

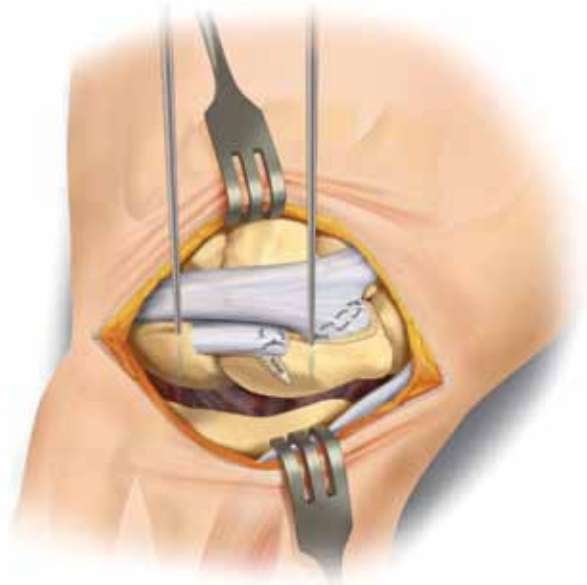
Scapholunate Ligament Repair

Operative Technique of Acute Injuries

A Small Joint Series Technique Guide

As described by:

Michael G. McNamara, MD



Hand Anatomy



Scapholunate Ligament Repair Operative Technique of Acute Injuries

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Introduction

The scapholunate ligament—a primary stabilizer of the wrist—binds the scaphoid and lunate bones. Injury to the scapholunate ligament typically occurs through hyperextension of the wrist. Depending on the severity of the tear or chronic nature of the injury to the scapholunate ligament, the patient may experience various symptoms and has numerous treatment options. An acute or partial scapholunate ligament tear causes pain and swelling in the wrist and may be treated with arthroscopic debridement and subsequent pinning for joint stabilization while healing. In more serious injuries, however, the patient may describe pain, swelling, and even a popping or clunking sensation in the wrist. Another common sign of a scapholunate ligament tear is diastasis, or widening, of the scapholunate joint, which can be identified on x-ray.

Complete disruption of the scapholunate ligament results in dorsal intercalated segment instability (DISI). This pattern, characterized by lunate extension, allows for flexion and rotatory subluxation of the scaphoid, and it is often accompanied by diastasis between the scaphoid and lunate bones. The effect of this carpal mal-alignment is progressive, degenerative arthritis tending towards scapholunate advanced collapse (SLAC) of the wrist. Because of the late effects of scapholunate ligament injury in acute or sub-acute cases, open repair is often chosen. One technique is described.

Patient Preparation

1. Place the patient in the supine position with the hand on an arm table.
2. Use an axillary block, regional, or general anesthetic.
3. Drape and prepare the upper arm with a tourniquet and place the fingers in a traction tower.

Technique

1. Perform an arthroscopic examination of the proximal and midcarpal wrist joints to visualize and verify scapholunate dissociation from the radiocarpal and midcarpal portals.
2. Remove the patient's hand from the tower and place in pronation on the table.
3. Draw a lazy-S or straight line centered over the radial carpal joint, just ulnar to the Lister's tubercle, approximately 4 to 6 cm. Another approach would be a transverse incision as illustrated. (Figure 1).
4. Make an incision through the skin to the extensor retinaculum. Be careful to protect dorsal veins and dorsal radial cutaneous nerve branches.
5. Release the third compartment and retract the extensor pollicis longus tendon radially.
6. Elevate the fourth compartment off the dorsal capsule with a small portion of the posterior interosseous nerve transected and removed. Split the dorsal capsule obliquely along the edge of the dorsal intercarpal ligament (ICL). The dorsal ICL should be protected, released distal radially, then retracted for later use with capsulodesis (Step 13).
7. Two 0.625" K-wires placed into the dorsal scaphoid and dorsal lunate are used as joysticks. The K-wire in the scaphoid is oriented distal to proximal, and the K-wire in the lunate is oriented proximal to distal. With the wrist in lateral profile, bring the K-wires parallel to each other to reduce the scapholunate interval and correct the DISI posture. Maintain the reduction using additional K-wires (size 0.045") across the scapholunate joint. Place another 0.045" K-wire from the scaphoid to the capitate for further stabilization (Figure 2).
8. Using a small rongeur, gently debride the anatomic insertion site of the bone (usually the dorsal rim of the scaphoid) where the avulsed ligament has lifted off.

