Anterior transposition compared with simple decompression for treatment of cubital tunnel syndrome: a meta-analysis of randomized, controlled trials

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CRD summary
This review assessed the efficacy of simple decompression compared with anterior transposition of the ulnar nerve in the treatment of ulnar nerve compression at the elbow. The authors concluded that there was no difference between the two procedure outcomes for motor nerve conduction velocities or clinical outcome scores. These conclusions reflect the evidence and are likely to be reliable.

Authors' objectives
To assess the efficacy of simple decompression compared with anterior transposition of the ulnar nerve in the treatment of cubital tunnel syndrome.

Searching
MEDLINE, EMBASE, the Cochrane Database of Systematic Reviews, the Cochrane Central Register of Controlled Trials and CINAHL were searched from inception to November 2006. Search terms were reported. Various annual meeting archives were also scanned (2001 through 2006), as were the bibliographies of included studies.

Study selection
Randomised controlled trials (RCTs) or quasi-randomised controlled trials in patients presenting with ulnar nerve compression at the elbow, with no history of trauma or surgery in which simple ulnar nerve decompression was compared with anterior transposition, were eligible for inclusion. The included trials compared decompression with submuscular transposition and subcutaneous transposition.

The majority of patients had moderate or severe symptoms of cubital tunnel syndrome. The average patient age was 51 years and 65% were male in the included trials. Outcomes included postoperative motor nerve-conduction velocity or clinical scores. Patients were excluded if they had a previous traumatic injury and/or surgery involving the elbow, or there if there was subluxation or dislocation of the ulnar nerve.

Two reviewers independently selected the studies, but it was unclear how discrepancies were resolved.

Assessment of study quality
Validity was assessed based on the following criteria: randomisation; blinding of patients, clinicians, outcome assessors and data analysts; and proportion of patients lost to follow-up. The Detsky Quality Score (21 point scale) was also used to assess quality.

Two reviewers conducted the validity assessment with disagreements resolved by consensus.

Data extraction
Postoperative motor nerve conduction velocity and/or clinical scores were extracted. Clinical scores were analysed as continuous variables.

Data were independently extracted by two reviewers. Authors were contacted for missing trial data with three trials providing raw data.

Methods of synthesis
Effect sizes weighted by the study sample size were pooled using a random-effects model. Heterogeneity was assessed using the $X^2$ and $I^2$ tests. The methods of Hedges and Olkin were used to test for significance and homogeneity. Funnel
plots were used to assess for publication bias.

**Results of the review**

Four RCTs (n=335 patients, sample size from 47 to 152) were included, with Detsky quality scores between 13 to 18 points. Anterior ulnar nerve transposition was compared with simple decompression. In two trials the submuscular approach was employed (n=117 patients) and in two the subcutaneous method (n=218 patients).

Three trials (n=261 patients) reported a clinical score as an outcome and there were no significant differences between simple decompression and anterior transposition, yielding an effect size of -0.04 (95% Confidence Interval (CI): -0.36 to 0.28; p=not significant).

Two trials (n=100 patients) reported postoperative motor nerve conduction velocities, with an effect size of 0.24 (95% CI: -0.15 to 0.63; p=not significant).

There was no significant heterogeneity between studies. Funnel plots were uninformative.

**Authors' conclusions**

There was no difference between simple decompression and ulnar nerve transposition, in terms of motor-nerve conduction velocities or clinical outcome scores, for the surgical management of ulnar nerve compression at the elbow.

**CRD commentary**

This review addressed a clear question and undertook a thorough search for studies. Publication bias was assessed using funnel plots but was found to be uninformative for all outcome measures. Appropriate methods were used to minimise reviewer error and bias during the review process. Only randomised controlled trials were included. The validity of the included trials was assessed and the results reported. Small study size was apparent for most trials. Suitable methods were used for the meta-analysis. Heterogeneity was assessed, though none was found. The review was generally well conducted and clearly reported. The authors' conclusions reflect the evidence and are likely to be reliable.

**Implications of the review for practice and research**

**Practice:** The authors did not state any implications for practice.

**Research:** The authors stated that further research should include randomised controlled trials undertaken to minimise bias, including concealed randomisation, objective outcome measures and blinded outcome assessments. Any such study designs should also take account of potential performance bias due to different levels of expertise.

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