Treatment of Athletes With Symptomatic Intra-Articular Hip Pathology and Athletic Pubalgia/Sports Hernia: A Case Series

Christopher M. Larson, M.D., Bradley R. Pierce, M.D., and M. Russell Giveans, Ph.D.

Purpose: The purpose of the study was to evaluate the results of surgical treatment in athletes with associated intra-articular hip pathology and extra-articular sports pubalgia. **Methods:** Between December 2003 and September 2009, 37 hips (mean patient age, 25 years) were diagnosed with both symptomatic athletic pubalgia and symptomatic intra-articular hip joint pathology. There were 8 professional athletes, 15 collegiate athletes, 5 elite high school athletes, and 9 competitive club athletes. Outcomes included an evaluation regarding return to sports and modified Harris Hip Score, Short Form 12 score, and visual analog scale score. **Results:** We evaluated 37 hips at a mean of 29 months (range, 12 to 78 months) after the index surgery. Thirty-one hips underwent thirty-five athletic pubalgia surgeries. Hip arthroscopy was performed in 32 hips (30 cases of femoroacetabular impingement treatment, 1 traumatic labral tear, and 1 borderline dysplasia). Of 16 hips that had athletic pubalgia surgery as the index procedure, 4 (25%) returned to sports without limitations, and 11 (69%) subsequently had hip arthroscopy at a mean of 20 months after pubalgia surgery. Of 8 hips managed initially with hip arthroscopy alone, 4 (50%) returned to sports without limitations, and 3 (43%) had subsequent pubalgia surgery at a mean of 6 months after hip arthroscopy. Thirteen hips had athletic pubalgia surgery and hip arthroscopy at one setting. Concurrent or eventual surgical treatment of both disorders led to improved postoperative outcomes scores ($P < .05$) and an unrestricted return to sporting activity in 89% of hips (24 of 27). **Conclusions:** When surgery only addressed either the athletic pubalgia or intra-articular hip pathology in this patient population, outcomes were suboptimal. Surgical management of both disorders concurrently or in a staged manner led to improved postoperative outcomes scoring and an unrestricted return to sporting activity in 89% of hips. **Level of Evidence:** Level IV, therapeutic case series.

Intra-articular hip pathology and athletic/sports pubalgia are 2 separate entities that have been described as a source of significant disability in high-level athletes. Femoroacetabular impingement (FAI) is a disorder consisting of acetabular overcoverage and/or decreased femoral head neck offset.[1,2] This disorder has been recognized in many athletes with intra-articular hip pathology.[3-6] Open and arthroscopic surgical management of FAI has allowed many of these athletes to return to their preinjury level of sporting activities.[7-13] Athletic pubalgia or sports hernia results in exertional lower abdominal and adductor pain, and multiple surgical procedures have been described, with excellent outcomes in the majority.[14-18]

Recently, a subset of athletes have been reported who present with both intra-articular hip pathology and extra-articular athletic/sports pubalgia symptoms.[19,20] A majority of these athletes appear to have associated FAI with significant hip range-of-motion limitations primarily in flexion and internal rotation. A National Football League study reported the association of rectus abdominis, adductor, and hip joint pathology termed the "sports hip triad."[19] Other studies have found an association between preseason limitations in hip range of motion and the development of

From the Minnesota Orthopedic Sports Medicine Institute (C.M.L., M.R.G.), Twin Cities Orthopaedics, and General Surgical Consultants (B.R.P.), Fairview Southdale, Edina, Minnesota, U.S.A.

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Address correspondence to Christopher M. Larson, M.D., 4010 West 65th St, Edina, MN 55435, U.S.A. E-mail: chrislarson@tcomn.com

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symptomatic hip/groin pain.[5,6] Surgeons have noted athletes who have undergone prior hip procedures with continued pain due to underlying persistent hip impingement and sports pubalgia symptoms despite the resolution of a distinct portion of their pain after surgery.

The purpose of the study was to evaluate the results of surgical treatment in athletes with associated intra-articular hip pathology and extra-articular sports pubalgia. Our hypothesis was that failure to recognize and treat both symptomatic intra-articular pathology and symptomatic athletic/sports pubalgia would result in continued disability in a subset of athletes.

