

Open Management of Acute S-L Instability

UnifiMI® Headless Compression System

Case Study | Dr. William Geissler



Figure 1

Patient History

The patient is a 36 year old male with post polytrauma injuries to wrist. This includes a fracture of the radial shaft, and a questionable injury to the scapholunate interosseous ligament. He presented with distal forearm pain, wrist pain and swelling.

Physical examination at that time noted moderate swelling over the wrist. He was point tender over the dorsum of the scaphoid lunate interval and had a very positive Watson maneuver. Radiographs showed a displaced fracture of the radial shaft and widening of the scapholunate interval. *Fig.1*

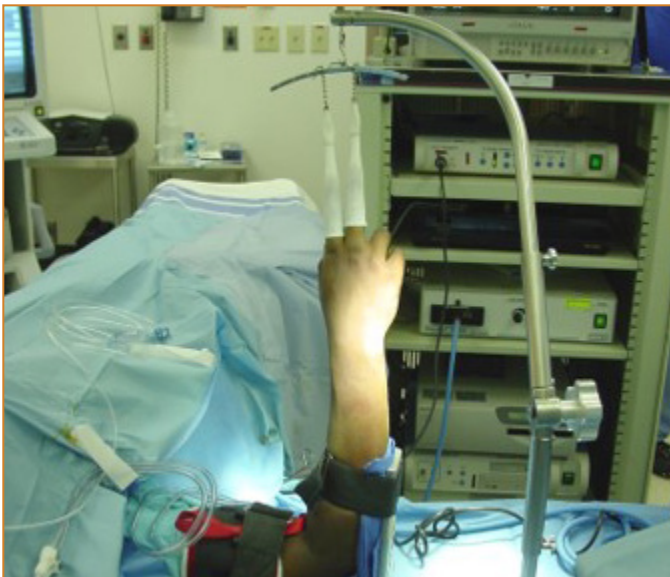


Figure 2

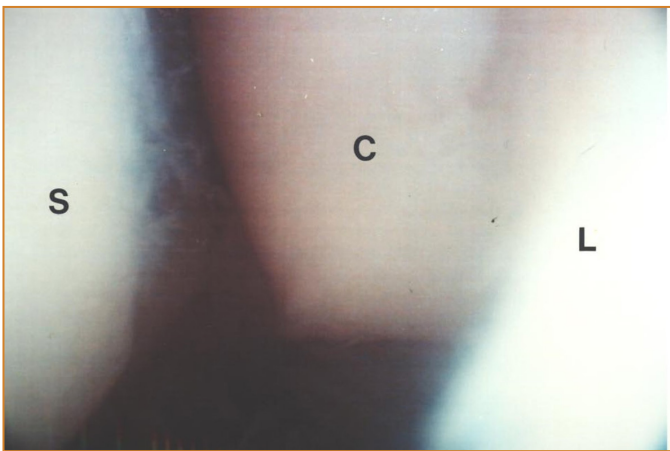


Figure 3

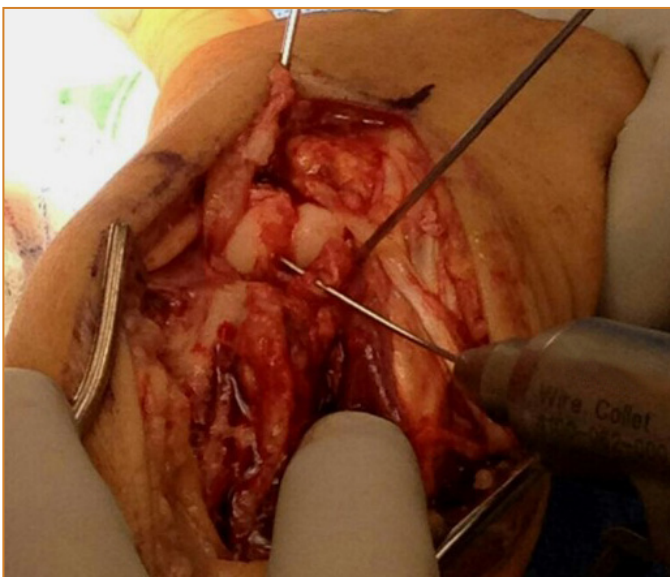


Figure 4

Treatment

Due to both the radiographic and clinical findings, the patient was brought to surgery to evaluate his right wrist. The wrist was suspended in a standard wrist arthroscopy traction tower. The advantage of this particular tower is that the side bar is located away from the wrist to allow for simultaneous arthroscopic and fluoroscopic evaluation.

Fig.2

The arthroscope was placed in a standard 3-4 portal and an arthroscopic evaluation to the wrist was performed.

