

# FEMOROACETABULAR IMPINGEMENT (FAI) (AKA: FEMORAL ACETABULAR IMPINGEMENT)

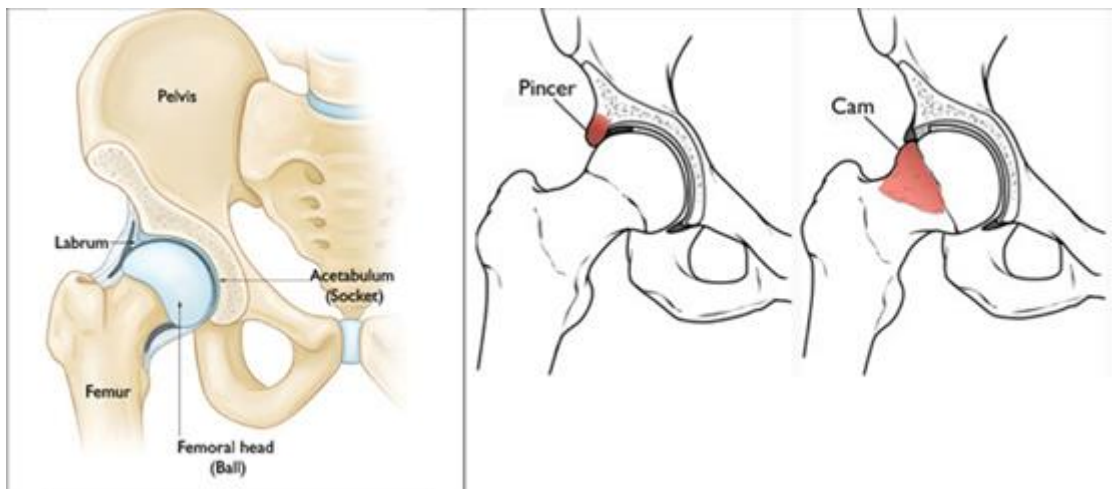
Femoroacetabular impingement or FAI is a condition where the bones of your hip joint come too close and pinch tissue or cause too much friction. Usually, the ball of the hip joint (femoral head) sits on the femoral neck similar to an ice cream sitting on a cone. The pinching and friction occurs when the femoral head and neck contact the socket (acetabulum), creating damage to the hip joint. The pinching or friction may cause damage to the labrum (a fibrous cartilage that lines the outer edge of the socket) and/or the articular cartilage (the white covering over the bony surfaces that results in the very smooth surface gliding of the joint).

## Causes

FAI generally occurs as two forms: Cam and Pincer. The Cam form describes the femoral head and neck relationship as aspherical or not perfectly round. This loss of roundness contributes to abnormal contact between the head and socket as the hip goes through a range of motion. The Pincer form describes the situation where there is overcoverage of the socket or acetabulum relative to the ball or femoral head. This over-coverage typically exists along the front-top rim of the socket (acetabulum). The end result is that the labral cartilage gets “pinched” between the rim of the socket and the front part where the femoral head meets the femoral neck. The Pincer form of the impingement is typically the results of “retroversion”, where the socket is pointed backwards a bit (rather than the usual situation where it is angled forwards), or where the socket is too deep. Very often, the Cam and Pincer forms exist together. The cause of these bony variations is not known at this time, but the cam lesion is likely related to activities performed during teenage years.

## Damage

FAI is associated with articular cartilage damage and labral tears and may result in hip arthritis at a younger age than usually occurs. .



## Who is at risk?

FAI is common in high level athletes, but also occurs in active individuals. I have patients with FAI who are involved in almost any / every sport. Sports particularly associated with FAI include Martial Arts, Ballet, Cycling, Rowing, Golf, Tennis, Soccer, Football, Ice Hockey, Baseball, Lacrosse, Field Hockey, Rugby, Water Polo, and Deep squatting activities such as power lifting.

## Symptoms

- There may be no pain or symptoms
- Pain or aching (usually located at the inner hip, or groin area), usually after walking, or prolonged sitting (such as in a car)
- A locking, clicking or “catching” sensation within the joint
- Pain sitting for long periods of time, like in a car
- Difficulty putting on your socks and/or shoes
- Difficulty walking up hill
- Low back pain.
- Pain at the SI (sacroiliac joint on back of pelvis), the buttock, or greater trochanter (side of hip).
- It is often confused with other sources of pain, such as hip flexor tendinitis, pain from the back (disc or spine), testicular pain, sports hernia.

