Scapholunate (S-L) dissociation injuries are probably the most common form of carpal instability. They are frequently misdiagnosed as wrist sprains. Such injuries can occur due to ligament disruptions alone or they can coexist with distal radius or scaphoid fractures.

Improper diagnosis can significantly compromise the function of the wrist as time goes by. Proper and early diagnosis, in conjunction with the correct treatment, has been found to prevent further carpal instability and wrist disability that otherwise could evolve from scapholunate injuries.

It is important to have a thorough understanding of the carpal anatomy and biomechanics when attempting to diagnose and treat wrist injuries. A brief review of the anatomy begins with the proximal and distal carpal rows.

The proximal row consists of the scaphoid, lunate, triquetrum, and pisiform from a radial to ulnar direction. The trapezium, trapezoid, capitate, and hamate form the distal row. The scaphoid spans the proximal and distal rows, stabilizing both. Motion occurs between and within the rows. With radial deviation, the scaphoid and lunate palmar flex. Dorsiflexion of the scaphoid and lunate occurs with ulnar deviation.

The ligamentous anatomy of the wrist is a difficult area to understand. There is lack of consensus as to whether the radioscapholunate (RSL) or the scapholunate interosseous ligament (SLIL) is the main stabilizer of the scapholunate complex.

Recent studies suggest that the SLIL may be the main stabilizer of the scapholunate complex. (Green, Operative Hand Surgery, 3rd ed., 1993, Churchill Livingstone). These ligaments, along with the dorsal scapholunate ligament, are commonly referenced in association with scapholunate dissociation injuries (Blatt, Hand Clinics, Feb. 1987, p. 81).

Complete disruption of the scapholunate ligament allows the lunate to dorsiflex with the scaphoid, assuming a volar flexed position (dorsal intercalated segmental instability). This carpal malalignment could then create increased stress on the radioscapholunate and capitate-lunate joints, which can lead to a generalized arthritic change called the SLAC (scapholunate advanced collapse) wrist.

Scaphoid-lunate dissociation injuries usually result from a fall onto the proximal palm, causing wrist hyperextension, ulnar deviation, and intercarpal supination. Tenderness and swelling over the dorsoradial aspect of the wrist (scapholunate joint) and anatomic snuffbox, decreased grip, and pain with wrist motion are signs noted with early diagnosis.

X-rays are important in the diagnostic process. The AP view (hand in full supination) is used with and without fist closure to determine whether there is a gap between the scaphoid and lunate. The clenched fist position loads the S-L ligament.

Comparison views are recommended. A gap greater than 2 to 3 mm between the scaphoid and lunate of the injured carpus is an indication of the injury. This scapholunate widening has been termed the “Terry Thomas” sign after the English film comedian’s dental gap.

Other radiographic signs include foreshortened scaphoid, cortical ring sign, and S-L angle greater than 60 to 70°, the norm being 30 to 60° (Hershman, ed., The Upper Extremity in Sports Medicine, 2nd ed., 1995, Mosby).

Watson’s scaphoid shift test is useful in identifying the injury, but one needs experience with this test in order to use it with confidence. Test procedure requires the examiner to place 4 fingers of one hand on the distal radius. The thumb is placed over the volar tubercle of the scaphoid. The wrist is moved...
from ulnar to radial deviation with slight flexion. With S-L injuries, as the wrist is moved into radial deviation, the proximal pole of the scaphoid shifts onto the dorsal rim of the radius from the pressure of the thumb. A painful clunk is noted when the thumb pressure is removed as the scaphoid returns.

Successful treatment of S-L dissociation depends on how soon it is diagnosed. The longest acceptable time span from acute injury to ligament repair is 3 to 5 weeks (Lichtman, ed., The Wrist and Its Disorders, 1988, Saunders).

Reconstructive procedures are not commonly utilized with chronic scapholunate ligament injuries, due to atrophy of the ligament remnants. Cast immobilization alone is not recommended because of the difficulty in maintaining proper scaphoid and lunate alignment.

Several surgical approaches can be used depending on the surgeon's preference. Open reduction, internal fixation, and repair of the SLIL ligament is a common procedure for athletes. Post-op therapy is not usually initiated until after 8 to 10 weeks of casting. A thumb spica or wrist splint is used for another month of protection once motion is initiated.

Active ROM exercises are recommended prior to PROM exercises. Forceful stresses (push/grip) to the hand, wrist, and forearm should be avoided for 4 to 6 months following surgery.

A thorough understanding of the intricate anatomy and biomechanics of the wrist is needed in order to diagnose and treat wrist disorders. Any athlete reporting radial wrist pain after trauma should be carefully evaluated for scaphoid fractures or ligamentous injury. These types of injuries can be diagnosed with a detailed history of the injury, thorough physical examination, proper imaging, and other diagnostic studies.

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