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Extra-articular hip impingement: A review of the literature☆

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Abstract Hip and groin pain is a common clinical problem. Multiple causes can generate hip or groin pain, often sharing clinical and demographic characteristics. Diagnostic imaging tests play an important role in the etiological diagnosis. New forms of extra-articular hip impingement have recently been recognized as a cause of hip pain and limited function especially in young active patients. These conditions include ischiofemoral impingement, anterior inferior iliac spine and subspine impingement, iliopsoas impingement and greater trochanteric-pelvic impingement. In general, they are caused by a mechanical conflict with an abnormal or excessive contact between the proximal femur and pelvis and/or soft tissue between them. In this manuscript we review the physiopathology, clinical presentation, the most common radiologic findings and treatment of these forms of extra-articular hip impingement.

PALABRAS CLAVE
Atrapamiento extraarticular de cadera;
Atrapamiento isquiofemoral;
Choque de la espina iliaca anteroinferior;

Atrapamientos y choques extraarticulares de la cadera: revisión de la literatura

Resumen El dolor inguinal o de cadera es un motivo de consulta muy frecuente. Debido a las múltiples causas que pueden generarlo, y a que en muchas ocasiones comparten características clínicas y demográficas, las pruebas de imagen desempeñan un papel complementario en el diagnóstico etiológico. Se han descrito nuevas formas de atrapamiento extraarticular de la cadera como causa de dolor y limitación funcional, en especial en pacientes jóvenes activos.

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Choque subespinoso;
Atrapamiento del iliopsoas;
Choque pélvico-trocantéreo

Incluyen el atrapamiento isquiofemoral, el choque subespinoso o de la espina iliaca anteroinferior, el atrapamiento del iliopsoas y el choque pélvico-trocantéreo. De forma general, se deben a un problema mecánico que conduce al contacto anormal o excesivo entre el fémur proximal y la pelvis ósea, o las partes blandas interpuestas. Realizamos una revisión actualizada de estas formas de atrapamiento extraarticular de la cadera, describiendo la fisiopatología, las manifestaciones clínicas, los hallazgos radiológicos más comunes y el tratamiento.

Introduction

Hip and groin pain is a common clinical problem that can be due to a great variety of causes of very different physiopathology but often sharing clinical and demographic characteristics, which is why the final etiological diagnosis is a challenge.

Hip impingement – whether intra-articular (femoroacetabular impingement) or extra-articular, has recently been described as a cause of hip pain and limited function especially in young active patients.

Back in 2003, Ganz et al.[1] described femoroacetabular impingement (FAI) as the ''abnormal contact between the femur and the acetabular cavity secondary to morphological alterations, or an articular movement in an excessive or supraphysiological range''. The FAI syndrome has recently been redefined as a clinical condition associated with the movement of the hip representing a premature symptomatic contact between the femur and the acetabulum, and whose diagnosis requires the presence of symptoms and findings that are compatible both in the physical examination and the imaging modalities.[2]

During the last few years, new forms of extra-articular impingement have been reported including ischiofemoral impingement, anterior inferior iliac spine and subspine (AIIS) impingement, iliopsoas impingement and greater trochanteric-pelvic impingement.

In general, they are caused by a mechanical conflict with an abnormal or excessive contact between the proximal femur and the osseus pelvis and/or the soft tissues between them.[3]

In the diagnosis of these forms of extra-articular hip impingement, the clinical presentation and the dynamic physical examination are essential. The role of the imaging modalities is to support the clinical suspicion and even, sometimes, participate in the treatment whether guiding the percutaneous administration of therapy, or assisting the traumatologist in his surgical planning.

It is not rare to find compatible radiologic findings in asymptomatic patients and, on the other hand, the border lines between the morphological changes that can be the pathological substrate and the normality variate are still very confusing. This is why we should emphasize the need to be particularly cautious in the radiologic diagnosis of these syndroms only in order to avoid unnecessary interventions.

There is a growing interest to define the predisposing factors, the physiopathological mechanisms, and the imaging findings of these forms of extra-articular hip impingement, yet, today, there are still numerous things we simply do not understand, which is why new studies are needed to help us improve our understanding and diagnostic accuracy through the validation of clinical and radiologic criteria.[3–7]

In this paper we will be providing an updated review on these forms of extra-articular hip impingement describing its physiopathology, clinical presentation, and its most common radiologic findings; finally, we will be discussing the treatment of these forms of extra-articular hip impingement (Table 1).

Ischiofemoral impingement

The ischiofemoral impingement was first described in patients with no history of arthroplasty back in 2008[8,9] and includes hip pain attributed to the space between the ischial tuberosity of the hamstring muscle insertion, and the lesser trochanter, with intermittent repetitive compression of the quadratus femoris muscle.[3,6,10]

The ischiofemoral space can, in turn, be assessed through the assessment of two spaces (measured on an axial plane at the lesser trochanter level):

- The ischiofemoral space (IFS) is defined as the shortest distance between the ischial tuberosity and the lesser trochanter.
- The quadratus femoris space (QFS) is the narrowest space crossed by the quadratus femoris muscle outlined by the lateral side of the harmstring tendons (mainly the semimembranous tendon) and, laterally, by the lesser trochanter or the medial margin of the psoas tendon, or both[11] (Fig. 1).

Although the limits of normality for these two spaces have not been standardized yet, in several case control studies published during the last few years it has been confirmed that in symptomatic patients, the IFS, and the QFS are significantly shorter than in asymptomatic patients.[11–13]

In a meta-analysis conduct by Singer et al.,[14] they say that there is a strong correlation between the narrowing of the IFS and the QFS and the presence of swelling or atrophy