



POSTERIOR TIBIAL TENDON INJURY - IS MISSED DIAGNOSIS, A POSSIBILITY? SHOULD IT BE SUSPECTED IN ALL ANKLE EVERSION SPRAINS? - A CASE REPORT

Orthopaedics

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| Dr. Chavda Sumant* | Core Clinical Professor Orthopedics, RAK College of Medical Sciences, RAKMHSU, Ras al Khaimah, UAE. *Corresponding Author |
| Dr. Garg Chaitanya | Core Clinical Professor General surgery, RAK College of Medical Sciences, RAKMHSU, Ras al Khaimah, UAE. |
| Dr. George, Biji Thomas | Core Clinical Associate Professor General surgery, RAK College of Medical Sciences, RAKMHSU, Ras al Khaimah, UAE. |
| Jad Allah, Bader | 4 th year medical student, RAK College of Medical Sciences, RAKMHSU, Ras al Khaimah, UAE. |

ABSTRACT

Ankle sprains are one of the most common injuries that occur among people of all ages and accounts for 75% of ankle injuries and for 10 to 30 percent of sports-related injuries in young athletes. Inversion sprain is more common than eversion ankle sprain, to result in injury to the lateral ligament complex. Though injury to the posterior tibial tendon is not a very common injury associated with eversion ankle sprain, it often can be overlooked and missed in the initial physical examination. We present a case of a college student who sustained a twisting injury to his left ankle while playing football. After initial history, physical examination and plain radiographic evaluation, a diagnosis of eversion ankle sprain was made by a general practitioner and treated conservatively. Due to persistent symptoms and local signs, subsequent evaluation with an MRI study revealed tibialis posterior (TP) tendon strain with diffuse soft tissue swelling extending up to lower third of the leg and associated Grade I osteochondral injury to the posterolateral aspect of talus. The injury was successfully treated with medial arch support ankle brace, analgesics, guarded weight bearing and physiotherapy with full functional recovery in 12 weeks.

KEYWORDS

eversion ankle sprain, posterior tibial tendon injury

Short case summary:

A 20-year-old young college student sustained a twisting ankle trauma while playing football. His ankle was pushed from the lateral side by a player of the opposing team, while chasing behind the ball and fell down. He felt sudden pain in his left ankle and noticed swelling and a bruise on the medial side of his ankle (picture-1). His pain was rated as 7/10 on the visual pain scale (VPS) immediately after the trauma. He could not bear weight on his left foot and had to stop playing. The pain worsened over the next 24 hours to 9/10 by the following day. He was seen by a general practitioner in the emergency department of a nearby hospital the next day. After taking the initial history, performing physical examination and plain x-ray evaluation (picture-2), a diagnosis of simple ankle sprain was made. He was treated with standard RICE (rest, ice, compression and elevation) protocol, oral and local anti-inflammatory medication and protected weight bearing as tolerated.

Over the next 5-7 days, local signs of inflammation continued to progress, therefore he consulted the orthopedic surgeon at the local hospital. Based on the local ankle examination the orthopedician suspected a subtle joint instability and advised an MRI (picture-3). Conservative treatment, as above, was advised to continue till the MRI result was available. At around 2 weeks' post-injury, local signs of inflammation were stable and the patient's swelling began to reduce. MRI results were available by this time and showed no signs of any ligament injuries but did reveal a posterior tibial tendon strain, local soft tissue inflammation and Grade I osteochondral injury of talar body.



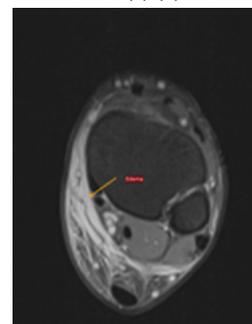
Picture-1 – clinical photograph showing diffuse swelling around medial malleolus, extending to posterior-medial side of lower leg



Picture-2 – Initial plain x-ray showing no bony injuries



3 (a) (b)



3(c)

Picture-3 (a),(b),(c) Grade I strain of TP and soft tissue swelling

The patient was given a medial arch support ankle brace to protect and provide rest to the posterior tibial tendon and was advised protected partial weight bearing as tolerated for the next 3 weeks. Medial arch support was discontinued after 3 weeks and full weight bearing was permitted. He had gradual improvement over the next 4 weeks, however it took 12 weeks to get back to his full pre-injury functional level.

DISCUSSION:

Ankle sprains are one of the most common injuries that occur among people of all ages and accounts for 75% of ankle injuries [1] and for 10 to 30 percent of sports-related injuries in young athletes [2]. They range from mild to severe, depending upon how much force is applied to the supporting ligaments. Most common causes of the injury are a sudden twist while walking or exercising, falling down, sports such as trail running, basketball, tennis, football, and soccer. The most common mechanism of injury in ankle sprains is a combination of plantar flexion and inversion causing injury to the lateral stabilizing ligaments namely the anterior talofibular, calcaneofibular and posterior talofibular ligaments. The anterior talofibular ligament is the most commonly injured. Concomitant injury to this ligament and the calcaneofibular ligament can result in appreciable instability. [3] Eversion sprain causing injury to deltoid ligament and or posterior tibial tendon is less common than inversion sprain [4].

