



## Q/ Do corticosteroid injections improve carpal tunnel syndrome symptoms?

### EVIDENCE-BASED ANSWER

**A** / **YES. INJECTED CORTICOSTEROIDS REDUCE SYMPTOMS** of carpal tunnel syndrome (CTS) more effectively than placebo or systemic steroids, but no better than anti-inflammatory medication and splinting, from one to 12 weeks after therapy (strength of recommendation [SOR]: **A**, meta-analysis of randomized controlled trials [RCTs] and consistent RCT).

A 40-mg injection of methylprednisolone

reduces symptoms as effectively as an 80-mg injection for as long as 10 weeks, but the 80-mg dose reduces progression to surgery at one year (SOR: **B**, RCT). Long-term effects of injections decrease by 12 months (SOR: **B**, RCT).

After corticosteroid injections, 14% of patients proceed to surgery at one year, and 33% proceed to surgery at 5 years (SOR: **B**, cohort trial).

### Evidence summary

A 2007 Cochrane review of 12 RCTs with 671 patients compared the efficacy of corticosteroid injections for CTS with placebo injections or other nonsurgical interventions.<sup>1</sup> Patients who received corticosteroid injections showed clinical improvement at one month or less compared with placebo (2 trials, 141 patients; 73% corticosteroids vs 28% placebo; relative risk [RR]=2.58; 95% confidence interval [CI], 1.72-3.87; number needed to treat [NNT]=2).

Compared with systemic corticosteroids, corticosteroid injections didn't improve symptoms on a Global Symptom Score (scale of 0-50, with 50 indicating the most severe symptoms) at 2 weeks (one trial, 60 patients; mean difference [MD]= -4.2; 95% CI, -8.7 to 0.26), but did improve symptoms at 8 weeks (MD= -7.16; 95% CI, -11.5 to -2.86) and 12 weeks (MD= -7.1; 95% CI, -11.7 to -2.52).

Patients showed no difference in scores between corticosteroid injection and oral anti-inflammatory medication with neutral angle wrist splints on the Symptom Severity

Scale (1 to 5, with 5 indicating the most severe symptoms) at 2 weeks (1 trial, 23 patients [37 wrists]; MD=0.0; 95% CI, -0.64 to 0.64) or 8 weeks (MD=0.1; 95% CI, -0.33 to 0.53).

### Higher corticosteroid dose reduces surgery at one year

A 2013 high-quality RCT with 111 patients assessed pain relief and rates of surgery at one year with local corticosteroid injections for CTS.<sup>2</sup> This trial had 3 arms with 37 patients in each: 80-mg methylprednisolone injection, 40-mg methylprednisolone injection, or placebo injection.

Both corticosteroid groups showed greater improvement on the Symptom Severity Scale at 10 weeks compared with placebo (40-mg methylprednisolone group: MD= -0.88; 95% CI, -1.3 to -0.46; 80-mg methylprednisolone group: MD= -0.64; 95% CI, -1.06 to -0.21). There was no difference between the methylprednisolone groups.

The incidence of surgery at one year was lower in the 80-mg methylprednisolone group compared with placebo (73% vs

**Corey Lyon, DO;**  
**Jonathan Syfert, MD**  
University of Colorado Family  
Medicine Residency, Denver

**Joan Nashelsky, MLS**  
University of Iowa, Iowa City

**DEPUTY EDITOR**  
**Rick Guthmann, MD**  
Advocate Illinois Masonic  
Family Medicine Residency,  
Chicago

92%; RR=0.79; 95% CI, 0.64-0.99; NNT=5) but not in the 40-mg methylprednisolone group compared with placebo (81% vs 92%; RR=0.88; 95% CI, 0.73-1.06).

### Corticosteroids improve symptoms and disability, but effects wear off

A randomized double-blind, placebo-controlled trial conducted in 2010 examined the effectiveness of corticosteroid injections given by general practitioners to 69 patients with CTS.<sup>3</sup> Patients were randomized to receive 10 mg of either triamcinolone or saline. They were reassessed after one week, and patients in the saline injection group who had inadequate symptom relief received a triamcinolone injection as bail-out treatment. Follow-up by patient questionnaire was done at 1, 3, 6, and 12 months.

Investigators assessed symptoms and disability using the Symptom Severity Scale and Functional Disability Scale, which are part of the Boston Carpal Tunnel Questionnaire. Like the Symptom Severity Scale, the Functional Disability Scale is scored from 1 to 5, with higher scores indicating more severe disability.

One week after treatment, the corticosteroid group showed greater improvement in symptom severity and functional disability than the saline group (symptom severity decreased from 2.9 to 1.9 with triamcinolone vs 2.8 to 2.5 with saline; MD=0.64; 95% CI, 0.32-0.96; functional disability decreased from 2.5 to 1.9 with triamcinolone but remained at 2.4 with saline; MD=0.59; 95% CI, 0.23-0.94).

Long-term follow-up of 35 patients who responded to corticosteroid injections found that the effects wore off over 12 months when

assessed using the Symptom Severity Scale (mean score 1.5 at 1 month, 2.0 at 12 months;  $P=.08$ ).

### Surgery rates at one and 5 years

A 2012 prospective cohort study examined the 5-year rate of surgical intervention after a 20-mg methylprednisolone injection in 824 patients diagnosed with CTS who had failed conservative treatment.<sup>4</sup> A total of 500 patients had a relapse of symptoms, and 372 of them elected to have a second injection. A Kaplan-Meier survivorship analysis determined rates of surgical intervention to be 14.5% (95% CI, 11.9-17) at one year and 33.2% (95% CI, 28.7-37.8) at 5 years.

### Recommendation

A 2010 American Academy of Orthopaedic Surgeons evidence-based practice guideline on the treatment of CTS recommends corticosteroid injection before considering surgery (Grade B, Level 1 suggested recommendation with good evidence).<sup>5</sup> **JFP**

### References

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4. Jenkins PJ, Duckworth AD, Watts AC, et al. Corticosteroid injection for carpal tunnel syndrome: a 5-year survivorship analysis. *Hand*. 2012;7:151-156.
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