

## Repetitive shock wave therapy for lateral elbow tendinopathy (tennis elbow): a systematic and qualitative analysis

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**Objective:** Pooled meta-analyses of statistically and clinically heterogeneous data of randomised-controlled studies are difficult to interpret. Therefore, a qualitative study-by-study assessment was thought to be of greater relevance, to physicians confronted with a therapy-resistant tennis elbow patient, to determine the effectiveness of shock wave therapy (SWT) for lateral elbow tendinopathy.

**Setting:** Orthopaedic clinic.

**Methods:** Randomized trials were identified from a current search of The Cochrane Bone, Joint and Muscle Trauma Group specialized register of trials, the Cochrane Central Register of Controlled Trials, MEDLINE and reference lists of articles and dissertations. We included 10 trials that randomized 948 participants to SWT or placebo or treatment control. For each trial, two independent reviewers assessed the methodological quality and extracted data. Methodological quality criteria included appropriate randomization, allocation concealment, blinding, number lost to follow-up and intention-to-treat analysis.

**Results:** Conflicting results of the 10 studies were found. There was considerable heterogeneity in terms of methodological quality; treatment regimen; patient selection and follow-up period, precluding pooled analyses. Instead, individual trial results were described in the text. Only six trials had a high-quality methodology. Two independent high-quality randomized placebo-controlled trials (196 participants) reported significant success of SWT over placebo (65 versus 28%; 61 versus 29%). Design of both trials included enrolment of chronic recalcitrant patients only; 1500–2000 shocks of low-energy flux density (0.1 mJ/mm<sup>2</sup>) applied to the site of maximal discomfort (clinical focusing) in weekly intervals; no use of local anaesthesia and main follow-up at least 3 months after the last application. Three other independent high-quality trials (406 participants) did not find any benefit of SWT over placebo (32 versus 33%; 35 versus 34%; 39 versus 31%). In these three trials, study designs deviated from the design described earlier, enrolling acute patients or applying SWT under local anaesthesia or expanding the application intervals to 4 weeks, while reducing the main follow-up to 4 weeks.

**Conclusions:** With current studies heterogeneous in terms of the duration of the disorder; type, frequency and total dose of SWT; period of time between SWT; type of management and control group; timing of follow-up and outcomes assessed, a pooled meta-analysis of SWT for lateral elbow tendinopathy was considered inappropriate. In a qualitative systematic per-study analysis identifying common and diverging details of 10 randomized-controlled trials, evidence was found for effectiveness of shock wave treatment for tennis elbow under well-defined, restrictive conditions only.

**Keywords:** lateral elbow tendinopathy • tennis elbow • shock wave treatment • qualitative analysis

Accepted for publication June 6, 2007.