

The occasional carpal tunnel injection

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A 21-year-old patient presents to your office with a 3-week history of increasing pain and numbness in his right dominant hand. Particularly affected are the index and long fingers. Symptoms are worse at night and awaken him from sleep. To relieve the symptoms, he flicks the wrist as if he were shaking down a thermometer. On examination, flexion at the wrist reproduces the pain within 45 seconds. Tapping the proximal wrist crease also reproduces the pain. There is decreased pin prick sensation in the index finger, compared with the other hand. Muscle mass in the hand is normal. The diagnosis is easy — carpal tunnel syndrome (CTS). The etiology is more difficult to ascertain.

Not all carpal tunnel syndrome is median neuropathy. Even with "classic" symptoms, up to one-third of patients will have normal median nerve conduction.[1] In light of this, many surgeons will not decompress the carpal tunnel unless there is an electromyograph (EMG) on the chart indicating abnormal median nerve conduction. In my region, the EMG, the surgeon and the hospital will add many weeks to months of waiting. However, the patient can be treated on the day of presentation in the office.

A single injection of a steroid into the carpal tunnel will provide relief for 85% of patients with CTS symptoms, according to a Cochrane review.[2] If there is no response or symptoms recur despite this conservative treatment, then I refer for EMG.

Alternate therapy, such as night wrist splints (particularly for pregnant patients), may be helpful and can be combined with injection. Note that nonsteroidal anti-inflamatory drugs, diuretics and pyridoxine are no more effective than placebo in relieving the symptoms of CTS.[3]

Risks of the procedure include infection, bleeding and injury to underlying structures. Case reports of median nerve injury exist but are felt to be much less common than with carpal tunnel surgery.

Equipment

- Alcohol swabs
- Plastic strip bandage
- Sterile gloves
- 25 gauge 40 mm needle
- 3 mL syringe
- 10 mg methylprednisolone

Procedure

Step 1

Check the surface anatomy to find the injection site. You may roll a small towel to place under the wrist to put it in mild extension. You want to enter the skin just ulnar to the palmaris longus tendon and proximal to the wrist crease. For those few patients without a palmaris longus tendon, you can landmark the flexor carpi radialis just ulnar to the midline of the wrist (Fig. 1).



Fig. 1. The injection is made proximal to the transverse carpal ligament and ulnar to the palmaris longus tendon.

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Step 2

Prepare the skin and your solution. When I started injecting the carpal tunnel I used a mixture of 2% xylocaine and 20 mg methylprednisolone. My patients would get anesthesia in the median nerve distribution, which would confirm proper location of the solution. However, as patients are disconcerted by a numb hand, even for just an hour, I now just inject the steroid (Fig. 2).



Fig. 2. Methylprednisolone and syringe.

Step 3

Insert the needle at a 30° angle, directed toward the ring finger (Fig. 3). If the patient experiences paresthesias you are close to the nerve and the needle should be withdrawn immediately and redirected in a more ulnar fashion. As with any injection, aspirate to ensure that the needle has not been placed in a blood vessel. Injection should be done slowly and not meet any resistance.

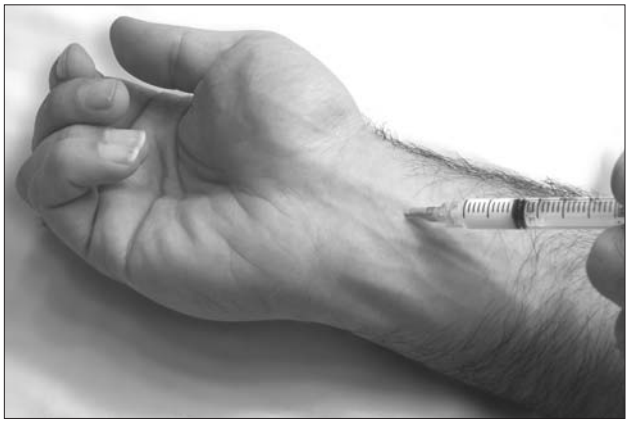


Fig. 3. The needle is inserted at 30° aiming for the ring finger.

If a venous plexus makes it difficult to inject at the wrist you can use a longer needle and enter the skin 3 cm proximally at a more shallow angle (10–20°) (Fig. 4). Do not try to inject distally through the transverse carpal ligament as the space there is more limited, with increased potential for pain or injury.

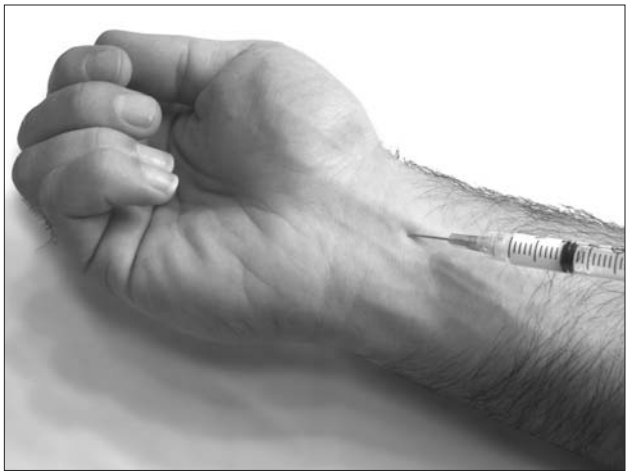


Fig. 4. Alternately, the injection can be made distally at 10–20°.

Summary

Patients often present to rural doctors with CTS. A single injection of corticosteroid into the tunnel is an easy and effective form of treatment. Determination of median neuropathy is only important if the patient wants surgery or if steroid injection fails.

Competing interests: None decalred.

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