



## QUESTION | What is the role for surgery versus conservative therapy in femoroacetabular impingement (FAI)?

**ANSWER |** Femoroacetabular impingement (FAI) is a relatively new diagnosis in the field of orthopaedics, first being described in the 1990's by R. Ganz. There are two major types of FAI, 'cam' and 'pincer' with a 'mixed' subtype containing features of both. A 'cam' lesion represents a loss of sphericity of the head of the femur which contributes to incongruity between it and the acetabular socket. It is named for the eccentric shape of mechanical 'cams'. 'Pincer' lesions refer to a relative deep acetabular socket limiting the range of motion available at the hip joint. Mixed FAI contains features of both cam and pincer lesions. The clinical significance of pincer lesions is less established than that for cam lesions. Importantly, the presence of morphological changes alone is insufficient for a diagnosis of FAI. Symptoms such as pain must be present, and this is reflected by the inclusion of 'impingement' in its description.



**Figure 1**

a) AP x-ray demonstrating pistol grip deformity due to a cam lesion

b) Anterior view of 3D CT demonstrating cam lesion

c) Anterior view of 3D CT demonstrating pincer lesion

Pain from FAI can arise from different sources. The acetabular labrum, attached to the periphery of the acetabular socket is pain sensitive and a common source of pain in FAI. While the protective articular cartilage lining the bones within the joint has no nerve supply, its degradation, otherwise known as osteoarthritis, can contribute to pain in several ways. Loss of protection of the underlying (subchondral) bone, combined with altered joint mechanics secondary to loss of joint congruency can lead to bone stress characterised by micro-trabecular injury. Pain from bone stress is commonly exacerbated both during and after exercise and can be present at night. Degradation and fragmentation of articular cartilage can also contribute to 'synovitis', or inflammation of the joint lining. This pain is often worse following periods of relative immobility.

FAI is strongly associated with the development of OA and patients with cam lesions are at approximately 10 x's the risk of developing osteoarthritis. A significant increase in the risk of OA is also seen in asymptomatic patients with FAI morphology (who technically do not have FAI due to lack of symptoms).

The role of surgery in managing FAI is poorly defined. Typically performed arthroscopically, surgical intervention may include repair or debridement of the acetabular labrum, shaving of any prominences contributing to joint incongruity and debridement of articular cartilage. While approximately 70% of patients improve in the short term, long term results are lacking. There is no clear evidence that surgery reduces the likelihood of progression to OA and some authorities feel arthroscopic surgery may even accelerate future joint degeneration. This also includes treatment of isolated FAI morphology without symptoms, which has not been shown to benefit from prophylactic surgery. Some research suggests that patients with isolated labral pathology may respond best to surgery, possibly because the labrum is a significant pain generator early in the course of FAI. Nonetheless, approximately 30% of patients who undergo surgery have unsatisfactory results and any decision to proceed with surgery should be well considered.

Conservative management is unable to correct the morphological changes seen in FAI. Consequently, therapy has traditionally focussed on addressing impairments, usually of range or strength. While some individuals appear to benefit from this approach, evidence of the long-term efficacy of impairment focused therapy is not yet clear.

Education regarding the avoidance of provocative postures and movements appears effective for symptom management and should be a central tenet of conservative management. An understanding of the anatomical basis of impingement will allow for careful selection or modification of activities. For example, some patients may tolerate slow running, requiring minimal hip flexion, while road cycling may provoke symptoms. Tolerance to squat based activities, if unable to be avoided, may be improved by increasing hip abduction and external rotation and limiting the degree of hip flexion. These changes can reduce the contact between cam lesions, typically located antero-superiorly and the acetabular rim. Repetition of provocative movements should be discouraged. Many patients will become symptom free through the avoidance of provocative manoeuvres, although it is unclear as to what effect this approach may have on future risk of osteoarthritis.



**Figure 2:** a) the 'sumo' squat is performed with the feet externally rotated to 45° and feet wider than shoulder width. b) While cycling is often recommended for those with joint pain, the range of hip flexion required can be provocative in FAI, especially road cycling.

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