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Resident's corner

Activity related hip pain in a young adult

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ABSTRACT

Two most common causes of non-inflammatory hip disease in the adolescent and young adult patient population are FAI or hip dysplasia. This article describes the clinical presentation of a patient with femoroacetabular impingement (FAI). It explains presentation and pathophysiology, and goes on to discuss important radiological parameters to diagnose FAI. In the end, treatment strategy of FAI is summarised.

1. Case summary

A 27 years old lady was referred by general practitioner, with complaints of having painful right hip that has progressively worsened over past 2 years. She describes her pain as sharp and deep inside the hip joint. This pain is especially worse on prolonged sitting and long distance driving. Occasionally her hip pain has been severe enough to restrict her daily activities with pain score of 8/10. She used to be a keen runner but due to her hip pain she can no longer continue with her recreational activities.

In addition to pain, she also feels clicking inside her hip, often with associated giving away sensation. There is no history of previous trauma, back ache or radiating pain down the leg, and she is otherwise fit and well. There is no relation of hip pain with her menstrual cycle. Apart from taking regular analgesics, she is not on any other medications.

Clinical examination reveals normal gait with no true or apparent leg length discrepancy. There is no swelling in the groin or around the hip joint and there are no signs of any hernias. Hip examination reveals bilaterally equal hip flexion of 100° with external rotation of 50°. At 90° of hip flexion, both hips have markedly reduced internal rotation of 15° with right hip painful. Pain on internal rotation was sharp and localised to the groin. Straight leg raise test is negative. Knee and lumbosacral examination is normal with no distal neurovascular deficit. Abdominal examination is also normal.

X-ray AP pelvis performed and shown in Fig 1.

2. Questions (answers overleaf)

1. What is the differential diagnosis of groin pain in an active young adult?
2. What are the positive findings on the X-ray shown in Fig. 1?
3. What are the clinical symptoms and signs of femoroacetabular impingement (FAI)?
4. What is the pathophysiology of FAI?

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Fig. 1 – Standing anteroposterior (AP) pelvis X-ray showing both hip joints.

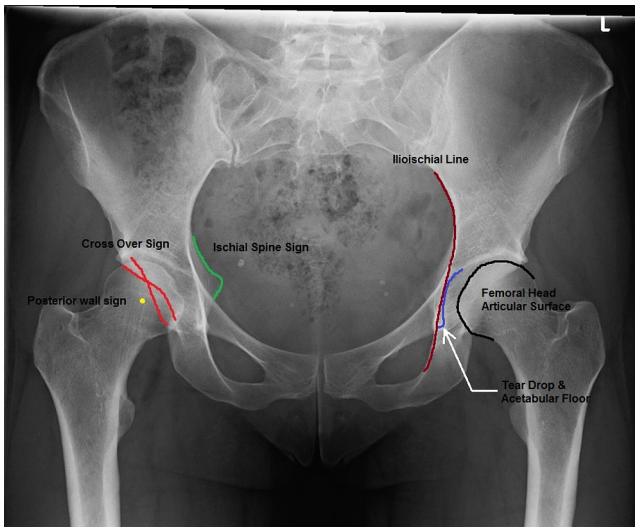

Fig. 2 – Standing AP pelvis X-ray, showing Cross over (red), Ischial spine (green), and Posterior wall sign (yellow) in right hip. Left hip shows normal relationship of ilioischial line (maroon), acetabular floor (blue) and femoral head articular surface (black).

5. What are the radiological parameters of pincer lesion?
6. What are the radiological parameters of cam lesion?
7. Why is it important to looks for signs of hip dysplasia in suspected cases of FAI?
8. What are the secondary abnormalities caused by FAI?
9. How do you treat FAI?

1. What is the differential diagnosis of groin pain in an active healthy young adult?

Groin pain can emanate from hip, abdomen, spine and pelvis. In the absence of any history and clinical signs and symptoms of abdominal or spinal disorders, the groin pain is most likely due to hip joint disorders. The differential diagnosis of hip joint disorders causing groin pain in adolescents and adults includes FAI, hip dysplasia, stress fractures, avascular necrosis, iliopsoas tendinopathy, adductor strain, rectus femoris strain, tumour, infection and arthritis. Two most common causes of non-inflammatory hip disease in the adolescent and young adult patient population are FAI and hip dysplasia.[1]

2. What are the positive findings on the X-ray shown in Fig. 1?

Fig. 1 shows appropriately performed X-ray AP pelvis without any signs of pelvic rotation (tip of coccyx in line with centre and 2–3 cm above pubic symphysis, symmetrical obturator foramina, tear drops and iliac wings).

There are signs of bilateral acetabular retroversion. These signs are highlighted as cross over, ischial spine and posterior wall sign in Fig. 2. There are no signs of hip dysplasia or osteoarthritis (OA) with well preserved joint space.

3. What are the clinical symptoms and signs of FAI?

Patients with symptomatic FAI usually complain of pain in anterior groin. Large majority of patients at some stage had been involved in physical activities resulting in extreme flexion and rotational movements of hip joint like athletics and dancing. Patients often localise their pain to the groin by holding the anterolateral thigh and groin with hand in a cupping position called 'C sign'. Internal rotation is markedly restricted followed by hip flexion. The most sensitive test pointing towards FAI is impingement test causing sharp groin pain with hip in flexion, adduction and internal rotation (FADIR).[2] In a recent study, impingement test (FADIR) was positive in 88% of confirmed cases of FAI.[2]

Patients with labral tears secondary to impingement also have mechanical symptoms presenting as clicking or snapping deep inside the groin with occasional associated giving away sensation. These mechanical symptoms can be elicited while performing impingement test.

4. What is the pathophysiology of FAI?

In FAI, there is abnormal abutment of femur against the acetabulum due to anatomical abnormalities of femoral head–neck junction and/or acetabulum. This impingement is a dynamic process and occurs during joint motion. Over a period of time, the process of impingement results in damage to acetabular labrum and/or cartilage. There is some evidence to suggest that FAI may be the cause of 40%–50% cases of hip arthritis.[3] Anatomical abnormality causing FAI can exist as either cam or pincer lesion. If anatomical abnormality causing FAI is at the femoral head–neck junction then it is called 'cam lesion', where as an abnormally prominent acetabular rim causing impingement is known as 'pincer lesion'. Quite often it is a variable combination of both of these lesions that results in impingement.

Cam lesion is usually located at the anterior or anterosuperior femoral head–neck junction and these lesions mostly if not always cause damage deep into the acetabular cartilage at the chondrolabral junction.[4]

On the other hand, pincer lesion results in acetabular 'over-coverage'. This over-coverage of acetabulum can be either 'focal' or 'global'. Acetabular retroversion is the most common cause of focal pincer lesion. On the other hand, global pincer type lesion is secondary to abnormally deep acetabulum either due to coxa profunda or protrusio