Internal fixation versus arthroplasty of comminuted fractures of the distal humerus
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CRD summary
This review compared open reduction internal fixation of distal humerus fractures in the elderly with arthroplasty. It concluded that the two approaches led to equivalent functional outcomes up to 4 years after the procedure, but added that more research is needed. These conclusions cannot be considered reliable, given the inadequate reporting of the review methods and the paucity of good-quality studies.

Authors' objectives
To evaluate the best available evidence to assist in guiding clinical decision-making for open reduction internal fixation (ORIF) versus arthroplasty of intraarticular distal humeral fractures in elderly patients.

Searching
The authors reported searching the Cochrane Library and using the OVID search engine, covering the period 1969 to 2003; the search terms were not reported. In addition, the bibliographies of selected articles were screened.

Study selection
Study designs of evaluations included in the review
The authors stated that they were seeking the 'best available evidence', but did not specify any inclusion criteria pertaining to the study design. The studies reported in the review were all small case series. The duration of follow-up ranged from 17.8 to 46 months.

Specific interventions included in the review
Studies of patients receiving ORIF or arthroplasty were eligible for inclusion.

Participants included in the review
Studies of elderly patients were eligible for inclusion. The authors did not define what they consider to be 'elderly', and it appears that not all of the patients in the included studies could be classified as elderly (the mean age in one study was 45 years).

Outcomes assessed in the review
The authors did not state any inclusion criteria relating to the outcomes. The outcomes reported in the included studies were: range of motion, nonunion or malunion, number of reoperations, infection and function/symptom/quality of life scores (Mayo score, Disabilities of Arm, Shoulder and Hand Score, SF-36).

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

Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction.

Methods of synthesis

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How were the studies combined?
The studies were tabulated and briefly summarised in the text.

How were differences between studies investigated?
Study details were tabulated and differences were discussed in the text.

Results of the review
Eight studies (n=137) were included in the review. All eight were uncontrolled case series.

ORIF (3 case series, n=88).
Mayo scores at follow-up for these three series were 79, 89 and 89. Range of movement varied between 108 and 112 degrees (2 studies), 7 participants required reoperation (3 studies), and there were no infections (2 studies).

Arthroplasty (5 case series; n=49).
Mayo scores at follow-up for these five series were 90 (for rheumatoid arthritis; 78 for fractures), 82, 96, 94 and 93. Range of movement varied between 101 and 137 degrees (5 studies), 2 participants required reoperation (1 study), and there were no infections (2 studies).

Authors' conclusions
Evidence from case series suggested equivalent functional outcome for less than 4 years. Strong evidence favouring either alternative was lacking.

CRD commentary
The review question was clear in terms of the intervention and participants, though not the outcomes and study design. The authors reported conducting a computerised search, supplemented by bibliography checks. However, they reported neither the specific databases searched nor the search terms used. It is therefore possible that relevant studies might have been missed, though without crucial information about the search this is impossible to verify. Although the identified studies as a whole were considered ‘weak evidence’, no attempts were made to assess the validity of relevant studies compared with one another. It was unclear how many reviewers were involved in the study selection and data extraction, so there remains the potential for bias and error in these processes.

The ‘Results’ section of the review referred to studies other than those presented in the tables, though the final conclusion appeared to relate only to these tabulated studies. Given that none of the included studies directly compared ORIF with arthroplasty, the conclusion that the two approaches are ‘equivalent’ may be overstating the evidence. The authors’ conclusions, that larger studies of better quality are required, would be appropriate if the evidence identified here was all that is available. However, as already stated, it is not clear whether this is the case. Given the methodological limitations of the review and the paucity of good-quality studies, the results of the review should be treated with caution.

Implications of the review for practice and research
Practice: The authors stated that surgeon experience and judgement should guide treatment until larger comparative studies are available.

Research: The authors stated that larger studies are needed. They added that prospective study design with randomisation would limit bias inherent in these retrospective case series.

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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.