Systematic review of cemented and uncemented hemiarthroplasty outcomes for femoral neck fractures
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CRD summary
This poorly reported review concluded there were few differences between cemented and uncemented hemiarthroplasty for femoral neck fractures, although some trends were in favour of cemented techniques. Given the analyses carried out, including the pooling of potentially heterogeneous data, these results cannot be regarded as reliable.

Authors' objectives
To compare cemented and uncemented hemiarthroplasty in the treatment of femoral neck fractures.

Searching
PubMed and The Cochrane Library were searched (terms reported) between 1980 and August 2005 for published articles or abstracts in English. Reference lists and personal files were handsearched.

Study selection
Randomised controlled trials (RCTs), prospective or retrospective comparisons of cemented or uncemented hemiarthroplasty for intracapsular proximal femoral fractures in more than 10 patients per group with an average age over 60 years were eligible. Studies had to report clinical outcomes. Papers were excluded where patients had femoral head, intertrochanteric or pertrochanteric fractures.

Included studies were either RCTs or retrospective cohort studies. Average reported age ranged from 78.9 to 77.5 years in the two comparator groups. The proportion of males in the cemented group was 38.5% and in the uncemented group was 45.2%. Reported outcome variables included perioperative mortality, intermediate mortality, long-term mortality, complications, revision surgery, blood loss, operative time and pain.

Two reviewers independently performed the study selection.

Assessment of study quality
Methodological quality was assessed by two reviewers using a 12-point system from a previous Cochrane review (further details were not reported).

Data extraction
Data were extracted as risk ratios by two independent and blinded reviewers for the outcomes of interest. Where studies were available only as abstracts, original authors were contacted for data.

Methods of synthesis
Data were pooled to generate relative risk estimates and associated 95% confidence intervals (CI). Both random-effects (DerSimonian and Laird) and fixed-effect (Mantel-Haenszel) models were used. The Cochran Q statistic was used to quantify heterogeneity.

Results of the review
Three RCTs and eight retrospective cohort studies were included in this review. Total patient numbers were 2,498 and 1,632 cemented and 981 uncemented hemiarthroplasties were carried out. Quality appeared to range between 2 and 8 out of 12 points.

There did not appear to be any significant differences between cemented and uncemented groups in terms of the following relative outcomes: mortality rates at short-, medium- or long-term follow-up, total complications and pain.

The relative risk of revision surgery was reported to be significantly lower for patients who received cemented
arthroplasty (p=0.01).

Both operative time (minutes) and blood loss (mL) were reported to be significantly lower for patients who received uncemented treatment.

Q statistic values were reported for each of the main outcomes, as were random-effects and fixed-effect model relative risks. It was unclear which model the Q statistic referred to, but significant heterogeneity was noted for one to three month mortality, greater than three month mortality, complications and presence of pain.

**Authors' conclusions**
Few differences between cemented and uncemented techniques were found. Trends suggested that there may be benefit for patients of cemented interventions in terms of mortality rates, complications, pain and need for revision surgery. Further trials were needed to confirm or refute these.

**CRD commentary**
This review addressed a clear research question with adequate inclusion criteria. Only two databases were searched for English-language papers, which suggested the review may be vulnerable to publication and language biases and may have missed potentially eligible studies. The study selection and data extraction processes were partially described and reviewer error and/or bias was unlikely to have impacted on the review, but lack of detail regarding the validity assessment made it difficult to assess the reliability of the primary studies. The analyses were poorly described and it was unclear whether the studies were sufficiently homogeneous to warrant pooling or summary data. Using RCT and cohort study results in a single analysis can be misleading, and could have been more clearly explored in a sensitivity analysis. As a result of the poor reporting and potentially inappropriate analyses, the authors' conclusions cannot be considered reliable and may not reflect the primary data.

**Implications of the review for practice and research**
The authors did not state any implications for practice or research.

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