## Evaluation

Your doctor will ask about your hip (your symptoms and how the pain started, for how long, etc) and perform an examination. Your doctor will move your hips and legs in different positions to assess your range of motion and evaluate the positions where your hip hurts.

To confirm a diagnosis you will likely get XRays of your hip. Plain XRays are very important in the evaluation of the active patient with hip pain. There is information the plain XRays provide that even MRIs cannot, so even if you have an MRI, you will need an XRay. Often, you may undergo a special type of magnetic resonance imaging (MRI) called magnetic resonance arthrography (MRA).

Magnetic resonance arthrography (MRA) is a noninvasive, non-irradiating imaging technique that uses a magnetic field and radio waves to evaluate your hip. While XRays show bones well, the MRI is particularly good at showing the non-bony structures of the body, such as the labrum and articular cartilage. Further, while XRays are like looking at shadows, the MRI allows evaluation of the tissues around the hip in slices (like slices of bread as opposed to seeing the whole loaf without what is inside) and allows viewing from different views. During magnetic resonance arthrography, dye (contrast material) is injected into the joint space to help make images more clear. Frequently, local anesthetic (numbing medicine) is added to the contrast material to help determine if the pain is coming from inside the joint. The MRI will also help eliminate certain causes of non-FAI hip pain including avascular necrosis (dead bone) and tumors.

Sometimes your physician may order a CT or CAT scan. This study can help understand the exact shape of the bones of the hip, but is not essential to the diagnosis of FAI. 3-D CT scans are particularly good at giving the surgeon a very realistic perspective of the shape of the bone.

## Treatment

The underlying problem with FAI is a bony abnormality. This bony shape will not change with physical therapy or rest. However, the shape of the bones itself do not cause pain. Other structures that can be injured with FAI, such as the labrum, or articular cartilage may cause the pain in the hip. Neither the labrum or articular cartilage have much capacity to heal, but sometimes these structures, even when injured do not cause pain or other symptoms. Thus, for those with symptoms the initial treatment may involve rest and rehabilitation, while those that have symptoms that persist, arthroscopic surgery may be needed. We have seen many high level athletes improve and return to high level sports with just physical therapy.

The long term sequelae of FAI has not been conclusively proven, but there is much evidence that it may be a major cause of premature arthritis of the hip. It has also not been proven that surgery for FAI will prevent arthritis. However, removing the offending bone may help reduce further injury to the joint, while also reducing symptoms. The results of surgery are clearly better when there is no articular cartilage damage. Thus, most physicians familiar with this problem often recommend early surgical intervention for symptomatic patients with FAI.

### **NonOperative Treatment**

Nonoperative management of FAI is usually the first step in treatment. However, this route also involves a change in lifestyle from active to less active and a commitment to maintaining hip strength. A good physical therapy program focusing on hip and core strengthening instead of stretching may be beneficial. Stretching associated with yoga and sometimes physical therapy may make the symptoms worse. Activity modification should involve avoiding activities that take the hip through extreme or full ranges of motion. Anti-inflammatory medications can also be tried.

### **Surgery**

Surgery for FAI can be performed using hip arthroscopy or open surgery. In hip arthroscopy, the hip is distracted and an arthroscope (a video-camera about the size of a pen) is used to look in the joint to see and treat damage that is found using two to five incisions that are about ¼" in size. Often, all of the components of FAI such as the labral tear, damaged articular cartilage, and bony changes between the ball and socket can be treated with the assistance of the arthroscope. Repair of a torn labrum as well as stimulating new cartilage growth (microfracture) are often possible with the arthroscopic approach. A hip arthroscopy is an outpatient procedure (go home the same day) and takes 1 – 2 hours. This is the way Dr. Safran does his FAI surgeries.

The open surgical hip dislocation involves a single long incision (approximately 7 to 10 inches), cutting a bone of the upper thigh, and dislocation of the ball from the socket exposing all parts of the joint. This exposure allows treatment of labral tears and abnormal contact between the ball and socket. The open approach can typically be done in a few hours. Patients usually stay in the hospital for several days after this approach.

### **Recovery from Surgery**

The patient is on crutches after surgery. Recovery time from most FAI surgical procedures is 4 – 6 months to full, unrestricted activity. Your postoperative activity level will depend on your surgeon's recommendation, the type of surgery performed, and the condition of the hip joint at the time of surgery.

Usually, Dr. Safran's patients are on crutches, putting 20lbs of weight on the surgical leg, with the foot flat, for 2 weeks. For women over 40 and men over 50, patients are on crutches an extra week per decade, to help reduce the risk of hip fracture.

If there is a microfracture, the patient is on crutches for 6 weeks.

