**Zyluk A, Szlosser Z. The results of carpal tunnel release for carpal tunnel syndrome diagnosed on clinical grounds, with or without electrophysiological investigations: a randomized study. J Hand Surg Eur Vol. 2013;38(1);44-9.**

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Design: randomized clinical trial

Purpose of study: to determine if the outcomes of carpal tunnel release are different in patients whose CTS is diagnosed on clinical grounds alone versus those whose CTS diagnosis is confirmed preoperatively with electrodiagnostic testing

Population/sample size/setting:

* 93 patients (83 women, 10 men mean age 57) referred for surgical treatment of CTS at a department of hand surgery in Poland
* Inclusion criteria were “classical” symptoms and signs of CTS (pain/numbness in the hand, wakening the patient at night, alleviated by shaking the hand, feeling of edema in the digits, occurrence at manual work or static grip with a flexed hand, weaker grip, reduced dexterity of the hand)
* Exclusion criteria were atypical symptoms or unusual course of disease, recurrent syndrome, diabetic neuropathy, cervical radiculopathy, and inability to participate in the study

Interventions :

* All patients underwent a mini-invasive carpal tunnel release under local anesthesia with use of a tourniquet
* Randomization was initially done with 122 patients, who differed with respect to preoperative diagnostic workup
	+ One group (n=56) had nerve conduction studies (NCS) prior to surgery
		- Sensory NCS were done with antidromic stimulation of the median nerve with a surface electrode at the distal forearm
		- Motor nerve conduction was examined with orthodromic stimulation at the cubital fossa and distal forearm, with the receiving bipolar surface electrode placed over the abductor pollicis brevis
		- The process of arranging NCS took one month on average, delaying surgery in those patients for the same amount of time
	+ The other group (n=66) went to surgery without NCS
* No other diagnostic workup (MRI, median nerve ultrasound) was done

Outcomes:

* Followup assessment was done at 1 and 6 months
* The hand-specific scale which was used, the Boston [Levine] Questionnaire, has 11 items for symptom severity and 8 items for functional difficulties
	+ Each item in the questionnaire is scored from 1 to 5, with higher scores indicating worse symptomatology or function
	+ The hand score entered into the analysis was the mean of all 11 symptom items and all 8 function items, such that the score was a number between 1 and 5
* The group with no NCS had somewhat worse baseline Levine scores than the NCS group (average symptom scores of 3.0 for the NCS group and 3.4 for the no-NCS group; average function scores of 2.8 for the NCS group and 3.4 for the no-NCS group)
* At the one month followup, both groups of patients had substantial resolution of CTS symptoms and hand function
* At the six month followup, the Levine symptom score for the NCS group was 1.4, which was also the average score for the no-NCS group; the Levine function score was 1.5 in the NCS group and 1.6 in the no-NCS group; the primary outcomes were therefore equal at the six month followup
* Complications such as nerve or vessel injury or infection and CRPS were not observed in either group

Authors’ conclusions:

* Patients with clinically typical CTS can safely be referred for operative treatment without nerve conduction studies; these studies do not improve outcomes of surgery and can be omitted
* NCS may be needed in patients with an atypical history or clinical findings

Comments:

* Although a flow diagram is missing, the attrition rates in the groups can be calculated from the numbers given in the text
	+ 56 patients were randomized to NCS, and 45 had six month followup data, for an attrition rate of 24.4%
	+ 66 patients were randomized to no NCS, and 48 had six month followup data, for an attrition rate of 27.7%
	+ The authors attempted to contact the patients by telephone or by mail, but a substantial loss to followup occurred in both groups
	+ There does not appear to be differential attrition, however, and the high dropout rate has no clear interpretation with respect to potential biased comparisons between groups
* The inclusion criteria excluded patients with cervical radiculopathy, but there is no information about how that information was elicited; it would be more accurate to say that patients were excluded if there was “known cervical radiculopathy”
	+ Unrecognized cervical radiculopathy is one justification for nerve conduction studies prior to CTS surgery, and an unknown number of patients may have had this condition at the time of enrollment
	+ The randomization would be expected to balance the numbers of unrecognized cervical radiculopathies between the two groups, and the groups as randomized may therefore represent the population of interest: those with clinical CTS and no known additional pathology
* At six months, there were some group differences with some of the secondary outcomes, which may be of parenthetical interest but were not the focus of the trial as designed: three-point pinch strength was better in the no-NCS group (106% vs 84%), and the sensory index was better in the NCS group (4.5 vs. 4.3)
* The baseline imbalance on the Levine scores, which were somewhat worse in the no-NCS group than the NCS group, are not likely to bias the final outcome assessment; it would have been more elegant to analyze the results using analysis of covariance with the baseline scores as covariates than with the Student t-test used in the analysis, but the conclusion of equal improvement would not have been compromised
* The authors do not appear to have discovered any preoperative pathology (such as double-crush syndrome) that would have changed the management strategy in the patients who had NCS, but this is not made clear

Assessment: adequate for some evidence that in patients who present with clinically typical CTS symptoms of median nerve distribution pain and numbness which awaken the patient at night and are alleviated by shaking the hand, the outcomes of mini-open carpal tunnel release are similar at 6 months with respect to symptoms and function between patients who do and do not undergo preoperative nerve conduction studies