Arthroscopic evaluation to the wrist showed a complete tear to the scapholunate interosseous ligament. The patient had a drive thru sign where the arthroscope can be easily translated from the radiocarpal space up to the midcarpal space through the gap between the scaphoid and lunate. The capitate can be well seen between the gap between the scaphoid and lunate in this arthroscopic evaluation. *Fig. 3*

Following arthroscopic evaluation, a standard dorsal approach was made to the wrist. The extensor pollicis longus is released to the third compartment, and the second and fourth dorsal compartments were elevated. A radial based flap was made exposing a complete tear to the scaphoid lunate interosseous ligament. A primary repair of the scaphoid lunate interosseous ligament was to be performed, as well as a dorsal capsulodesis, and stabilization of the scapholunate interval with an OsteoCentric 3.8mm headless cannulated screw fastener. If an intra-carpal screw is replaced, the key is the ideal insertion of the cannulated screw fastener. The screw fastener needs to be in the anterior posterior plane aimed towards the most ulnar aspect of the lunate. In the lateral plane, it needs to be in the midline, or slightly volar to the midline of the scaphoid lunate axis. If the screw is placed dorsal to this axis, placement will cause an increased risk of loosening and pain.

The easiest trick to place the screw fastener in this ideal position, is to open up the scaphoid lunate interval with joy sticks in the scaphoid and in a lunate. The OsteoCentric guide wire for the intra-carpal screw fastener is then placed on the ulnar aspect of the scaphoid and is aimed from ulnar to radial, exiting out the scaphoid and the radial aspect of the wrist. *Fig.4*

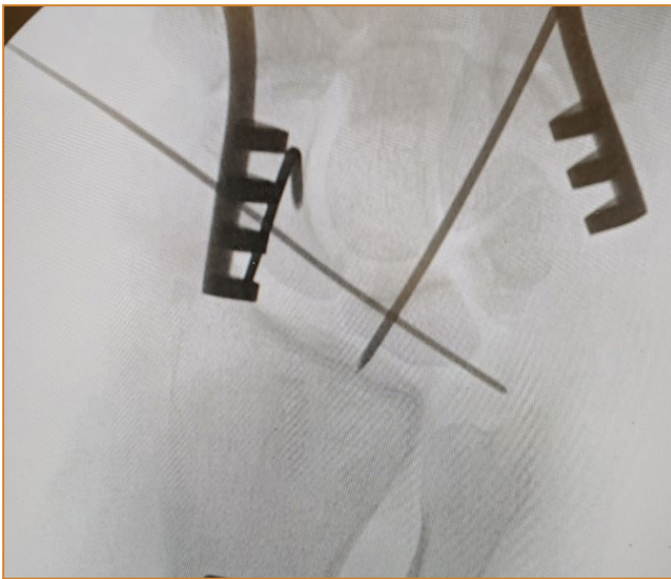


Figure 5

In this manner, the guide wire is placed in the most central aspect of the scaphoid so it will be neutral or slightly volar. The key to closing the scapholunate interval is not compression, but simple rotation of the scaphoid in relation to the lunate. With the joysticks, the interval is easily closed with rotation of the carpal bones, and then the OsteoCentric guidewire is advanced from the scaphoid into the lunate. Fluoroscopic views confirm ideal position of the guide wire in both the anterior-posterior and lateral planes. *Fig.5*

Again the guide wire is centered in the central or volar aspect of the lunate. A generous incision is made over the OsteoCentric guide wire along the radial aspect of the wrist and blunt dissection is carried down to the scaphoid in order to protect the dorsal sensory branch of the radial nerve. The ideal length of the screw is measured. A screw 4mm shorter is utilized to allow for compression across the scaphoid lunate interval. The OsteoCentric guide wire is then advanced across the scaphoid lunate interval, exiting out the ulnar side of the wrist in case of breakage or bending of the guide wire. Through the cannula, the scapholunate interval is then drilled with the OsteoCentric drill. The OsteoCentric 3.8mm cannulated screw fastener is then placed over the guide wire allowing excellent compression across the interosseous scapholunate interval.

The position of the OsteoCentric screw fastener is checked in both the AP and lateral planes confirming ideal position and compression across the scapholunate interval. *Fig.6*

The scapholunate interosseous ligament is then repaired, and the dorsal capsulodesis is performed. The second and fourth dorsal compartments are then closed, and the extensor pollicis longus is left free. The patient is placed in a volar wrist brace.



Figure 6



Figure 7

Post-Op

The patient returned two weeks post-op and reported good recovery from surgery. At this point, with limited surgical site pain, the patient was directed to start a range of motion and strength program with physical therapy. *Fig. 7*

Clinical Advantages of UnifiMI®

The OsteoCentric 3.8mm screw fastener allows for excellent provisional stabilization to allow for early range of motion and strength protocols. A traditional fully threaded headless screw is not recommended to stabilize the scaphoid lunate interval. They provide very rigid fixation across the scaphoid lunate interval, which denies the normal rotation that occurs between the scaphoid and lunate during range of motion in the wrist.

The OsteoCentric Headless Compression screw fasteners have a smooth central shaft, which allows normal range of motion between the scaphoid and lunate along with preventing breakage, as compared to a traditional, fully-threaded headless screw. *Fig. 8*



Figure 8

A traditional fully threaded headless screw showing breakage.

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