

Femoroacetabular Impingement: Diagnosis By Exclusion

Femoroacetabular impingement, otherwise known as FAI, does not have one symptom or one clinical test that tells the physician, "Yes, this person has femoroacetabular impingement FAI". Instead, the diagnosis is one of exclusion based on patient history, clinical symptoms, physical examination, and the results of imaging studies (X-rays, MRIs).

We say the diagnosis is one of exclusion because there are other hip problems with similar presentation. The examining physician formulates the diagnosis by excluding other potential causes in order to make the final determination that the condition responsible for the patient's symptoms is, indeed, FAI.

In this article, orthopedic surgeons from three well-known and well-respected medical centers (Washington University - St. Louis, Mayo Clinic, and Harvard Medical School) teamed up to review the clinical diagnosis of FAI. They provide a description and discussion of the three components needed to make the differential diagnosis.

Beginning with patient history and going through a step-by-step physical examination, they also included imaging studies and say that all three must be reviewed together. Only with the combination of these three factors can the final diagnosis be made with certainty.

What is it about the patient history that tips the physician off that this might be FAI? Here's where the "exclusion" piece comes in. Because patients with hip pain have a variety of symptoms, questions must be asked to help determine the cause of those symptoms. Was there an accident or injury affecting the hip? Did the person have any hip problems as a child (e.g., slipped capital epiphysis or Legg-Calve-Perthes disease)? Were there any previous surgeries on the hip?

Activity level (especially activities that involve repetitive hip motion) is a key risk factor for FAI, whereas a history of alcohol and steroid use might point more toward something like osteonecrosis (death of bone cells). Labral tears (the labrum is a fibrous rim of cartilage around the hip socket) can cause similar symptoms to FAI (e.g., painful clicking, popping, snapping with hip motion) but is usually associated with a specific injury (often sports-related).

During the physical assessment, the examiner uses different tests to determine whether the pain (or other symptoms) is intra-articular (coming from inside the hip joint) or extra-articular (structures around the joint but not inside the joint). Observing how the patient sits, stands, and walks might provide some additional helpful diagnostic clues. For example, there is a tendency among patients with FAI to sit with a slouched posture to take pressure off the hip.

Limited hip internal rotation is a red flag for FAI. But most other positive findings (e.g., positive FABER test, activities that aggravate or relieve pain, positive Trendelenburg sign) only point to the hip as the source of the symptoms, not the actual cause. Likewise, a positive response to injection of an anesthetic (numbing) agent into the hip can confirm the source of pain. Relief of pain with injection directly into the joint confirms the hip (not lumbar spine or groin) as the true origin of pain. These additional areas where pain can occur with FAI cause some diagnostic confusion.

That's when the physician turns to imaging studies to get a look inside the hip and see what's going on. Change in the lateral center-edge and alpha angles as measured on X-rays with no sign of hip dysplasia is diagnostic of deformity associated with FAI. On the other hand, MRI-evidence of labral or other cartilage damage helps rule out FAI as the potential source of symptoms.

The authors conclude that since there is no one test, symptom, or clinical finding that confirms a diagnosis of femoroacetabular impingement (FAI), a thorough evaluation is required. With patience and persistence, the orthopedic surgeon can sort through important points in the patient history. Combining that information with findings from the physical examination and imaging studies will be necessary to make the final diagnosis. The differential diagnosis is often one of exclusion through a process or "ruling out" other hip conditions, one at a time.

Reference: Jeffrey J. Nepple, MD, et al. Clinical Diagnosis of Femoroacetabular Impingement. In *Journal of the American Academy of Orthopaedic Surgeons*. July 2013. Vol. 21. Supplement. Pp. S16-S19.