Perilunate Dislocation in a Collegiate Football Player

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PERILUNATE DISLOCATION involves displacement of the carpal bones that are adjacent to the lunate, while the lunate remains in its normal anatomic relationship to the radius. It is a rare occurrence, which accounts for no more than 3% of carpal injuries. These injuries are usually caused by a high impact load to the wrist, which does not typically occur during participation in college athletics. Immediate diagnosis and initiation of appropriate care for this injury can greatly affect future wrist function.

Background

The injured athlete was a 20 year-old African-American male football corner back who sustained a blow to his dorsiflexed wrist from the helmet of an opposing player. He immediately removed himself from play and sought attention from the athletic trainer. He immediately felt intense pain and was unable to move his wrist. No deformity was evident, but there was a palpable deformity of the perilunate. There was some immediate swelling, as well as crepitus over his wrist. Active and passive ROM were limited to a moderate extent. Sideline exams performed by an athletic trainers and team physicians revealed normal capillary refill and a normal sensory exam.

Differential Diagnosis

The differential diagnoses for this injury include (a) ligament sprain, (b) scaphoid and/or other carpal bone fracture, (c) triangular fibrocartilage complex tear, (d) lunate dislocation, and (e) perilunate dislocation.

Treatment

X-rays obtained at the site of the game revealed a perilunate dislocation. A team physician immediately attempted to reduce the dislocation without success. The athlete was taken to a nearby hospital emergency department for reduction of the dislocation. Local anesthesia (10cc Bupivicaine) was injected into the joint and reduction was attempted, which was unsuccessful. While consciously sedated (Propofol), finger trap splints were
used to create traction for a successful closed reduction, which was confirmed by a plain film radiograph (Figure 1). The athlete was then splinted and referred to an orthopedic hand and wrist specialist for surgical follow-up.

Prior to surgery, MRI indicated a nondisplaced fracture of the proximal pole of the scaphoid (Figure 2), a central ligament tear of the scapholunate ligament, a partial thickness tear of both the dorsal and volar aspects of the scapholunate ligament, a peripheral tear of the triangular fibrocartilage complex, and a perforation of the lunotriquetral ligament. The preoperative plan was to repair the ligament tears, with fixation of scaphoid if indicated. The dorsal-approach surgical procedure was performed four days after injury for open reduction of the scapholunate joint. An extensor carpi radialis brevis (ECRB) tendon weave procedure, with K-wire reinforcement, was used to reconstruct the scapholunate interosseous ligament. The lunotriquetral ligament and dorsal capsule were found to be avulsed from the lunate, which were sewn to the reconstructed ligament. After closure of the surgical incision and application of a sterile dressing, the wrist was placed in a sugar-tong splint. A short-arm cast was applied at two weeks following surgery.

The athlete returned to conditioning activities at two days after surgery and was able to participate in noncontact activities and drills (with no right hand use) the same week of surgery. He returned to practice at three weeks after surgery and to full participation at four weeks after surgery while wearing a short-arm cast. Therapeutic exercises were initiated after cast removal at seven weeks postsurgery. Initial exercises were focused on restoration of range of motion, with addition of strengthening exercises as motion was increased. The athlete was able to play the remainder of the season, but he was required to wear the short-arm cast for all contact activity. At five months postsurgery, the athlete was lacking a full range of wrist motion. He demonstrated 40 degrees of wrist extension and 80 degrees of wrist flexion. X-rays demonstrated some widening of the scapholunate space and dorsal intercalated segment instability, which implies failure of the ligament repair. The widening and deformity is common in injuries of this nature. If the condition becomes symptomatic, further treatment is necessary. The athlete was instructed to wear a thermoplastic splint to limit motion for contact activity.

Figure 1 Post reduction x-rays.

Figure 2 MRI finding with scaphoid fracture highlighted.
during spring football practices and to continue range of motion exercises.

**Uniqueness**

This injury is usually caused by a fall from a significant height on an outstretched hand or from a very forceful impact with the wrist in an extended position (e.g., a motor vehicle accident). A person-to-person collision is a rare mechanism for this injury. Only one report of lunate and perilunate dislocations among football players was found in the literature. The authors reported that 10 of these injuries occurred over a five-year period, which were treated by a variety of methods. All required some treatment other than immobilization, but the relative long-term effectiveness of open reduction versus closed reduction was inconclusive.\(^4\)

**Conclusion**

Although perilunate dislocation is not a career-ending injury, the method of treatment varies and its long-term prognosis is not highly predictable. The best method for acute treatment for this injury is not clear.\(^1\)

**References**


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