Ischiofemoral impingement

Femoroacetabular impingement is a well-documented cause of hip pain. There is, however, increasing evidence for the presence of a previously unrecognised impingement-type condition around the hip – ischiofemoral impingement. This is caused by abnormal contact between the lesser trochanter of the femur and the ischium, and presents as atypical groin and/or posterior buttock pain. The symptoms are gradual in onset and may be similar to those of iliopsoas tendinitis, hamstring injury or bursitis. The presence of ischiofemoral impingement may be indicated by pain caused by a combination of hip extension, adduction and external rotation. Magnetic resonance imaging demonstrates inflammation and oedema in the ischiofemoral space and quadratus femoris, and is distinct from an acute tear. To date this has only appeared in the specialist orthopaedic literature as a problem that has developed after total hip replacement, not in the unreplaced joint.

Ischiofemoral impingement (IFI) was first described in 1977 by Johnson,1 who described three patients with persistent pain after total hip replacement. The pain was located in the medial aspect of the thigh and groin and was exacerbated by a combination of extension, adduction and external rotation of the hip. He hypothesised that the distance between the lesser trochanter and the ischium might be reduced as a result of previous intertrochanteric fracture, surgery, or migration of the femoral head due to arthritis. A temporary resolution of symptoms was achieved in his series by injection of local anaesthetic around the lesser trochanter, and this was followed by excision of the lesser trochanter with a satisfactory outcome in all patients.

However, the concept of ischiofemoral impingement in a previously unoperated and uninjured patient, where the quadratus femoris is compressed directly between the lesser trochanter and the ischium, has begun to gather momentum. This was highlighted initially in a 2008 case report by Patti et al,2 followed a year later by a more comprehensive radiological study by Torriani et al.3 This paper describes the previously unrecognised phenomenon of ischiofemoral impingement and reviews the literature relating to its recognition and treatment.

Anatomy

The quadratus femoris muscle occupies the space between the lesser trochanter and the ischium and, as such, may thus be compressed between these two bony structures. Symptomatic pathology in the area of the quadratus femoris has been identified in radiology journals, and very occasionally in the more general musculoskeletal literature.1-8

The normal distance between the lesser trochanter and the ischial tuberosity (the ischiofemoral space) is said to be approximately 20 mm,1 but this may vary. A radiological study3 has suggested that this space is reduced to 13 mm ± 5 mm in patients with ischiofemoral impingement. By comparison, in an asymptomatic control group in the same study, this space was found to measure 23 mm ± 8 mm. It has also been suggested that women may be more prone to impingement because of the wider positioning of the ischial tuberosities in the female pelvis.3

Clinical presentation

Patients with ischiofemoral impingement present with chronic pain in the groin and/or buttock without a precipitating injury. The pain may radiate distally.2,4,7 The differential diagnoses have included a snapping psoas tendon, sciatica, chronic hamstring injury, quadratus femoris tear and adductor tendonitis. Clinically, the symptoms of impingement can be reproduced by a combination of extension, adduction and external rotation of the hip, as originally described by Johnson.1

Other structures may also be affected, including the insertion of psoas into the lesser trochanter.
trochanter and the origin of the hamstrings from the ischial tuberosity.2,3 Chronic bursitis of psoas or hamstrings may be a reflection of ischiofemoral impingement, or contribute to its cause by narrowing the ischiofemoral space. It is therefore important to recognise that these conditions may coexist.

**Radiological investigation**

Plain radiographs may be normal, although there are two reports of sclerosis and cystic changes in the lesser trochanter and ischium in patients with impingement.2,4 Ultra-sound studies of the hip and surrounding structures have not so far proved useful in the diagnosis of either ischiofemoral impingement or an acute tear in quadratus femoris.2,6

Magnetic resonance imaging (MRI) appears to be the best way of demonstrating pathology of the quadratus femoris. There has been debate in the radiology literature as to the cause of the abnormally high signal returned on MRI, which has been attributed either to impingement or to a quadratus femoris tear. In the presence of IFI, good-quality axial T2-weighted images will show oedema within the muscle belly of quadratus femoris without disruption of its fibres (Fig. 1).5 It should be noted that muscle oedema visible on MRI does not necessarily indicate a muscle tear, although it may be reported as such. This highlights the need for good-quality imaging, and an awareness of ischiofemoral impingement as an entity. Sclerosis of the lesser trochanter may also be seen on MRI, again suggesting a chronic condition rather than an acute injury.2,5 Coronal sections may also show oedema between the lesser trochanter and the ischial tuberosity (Fig. 2).

**Treatment**

Recent reports have concentrated on the radiological characteristics of the condition.2,3,5 No definitive treatment has been recommended, other than excision of the lesser trochanter, as originally described by Johnson.1 If this were to be used as the routine treatment for this condition, there would be considerable associated morbidity with weakness of hip flexion that would follow excision of the lesser trochanter. All the recently described cases of ischiofemoral impingement are in active individuals. Johnson’s original three patients had all undergone previous hip surgery which contributed to the development of impingement, and in these cases excision of the lesser trochanter may have been justified.

Peri-articular endoscopic decompression around the hip has recently gained popularity in the treatment of conditions such as snapping psoas tendon, gluteus medius and minimus tears and sciatic nerve compression.9–11 The ischiofemoral space would be amenable to arthroscopic access, and decompression of quadratus femoris in patients with impingement may be effective. This technique has recently been described.12

Atypical hip pain in patients with normal radiological and ultrasound appearances may reflect ischiofemoral impingement. Clinically, the symptoms may be reproduced by a combination of extension, adduction and external rotation of the hip. MRI is the imaging modality of choice, and special attention should be paid to the ischiofemoral space. Radiologically guided infiltration of this space with a combination of local anaesthetic and steroid has been reported to be useful.1,8 The definitive treatment for ischiofemoral impingement is, however, not yet clear, as the condition is not widely recognised. However, for the practising orthopaedic surgeon, particularly those concerned with the management of athletes, ischiofemoral impingement should form part of the differential diagnosis in a patient with atypical pain in the groin or buttock.

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References