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[Intervention Review]

Conservative management following closed reduction of traumatic anterior dislocation of the shoulder

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ABSTRACT

Background

Acute anterior shoulder dislocation, which is the most common type of dislocation, usually results from an injury. Subsequently, the shoulder is less stable and is more susceptible to re-dislocation or recurrent instability (e.g. subluxation), especially in active young adults. After closed reduction, most of these injuries are treated with immobilisation of the injured arm in a sling or brace for a few weeks, followed by exercises. This is an update of a Cochrane Review first published in 2006 and last updated in 2014.

Objectives

To assess the effects (benefits and harms) of conservative interventions after closed reduction of traumatic anterior dislocation of the shoulder. These might include immobilisation, rehabilitative interventions or both.

Search methods

We searched the Cochrane Bone, Joint and Muscle Trauma Group Specialised Register, the Cochrane Central Register of Controlled Trials, MEDLINE, Embase, CINAHL, PEDro and trial registries. We also searched conference proceedings and reference lists of included studies. Date of last search: May 2018.

Selection criteria

We included randomised or quasi-randomised controlled trials comparing conservative interventions with no treatment, a different intervention or a variant of the intervention (e.g. a different duration) for treating people after closed reduction of a primary traumatic anterior shoulder dislocation. Inclusion was regardless of age, sex or mechanism of injury. Primary outcomes were re-dislocation, patient-reported shoulder instability measures and return to pre-injury activities. Secondary outcomes included participant satisfaction, health-related quality of life, any instability and adverse events.

Data collection and analysis

Both review authors independently selected studies, assessed risk of bias and extracted data. We contacted study authors for additional information. We pooled results of comparable groups of studies. We assessed risk of bias with the Cochrane 'Risk of bias' tool and the quality of the evidence with the GRADE approach.

Main results

We included seven trials (six randomised controlled trials and one quasi-randomised controlled trial) with 704 participants; three of these trials (234 participants) are new to this update. The mean age across the trials was 29 years (range 12 to 90 years), and 82% of the participants were male. All trials compared immobilisation in external rotation (with or without an additional abduction component) versus internal rotation (the traditional method) following closed reduction. No trial evaluated any other interventions or comparisons, such as rehabilitation. All trials provided data for a follow-up of one year or longer; the commonest length was two years or longer.

All trials were at some risk of bias, commonly performance and detection biases given the lack of blinding. Two trials were at high risk of selection bias and some trials were affected by attrition bias for some outcomes. We rated the certainty of the evidence as very low for all outcomes.

We are uncertain whether immobilisation in external rotation makes a difference to the risk of re-dislocation after 12 months' or longer follow-up compared with immobilisation in internal rotation (55/245 versus 73/243; risk ratio (RR) 0.67, 95% confidence interval (CI) 0.38 to 1.19; 488 participants; 6 studies; $I^2 = 61%$; very low certainty evidence). In a moderate-risk population with an illustrative risk of 312 per 1000 people experiencing a dislocation in the internal rotation group, this equates to 103 fewer (95% CI 194 fewer to 60 more) re-dislocations after immobilisation in external rotation. Thus this result covers the possibility of a benefit for each intervention.

Individually, the four studies (380 participants) reporting on validated patient-reported outcome measures for shoulder instability at a minimum of 12 months' follow-up found no evidence of a clinically important difference between the two interventions.

We are uncertain of the relative effects of the two methods of immobilisation on resumption of pre-injury activities or sports. One study (169 participants) found no evidence of a difference between interventions in the return to pre-injury activity of the affected arm. Two studies (135 participants) found greater return to sports in the external rotation group in a subgroup of participants who had sustained their injury during sports activities.

None of the trials reported on participant satisfaction or health-related quality of life.

We are uncertain whether there is a difference between the two interventions in the number of participants experiencing instability, defined as either re-dislocation or subluxation (RR 0.84, 95% CI 0.62 to 1.14; 395 participants, 3 studies; very low certainty evidence).

Data on adverse events were collected only in an ad hoc way in the seven studies. Reported "transient and resolved adverse events" were nine cases of shoulder stiffness or rigidity in the external rotation group and two cases of axillary rash in the internal rotation group. There were three "important" adverse events: hyperaesthesia and moderate hand pain; eighth cervical dermatome paraesthesia; and major movement restriction between 6 and 12 months. It was unclear to what extent these three events could be attributed to the treatment.

