Postsurgical electrical stimulation

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Patients with severe cubital tunnel syndrome often have poor functional recovery with conventional surgical treatment. Postsurgical electrical stimulation (PES) has been shown to enhance axonal regeneration in animal and human studies.

To determine if PES following surgery for severe cubital tunnel syndrome would result in better outcomes compared to surgery alone.

Patients with severe cubital tunnel syndrome in this randomized, double-blind, placebo-controlled trial were randomized in a 1:2 ratio to the control or stimulation groups. Control patients received cubital tunnel surgery and sham stimulation, whereas patients in the stimulation group received 1-h of 20 Hz PES following surgery. Patients were assessed by a blinded evaluator annually for 3 yr. The primary outcome was motor unit number estimation (MUNE) and secondary outcomes were grip and key pinch strength and McGowan grade and compound muscle action potential.

A total of 31 patients were enrolled: 11 received surgery alone and 20 received surgery and PES. Three years following surgery, MUNE was significantly higher in the PES group (176 \pm 23, mean + SE) compared to controls (88 \pm 11, P < .05). The mean gain in key pinch strength in the PES group was almost 3 times greater than in the controls (P < .05). Similarly, other functional and physiological outcomes showed significantly greater improvements in the PES group.

Postsurgical electrical stimulation enhanced muscle reinnervation and functional recovery following surgery for severe cubital tunnel syndrome. It may be a clinically useful adjunct to surgery for severe ulnar neuropathy, in which functional recovery with conventional treatment is often suboptimal ¹⁾.

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Power HA, Morhart MJ, Olson JL, Chan KM. Postsurgical Electrical Stimulation Enhances Recovery Following Surgery for Severe Cubital Tunnel Syndrome: A Double-Blind Randomized Controlled Trial. Neurosurgery. 2019 Aug 20. pii: nyz322. doi: 10.1093/neuros/nyz322. [Epub ahead of print] PubMed PMID: 31432080.

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