Acute Achilles Tendon Rupture in a Collegiate Basketball Athlete

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Abstract

Background: Achilles tendon rupture is a common injury among athletic populations. It is often a significant injury that causes a significant loss of function and reduced athletic performance. The purpose of this case report is to document the progression of this athlete toward his return to play. Evidence-based practice determined the treatments and outcomes of this case.

Purpose: A specific domain of the Athletic Training field is the clinical evaluation and diagnosis of injuries. As important domains of athletic training is the treatment and rehabilitation of an injury. The purpose of this case report was to document the progression of this athlete toward his return to play. Evidence-based practice determined the treatments and outcomes of this case.

Background: Athlete was a 22-year-old male who played basketball for a collegiate university. This case report describes the treatment and rehabilitation of a collegiate basketball athlete with an acute Achilles tendon rupture.

Differential Diagnosis

- Achilles tendon rupture
- Gastrocnemius strain
- Soleus strain

Clinical Evaluation

Upon attending to the athlete, the athlete stated that he felt like someone "threw a ball at his leg". The mechanism of injury was described as pushing off of the floor as the athlete attempted to sprint. The athlete fell and felt a "pop" as he hit his right foot off the ground. An obvious gait disturbance was noted. Pain and point tenderness were felt at the proximal Achilles and a palpable defect was noted. An abnormal ROM was noted both actively and passively at the calcaneal joint. The Thompson test was performed and a positive Achilles tendon rupture was revealed. All neurological and circulatory screening was within normal limits.

Treatment

Post-operative treatment consisted of a four-phase rehabilitation plan encompassing a total of twelve months. During phase one of rehabilitation, the athlete was NWB with crutches. This phase lasted one week, and consisted of AROM exercises for the toes, knee, and hip. After progression, straight leg raises and cardiovascular exercises were added to the stationary bike. During this phase, balance exercises and weight shifts along with theraband work were introduced. The final phase (three months post-op), the athlete returned to his boot and was allowed to weight bearing without a boot. During this phase, the athlete was able to start jogging just short of six months post-surgery and was fully able to jump/run around seven months. The athlete returned to play eleven months after surgery and was able to return to play without any complaints or problems.

Implications

Though the Achilles tendon is the largest tendon in the human body, it does not make it exempt from rupture. In fact, the prevalence of Achilles tendon ruptures has been reported in numerous studies, with a range of 6 to 37 out of 100,000 persons per year, and it seems to increase with each calendar year. An Achilles tendon rupture can be a career threatening injury for athletes. This injury may also have a significant psychological impact on the athlete as well. The most common location for an Achilles tendon rupture is 3-6 cm above the calcaneal insertion due to the peak stress observed at this location. According to Claassen, De Vos, Reijman, & Meuflers (2014), "The etiology of Achilles tendon rupture is to be multi-factorial and includes local factors, biomechanical factors, histological factors, medication and genetic factors." Moderate evidence was found for an association between Achilles tendon rupture risk and decreased fibril size. There was limited evidence for an association with body mass index. A loss of larger fibrils in the core and periphery of the Achilles tendon was a common predictor for Achilles tendon rupture. When a ruptured Achilles was compared to a control tissue sample, the ruptured Achilles contained significantly lower fibril sizes of medium to large size. More research must be conducted to determine if this is the main reason for Achilles tendon ruptures.

Uniqueness

Typically, Achilles tendon ruptures do not occur in teenage athletes. The occurrence of such injuries is mostly found in middle-aged men that do not compete in athletic participation on a regular basis. Because of the nature of their sport, they are usually accustomed to causing the rupture. In this case, the nineteen-year-old (at the time of the injury) athlete was in elite conditioning shape and was finishing up his last season before his time at the school. The athlete also had a history of competing in multiple other sports at the high school level. Furthermore, the uniqueness of this acute injury is that the athlete had no prior injuries to this leg. Acute Achilles tendon rupture ‘s can be contributed by previous weakness or injury to the same area. In this case, this was not the case.

References


Discussion

Further research must be conducted into the minimally invasive technique of surgical repair and determine whether this technique is superior to the traditional open surgery. If it truly is superior, more surgeons could use this technique to surgically repair an Achilles tendon rupture. More research must also be conducted into the debate over immobilization and early mobilization following surgery. Recently, research is starting to lean toward early mobilization of the joint over complete immobilization and this technique should be used more often if it is found to be more effective. The last recommendation is regarding the use of surgery in general to treat Achilles tendon ruptures. More recent research has begun to shift toward a non-operative approach for repairing a ruptured Achilles tendon.