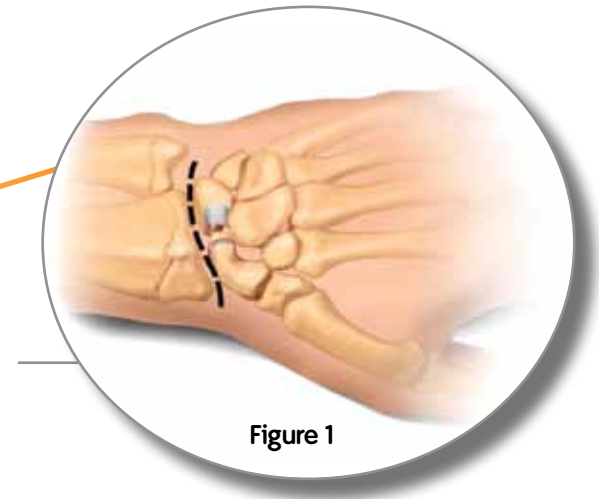


Figure 1

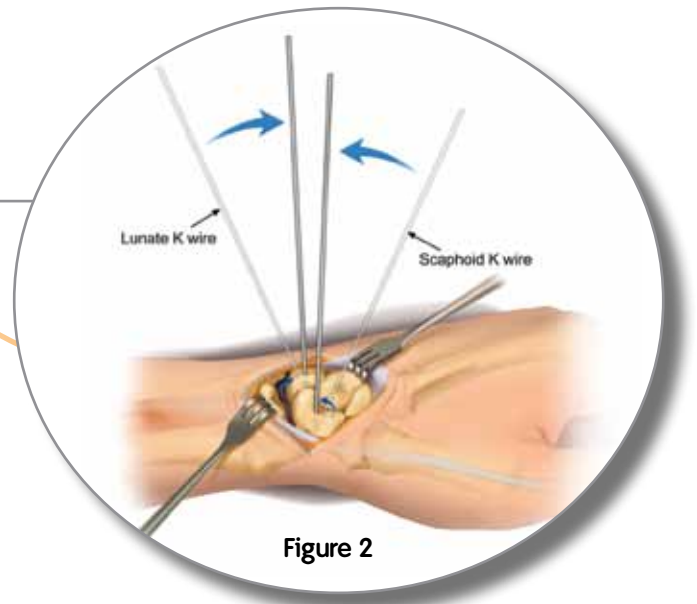
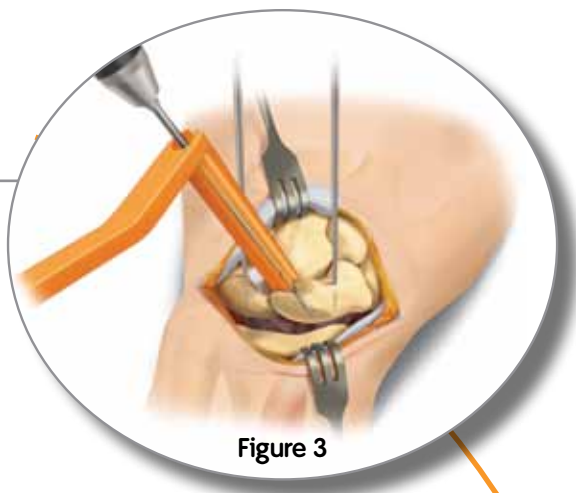


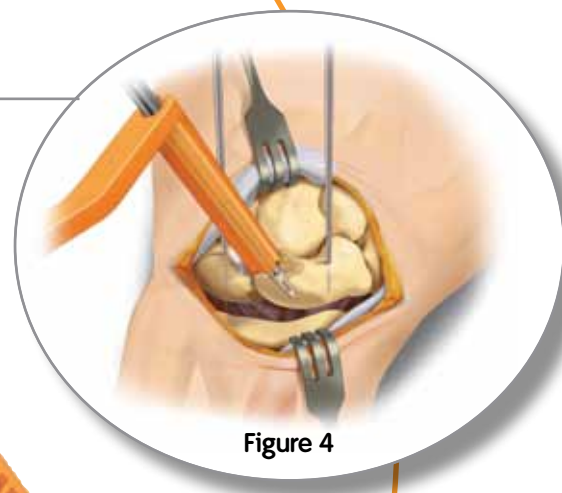
Figure 2

- Place the drill guide at the desired anchor implantation site. Drill a hole with the 1.6 mm drill (for DYNOMITE® 2.0 PK Suture Anchor) or the 1.8 mm drill (for SPYROMITE® 2.0 PK Suture Anchor) (Figure 3).