METHODS

Between December 2003 and September 2009, 1,033 hip arthroscopies were performed at a single institution (Minnesota Orthopedic Sports Medicine Institute, Edina, MN). In total 37 hips (31 patients) presented with the diagnosis of both symptomatic intra-articular hip pathology and athletic/sports pubalgia. There were 21 male and 9 female patients, with a mean age of 25 years (range, 16 to 43 years). There were 2 distinct pain generators in each patient: lower abdominal/adductor pain and deep hip/groin pain.

The diagnosis of symptomatic intra-articular pathology and athletic/sports pubalgia was made based on clinical examination by an experienced sports medicine hip orthopaedist and general surgeon, imaging studies, and selective anesthetic injections followed by provocative activity. Preoperatively, an anteroposterior plain radiograph of both hips, as well as cross-table lateral, false-profile, and 45° modified Dunn radiographs of the affected hip, was obtained in all patients. In addition, all patients underwent magnetic resonance imaging (MRI) arthrography of the affected hip preoperatively. The presence of FAI was evaluated by use of plain radiographs and 3-dimensional computed tomography scans. Pincer-type impingement was evaluated on a well-centered anteroposterior radiograph and defined as a lateral center edge angle greater than 40°, presence of a crossover sign with a lateral center edge angle of greater than 25° (acetabular retroversion or focal anterior overcoverage), presence of coxa profunda (teardrop medial to ilioischial line), or protrusio acetabuli (femoral head medial to ilioischial line).[21] Pincer-type impingement was verified arthroscopically when labral ecchymosis and extension of the acetabular rim well beyond the labral-chondral junction (>5 mm) were present. Cam-type impingement was defined as an alpha angle greater than 55° on radiographs.[22] Cam-type impingement was verified arthroscopically when a labral-chondral separation with varying degrees of chondral delamination was present. Acetabular dysplasia was present radiographically when the lateral center edge angle and anterior center edge angle were less than 25° and 20°, respectively, on well-centered radiographs. Preoperatively, all patients had a positive anterior impingement sign (hip flexion, internal rotation, and adduction) that re-created their typical limiting deep anterior or deep lateral hip pain. In addition, all patients had a preoperative intra-articular anesthetic injection followed by provocative activity to verify the hip joint proper as a component of their pain. The mean rate of temporary relief of deep groin and deep lateral pain after intra-articular anesthetic injection was 90% (range, 60% to 100%). Importantly, all patients noted the persistence of lower abdominal– and superficial groin/adductor–related pain that was significantly limiting, indicating the additional presence of extra-articular pain generators (mean, 56% [range, 40% to 80%] relief of all areas of pain with intra-articular injection). Osteitis pubis was defined as tenderness over the pubic symphysis; by radiographs showing symphyseal lysis, cystic changes, and sclerosis; and/or by MRI showing increased parasymphyseal bony edema. Rectus abdominis pathology was defined as tenderness to palpation over the distal rectus abdominis/conjoined tendon and resisted sit-ups consistent with a portion of the patient's limiting pain, MRI evidence of rectus abdominis/adductor aponeurotic tears, and evidence of tearing/attenuation at the time of pubalgia repair. Adductor pathology was defined as tenderness to palpation over the proximal adductor tendon/myotendinous junction, resisted adduction that re-created a portion of the patient's typical pain, and MRI evidence of partial tendon tearing or tendinosis. Abdominal oblique/transversalis fascia/posterior inguinal floor tears and insufficiency were defined as tenderness to palpation with external and internal (hernia evaluation) palpation that re-created a portion of the patient's pain and was confirmed with intraoperative exploration. Psoas tendon disorders were present when painful internal snapping was reproduced on physical examination, a psoas bursal injection temporarily relieved a portion of the patient's limiting pain, and arthroscopy showed bruising of the labrum and/or psoas capsular adhesions at the level of the anterior rim, anterior inferior labrum, and psoas tendon by central compartment arthroscopy.

With respect to intra-articular pathology, 95% of hips (35 of 37) were diagnosed with FAI. Of these, 2