Authors' objectives
To clarify available information which influences decisions on whether to advise a young adult to undergo surgery for a severely displaced acromioclavicular dislocation.

Searching
Articles published in the English language in American journals and listed in the Index Medicus were identified in the MEDLINE database (1966 to 1997). References of identified studies were scanned.

Study selection
Study designs of evaluations included in the review
Articles that described treatment of severely displaced dislocation of the acromioclavicular joint were included. When two or more papers from the same unit were available, only the paper assessed as being the more methodologically sound was included. Randomised and non-randomised trials were included.

Specific interventions included in the review
The following surgical techniques and fixation devices used to treat acromioclavicular dislocation were included: threaded and unthreaded acromioclavicular joint fixation; excision arthroplasty; coracoclavicular ligament repair and screw fixation; biceps tendon transfer; Dacron tape; cerclage wire; autologous tissue coracoclavicular slings; acromioclavicular ligament reconstruction; and hook plates. Control was conservative therapy.

Participants included in the review
Patients with severely displaced acromioclavicular dislocations were included. These were largely defined as Tossy et al or Allman Type III dislocations. Rockwood et al Type III dislocations were included where stated as such. Rockwood type IV to VI were excluded. Unclassified types of dislocation were included if they were described in terms of displacement greater than 1 cm or half the diameter of the clavicle. Where Allman Groups II and III were reported together, these were included as group III if Group III formed the majority of cases and if Group II formed the majority, they were excluded. See Other Publications of Related Interest no.1- no.3 for references to classification of types of dislocation.

Outcomes assessed in the review
The following outcomes were assessed: overall outcome as stated in the paper (satisfactory defined as excellent or good outcome vs unsatisfactory defined as fair, acceptable or poor outcome); return to work (proportion returning to previous employment or mean time to return to work); return to other premorbid activities; complications (including implant failure, need for later surgery, infection and residual deformity); radiographic features (osteolysis, calcification, and osteoarthritis); pain (absent or mild vs moderate to severe); range of motion (normal or near normal vs restricted); and strength (normal vs reduced).

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

Assessment of study quality
Papers were divided into the following 4 groups based on study design: randomised trials (RCTs) of surgical vs conservative therapy; nonrandomised trials of surgery vs conservative therapy; trials of surgical therapy only; trials of conservative therapy only. Methods used to classify studies were not described. The authors do not state how the papers were assessed for validity, or how many of the reviewers performed the validity assessment.
Data extraction
The authors do not state how the data were extracted for the review, or how many of the reviewers performed the data extraction.

Methods of synthesis
How were the studies combined?
Pooled odds ratios (OR) and 95% confidence intervals (CIs) were calculated for data from the 4 comparative studies using methods described by Peto. Otherwise pooled rates of events were calculated by summing data over all trials reporting data for the specific outcome.

How were differences between studies investigated?
Sub-group analysis was conducted for the following outcomes where that information was available: pain; range of movement; strength; complications; return to work; and radiological features.

Results of the review
A total of 24 papers were identified (1172 patients), including 5 papers with 340 patients reporting comparative outcomes for surgical and conservative treatment.

The following types of trial were identified: two RCTs with 144 patients; 3 nonrandomised trials of surgery vs conservative therapy; 14 trials of surgical therapy only; and 5 trials of conservative therapy only.

Overall patients with satisfactory outcomes from surgery = 88% vs without surgery 87%. The 2 RCTs reported a satisfactory outcomes from surgery in 90% of cases vs satisfactory conservative outcome = 91%.

Pain (7 studies with 344 patients): pain absent or minimal in 93.48% of the surgical group vs 95.63% of the medical group.

Range of movement (6 studies with 331 patients): range was normal or near normal in 85.71% of the surgical group vs 94.92% of the medical group.

Strength (7 studies with 365 patients): strength was normal or near normal in 86.73% of the surgical group vs 91.56% of the medical group.

