

Image Diagnosis: Scapholunate Dissociation

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Scapholunate (SL) dissociation is part of a spectrum of traumatic carpal bone instabilities and is defined as disruption of the ligamentous complex holding the scaphoid and lunate together.¹ The SL ligament complex consists of the volar, dorsal, and intermediate components, with the dorsal component being the strongest and primary stabilizer of the SL joint.² SL dissociation often results from rupture of the SL interosseous ligament following forceful wrist extension, allowing for widening of the SL joint.³ These injuries typically occur in the setting of a hyperextended wrist that is in ulnar deviation after a fall on an outstretched hand, but they have also been noted to occur in the setting of spastic paresis, rheumatoid arthritis, and congenital ligament laxity.^{1,4}

Approximately 5% of all wrist sprains have an associated SL tear, and SL ligament injuries are often associated with distal radius fracture (40% of the cases on average), particularly fractures of the radial styloid.² The latter stage of SL ligament instability, with complete diastasis of the SL ligament complex, includes dorsal intercalated segmental instability and perilunate dislocation, which requires emergent reduction.

Physical examination of patients with SL dissociation reveals wrist swelling, point tenderness at the dorsal SL interval, and pain with wrist extension and radial deviation.⁴ In acute injuries the wrist is often positioned in extension, and there is ulnar deviation and carpal supination. A palpable “clunk” can be felt during the Watson shift test (when volar counter pressure over the scaphoid tubercle is removed with movement of the wrist from ulnar to radial deviation).^{4,5}

Imaging on standard posteroanterior radiographs may reveal an increased SL interosseous gap of 5 mm or greater (Figure 1). The normal gap is 2 mm or less.^{6,7} The SL gap can be accentuated by ulnar deviation of the wrist by 20 degrees on the posteroanterior view (Figure 2) or by a clenched-fist anteroposterior position



Figure 1. Posteroanterior radiograph of the left wrist of a 49-year-old man demonstrating an scapholunate interosseous gap of approximately 5 mm (black arrow), and signet ring sign (white arrow).

view (SL gap < 3 mm), and has been dubbed the “Terry Thomas sign,” in reference to the gap between the front teeth of the British comedian.^{5,8} The signet ring sign (results from the scaphoid’s rotary motion and repositioning of its distal pole in a palmar position) may also be seen on the posteroanterior radiograph (Figure 1) in cases of SL dissociation, but may also be present normally and should be evaluated in light of clinical findings.⁹

Magnetic resonance imaging can be useful for definitive diagnosis of a ligamentous tear (Figure 3), with magnetic resonance arthrography demonstrating a higher sensitivity for diagnosis of complete and incomplete SL tears, although neither magnetic resonance imaging nor magnetic resonance arthrography need to be obtained during the initial Emergency Department visit.¹⁰

Treatment in the Emergency Department for SL dissociations includes splinting of the affected wrist in a thumb spica splint, analgesia, and urgent referral to a hand specialist.¹ SL dissociation may require urgent surgical intervention (within 6 weeks) to decrease the risk of severe and debilitating wrist dysfunction.¹¹ Prompt recognition of traumatic carpal instabilities is crucial, as delayed diagnosis and treatment are associated with



Figure 2. Posteroanterior radiograph showing the left wrist in ulnar deviation, demonstrating accentuation of the scapholunate interosseous gap (black arrow).



Figure 3. Magnetic resonance imaging of the left wrist demonstrating tear of the scapholunate ligament (arrow, dark signal) with fluid between the lunate and ligament (bright signal).

chronic pain, joint instability, inflammatory arthritis, and long-term degenerative changes including SL advanced collapse, or SLAC wrist.^{1,2,4} ❖

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References

- Casey PD, Youngberg R. Scapholunate dissociation: A practical approach for the emergency physician. *J Emerg Med* 1993 Nov-Dec;11(6):701-7. DOI: [https://doi.org/10.1016/0736-4679\(93\)90629-l](https://doi.org/10.1016/0736-4679(93)90629-l).
- Andersson JK. Treatment of scapholunate ligament injury: Current concepts. *EFORT Open Rev* 2017 Sep 19;2(9):382-393. DOI: <https://doi.org/10.1302/2058-5241.2.170016>.
- Meldon SW, Hargarten SW. Ligamentous injuries of the wrist. *J Emerg Med* 1995 Mar-Apr;13(2):217-25. DOI: [https://doi.org/10.1016/0736-4679\(94\)00136-7](https://doi.org/10.1016/0736-4679(94)00136-7).
- Lee DJ, Elfar JC. Carpal ligament injuries, pathomechanics, and classification. *Hand Clin* 2015 Aug;31(3):389-98. DOI: <https://doi.org/10.1016/j.hcl.2015.04.011>.
- Rodner CM, Weiss APC. Chapter 10: Acute scapholunate and lunotriquetral dissociation. In: Budoff JE, editor. *Fractures of the upper extremity; a master skills publication*. Chicago, IL: American Society for Surgery of the Hand; 2008. p 155-71.
- Walsh JJ, Berger RA, Cooney WP. Current status of scapholunate interosseous ligament injuries. *J Am Acad Orthop Surg* 2002 Jan-Feb;10(1):32-42. DOI: <https://doi.org/10.5435/00124635-200201000-00006>.
- Geissler WB, Freeland AE. Arthroscopic management of intra-articular distal radius fractures. *Hand Clin* 1999 Aug;15(3):455-65, viii.
- Gleeson AP, Brookes C, Brydon G. Scapholunate instability—a spectrum of pathology. *J Accid Emerg Med* 1996 May;13(3):216-9. DOI: <https://doi.org/10.1136/emj.13.3.216>.
- Tsyrlunik A. Emergency Department evaluation and treatment of wrist injuries. *Emerg Med Clin North Am* 2015 May;33(2):283-96. DOI: <https://doi.org/10.1016/j.emc.2014.12.003>.
- Scheck RJ, Romagnolo A, Hierner R, Pfluger T, Wilhelm K, Hahn K. The carpal ligaments in MR arthrography of the wrist: Correlation with standard MRI and wrist arthroscopy. *J Magn Reson Imaging* 1999 Mar;9(3):468-74. DOI: [https://doi.org/10.1002/\(sici\)1522-2586\(199903\)9:3<468::aid-jmri16>3.0.co;2-t](https://doi.org/10.1002/(sici)1522-2586(199903)9:3<468::aid-jmri16>3.0.co;2-t).
- Zarkadas PC, Gropper PT, White NJ, Perey BH. A survey of the surgical management of acute and chronic scapholunate instability. *J Hand Surg Am* 2004 Sep;29(5):848-57. DOI: <https://doi.org/10.1016/j.jhssa.2004.05.008>.