# Spinal manipulation in patients with disc herniation: a critical review of risk and benefit

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## CRD summary

The author's conclusion appears to be that there is some suggestion of an early benefit of spinal manipulation in patients with disc herniation, but there were insufficient good-quality trials to reach definitive conclusions. Given the methodological weaknesses in the included studies and the review process, and the limited reporting of study results, the author's conclusions should be treated with caution.

## Authors' objectives

To determine the effectiveness and safety of spinal manipulation in the management of disc herniation.

## Searching

MEDLINE and AMED were searched from inception to February 2006; the search terms were reported. The Cochrane CENTRAL Register and Clinical Evidence websites were also searched. Backward chaining from the references of relevant articles was carried out.

## Study selection

Studies of spinal manipulation were eligible for inclusion. The majority of included studies were of spinal manipulation alone; one study was of osteopathic care, comprising spinal manipulation and advice. In all included trials, the technique involved mobilisation in combination with high velocity thrust. Where stated, the duration of the intervention ranged from 2 to 12 weeks. Control interventions in the included studies were exercise, traction, corset, heat treatment or chemonucleolysis. Studies of patients with disc herniation with sciatica were eligible for inclusion. In two of the included studies patients had disc herniation confirmed by imaging; the remaining studies were of patients with low back pain and reduced straight leg raising or pain in the sciatic distribution that was not image confirmed. Where stated, the patients were attending hospital out-patient departments or were in-patients. Inclusion criteria for the outcomes were not defined. The outcomes reported in the included studies were pain (measured using a variety of tools), self-perceived improvement and return to work. All of the included studies measured outcomes at repeated intervals, with the final follow-up period ranging from 5 weeks to 12 months. Randomised controlled trials (RCTs) were eligible for inclusion.

The author did not state how the studies were selected for the review, or how many reviewers performed the study selection.

## Assessment of study quality

The author did not formally assess validity. However, methodological quality was discussed for each study in the 'Results' section. The aspects of study quality commented on were randomisation, blinding, comparability of the groups, the presence of confounding factors, loss to follow-up, intention-to-treat analysis and study power.

## Data extraction

The author did not state how the data were extracted for the review, or how many reviewers performed the data extraction. Generally, only descriptions of the direction of the main effect were reported. In one study the size of effect was also reported.

## Methods of synthesis

The results were combined in a narrative. The characteristics and results of each study were discussed in turn. Further information was evident from the tables provided.

## Results of the review

Four RCTs (n=707) were included in the review.

Although validity was not formally assessed, aspects of methodological quality were discussed for each study. All studies demonstrated at least some of the following weaknesses: lack of blinding; inadequate description of the randomisation process; insufficient information on group characteristics; insufficient information to establish whether control and intervention groups were comparable at baseline; failure to control for possible confounding factors; loss to follow-up; failure to use intention-to-treat analysis; and under-powered studies.

The highest quality trial (n=40) reported a significant benefit of spinal manipulation compared with chemonucleolysis on pain at 2 and 6 weeks and on disability at 2 weeks. There was no difference between the groups at 12 months.

One study (n=233) reported that 80% of patients treated with spinal manipulation had recovered at 2 weeks compared with 67% of control patients treated with heat. One study (n=112) reported a significant benefit of manipulation compared with traction in an in-patient population at 5 weeks' follow-up. The final study (n=322) found no significant difference between a group receiving spinal manipulation and patients undergoing exercise, traction or corset interventions. All of these studies were deemed to be of relatively poor quality.

## Authors' conclusions

The author's conclusion appears to be that there is some suggestion of an early benefit of spinal manipulation in patients with disc herniation, but there were insufficient good-quality trials to reach definitive conclusions.

## CRD commentary

The inclusion criteria were clearly defined for the intervention, study design and participants. However, inclusion criteria were not stated a priori for the outcomes. Several relevant databases were searched but, since the author does not appear to have sought unpublished data, publication bias cannot be ruled out. There was insufficient information about the study selection and data extraction processes to rule out the possibility of error and bias. Although a formal validity assessment was not carried out, the author highlighted several areas of methodological weaknesses in the included studies. Furthermore, the inclusion of studies with patients who may not have had disc herniation limits the ability to generalise the results to this population. The decision to combine the results in a narrative was appropriate given the clinical heterogeneity between the studies. However, the absence of statistical data makes it difficult for the reader to assess the clinical or statistical significance of the results. The results of each study were discussed separately, therefore the review might have benefited from a greater synthesis of the results. Poor reporting of aspects of the review process, including the results of included studies, together with methodological weakness in some of these studies, mean that the author's conclusions should be treated with caution.

## Implications of the review for practice and research

Practice: The author stated that practitioners using spinal manipulation should advise their patients of the potential risk.

Research: The author stated that further large scale, well-designed trials are required, particularly to separate the benefits of manipulative thrust from the effects of mobilisation. Further cohort studies are required to identify adverse events associated with manipulation in patients with disc herniation.

## Funding

Not stated.

## Bibliographic details

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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.