Carpal tunnel syndrome (CTS) is a common, painful disorder that occurs predominantly in adults 40 to 60 years old. It is five times more likely to occur in women than in men but is extremely rare in children. Traditional treatment includes splinting, nonsteroidal anti-inflammatory drugs (NSAIDs), vitamin B6, steroids, physiotherapy, restricting hand activity, and changing occupations.

Steroid injection into the carpal tunnel provides effective short-term relief 80% of the time. Surgery is recommended in 40% of cases. Postsurgical recovery from conventional techniques is slow; light work can resume at 4 to 8 weeks and heavy gripping or repetitive work at 3 months.

Endoscopic techniques have reduced functional recovery times but are not always available. Complications arise in 10% of carpal tunnel surgery cases, including failure to relieve symptoms or symptom recurrence.

This case report documents use of acupuncture in a patient who wanted to avoid surgery. Using soft-tissue ultrasound to diagnose and follow the effects of acupuncture treatment is highlighted.

**Case report**

A 36-year-old woman was referred to one of the authors (R.B.) for acupuncture treatment for CTS. The author had incorporated acupuncture into his practice, and over the past several years had developed a referral practice in Prince Rupert, BC, using needle acupuncture for various musculoskeletal complaints. This patient had been complaining of numbness and pain in her right hand and wrist for 9 months. The left hand was asymptomatic. Her only prior treatment was a custom-made wrist splint worn at bedtime. It was only somewhat helpful.

The patient had been diagnosed with Crohn’s disease 13 years earlier, but it required no treatment. A physical examination showed severe CTS evidenced by true wasting of the right thenar muscle as well as the first and second dorsal interossei muscles together with weakness of the opponens pollicis. Tinel and Phalen’s signs were positive on the right. Results of an arterial blood pressure cuff occlusion test were positive with reproduction of symptoms in less than 60 seconds. The patient had a normal body mass index of 25.

Laboratory investigations included normal fasting blood sugar, glycosylated hemoglobin (HbA1c), and thyroid-stimulating hormone. The nearest facility for nerve conduction studies was 2 hours away in Terrace, BC, and it was not standard practice to refer patients for this test unless they were being considered for surgery, which this patient was trying to avoid. Diagnosis was thus based on clinical history and findings together with soft-tissue ultrasound findings.

Soft-tissue sonograms of both carpal tunnels were conducted before treatment and after symptoms disappeared. The median nerve in normal wrists has a standard size and appearance, flattening ratios, and limits to palmar displacement. At least one of the following is considered diagnostic of CTS on ultrasound examination: diffuse or localized swelling of the median nerve at the entrance and in the proximal part of the tunnel, flattening of the median nerve in the distal part of the tunnel, and increased bowing of the flexor retinaculum. Initial examination showed both median nerves to be flattened with an anterior-posterior diameter of 2 mm; the right was hypoechoic in relation to the left. Mean cross-sectional area of the right median nerve was 5 mm² and of the left median nerve 9 mm². Acupuncture treatments were performed weekly for 5 weeks.

During the treatment period, the patient decided on her own to stop wearing her night splint, and in 5 weeks without any other treatment she was symptom free. Results of a follow-up ultrasound evaluation showed that both nerves had symmetric echogenicity,
with a normal anterior-posterior diameter (1.4 mm) and mean cross-sectional area (3 mm²).

**Discussion**

Electromyography (EMG) is considered the criterion standard for diagnosing CTS. Practices located in remote areas often do not have access to EMG; ultrasound evaluation is generally more accessible. For patients who present for surgery with an EMG diagnosis of CTS, ultrasound and magnetic resonance imaging are equally reliable and valid for demonstrating anatomical abnormalities consistent with symptoms.⁵

In 1997, a National Institutes of Health Consensus Conference was held to answer a predefined set of questions concerning acupuncture. A 12-member panel reviewed the literature (as described below); heard presentations from 25 experts from various fields; and, in an open forum of 1200 people, developed conclusions and recommendations based on the weight of evidence provided. They concluded that acupuncture might be effective as an adjunct therapy, as an acceptable alternative, or as part of a comprehensive treatment program for CTS.⁶

To facilitate deliberations of the consensus development panel, the National Library of Medicine (NLM) conducted an extensive review of the literature from January 1970 through September 1997. All NLM databases were searched electronically and NLM journals searched manually for articles with relevant clinical data on acupuncture. The bibliography also incorporated much of the Medical Acupuncture Research Foundation’s bibliography disseminated by the American Academy of Medical Acupuncture.

Only two of 2302 citations in the primary bibliographic source for this conference dealt with acupuncture and CTS. One abstract of a prospective observational study reported successful use of a gallium arsenide laser along five points of the distal median nerve.⁷ Unfortunately, no publication could be found in follow up to the abstract.

In this abstract, symptom relief with normalization of latencies occurred in nine of 11 patients who had clinical and EMG evidence of CTS. In the only other reference, Chen⁸ retrospectively reviewed use of acupuncture in 36 patients with EMG-diagnosed CTS. Using either manual or electrical stimulation with acupuncture needles at pericardial 6 and 7, gave 24 patients complete relief of symptoms. They continued to report being symptom free for 2.5 to 8.5 years. Subsequent searches of EMBASE, MANTIS, and MEDLINE after 1997 did not find any new relevant articles.

**Editor’s key points**

- Acupuncture treatment for carpal tunnel syndrome (CTS) has shown some promise as an adjunct therapy.
- This case demonstrates subjective and objective ultrasound evidence of improvement after acupuncture.
- High-resolution ultrasound might be useful for diagnosing CTS when electromyography is unavailable.

**Conclusion**

Using ultrasound to show evidence of anatomic change from successful acupuncture treatment for CTS (with symptom resolution) has not been reported previously. A randomized controlled clinical trial to confirm this finding is currently under way; completion is anticipated in June 2001. If results seen in this case report are reproducible, future research should be directed toward investigating the biochemical mechanism of action of acupuncture in CTS.
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Competing interests
None declared

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References

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