



ORIGINAL ARTICLE

Ultrasound-guided Corticosteroid Injection for the Treatment of Athletic Pubalgia: A Series of 12 Cases



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Surgical treatment for athletic pubalgia is the standard of care, however, it poses risks. This study investigated the use of ultrasound-guided corticosteroid injections as an alternative treatment. Twelve consecutive patients underwent injections into the area of degeneration in the rectus abdominis and/or adductor longus aponeurosis. The Western Ontario and McMaster Universities (WOMAC) scores were used to evaluate treatment effectiveness. The average WOMAC score was 90.9. With a mean follow up of 8.7 months (range, 6–19 months), eight of the 12 patients reported complete symptom resolution. In conclusion, corticosteroid injections alleviate pain in patients with athletic pubalgia and provide an alternative to surgery.

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Introduction

Groin pain is a common symptom among athletes [1]. It may result from a variety of etiologies such as muscle strain, osteitis pubis, acetabular labral tears, pubic ramus or femoral neck stress fractures, rectus tendinopathy, adductor syndromes, snapping hip syndrome, hernias, sacroiliitis, apophysitis, visceral pelvic pathology, intrinsic hip pathology, referred pain, and athletic pubalgia [1,2]. Athletic pubalgia, also known as “sportsman’s hernia” or “core

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muscle injury," is a complex injury involving the abdominal and pelvic musculature that affects athletes participating in sports requiring trunk hyperextension and thigh hyperabduction (e.g., soccer, American football, ice hockey, hurdling, running, and skiing) [3–6]. Athletic pubalgia is the primary diagnosis in 39–50% of athletes with groin pain [2,7]. The etiology of athletic pubalgia is related to chronic wear or overuse when the adductor muscles generate greater forces than the lower abdominal muscles [4,8–10]. This results in occult hernia of the internal inguinal ring without a clinically recognizable hernia, and leads to chronic groin pain [7,8,11]. Pathologic findings in athletic pubalgia are varied and include attenuation of the transversalis fascia, conjoined tendon or rectus abdominis muscle, avulsion of the internal oblique muscle fibers at the pubic tubercle, and tearing of the internal oblique musculature or abnormalities in the external oblique muscle [1,5,6,8,10,12–14]. Patients with athletic pubalgia typically present with activity-related groin pain that resolves with rest [1,8,10,12,13]. The pain is usually unilateral, but can be bilateral, and typically manifests as tenderness over the symphysis pubis, pubic tubercle, and/or midinguinal region with possible radiation into the adductor region, perineum, or testicular area [1]. Some patients recollect a specific inciting injury, although they typically report an insidious onset of pain associated with activities such as running, kicking, and cutting [2,5,6,8,13–15]. Despite research into advanced imaging studies for the diagnosis of athletic pubalgia such as magnetic resonance imaging (MRI) [1] and ultrasound [16], no diagnostic modality has demonstrated sufficient sensitivity and/or specificity to become a gold standard treatment [1]. A diagnosis is consequently determined clinically with adjunctive studies used to rule out other possible etiologies of groin pain [1].

As with most causes of groin pain, the treatment of athletic pubalgia begins with a trial of physical therapy [12,17]. Physical therapy and rehabilitation protocols focus on core strengthening exercises that aim to balance the opposing forces of the abdominal musculature and the hip adductors [10,12,18]. In general, 6–8 weeks of physical therapy is employed with anti-inflammatory medications, rest, and deep-tissue massage [1]. Athletic pubalgia unfortunately rarely responds to such conservative treatment and often requires more invasive management [8,19]. Surgical repair has consequently historically been advocated when conservative measures fail to alleviate the pain. Treatment can be open surgery or laparoscopic surgery and patients can expect to return to play within 6 weeks to 6 months [1]. Surgical repair has good results [13], but does have the inherent risks of surgery and associated cost [12].

The use of corticosteroid injections in the treatment of athletes with other myoaponeurotic injuries [20,21] has recently been reported to reduce pain and return an athlete to preinjury activity. We hypothesized that ultrasound (U/S)-guided corticosteroid injections could alleviate pain and improve function in patients with athletic pubalgia. Because of the potential morbidity and prolonged return to sports-related activity associated with surgical treatment of athletic pubalgia, corticosteroid injections may present a minimally invasive and effective alternative treatment option.

Materials and methods

Patient cohort

The institutional review board approved the study. Thereafter, 12 consecutive patients diagnosed with athletic pubalgia at a single academic medical center provided written, informed consent between September 2009 and November 2010. They were treated with U/S-guided corticosteroid injections. Diagnosis was based on clinical symptoms and MRI findings, as previously described by Farber et al [1]. All patients underwent an initial MRI before providing consent for the procedure. In this study, the average age of patients was 31 years (range, 16–63 years), and there were 10 males and two females (Table 1). All 12 patients underwent targeted ultrasound of their painful groin, which revealed a partial thickness tear or complete tear around the insertion site of the rectus abdominis and/or the adductor longus tendons. In all 12 patients, the MRI findings were consistent with the ultrasound findings, and confirmed the diagnosis.

Technical procedure and sonographic technique

At our institution, we used sonography to provide guidance for the steroid–anesthetic mixture injection. Scans were performed using a 12–5 MHz linear transducer and an iU22 scanner (Philips Healthcare, Bothell, WA, USA). Patients were placed in the supine position with the scan plane corresponding to the anatomic transverse oblique plane. The transducer was placed along the anterior margin of the symphysis pubis on the side of patient pain. The rectus abdominis–adductor longus aponeurotic area of injury was identified. Under direct sonographic visualization and with the patient's thigh flexed, abducted, and externally rotated, a freehand technique was used to introduce the needle into the area of degeneration or fraying of the rectus abdominis and/or adductor longus aponeurosis using a transverse oblique approach (Fig. 1). A pure transverse position was not used because this may have pierced the

Table 1 The patients' demographics and the location of pathology for the adductor longus and/or rectus abdominis partial thickness or complete tears.

| Patient no. | Age (y) | Sex (M/F) | Location of pathology |
|-------------|---------|-----------|-----------------------|
| 1 | 37 | M | Left AL |
| 2 | 31 | M | Right RA and AL |
| 3 | 21 | M | Left RA |
| 4 | 25 | M | Left AL |
| 5 | 29 | M | Right AL |
| 6 | 20 | M | Right RA and AL |
| 7 | 19 | M | Left and right AL |
| 8 | 63 | F | Left AL |
| 9 | 41 | M | Right AL |
| 10 | 23 | F | Left AL |
| 11 | 50 | M | Left AL |
| 12 | 16 | M | Left and right AL |

AL = adductor longus; RA = rectus abdominis.

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