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Posterior ankle impingement syndrome in football players: Case series of 26 elite athletes

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ABSTRACT

Objective: To describe a clinical treatment algorithm for posterior ankle impingement (PAI) syndrome in professional football players.
Material and methods: A case series of 26 elite professional football players diagnosed and treated for posterior ankle impingement syndrome were included for the study. All of the athletes received conservative treatment with physical therapy modalities initially. If the first line medical treatment and rehabilitation was ineffective to alleviate the symptoms, ultrasound-guided corticosteroid injection was proposed and thereafter the patients underwent posterior ankle arthroscopy if the complaints are still unresolved. The pain scores (AOFAS, VAS), and time to return to play were the main outcome measures.
Results: The complaints of 18 (69.2%) players were subsided with non-surgical treatment whereas three of acute cases and five of the chronic cases did not respond to medical treatment and arthroscopic surgery was performed for eight athletes. Eighteen players returned to training for a mean time of 36.3 days (24–42 days) after conservative treatment. The patients who underwent arthroscopic surgery returned to training for a mean time of 49.8 days (42–56 days) after the surgery. All athletes returned to their previous level of competition after treatment without any complications or recurrence in a mean follow-up 36.5 months (19–77 months).
Conclusion: Non-surgical treatment modalities were effective in 2/3 of posterior ankle impingement syndrome in elite football players. On the other hand, posterior ankle arthroscopy is safe and effective treatment option for posterior ankle impingement syndrome if the conservative treatment fails.
Level of evidence: Level IV, Therapeutic study

Introduction

Posterior ankle impingement (PAI) syndrome is increasingly being diagnosed in ballet dancers, javelin throwers and football players. It is a condition consisting of a group of pathology as a result of exposure of the foot to plantar flexion or repeated trauma.[1] Patients usually experience chronic or recurrent posterior ankle pain caused or exacerbated by forced plantar flexion or push-off maneuvers, such as kicking, dribbling or bouncing in which football players usually engage. Compression of the posterior portion of the talus and surrounding soft tissues between the calcaneus and the tibia during plantar flexion results with impingement. The bony lesions such as os trigonum, fragmentation in the lateral talar tubercle and pseudoarthrosis are common cause of PAI syndrome. The accompanying pathologies in soft tissues affect the posterior joint capsule, flexor hallucis longus (FHL) tendon, posterior talofibular ligament, intermalleolar ligament and the tibiofibular ligament.[2]

Posterior impingement syndrome usually responds to conservative treatment. Operative treatment may be indicated when non-operative measures have failed. Surgical management involves removal of the os trigonum, scar tissue, or hypertrophic posterior talar process. If surgical debridement or excision is deemed necessary, arthroscopic surgery via a posterior approach is

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recommended to excise impingement lesions with a quicker return to sport expected and minimal complications.[3–5] Herein, a case series of 26 professional football players diagnosed with PAI syndrome and a treatment algorithm for high-level athletes were presented.

Case series

124 professional football players who had posterior ankle pain were applied to Sports Medicine Clinic between the years of 2007 and 2012. After physical examination and imaging techniques, 26 of these athletes were diagnosed as posterior ankle impingement syndrome (Figs. 1 and 2). The patients were all male, elite athletes in professional level at Turkish Super League with a mean age of 21.9 years [range 17–29 years]. Demographic and clinical characteristics of the athletes are given in Table 1.

