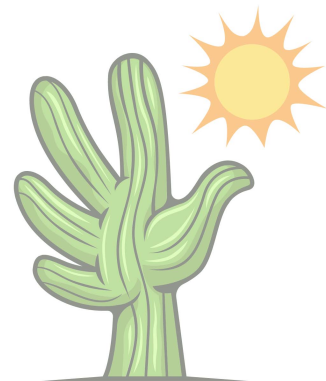


## John Dunn, MD

Double Board-Certified Hand, Wrist, and Nerve Surgeon

JohnDunnMD.com

### PERIPHERAL NERVE INJURY



#### What is it?

- Nerves branch off from the spinal cord in your neck and travel down your arm and into your hand
- Nerves can be transected, stretched, or compressed – leading to nerve injury.
  - o Depending on the mechanism of nerve injury, location, age of patient, and time to repair – will determine treatment and outcome.
- Nerves are like electrical cords – they plug into a wall socket (muscle and motor end plate)
  - o If the nerve/electrical cord does not get repaired (plugged back into the wall) before a certain period of time (6-9 months) the muscle will irreversibly atrophy.
    - There may be a permanent functional deficit.
- Ulnar nerve injuries cause clawing – which can be irreversible if not treated quickly.

#### Who gets it?

- Nerve injury occurs in 2% of all extremity trauma.
  - o Humerus fracture → radial nerve injury.
- Nerve injuries account for 3% of all upper extremity injuries.



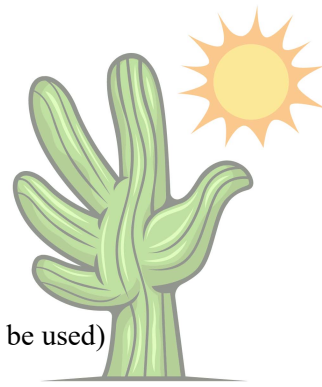
#### What can you do about it?

- A MRI/CT may be needed in some cases (stretching injuries)
- A hand surgeon can diagnose this condition many times with only a physical exam.
  - o Electrodiagnostic nerve study may be ordered 3 weeks after the injury.
- Surgery is always indicated with nerve lacerations.
- Surgery MAY not be indicated for stretch or compression injuries.
  - o Compression injuries may be “watched” in clinic with serial nerve studies.

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### Surgery:

- Nerve graft (allograft from donor tissue or sometimes extra nerve from your body can be used)
- Nerve transfers may help provide extra axons (electricity) to the injured nerve.
  - o A branch of the median nerve is often transferred to the ulnar nerve in the wrist to help prevent clawing of the hand when the ulnar nerve is injured.

### Post-operative course

- Pain pills may be needed for the first 5-7 days.
- Black nylon sutures are removed at the first post-operative visit in 2 weeks.
  - o This suture is inert (does not react with your body) and is sturdy.
- You can text, type, and do light duties with the hand before the sutures are removed while the dressing is in place (but no weight bearing)
- After the sutures are removed you can wiggle your fingers in the splint.
- Post-operative therapy very strongly encouraged – especially with nerve transfers so your body can re-program the muscles you need to move your hand.
  - o If you have a radial to axillary nerve transfer – you will have to re-learn how to lift your shoulder up.

### Outcomes

- Outcomes are better for younger patients, a more distal injury (closer to the hand as opposed to closer to the shoulder), quicker time to surgery, lacerations (as opposed to stretch or crush)
- Median to Ulnar transfer:
  - o Improves grip strength (32%), pinch strength (30%), disability (20% less)
  - o 50% will improve over 1 year, 16% will improve within 3 months.
- Radial to Axillary transfer:
  - o Improves shoulder elevation (100°), strength (82% of patients)

### Complications

- The biggest complication is the patient not improving – nerve injuries can be devastating so I often tell patients they do not have much to lose and should try all available options to improve function.

