

Obturator Internus Strain in the Hip of an Adolescent Athlete

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ABSTRACT

A male 13-year-old presented with acute onset of right hip pain as he prepared to kick a soccer ball. A case of acute strain of the obturator internus is reported. The strain resolved completely after a period of activity modification and physical therapy.

The differential diagnosis for hip pain in adolescent athletes is vast. Acute onset of hip pain can be from infectious causes (eg, osteomyelitis, septic arthritis) or common traumatic causes (eg, muscle strains, apophysitis, pelvic apophyseal avulsions).¹ Intra-articular pathology can include labral tears or chondral injuries. Injuries to the external rotators of the hip have been reported in the radiology literature, but mainly involved injury to the quadratus femoris.²⁻⁴

We present the first report of an acute strain of the obturator internus in an adolescent athlete who was injured while preparing to kick a soccer ball. Written informed consent was obtained from the parent of the subject and permission was given for manuscript inclusion of radiologic

images and non-identifying clinical information. The patient and his family were given the opportunity to review the manuscript.

CASE REPORT

A male 13-year-old presented with acute onset of right hip pain while playing soccer. He was initially evaluated in the emergency room after he felt a pop in his lower back area with immediate pain and inability to bear weight. The pain worsened several minutes after the injury. The injury occurred while

tion of the hip from its resting position in maximal external rotation. Logrolling of the hip caused significant pain. With the lower extremity in maximal external rotation, he tolerated passive range of motion from 20° of flexion to 110° of flexion. There was no tenderness to palpation over the pubic rami, pubic symphysis, or greater trochanter or along the hamstring or adductor tendon insertions. The patient was unable to demonstrate any active range of motion of the hip.

“Strain of the hip external rotators, including the obturator internus, should be included in the differential diagnosis for hip injuries in adolescent athletes.”

attempting to kick a soccer ball, and the pain began just prior to striking the ball. The patient had difficulty localizing the area of pain and stated that the groin area hurt, although he occasionally had pain that radiated down his right thigh and leg. He denied any numbness in his right lower extremity. The patient had no medical problems, took no medications, and had never had a previous injury to either lower extremity or hips.

On physical examination the patient was in obvious discomfort and was awkwardly lying on the gurney. The patient weighed 105 lbs with a height of 5 ft. He held his right lower extremity in a maximally externally rotated position with the hip flexed to 60°. There were no neurovascular deficits on examination. The patient had extreme discomfort with any internal rota-

Radiographic imaging consisted of anteroposterior (AP) and AP frog-leg views. Radiographs showed no evidence of any pelvic apophyseal avulsion fractures, and the frog-leg radiograph showed normal contour of the femoral head-neck junction at the physis.

Given the high clinical suspicion of a slipped capital femoral epiphysis and the patient’s presentation with severe pain, admission with subsequent magnetic resonance imaging (MRI) was recommended. The family elected to take the patient home and have the MRI performed the following day. He was cautioned about the risks of falling or weight bearing in the setting of slipped capital femoral epiphysis and was made non-weight bearing on crutches.