Ten of 26 athletes (mean age: 22.5) were admitted with posterior ankle pain after an acute ankle sprain injury and the rest declared complaints of chronic posterior ankle pain at least 6 weeks. The physical examination of patients ($n = 10$) after ankle sprain demonstrated tenderness on the anterior talofibular ligament (ATFL) adhesion-site, limited ankle range of motion, swelling and posterior ankle pain aggravated with forced plantar flexion. All patients were examined with X-Ray and magnetic resonance imaging (MRI). Complete tear of ATFL was observed in 2 patients and talar bone marrow edema was found in 6 patients. FHL tendon synovitis and os trigonum was depicted in all patients. Initial treatment of ankle sprain injuries was performed with modification of sports activity, RICE protocol, anti-inflammatory drugs, supportive brace (to limit plantar flexion), physical therapy and sports-specific rehabilitation program. Following four weeks of conservative treatment all patients were examined and the complaints of 6 players were subsided. The mean American Orthopaedic Foot and Ankle Society (AOFAS) score was improved to 87.6 (63–100) from 73.5 (59–87) and visual analogue scale (VAS) was decreased to 2.2 (0–6) from 6.3 (5–8). Therefore, five players were participated in team training and returned to sports at a mean time of 34.2 days (24–41 days) of injury. Four patients who have failed with conservative treatment were applied single dose of methyl prednisone acetate injection combined with local anesthesia to the area of maximal tenderness through a lateral approach under ultrasonographic (USG) guidance. A single infiltration was performed on these patients as no improvement was observed for three players after two weeks and therefore surgical repair was the proposed treatment.

Fig. 1. Lateral radiograph of a 19 year-old football player with a 3-year professional background, showing a free bone structure belonging to os trigonum in talus posterior.

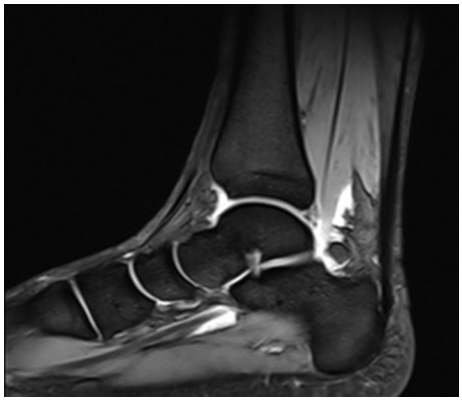

Fig. 2. Effusion is seen around os trigonum in T2W sagittal image of the ankle MRI.

All patients were operated by the same surgical team under spinal anesthesia in prone position by applying the tourniquet to the thigh. Superficial anatomical landmarks of heel were marked with a skin pen in all cases prior to the surgery. A stab incision was performed for posterolateral portal between the lateral border of the Achilles tendon and the posterior surfaces of the peroneal tendons in the border of superior surface of the calcaneus with preserving the sural nerve and small saphenous vein. The ankle was approached through standard posteromedial portals between the FHL and the medial border of the Achilles tendon at the same level. A 4.0-mm 30° arthroscope was used. Portals were extended through joint with a blunt obturator. The obturator and the posterior facet of the subtalar joint were detected via application of inversion and eversion to the foot. Posterior aspect of the subtalar joint could be visualized by dissection of soft tissues around the talus with the help of a motorized shaver. Capsulotomy was performed until all the necessary anatomical structures were visualized. Talus and the os trigonum have been viewed in terms of separation or fibrous synchondrosis (Fig. 3). FHL was evaluated for synovitis in terms of proximity to os trigonum. The talar process was removed with a burr until the impingement disappeared after removing the fibers attached to the fibrous tunnel around the posterior tibiotalar ligament, posterior talocalcaneal ligament, and the FHL (Fig. 4). In the presence of non-eligible os trigonum synchondrosis was detached with a small osteotome after removing all the soft tissues and the bone was excised. The operation was completed once the entire residual debris or bone fragments were checked. Portals were sutured primarily with 4.0 prolene and compressive elastic bandage was applied.

Partial weight-bearing with crutches was allowed from the first day with crutches and non-steroidal anti-inflammatory drugs were used for 7–10 days to reduce pain and inflammation after surgery. Range of motion exercises were permitted for the first postoperative day and cold application was performed for initial 5 days. Thereafter, in the clinical examination if swelling and tenderness disappeared, the exercise was done with body weight. Patients were allowed for sportive activities after second week, starting with bicycle and swimming; running was initiated in the third week. At the third week proprioceptive exercises were added to sportive rehabilitation. Athletes were allowed for sports specific field exercises at the postoperative fifth week. Preoperative posterior ankle pain of the athletes disappeared completely after surgery, and the three players returned to sports in 50 days (48–53

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