Early rehabilitation following less invasive surgical stabilisation plate fixation for distal femoral fractures

Smith TO, Hedges C, MacNair R, Schankat K

CRD summary
The review concluded that efficacy of different physiotherapy protocols following less invasive surgical stabilisation fixation for distal femoral fractures remained unclear and well-designed randomised controlled trials were needed. The authors' conclusions reflected the very limited evidence available and are likely to be reliable.

Authors' objectives
To assess the effectiveness of early physiotherapy rehabilitation of patients following less invasive surgical stabilisation plate fixation for distal femoral fractures.

Searching
EMBASE, MEDLINE, CINAHL and AMED were searched to October 2008. Search terms were reported. A handsearch of seven journals was made. Efforts were made to identify unpublished studies using numerous different sources, including SIGLE and UK National Research Register. Reference lists of retrieved studies and reviews were searched. Studies in any language except Chinese were included.

Study selection
Studies of any design (except case reports) that investigated clinical and/or radiological outcomes following less invasive surgical stabilisation fixation of distal femoral fractures (isolated injuries or poly-traumas) were eligible for inclusion. Studies had to document postoperative weight-bearing status and whether or not patients received a knee brace/immobilizer, or motion exercises following surgery.

Mean age of patients was 59.5 years (range 16 to 101 years). Most patients had a fracture with an AO classification of 33C or 33A. Nine or 13-hole plates were the most commonly used.

Two reviewers independently selected studies for inclusion. Disagreements were resolved through consensus.

Assessment of study quality
Study quality was assessed by two independent reviewers using the Critical Appraisal Skills Programme (CASP) tool to examine 15 criteria such as confounding factors, duration and completeness of follow-up, acknowledgement of bias and generalisability. Studies were awarded a score between 0 and 15. Disagreements were resolved through consensus.

Data extraction
Two reviewers extracted data, which were verified by a third reviewer.

Methods of synthesis
The authors reported that a lack of comparative clinical trials coupled with an absence of detail in allowing an assessment of study heterogeneity precluded a meaningful synthesis of the results. However, relevant study details (including results) were tabulated and a descriptive summary of interventions used was presented.

Results of the review
Seventeen case series that assessed 508 patients with 535 fractures were included in the review. Sample sizes ranged from five to 103 patients. Follow-up periods ranged from three to 62 months. CASP scores ranged from 1 to 11 out of 15.

The authors stated that there were considerable differences between studies in response to weight-bearing, bracing and exercise prescription. Therefore it was not possible to compare the findings of each study accurately. However, the authors noted that patients begin range of motion exercises immediately following surgery and were initially required to
restrict weight-bearing.

**Authors' conclusions**
The efficacy of different physiotherapy protocols following less invasive surgical stabilisation fixation for distal femoral fractures remained unclear; well-designed randomised controlled trials were needed.

**CRD commentary**
The review addressed a clear question supported by appropriate eligibility criteria. A thorough search was made to identify all relevant studies (except those published in Chinese). Suitable methods (such as independent duplicate processes) were used to reduce risks of reviewer error and bias throughout the review. Study quality was assessed with appropriate criteria. The authors found the case series too heterogeneous to be able to conduct a meaningful synthesis, but study results were tabulated.

The authors' conclusions reflected the very limited evidence available and are likely to be reliable.

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

**Practice:** The authors stated that commencing weight-bearing too early may permit implant failure and malunion.

**Research:** The authors stated that further well-designed randomised controlled trials were required to compare different postoperative physiotherapy rehabilitation programmes for patients following less invasive surgical stabilisation fixation of distal femoral fractures. Studies that compared levels of weight-bearing were needed.

**Funding**
Not stated.

**Bibliographic details**
Smith TO, Hedges C, MacNair R, Schankat K. Early rehabilitation following less invasive surgical stabilisation plate fixation for distal femoral fractures. Physiotherapy 2009; 95(2): 61-75

**PubMedID**
19627687

**DOI**
10.1016/j.physio.2009.02.002

**Original Paper URL**
http://dx.doi.org/10.1016/j.physio.2009.02.002

**Indexing Status**
Subject indexing assigned by NLM

**MeSH**
Bone Plates; Femoral Fractures /rehabilitation /surgery; Fracture Fixation, Internal /methods; Fracture Healing; Humans; Immobilization; Physical Therapy Modalities; Postoperative Care; Postoperative Complications; Weight-Bearing

**AccessionNumber**
12009107988

**Date bibliographic record published**
11/11/2009
Date abstract record published
29/09/2010

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.