The MRI showed intense, increased fluid signal in the obturator inter-

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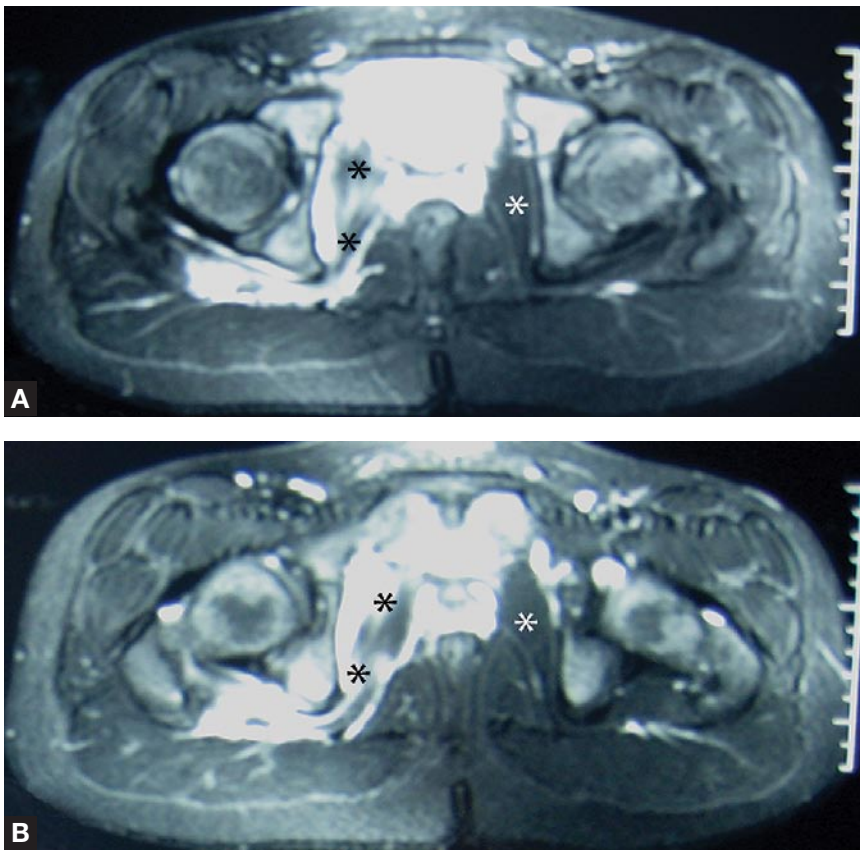


Figure. (A, B) Sequential axial slices from a T₂-weighted magnetic resonance imaging of the pelvis. The asterisks point to the obturator internus tendon as it courses around the ischial spine toward the greater trochanter. The black asterisks mark the injured and the white asterisks mark the uninjured sides of the pelvis. There is asymmetric fluid signal intensity around the obturator internus.

nus along its course from within the pelvis to the insertion on the greater trochanter (Figure). There was a very small area of fluid signal on T₂-weighted images within the hamstring tendon origin. There were no signal changes in the femoral neck about the physis.

On follow-up examination 2 days after the injury, the patient appeared much more comfortable and was ambulating with crutches. On examination, the right hip range of motion included 130° of flexion, extension to 0°, and abduction to 50°. With the hip flexed to 90°, internal rotation and external rotation were 30° and 50°, respectively. He remained slightly tender to palpation about the posterior aspect of the greater trochanter and had slight pain with resisted external rotation of the hip.

The patient was prescribed physical therapy for range of motion, strengthening, and gait training. After the first week, he was able to ambulate without crutches. Over 8 weeks, the patient made excellent progress. By the conclusion of therapy, he was able to return to full activities without restrictions.

Follow-up examination at 6 months revealed full range of motion and strength of the right lower extremity. The patient was asymptomatic with all activities.

DISCUSSION

To the authors' knowledge, this is the first case report of an acute strain of the obturator internus. Although the literature has also shown quadratus femoris strains to occur in the setting of traumatic hip dislocations, this entity has been reported in a teenage tennis player.^{2,4}

The patient's presentation was quite remarkable given his intolerance of hip range of motion and his peculiar comfort with maximal external rotation of the hip. Despite the normal pelvis and frog-leg hip radiographs, clinical suspicion remained high for an acute slipped capital femoral epiphysis.

The biomechanics of striking a soccer ball typically involve preparation for the kick with hip extension and external rotation. This is followed by rapid hip flexion, knee extension, and internal rotation of the hip. The patient injured his hip after extending his hip to kick the ball, and he likely eccentrically loaded the obturator internus when he began to flex and internally rotate his hip. After the injury, he may have had less discomfort in maximal hip external rotation as this minimizes passive strain on the obturator internus.

CONCLUSIONS

Strain of the hip external rotators, including the obturator internus, should be included in the differential diagnosis for hip injuries in adolescent athletes. MRI confirmed the diagnosis and ruled out any physeal or bony abnormalities. A period of protected weight bearing followed by activity modification and physical therapy resulted in complete recovery 8 weeks after the injury.

AUTHORS' DISCLOSURE STATEMENT

The authors report no actual or potential conflict of interest in relation to this article.

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