**Caliandro P, La Torre G, Padua R, et al. Treatment for ulnar neuropathy at the elbow. Cochrane Database of Systematic Reviews 2012, Issue 7. Art. No.: CD006839.**

PMID: 22786500

Design: meta-analysis of clinical trials

PICOS:  
 - Patient population: people with clinical symptoms suggesting the presence of ulnar neuropathy at the elbow (UNE) with or without neurophysiological evidence of entrapment

* Interventions/Comparisons: all forms of surgical and conservative treatments
* Outcomes: primary outcome was clinically relevant improvement in function compared to baseline
  + Preference was for validated scales such as the Disability of Shoulder and Hand (DASH) or the UNE questionnaire
  + If a study evaluated more than one functional outcome measure, a better score on at least one of the scales was enough to be considered an improvement
  + Secondary outcomes included measurements of muscle strength, sensory deficits, motor nerve conduction velocity across the elbow, change in baseline nerve diameter evaluated by MRI or ultrasound, change in quality of life, and adverse events
* Study types: randomized controlled clinical trials or quasi-randomized trials
  + For adverse events, the authors availed themselves from data from non-randomized studies such as case series of 10 or more patients, but not of single case reports

Study selection:

* Literature search was done up to February 2012
* Databases were the Cochrane Neuromuscular Register, MEDLINE, EMBASE, CINAHL, and others
* Two authors independently reviewed the results of the literature search to evaluate prospective articles for inclusion, and independently assessed trial quality
  + Risk of bias assessment was based on the usual Cochrane criteria: sequence generation, allocation concealment, blinding of participants and of outcome assessors, completeness of followup, freedom from selective outcome reporting, and “other risk of bias”
* When outcome data was similar enough between different studies to allow for statistical pooling, the authors undertook a meta-analysis to synthesize the results
  + When possible, the authors planned to do subgroup analyses based on age (45 years or younger vs over 45 years) and on degree of electrophysiological abnormality on nerve conduction studies

Results:

* After screening 427 papers from the literature search, the authors selected six RCTs (430 participants) for inclusion in the review
* In the main comparison between surgical interventions, the authors did a meta-analysis of three RCTs which compared simple decompression versus transposition
  + One of these trials did subcutaneous transposition and two trials did submuscular transposition
  + The three trials were homogeneous with respect to success rates expressed as proportion of patients with clinically relevant improvement in function compared to baseline
  + Clinical improvement was seen in 70% (91 of 131) of patients treated with simple decompression and in 75% (97 of 130) of patients treated with transposition; there was no statistical difference in success rates between the two operations
* In one trial which compared three nonoperative interventions in clinically mild to moderate ulnar neuropathy, the three groups experienced equal improvements in the Canadian Occupational Performance Measure (COPM), which asks patients about activity performance and satisfaction, at baseline and again at 6 months
  + The three interventions were nocturnal elbow brace for 3 months (n=26), instruction in nerve gliding to be done for 3 months (n=23), or control, receiving information only (n=21)
  + The control group received information on description of anatomy, probable causes of symptoms, and instructions on how to avoid provocative movements
  + The nocturnal brace was prefabricated with an aluminum splint which prevented flexion beyond 45°
  + The nerve gliding exercises were to be done twice per day, with six different positions to be held for 30 seconds, and subsequently to be increased to 3 times per day with each position held for 60 seconds
* For the secondary outcomes, the available data showed no significant differences between surgical procedures for measures of nerve conduction across the elbow
* However, with respect to adverse events, the authors did report that transposition had a higher number of deep and superficial wound infections than simple decompression when data were pooled from three trials with 261 participants
  + The relative risk of wound infection for simple decompression was 0.32 (95% CI 0.12 to 0.85) compared to transposition (i.e., the risk for decompression was one third of the risk for transposition)

Authors’ conclusions:

* The available evidence suggests that simple decompression and anterior transposition lead to equally good functional outcomes for UNE
* The studies included in the meta-analysis were of good quality, having high rates of followup, adequate methods of generation the randomization sequence, representing a clinically relevant spectrum of patients with UNE, and showing no significant heterogeneity between studies
  + A few methodological problems occurred with respect to clarity of allocation concealment and blinding of outcome observers, and the study hypothesis was not clear (i.e., whether the studies were designed as noninferiority studies or as superiority studies)
* The single trial of nonsurgical treatment of UNE suggested that simply providing information on appropriate arm positions and movements was as effective as nocturnal splinting and as effective as nerve gliding exercises
* The available evidence is not sufficient, however, to identify the best treatment of UNE
  + There have been no RCTs comparing a surgically treated group with a nonsurgically treated group, and there is only one trial comparing different nonsurgical treatments
* Similar systematic reviews of treatment of UNE have arrived at similar conclusions concerning decompression versus transposition, albeit by using different statistical methods to combine results from different studies

Comments:

* Although some of the included randomized trials contained weaknesses with respect to considerations like allocation concealment and blinding, the occurrence of some of the complications (such as wound infection) are not likely to be unduly biased for this important development, and the conclusion that simple decompression leads to fewer such complications is supported by the data
* There is one misprint on page 12, Figure 2, where the axes are inadvertently reversed for the main outcome, the “relative risk (RR)” of clinical improvement
  + Because the outcome is a favorable one, a “relative risk” of less than 1.0 (0.93) would favor transposition, not decompression
  + The RR was not statistically different between operations, and the misprint is without influence on the conclusions of the meta-analysis

Assessment: high quality meta-analysis supporting good evidence that simple decompression and anterior transposition lead to equally good functional outcomes. There is good evidence that the complication rate in terms of postoperative infection is considerably higher with anterior transposition than with simple decompression, for which the infection rate is approximately two thirds lower