Is eight weeks' immobilisation of the distal interphalangeal joint adequate treatment for acute closed mallet finger injuries of the hand: a critical review of the literature

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CRD summary
This review found there was a lack of robust evidence to determine whether 8 weeks' immobilisation of the distal interphalangeal joint is best practice for the treatment of acute closed mallet finger injuries. Despite some methodological concerns with the review, the author's conclusion appears to reflect the evidence presented.

Authors' objectives
To assess if 8 weeks of distal interphalangeal joint immobilisation is adequate treatment for acute closed mallet finger injuries of the hand.

Searching
MEDLINE, AMED, CINAHL, PEDro and DARE were searched from January 1981 to December 2001; the search terms were reported. Non-English papers were excluded.

Study selection
Study designs of evaluations included in the review
The study designs eligible for inclusion were not specified. While study designs were not reported, the included studies were described as prospective, retrospective or unclear. The author stated that most of the included studies were level III evidence (well-designed trials without randomisation, single group pre-post, cohort, time series or matched case-controlled studies). Discussion papers, letters, or papers with sample sizes less than 20 were excluded.

Specific interventions included in the review
Studies that evaluated the use of splints were eligible for inclusion. The joint position, type of splint used and timeframe of the intervention had to be described. The included studies evaluated stack, pipflex, double-finger elastic bandage, dorsal foam padded aluminum, volar and volar/dorsal padded aluminum splints. The immobilisation period of the included studies ranged from 6 to 10 weeks.

Participants included in the review
Patients with acute closed mallet finger injuries were eligible for inclusion. Treatments of 'simple injuries', including avulsion injuries, were eligible. Studies conducted in animals were excluded.

Outcomes assessed in the review
The author aimed to assess adequate treatment of finger injuries; this was reported as the percentage of participants that achieved good, successful or excellent distal extension (definitions varied by study). Other reported outcomes were flexion, pain and active range of motion. In some studies, outcomes were determined using goniometric assessment, while others did not report what method of assessment was used.

How were decisions on the relevance of primary studies made?
The author did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
The author used a published checklist to assess validity. The authors did not state how the validity assessment was performed.

Data extraction
The author extracted data on splint design, joint position and joint immobilisation period. The author did not state how many reviewers performed the data extraction.
Methods of synthesis
How were the studies combined?
The studies were combined in a narrative.

How were differences between studies investigated?
The studies were categorised by the type of splint examined.

Results of the review
Nine studies (n=511) were included: two were described as prospective, four as retrospective, and three were unclear.

Five studies variously reported that 33 to 58% of the participants achieved adequate results over 6 to 9 weeks after using stack splints. One study evaluated a pipflex splint and, after a mean of 5.8 weeks, reported that 60% of the patients had adequate results. One study evaluated a double-finger elastic bandage and reported that 68% of patients achieved a good result after 6 to 8 weeks. Another study reported that 37% of the patients had a successful result using a dorsal and volar padded aluminum splint after 6 weeks plus 3 weeks at night. One study that evaluated a volar splint reported that excellent results were achieved in 43% of the participants after 6 weeks plus exercise. One study evaluated a dorsal foam-padded aluminum splint reported an excellent result in 81% of the participants, and a successful result in 95% of the participants after 4 to 5 weeks plus 2 to 4 weeks at night.

No direct comparisons of data could be made, owing to variable treatment immobilisation periods and evaluation outcomes.

Authors' conclusions
There was a lack of robust evidence to determine whether 8 weeks' immobilisation of the distal interphalangeal joint is best practice for the treatment of acute closed mallet finger injuries.

CRD commentary
The inclusion criteria were clear for the participants and interventions, but less clear for the outcomes of interest and study design. The author searched a number of databases, although the exclusion of non-English articles and unpublished studies might have led to the omission of relevant research. The validity of the individual studies was not reported. Without this information, the reliability of the results is unknown. Details of some of the review processes were not provided, thus potentially introducing reviewer bias. Details of the primary studies were presented in tables and in the text of the review. Given the heterogeneity among the studies, the author appropriately summarised the data in a narrative synthesis. Despite some methodological concerns with the review, the author's conclusion appears to reflect the evidence presented.

Implications of the review for practice and research
Practice: The author did not state any explicit implications for practice.

Research: The author stated that a randomised controlled trial is required to determine whether 6, 7 or 8 weeks' immobilisation may be required for the successful treatment of acute closed mallet finger injuries. Further research is also needed to determine what position (i.e. extension or slight hyper-extension) is most effective. The author also stated that studies should include the method of assessment, use a standardised assessment procedure for one assessor, list results individually in degrees using a goniometer, and use an appropriate outcome measure. It was also suggested that when choosing an outcome measure, a patient's contralateral hand was assessed in order to establish usual range of motion for comparison with the injured hand.

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Other publications of related interest

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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.