE) or premature eccentric closure of the capital physis in adolescence are other possible causes.

### History

The patient will describe aggravating activities as those that place the hip in impingement positions – flexion & or internal rotation. Sitting in low chairs, driving, getting in & out of the car, squatting, ‘pushing off’ from a squat, and pivoting are possible aggravating activities. The pain is often described as deep in and around the groin region (88%). However

### Differential Diagnosis or Co-existing Conditions

Low back pain is commonly associated with hip conditions, as abnormalities in one region can lead to compensatory over-load in the other. Conditions which can give similar symptoms to FAI, or may be present in conjunction include:

1. Labral tears can exist in isolation (possibly after trauma), or occur secondary to FAI, dysplasia or degeneration. They are very often asymptomatic, so their presence is only relevant if it fits the clinical picture.
2. Athletic pubalgia. ‘Groin pain’ can arise from several possible conditions – adductor tendinopathy, osteitis pubis, sports hernia - as well as intra-articular hip pathology. If there is reduced hip rotation, there will be compensatory pelvic rotation that can overload the connecting soft-tissues. Pain due

to pubalgia will generally be activity related, while pain due to FAI will also be present with passive movements into the impingement position.

3. Ligamentum teres tears can occur due to trauma & possibly overuse, and can produce pain in many instances.
4. Iliopsoas tendinopathy or bursitis
5. Anterior or lateral snapping hip syndrome.
6. Gluteal tears, tendinopathy & / or bursitis.
7. SIJ referral.

## Radiology

*X-ray*: Traditional views: pelvic AP, hip AP and hip lateral are useful to exclude fractures, dysplasia, joint space narrowing or other OA changes, and missed childhood SCFE. However, to more accurately assess for FAI recommended views are

- True pelvic AP (WB or NWB) to assess for the 'crossover sign' where the anterior hip joint margin crosses over the posterior, an indication of possible pincer impingement.
- 45° Dunn view. Taken in external rotation, this is better for viewing the anterior aspect of the femoral neck, the common site of a cam lesion.
- Frog-leg & Cross-table views are variations of the Dunn view, and also useful for visualizing a cam lesion.



*3D CT*: This gives an accurate outline of bony anatomy, which is particularly important if corrective surgery is planned. The disadvantage of this technique is the high radiation exposure.



*MRI*: This is useful to image labral tears, bony cysts, chondral damage (some studies say sensitivity here is poor), effusions, and bone stress. However MRI is not always reliable for imaging FAI.

If after clinical examination & radiology the diagnosis is still unclear, a diagnostic local anaesthetic injection into the hip joint can be used to confirm the presence of intra-articular symptoms.

This has an accuracy of 90% (6).

## Conservative Management

There is good research evidence that the majority of patients will do well with physiotherapy, at least in the short to medium-term (3). This will include:

1. Education regarding aggravating activities and positions
2. Mobilisation and stretching to maximize hip capsular range.
3. Strengthening, particularly for the core, gluteals and deep hip stabilisers.
4. Neuromuscular re-education. Antalgic movement and aberrant movements and postures are common as a result of hip pain. Retraining movement is often very effective.
5. Myofascial techniques. Certain muscle groups are overused, with tension and trigger points being common.

## Surgery

Arthroscopic surgery is now employed preferentially over open procedures. More common surgical options for treating FAI include:

1. 'Bumpectomy'. In a patient without significant signs of degenerative changes, and in whom the impingement causes significant symptoms (particularly in athletes), the cam lesion can be shaved. Long-term results are unknown, but results up to 10-15 years appear promising
2. Labral trim or repair. The success rate of repair is thought to be only around 60%.
3. 'Rim trim'. For pincer impingement, and again if there are no significant degenerative changes, the acetabular rim can be shaved.

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