Syndesmosic Sprains in a College Football Athlete

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Abstract

Background: Ankle injuries are extremely common injuries occurring in athletes with the severity of injuries varying depending on the ankle complex and structure. Syndesmotic high ankle sprains can occur less often, but often require an athlete to experience a longer recovery period. Prior to 2015, 20-year-old and 185-pound linebackercareer athlete Robby Webber experienced a syndesmotic ankle sprain during the third quarter of competition and needed assistance off the field. The mechanism of injury was syndesmotic ankle injury during a tackle, causing the ligaments to fail, leading to the talus in dorsiflexion and external rotation. The athlete was pointed at the anterior Tibiofibular ligament and interosseous membrane of the ankle, which was injured during the tackle. Initial evaluation and X-ray revealed no bone deformities, but extreme pain on the anterior tibiofibular ligament. Webber was examined, during active ROM, single leg calf raises, standing knee’s list and dorsiflexion-external rotation during evaluation. The athlete was immobilized in a long leg cast with the help of crutches to assist with ambulation. The athlete was advised to report to treatment and follow up the next day of onset.

Case Report

Patient: This Division I football player is a 20-year-old (104 kg and 185cm) athlete who received a high ankle sprain during the third quarter of competition. The following information will explain the athlete’s condition, clinical findings, rehabilitation, treatment, and return to play. The athlete had the opportunity to provide additional information to this athlete’s unique injury.

Mechanism:

Syndesmotic ankle sprains can occur in all sports, collision sports have been found to cause more injuries. In a study of 60 athletes with syndromotic ankle sprains, there was a common injury mechanism of a collision while the foot was planted and externally rotated, resulting in a forward fall that caused further dorsiflexion. (Hunt, 2015). During this event, the athlete was tackled laterally causing the running back while running laterally. As he was initiating the tackle, the athlete’s bilateral knee forcefully rolled up on his right foot causing the fibula to separate from the talus in dorsiflexion and external rotation. This forceful external rotation resulted in the widening of the ankle mortise that pushes the fibula laterally from its articulation with the talus that resulted in this injury.

Clinical Examination: Prior to the athlete being assisted off the field during the third quarter, an on field assessment was performed. Upon arrival to the athlete, he was presented lying supine and favoring his right ankle. The assessment reviled pain on his fibula and through his syndromotic joint. No obvious deformity or apparent pain or injury to his knee was observed. The athlete also stated that he did not recall hearing or feeling a “pop.” Upon further evaluation off the field, the athlete’s leg was tender to palpation over his anterior tibial ligament as well as pain along the lateral side of his fibula. Passive and active range of motion was normal but was limited due to pain.

Rehabilitation and Results:

Following the decision of surgical repair of the complete rupture of the anterior tibiofibular ligament, conservative treatment is usually recommended for athletes with syndesmotic ankle sprains. With this patient, the sports medicine staff devised a rehabilitation protocol in which the athlete was to follow for 5 weeks. The protocol was designed with four phases with particular criteria’s for the athlete to progress to the next phase. Phase I criteria consisted of diminishing pain and inflammation, restoring range of motion, maintaining muscular strength and flexibility of involved uninvolved muscle groups. In order to reduce inflammation, besides the use of modalities and treatment, the team physician prescribed anti-inflammatory for the athlete to take until inflammation decreased. In order for the athlete to progress to phase II, minimal pain, range of motion limitations, and normal gait with crutches must be normalized. Phase II goals were to return pain-free range of motion, progress to full weight bearing with normal gait, and progressively increase muscle strength and endurance. Criteria to progress to phase III was minimal pain during phase II, full pain range of motion, and normalized full weight bearing gait and minimal pain during jogging in anti-gravity treadmill/Hervor. With the progression of the athlete to begin land running/jogging, the athlete was custom fitted into an Aircast Foot Orthosis brace. This brace prevents rotational and shearing forces that will protect the syndesmosis from further injury.

The athlete was able to complete both phases was returned within 14 days in order to progress to phase III with no setbacks. Phase III goals consisted of restoring the muscular and cardiovascular endurance, and optimized neuromuscular control. Before phase IV was progressed, minimal pain and normalized running gait at sub max speeds was reached. The athlete surprisingly reached phase IV one week before the rehabilitation protocol advised due to advanced progression. Once phase VI was reached, the return to functional levels in sport specific drills was applicable under the completion of all phases of the rehabilitation protocol. Unfortunately, the athlete experienced a setback during individual linebacker drills 30 days after injury. He was forced to return to phase III in which he returned full participation for the final completion of phase VI after a total of 43 days missed.

Discussion and Summary

Syndesmosic or high ankle sprain injuries are very rare and frequently misdiagnosed. These injuries can occur in all sports that produce collision and high velocity forces that require a long recovery period. “The range of time lost was 5-56 days with the importance between the severity of injury.” (Douglas, 1999) Not all ankle sprains are alike because of severity and mechanism, which is important to consider when individualized treatment plans and injury prevention are established. The mechanism may be caused in a different manner, but similarly consists of forced dorsiflexion and external rotation of the ankle relative to the leg. Physical examination methods that include proper palpations, X-rays, MRIs, and clinical findings are imperative in a correct diagnosis. Once a diagnosis is hypothesized, radiographic findings maybe interpreted, and CT scans maybe performed to confirm the diagnosis of the injured. Conservative treatment is followed and created with a rehabilitation protocol from the sports medicine staff.

This injury process was accurately assessed similarly during the injury of the Division I linebacker. The uniqueness of this athlete was the composite three weeks the athlete had to be placed in a cast and did not result in surgical procedure. From the initial onset to full functional return to play, the athlete followed the assigned rehabilitation protocol from the sports medicine staff where the time lost resulted in only 43 days. Injuries to the syndesmosis are relatively uncommon in certain athletic populations but important to understand the sequence, severity, and significance associated with injury to the syndesmosis to provide a better understanding of such a complex and diverse injury that will assist the athlete in returning in a faster time period.

References