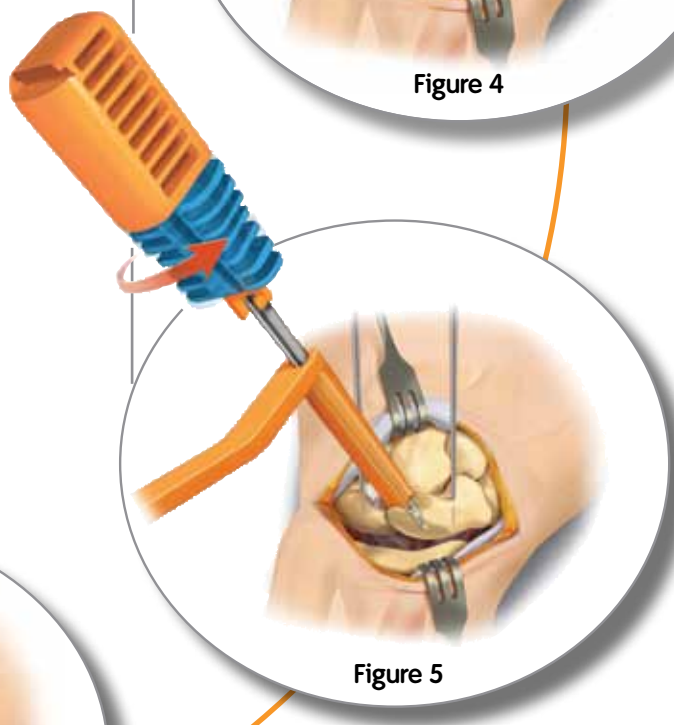
Drill the hole so the suture anchor gains maximum purchase within the bone, rather than into the cartilage surrounding the bone. The angle of hole drilled is, therefore, dependent on the length of ligament available for repair. Commonly, the hole is drilled approximately 45° to the ligament injury. A hole may be drilled at 90° (perpendicular to ligament injury) if ligament length allows.



- Maintain drill guide location and axial alignment with the prepared hole. Insert the suture anchor into the drill guide and prepared hole. Tap or twist the anchor into the bone until the anchor is fully seated to the desired depth. A laser mark indicator on the anchor shaft aligns with the proximal end of the drill guide to ensure proper insertion depth (Figure 4).



- Once proper anchor depth has been achieved, rotate the nose cone on the suture anchor handle 90° counterclockwise to allow the suture and needles to be released from the handle. Remove the insertion device and guide from the anchor site (Figure 5).

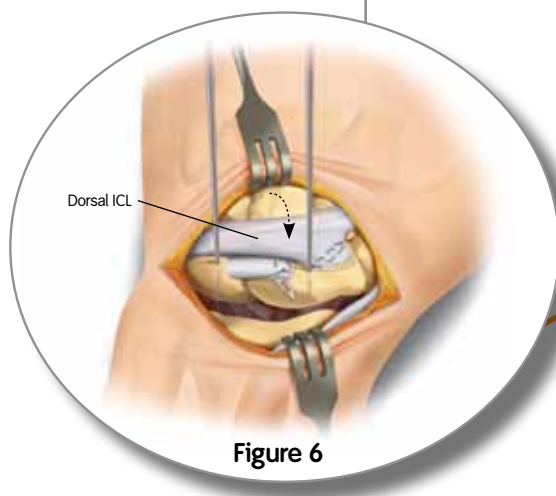


- Place horizontal mattress sutures from the repair site to the remaining scapholunate ligament to achieve deep purchase. Use a locking stitch if enough ligament is available.

- Use the rongeur to debride the dorsal distal one-third of the scaphoid. Incorporate the dorsal ICL from distal radial to the debrided portion of the scaphoid and secure the dorsal ICL with the same sutures used to secure the scapholunate ligament (Figure 6).

- Cut all pins just deep to the skin.

- Carefully close the dorsal capsule, extensor retinaculum, and skin.



Postoperative Protocol

1. Support the patient's wrist in a well-padded dorsal and volar thumb spica splint.
2. Following surgery, the patient should use elevation, ice, or Cryo/Cuff on the wrist.
3. At ten days, remove the sutures and fit the patient with a thumb spica cast for two weeks.
4. At four to six weeks, begin gentle therapy-assisted active motion at the radiocarpal joint to help prevent stiffness. The patient should wear a removable clamshell brace for another month to protect against pin breakage.
5. Remove pins at eight weeks and begin active and passive progressive motion.

References

- Chung, Kevin C. *Operative Techniques: Hand and Wrist Surgery* (pp. 178-183). Philadelphia: Elsevier, Inc., 2008.
- Cooney, William P. et al. *The Wrist: Diagnosis and Operative Treatment* (pp. 511-521). St. Louis: Mosby-Year Book, Inc., 1998.
- Gelberman, Richard H. *Master Techniques in Orthopaedic Surgery: The Wrist* (pp. 139-161). New York: Raven Press, Ltd., 1994.

Additional Instruction

Prior to performing this technique, consult the Instructions for Use documentation provided with individual components – including indications, contraindications, warnings, cautions, and instructions.

Ordering Information

Some of the more common instruments for scapholunate are listed below.
Call +1 800 343 5717 in the U.S. or contact your authorized Smith & Nephew representative to order any of the following.

72201881	DYNOMITE° 2.0 PK with one #2-0 ULTRABRAID° Suture and Needles
72201882	SPYROMITE° 2.0 PK with one #2-0 ULTRABRAID Suture and Needles
72202019	MINI TAC° 2.0 Ti with two #2-0 ULTRABRAID Suture and Needles
72202067	TWINFIX° 2.8 Ti with two #2-0 ULTRABRAID Suture and Needles
72202040	Drill Kit: For use with SPYROMITE 2.0 and MINI TAC 2.0
72202082	Drill Kit: For use with DYNOMITE 2.0

CAUTION: U.S. Federal law restricts these devices to sale by or on the order of a physician.



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