

Detailed Hand Examination

Pearls

- Findings that suggest nerve injury include sensory abnormality, motor loss, and loss of perception.
- Once a diagnosis of a nerve injury has been made, specialist consultation with repair or reconstruction of the nerve injury should be undertaken as soon as possible.
- Delays in management can lead to devastating functional sequelae.

Patients with hand, arm, shoulder or lower leg trauma should be properly examined for an appropriate diagnosis of any nerve injury. Once a diagnosis of a nerve injury has been made, specialist consultation with repair or reconstruction of the nerve injury should be undertaken as soon as possible, and rehabilitation strategies should be initiated early to achieve optimal outcome and function (Dahlin, 2013). Delays in management can lead to devastating functional sequelae.

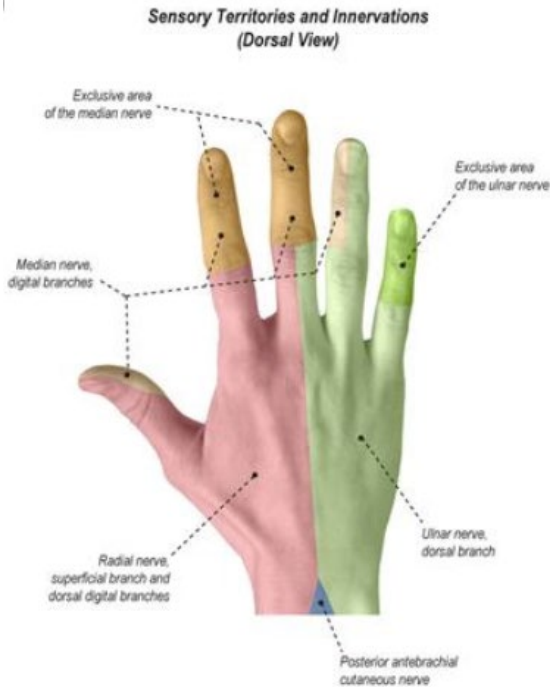

This pearl focuses on the assessment of the hand. Patients with upper extremity injuries should undergo a detailed hand examination, which includes strength and sensory and motor function testing, to assess for possible nerve and/or tendon injury.

Test strength individually by isolating joints in fingers for tendon injuries and be sure to test against both gravity and resistance - just because a patient can move a digit on their own does not rule out tendon injury.

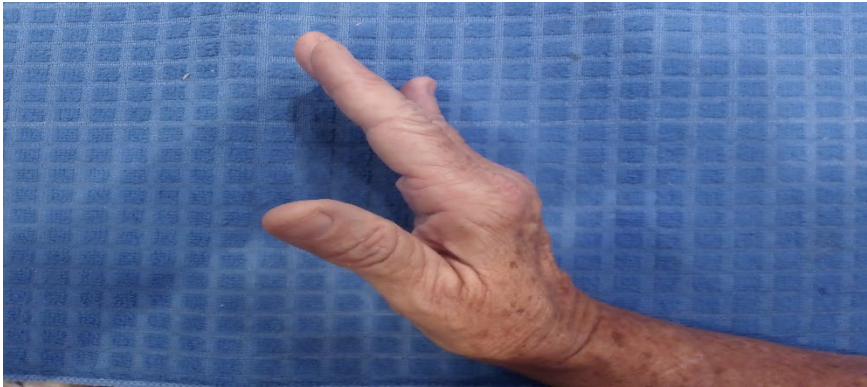
While there are numerous assessment techniques for the wrist and hand, some are specific for chronic conditions and injuries such as osteoarthritis and gamekeeper's thumb. A systematic hand exam approach to assess for acute injuries includes the following (Chow, 2016; Sheth, 2016):

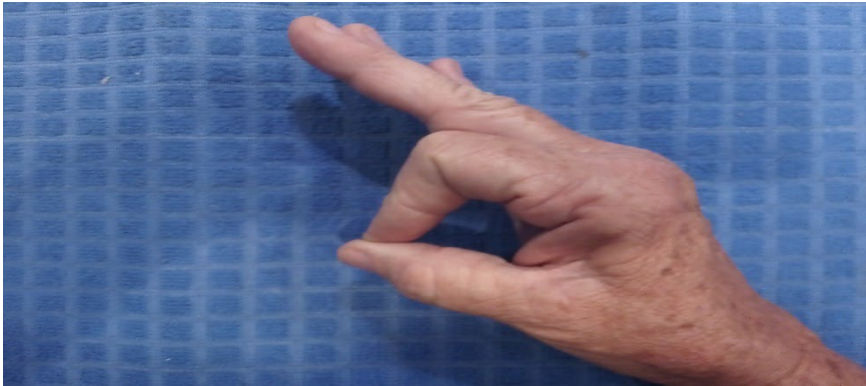

- Bilateral inspection – assess for asymmetry and skin changes, swelling, deformity, abnormal angulation or rotation
- Palpate the fingers and metacarpals for temperature, tenderness/pain, crepitus, clicking, and joint effusion
- Evaluate range of motion – active and passive
- Evaluate thumb extension and flexion, thumb abduction and adduction and thumb opposition
- Isolated digit flexion and extension of the MCP, PIP, and DIP joints and digit abduction & adduction against resistance
- Resisted thumb extension and flexion, thumb abduction and adduction and thumb opposition
- Resisted digit flexion and extension of the MCP, PIP, and DIP joints digit abduction and adduction
- Evaluate for ulnar nerve compromise (adductor pollicis) by having the patient cross the 2nd and 3rd fingers or have them attempt to hold a piece of paper between the 1st and 2nd finger against resistance (Froment's sign)
- Evaluate for anterior interosseous nerve by having the patient make the "OK" sign
- Test the ulnar collateral ligament by stabilizing the 1st metacarpal apply valgus stress at the MP joint and evaluate for laxity (skier's thumb)

Some of the most common hand examination techniques are highlighted below:

	RADIAL NERVE	MEDIAN NERVE	ULNAR NERVE
SENSORY FUNCTION TEST (Test with 2-point discrimination)	Dorsum of the thumb and index web space	Tip of the index finger	Tip of the little finger
<p>Sensory Territories and Innervations (Dorsal View)</p> 		<p>Sensory Territories and Innervations (Volar View)</p> 	

(Orthobullets, 2016)

MOTOR FUNCTION TEST		
RADIAL NERVE	Dorsiflex the wrist against resistance	

MOTOR FUNCTION TEST (CONTINUED)		
MEDIAN NERVE	OK sign with thumb and index finger	
ULNAR NERVE	Spread all 5 fingers apart against resistance	

References

Chow YC, Lee SW. Elbow and forearm injuries. In: Tintinalli JE, Ma OJ, Yealy DM, et al., eds. *Tintinalli's Emergency Medicine: A Comprehensive Study Guide*. 9th ed. McGraw Hill; 2020. Accessed February 1, 2022. <https://accessemergencymedicine.mhmedical.com/>. Text and images used by TeamHealth with full permission. [Consensus viewpoint/expert opinion, Level of Evidence C]

Dahlin LB. The role of timing in nerve reconstruction. *Int Rev Neurobiol*. 2013;109:151-64. doi: 10.1016/B978-0-12-420045-6.00007-9 [Review Article (not a systematic review of literature), Level of Evidence B]

Sheth U. Physical exam of the hand. *Orthobullets*. Updated May 23, 2021. Accessed May 31, 2022. <https://www.orthobullets.com/hand/6008/physical-exam-of-the-hand> [Consensus viewpoint/expert opinion, Level of Evidence C]