A sprained ankle is painful and other symptoms may include: swelling, bruising, tenderness to touch, instability of the ankle or a complete dislocation of the ankle joint depending on the severity of injury. Ankle sprain is graded as mild (Grade I) when there is slight stretching and microscopic tearing of the ligament fibers and mild tenderness and swelling around the ankle; as moderate (Grade II) when there is partial tearing of the ligament and moderate tenderness and swelling around the ankle and possibly instability if moved forcibly; and as severe (Grade III) when there is complete tear of the ligament, significant tenderness and swelling around the ankle and substantial instability [3].

Radiological imaging is usually not required in simple ankle sprain. However, a plain x-ray may be advised, if indicated, as per the Ottawa ankle rules to rule out any fracture. Stress films are helpful to identify moderate ligament injury and joint instability. Ultrasound and MRI are useful for diagnosing soft tissue injury such as to ligaments, joint capsule, tendons and neurovascular structures. Tibialis posterior (TP) tendon injuries are commonly missed or overlooked in eversion ankle sprain and may result in significant foot deformity [5]. It is often missed in sports-related injuries and thought to be secondary to the non-specific clinical findings in healthy, active individuals [6]. In most cases, symptoms related to a TP dysfunction, following injuries, are pain along the course of the tendon, swelling in the region of the medial malleolus, weakness, the partial or complete loss of the medial arch with a flatfoot deformity [7]. Though traumatic injuries and tear of the tibialis posterior tendon following an ankle sprain are rare it should be included in the differential diagnosis for persistent medial-sided pain following ankle sprain [8]. Missed diagnosis or misdiagnosis of posterior tibial tendon injury can cause subsequent significant foot deformity and chronic foot and ankle pain [9]. Apart from acute traumatic injury, tibialis posterior tendon strain (Grade I) has also been reported as a result of repetitive stress or overuse injury such as in triathletes and can be successfully treated by conservative treatment [10].

The majority of ankle sprains can be treated without surgery. Early management includes RICE (rest, ice, compression and elevation). Cryotherapy should be used immediately after the injury. The foot and ankle should be cooled for approximately 20 minutes every two to three hours for the first 48 hours, or until edema and inflammation have stabilized. Benefits of cryotherapy include a decrease in metabolism that limits secondary hypoxic injury [11]. To reduce and minimize swelling, the ankle should be wrapped with an elastic compression bandage starting just proximal to the toes and extending to the leg. The injured extremity should be elevated above the heart level to facilitate venous and lymphatic drainage until the swelling has begun to resolve [11]. Non-steroidal anti-inflammatory drugs are preferable for pain relief. Active exercises should be initiated to maintain range of motion and assist lymphatic drainage and weight bearing can be allowed as tolerated. A painful, edematous, sprained ankle tends to stiffen in a plantar-flexed slightly inverted position. To prevent stiffening and facilitate early rehabilitation a removable ankle and foot brace or

simple plaster posterior splint may be employed for immobilization. For Grade III injuries, a non-removable plaster cast may be required for 4-6 weeks. Air-filled or gel-filled ankle braces that restrict inversion-eversion and allow limited plantar flexion-dorsiflexion facilitate rehabilitation [12].

The importance of proper rehabilitation after an ankle sprain cannot be overemphasized. After initial acute treatment, a rehabilitation regimen is pivotal in speeding return to activity and preventing chronic stiffness and disability. The four components of rehabilitation are range-of-motion rehabilitation, progressive muscle-strengthening exercises, proprioceptive training and activity-specific training. Prolonged immobilization of ankle sprains is a common treatment error. Functional stress stimulates the incorporation of stronger replacement collagen [13]. Because Grades I and II ankle sprains are considered stable, functional rehabilitation can begin immediately. For minor sprains, rehabilitation normally takes about 2-3 weeks but may take up to 6-12 weeks for more severe injuries. As the patient achieves full weight-bearing without pain, proprioceptive training is initiated for the recovery of balance and postural control. The simplest device for proprioceptive training is the wobble board, a small discoid platform attached to a hemispheric base [14]. When walking a specified distance is no longer limited by pain, the patient may progress to a regimen of 50 percent walking and 50 percent jogging. When this can be done without pain, jogging eventually progresses to forward, backward and pattern running. Circles and figure-eight are commonly employed for pattern running. A patient who will be returning to sports participation may require additional athletic therapy under the supervision of a certified athletic trainer or sports physical therapist.

Successful outcome is dependent on accurate early diagnosis, appropriate treatment modality and upon patient commitment to rehabilitation exercises.

CONCLUSION:

Injury to posterior tibial tendon may be overlooked or missed during initial assessment by general practitioners and should always be in the list of differential diagnosis of all eversion ankle sprains. Pain along the course of tendon, weakness, swelling in area of medial malleolus, partial or complete loss of medial arch of foot are clinical indicators of possible TP tendon injury. Early recognition can help institute an appropriate protective and rehabilitative treatment for successful outcome and to avoid future complications.

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