Complications were mentioned in 17 studies (620 patients treated surgically and 302 patients treated conservatively): Re-operation was required in 59.35% of surgical compared to 5.63% of those conservatively treated; Infection was present in 6.29% of surgical compared to 1.32% of those conservatively treated; Fixation failure occurred in 20.16% of surgically treated patients; Deformity was present in 3.23% of surgical compared to 37.09% of those conservatively treated; and arthritis was reported in 10.6% of patients treated conservatively and was not reported in any studies of surgical treatment.

Return to work: data was heterogeneous and was difficult to combine. Where there was a significant difference, return to work and return to activities was substantially longer with surgical treatment.

Radiological features (1 nonrandomised controlled study): posttraumatic arthritis developed in 42% (5/12) untreated patients, 43% (27/63) non operatively treated patients, and 25% (13/52) operatively treated patients.

Peto OR for outcomes for surgical compared to conservative treatment (4 comparative studies) were as follows:

Pain absent/minimal (1 study with 84 patients): no statistically significant difference between treatment groups. OR = 0.13 (95% CI: 0, 6.5).

Strength normal/near normal (2 studies with 144 patients): no statistically significant difference between treatment groups. OR = 0.49 (95% CI: 0.12, 2.07).
Range of movement normal/near normal was statistically significantly more commonly reported in those receiving conservative treatment (2 studies with 144 patients): OR = 0.12 (95% CI: 0.05, 0.33).

Overall satisfactory outcome rates did not differ between treatment groups (4 studies with 310 patients): OR = 0.79 (95% CI: 0.36, 1.71.)

Additional surgery was required more commonly after initial operative management (2 studies with 271 patients): OR = 7.41 (95% CI: 3.97, 13.83).

Infection was present in more patients treated surgically than conservatively (3 studies with 127 patients): OR = 3.23 (95% CI: 1.09, 9.61).

Persistent deformity was more common in those treated conservatively (1 study with 127 patients): OR = 0.02 (95% CI: 0.01, 0.05).

Authors' conclusions
Meta-analysis from the four studies including data from surgical and conservative therapy showed no significant benefit from surgery. There does not seem to be any reason to recommend an operative procedure to a patient with a Rockwood et al type III injury based on the evidence currently available.

CRD commentary
The aims and inclusion criteria were stated. The results were clearly presented. The discussion mentions some of the issues in meta-analysis and considers the sample size required to provide studies with adequate power to detect differences in outcomes between interventions.

By limiting the included studies to those published in English in American journals, other relevant studies may have been omitted. Details of the search strategy were not given. Methods used to select studies and extract data were not described. More comprehensive information about the subjects would have been helpful. The aim was to evaluate treatment for young adults but it is not clear whether the studies actually reported interventions in this group. Neither validity nor heterogeneity was assessed. It is not clear whether the trials were sufficiently homogeneous for a meta-analysis to be appropriate. Results from individual studies were not reported. There appears to be discrepancies in the number of patients used to determine OR for some outcomes. The meta-analysis was based on 5 comparative papers, only two of which were RCTs and these were of unknown quality, thus limiting the strength of evidence identified.

In conclusion, it is not certain that all relevant publications were identified, that meta-analysis was appropriate, and to which patient population and surgical techniques the results apply.

Implications of the review for practice and research
Practice: The authors conclude that, based on the evidence currently available, there does not seem to be any reason to recommend an operative procedure to a patient with a Rockwood et al. type III injury.

Research: The authors comment that power studies suggest that to show a statistically significant benefit from surgery, large studies would be required, which, given the relative incidence of these injuries, would probably be multicentre and therefore vulnerable to methodological difficulties.

Bibliographic details

PubMedID
9728155
Other publications of related interest
1967;49A:774-84. 2. Rockwood CA, Williams GR, Young DC. Acromioclavicular injuries. In: Rockwood CA, Green

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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.