The effect of mobilization on repaired extensor tendon injuries of the hand: a systematic review

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CRD summary
This review of rehabilitation methods following surgery for extensor tendon injuries of the hand concluded that there was strong evidence that early controlled mobilisation was superior to immobilisation. More research of longer term outcomes was needed. Although at risk of publication bias, this was a well-conducted review.

Authors' objectives
To assess effectiveness of different mobilisation regimes in repaired extensor tendons of the hand.

Searching
The Cochrane Library, MEDLINE (from 1950), PEDro, EMBASE (from 1980) and CINAHL (from 1982) were searched to January 2008. Search terms were reported. Only Dutch and English language articles reported in full were included. Reference lists were searched for additional studies.

Study selection
Randomised controlled trials (RCTs), controlled clinical trials (CCTs) or studies of other design that assessed rehabilitation (immobilisation, early controlled mobilisation or early active mobilisation) were eligible for inclusion. Studies needed to describe at least two groups with a minimum of 10 digits per group. Eligible outcome measures were at least one of: body functions; manual dexterity or co-ordination; health-related quality of life; pain; and return to work.

Included studies assessed direct postoperative immobilisation (plaster splint), early active mobilisation (with static splint or palmar blocking splint) and early controlled mobilisation (dynamic splints, thermoplastic splints) compared to each other. Where reported, mean age ranged from 28 to 35 years. Duration of follow-up ranged from four weeks to six months.

Studies were selected by one reviewer and discussed with a second.

Assessment of study quality
RCTs and CCTs were assessed using the 17-item checklist of Van Tulder (items such as randomisation, treatment allocation, blinding of outcome assessor, timing of follow-up assessments and sample size calculations). Studies were classed as high quality if they met five of nine criteria for internal validity, four of six for descriptive criteria and one of two for statistical criteria. A shorter 14-item list was used for other study designs by removing questions about randomisation. Studies considered low quality (one CCT and one other design) were excluded from the synthesis.

Study validity was assessed by two reviewers independently. Disagreements were resolved by discussion or referral to a third reviewer.

Data extraction
Data were extracted onto predefined data extraction forms.

The authors did not state how many reviewers performed data extraction.

Methods of synthesis
Results were presented in a narrative synthesis grouped by rehabilitation method: immobilisation; early controlled mobilisation (ECM); and early active mobilisation (EAM).
Results of the review

Five studies were included: four RCTs (n=230) and one other design (n=65). All four RCTs were rated high quality.

**Immobilisation versus ECM**: One RCT reported significantly improved range of motion for ECM in patients with repaired extensor tendons in zones V and VI at six weeks postoperatively (but not at 12 weeks) and also a significantly higher grip strength. Another RCT found significant benefits of ECM for total active motion at four to eight weeks postoperatively and for grip strength at six weeks. There were no differences between ECM and immobilisation after six months. The third study did not find any statistically significant results.

**ECM versus EAM**: One RCT of injuries in zones IV to VIII found significantly better range of motion in patients treated with ECM compared with EAM at four weeks but not at three months. The other RCT compared ECM and EAM in patients with tendons in zones V and VI and found no significant differences in total active motion at four, eight and 12 weeks after surgery.

Authors’ conclusions

There was strong evidence for short-term superiority of early controlled mobilisation over immobilisation for extensor tendon injury repairs, but no conclusive evidence for the long-term effectiveness of different rehabilitation regimes.

CRD commentary

This review had a clearly stated question and specified inclusion criteria that related to interventions and outcomes. Studies of any design were eligible. It would have been helpful if the paper had reported more details of what "other designs" were. The search appeared comprehensive, but the review was at risk of language bias by including only studies in Dutch and English. It appeared that all the review methods except data extraction were performed by two reviewers, which reduced the risk of errors. Study validity was assessed using appropriate criteria. Given the small amount of evidence available, reporting the results of the two lower quality studies may have been beneficial to readers. The conclusions of this well-conducted review are likely to be reliable, but the strong evidence is based on only four fairly small RCTs.

Implications of the review for practice and research

**Practice**: The authors stated that implementation of a standard assessment method and outcome measures during rehabilitation of extensor tendon injuries was needed.

**Research**: The authors stated that high-quality RCTs with well-defined rehabilitation protocols for all zones of the hand and that measured longer term outcomes and patient compliance were needed. Outcome measurements as defined by ICFDH (World Health Organisation: International Classification of Functioning, Disability and Health) were recommended.

Funding

Not stated.

Bibliographic details


PubMedID

19061749

DOI

10.1016/j.apmr.2008.06.019

Original Paper URL

http://www.archives-pmr.org/article/S0003-9993(08)01494-9/abstract
Indexing Status
Subject indexing assigned by NLM

MeSH
Exercise Therapy /methods; Hand Injuries /rehabilitation /surgery; Humans; Orthopedic Procedures /rehabilitation; Splints; Tendon Injuries /rehabilitation /surgery

AccessionNumber
12009101910

Date bibliographic record published
31/03/2009

Date abstract record published
28/04/2010

Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.