

Hui AC, Wong S, et al. A randomized controlled trial of surgery vs steroid injection for carpal tunnel syndrome. *Neurology* 2005;64:2074-2078.

Design: Randomized clinical trial

Population/sample size/setting:

- 50 patients (48 women, 2 men, mean age 49) treated for carpal tunnel syndrome in a university neurology/neurosurgery department in Hong Kong
- Inclusion criteria were electrodiagnostically confirmed CTS in patients diagnosed more than 3 months but less than 1 year prior to study
- Exclusion criteria were severe CTS (thenar atrophy or absent distal motor latencies), ulnar/radial/proximal median neuropathy, brachial plexopathy, medical disorders associated with CTS, contraindications to steroids, and pregnancy

Main outcome measures:

- Randomized to open transverse carpal ligament release (n=25) or 15 mg Depo-Medrol injection (n=25)
- Follow-up was done at 6 weeks and at 20 weeks; plaster tape over wrists was applied to preserve blinding of outcome assessment
- GSS (global symptom score) was measured at baseline, 6 weeks, and 20 weeks; this rates symptoms on scale of 0 to 10 on pain, numbness, paresthesia, weakness/clumsiness, and nocturnal waking
- Grip strength, distal motor latency, and sensory nerve conduction velocity were measured at baseline and at 20 weeks, but not at 6 weeks
- Both steroid injection and surgery produced improvements in GSS at 6 weeks: steroid group from 25.2 to 11.5; surgery group from 28.6 to 5.5
- At 20 weeks, the GSS in the steroid group had gone back up to 16.6, but had remained low (4.3) in the steroid group
- Distal motor latency and sensory nerve conduction velocity also were improved in both groups, more in the surgical than in the steroid group
- Hand grip strength improved in the steroid group from 24.2 to 26.6 kg, but did not improve in the surgery group (declined from 23.4 to 21.8)
- At the end of the study, 19 of 25 patients in the surgery group were reported symptom-free at night, but only 4 of 25 steroid patients were symptom-free
- Adverse effects occurred in both groups but resolved by 6 weeks

Authors' conclusions:

- Surgery is more beneficial in mild to moderate CTS in improving symptoms and nerve conduction
- Many patients who receive steroid injections relapse after initial improvement
- Slight decrease in grip strength in surgical group may have been due to reluctance to exert maximal effort after recent surgery, and strength may improve over time

Comments:

- Study has many features of a well-planned and executed study: sample size was calculated in advance, care was taken to preserve allocation concealment and blinding of outcome, and no patient was lost to follow-up
- The main outcome was symptomatic and not functional; it is not clear why a function scale was not administered along with the symptom scale
- Nerve conduction improvement is not an adequate measure of function, since it correlates weakly with symptoms and function
- Grip strength largely measures forearm muscle power; key pinch strength would be a more relevant measure of intrinsic hand muscle strength

Assessment: for evidence statement that surgery improves symptoms better than steroid injection in the first five months: high-quality

For statement that surgery improves function more than steroid: inadequate