Authors' conclusions

The available evidence from randomised trials is limited to that comparing immobilisation in external versus internal rotation. Overall, the evidence is insufficient to draw firm conclusions about whether immobilisation in external rotation confers any benefit over immobilisation in internal rotation.

Considering that there are several unpublished and ongoing trials evaluating immobilisation in external versus internal rotation, the main priority for research on this question consists of the publication of completed trials and the completion and publication of ongoing trials. Meanwhile, evaluation of other interventions, including rehabilitation, is warranted. There is a need for sufficiently large, good-quality, well-reported randomised controlled trials with long-term follow-up. Future research should aim to determine the optimal immobilisation duration, precise indications for immobilisation, optimal rehabilitation interventions, and the acceptability of these different interventions.

PLAIN LANGUAGE SUMMARY

Non-surgical management after non-surgical repositioning of traumatic anterior dislocation of the shoulder

Background

Acute anterior shoulder dislocation is an injury in which the top end of the upper arm bone is pushed out of the joint socket in a forward direction. Afterwards, the shoulder is less stable, and prone to either partial or complete re-dislocation, especially in active

young adults. Initial treatment involves putting the joint back in place. This is called 'closed reduction' when it is done without surgery. Subsequent treatment is often conservative (non-surgical) and usually involves a period of immobilisation of the injured arm in a sling or brace, followed by exercises.

Review question

What are the benefits and harms of different conservative interventions for treating people after closed reduction of a primary traumatic anterior shoulder dislocation?

This is an update of a review that was first published in 2006 and last updated in 2014. We reviewed the evidence from clinical studies comparing any conservative intervention (e.g. immobilisation, rehabilitation) versus no treatment or a different intervention, or comparing different variants of an intervention (e.g. different duration). The primary outcomes of interest were re-dislocation, patient-reported shoulder instability measures (usually questionnaires) and return to pre-injury activities. Further outcomes of interest included patients' satisfaction with the intervention, health-related quality of life and adverse events.

Search date

We conducted the searches of healthcare literature for this review in May 2018.

Study characteristics

We identified three new relevant studies in this update. In total, this review now includes seven studies with 704 participants. Most of the participants (82%) were male; the average age across the studies was 29 years (range 12 to 90 years). All of the studies investigated just one comparison: immobilisation in external rotation (when the arm is orientated outwards with the forearm away from the chest) versus immobilisation in internal rotation (the usual sling position, where the arm rests against the chest) following closed reduction. Participants were followed over different lengths of time; the most common duration was two years or longer.

Key results

We are uncertain whether immobilisation in external rotation makes a difference to the risk of re-dislocation at one-year or more follow-up compared with immobilisation in internal rotation.

None of the four studies reporting on patient-reported outcome measures for shoulder instability at a minimum of one-year follow-up found evidence of any important difference between the two interventions.

We are uncertain of the relative effects of the two methods of immobilisation on resumption of pre-injury activities or sports. One study found no evidence of a difference between interventions in the return to pre-injury activity of the affected arm. Two other studies found greater return to sports in the external rotation group in a small group of participants who had sustained their injury during sports activities.

None of the trials reported on participant satisfaction or health-related quality of life. We are uncertain whether there is a difference between the two interventions in the number of participants experiencing instability, defined as either re-dislocation or subluxation (a partial dislocation).

The reporting of adverse events (complications) was unsatisfactory. There were reports of nine cases of short-term shoulder stiffness in the external rotation group and two cases of under-arm rash in the internal fixation group. There were three more serious adverse events: abnormal sensitivity and hand pain; abnormal sensation such as tingling in the little finger and along to the elbow; and major movement restriction. It was unclear to what extent these three adverse events could be attributed to the treatment.

Certainty of the evidence

We rated the certainty of the evidence as very low for all outcomes. This was mainly because there were not enough data and we were unsure how reliable the results were from the individual studies. Thus we are uncertain about the estimates of effect.

Conclusions

Overall, the current evidence is insufficient to inform the choice of immobilisation in external versus internal rotation. There is no evidence to inform on any other conservative interventions following closed reduction of traumatic anterior dislocation of the shoulder.