

Surgery was associated with greater long-term treatment success than wrist splinting in the carpal tunnel syndrome

Gerritsen AA, de Vet HC, Scholten RJ, et al. **Splinting vs surgery in the treatment of carpal tunnel syndrome: a randomized controlled trial.** JAMA. 2002;288:1245-51.

QUESTION

In patients with the carpal tunnel syndrome (CTS), what is the short-term and long-term effectiveness of wrist splinting and surgery?

DESIGN

Randomized (allocation concealed*), blinded {data collectors, outcome assessors, and data analysts}†,*, controlled trial with 18-month follow-up.

SETTING

13 neurologic outpatient clinics in the Netherlands.

PATIENTS

176 patients \geq 18 years of age (mean age 49 y, 81% women) with clinically and electrophysiologically confirmed idiopathic CTS. Exclusion criteria were previous treatment with splinting or surgery, history of wrist trauma or surgery, underlying causes of CTS, conditions emulating CTS, or severe thenar muscle atrophy. Follow-up was 95% at 1 month and 84% at 18 months.

INTERVENTION

89 patients were allocated to wrist splinting during the night for \geq 6 weeks, and 87 were allocated to open carpal tunnel release surgery.

MAIN OUTCOME MEASURES

Patient self-report of treatment success (defined as ratings of “completely recovered” or “much improved” on a 6-point ordinal

scale ranging from “completely recovered” to “much worse”); number of nights waking because of symptoms; and severity of the main complaint and paresthesia (each scored on an 11-point numerical scale, with 0 representing “no symptoms” and 10 representing “very severe symptoms”).

MAIN RESULTS

Analysis was by intention to treat. Treatment success rates did not differ between groups at 1 month but were higher in the surgical group at 18 months (Table). At 1 month, patients in the splinting group reported greater improvement in the number of nights/wk waking because of symptoms than those in the surgical group (mean improvement 2.0 vs 0.8 d, $P = 0.008$) and greater improvement in reducing the severity of paresthesia at night than those in the surgical group (mean improvement 2.5 vs 1.3, $P = 0.02$); groups did not differ at 18 months. At 18 months, patients in the surgical group reported greater improvement in

reducing the severity of the main complaint than those in the splinting group (mean improvement 6.2 vs 5.0, $P = 0.02$) and greater improvement in reducing the severity of paresthesia during the day than those in the splinting group (mean improvement 5.3 vs 4.0, $P = 0.01$); groups did not differ at 1 month.

CONCLUSION

In patients with the carpal tunnel syndrome, surgery and wrist splinting did not differ greatly in the short term, but surgery was associated with greater treatment success than splinting in the long term.

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*See Glossary.

†Information provided by author.

Treatment success of surgery vs wrist splinting in the carpal tunnel syndrome†

Follow-up	Surgery	Splinting	RBR (95% CI)	NNH
1 mo	29%	42%	32% (-3 to 55)	Not significant
			RBI (CI)	NNT (CI)
18 mo	90%	75%	20% (3 to 42)	7 (4 to 39)

‡RBR = relative benefit reduction. Other abbreviations defined in Glossary; RBR, RBI, NNT, NNH, and CI calculated from data in article.

COMMENTARY

Gerritsen and colleagues are to be commended for their well-designed, randomized trial of CTS. Their conclusions largely mirror results of 1 previous smaller, randomized study (1). The methodology was excellent, being the best possible next to doing sham operations. It is important to note that analysis of patients' treatment preferences before randomization did not affect outcome. However, possible changes of hand-use activities (e.g., employment and hobbies) were not included in an analysis of the long-term outcomes.

Despite these results, several issues should be considered before sending patients immediately to surgery. First, patient selection in this study was restricted. Patients with underlying causes of CTS, a history of wrist trauma or previous treatment, and those with severe thenar atrophy were excluded. These groups account for a large proportion of patients with CTS. Although this makes for a well-controlled trial, it does not accurately reflect typical clinical practice. Second, although the difference between groups for the primary outcome of success is clinically significant at 18 months, the difference between the groups

narrows over time, making study of even longer-term outcomes imperative. However, this was mainly caused by a large proportion of patients who received splinting (41%) going on to receive surgery.

The study advances the argument around treatment of CTS in favor of surgery in selected patients. Given the limitations of patient inclusion, the lack of accounting for altered hand use, and the potential for serious side effects from surgery (albeit extremely low), treatment still needs to be individualized. The current American Academy of Neurology recommendation of an initial trial of noninvasive therapy remains reasonable for a large number of patients.

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Reference

- Verdugo RJ, Salinas RS, Castillo J, Cea JG. Surgical versus non-surgical treatment for carpal tunnel syndrome. Cochrane Database Syst Rev. 2002;(2):CD001552.