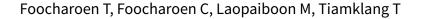


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[Intervention Review]

Aspiration of the elbow joint for treating radial head fractures

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ABSTRACT

Background

Radial head fracture is the most common fracture of the elbow. It usually results from a fall onto an outstretched arm. In 1954, Mason classified these fractures into type 1 (undisplaced), type 2 (simple displaced), and type 3 (comminuted fractures). Aspiration of the elbow joint aims to relieve pressure in the elbow joint and has been used as an initial treatment option for radial head fractures. However, it is an invasive technique with the potential for complications such as infection and injury to nerves and vessels.

Objectives

To assess the effects (benefits and harms) of elbow joint aspiration for treating radial head fracture in adults.

Search methods

We searched the Cochrane Bone, Joint and Muscle Trauma Group Specialised Register (14 April 2014), the Cochrane Central Register of Controlled Trials (CENTRAL) (14 April 2014), MEDLINE (1946 to April Week 1 2014) and EMBASE (1980 to 2014 Week 15), trial registries, bibliographies and conference proceedings.

Selection criteria

Randomised and quasi-randomised controlled clinical trials comparing aspiration versus no aspiration for treating radial head fractures in adults.

Data collection and analysis

Two review authors independently selected articles, assessed risk of bias and extracted data. Disagreements were resolved by discussion. Where appropriate, we pooled results of comparable studies using fixed-effect meta-analysis.

Main results

We included two trials that involved 126 participants but provided results for only 108 participants. Most participants were adults, typically over 30 years of age. Both trials were at high risk of selection, performance, detection and reporting bias. Reflecting this high risk of bias, we downgraded the quality of evidence two levels for study limitations and a further level for imprecision. Thus we judged the evidence for all outcomes to be 'very low' quality, meaning that we are very uncertain about these estimates.

One trial included participants with Mason type 1, 2 or 3 radial head fractures and also a few cases of traumatic elbow hemarthrosis without fracture. The other trial included participants with Mason type 1 and 2 fractures. All participants were managed non-surgically.

Neither trial reported functional outcome based on validated patient-reported outcome measures of function or pain using validated measures such as a visual analogue scale. Very low quality evidence (108 participants, two trials) indicates little difference between



aspiration and no aspiration in impaired function (unable to carry heavy loads; discomfort when carrying loads) at 12 months (9/51 in aspiration group versus 7/57 in the no aspiration group; risk ratio 1.43 favouring no aspiration, 95% confidence interval (CI) 0.57 to 3.58). Very low quality evidence (two trials) suggests a beneficial effect of aspiration on pain relief immediately after aspiration. Very low quality evidence (one trial, 28 participants) shows less pain after aspiration at three weeks, but it is unclear whether this applies subsequently. Neither trial reported on adverse events (for example, nerve and vascular injuries; deep or superficial infection) from the procedure, but aspiration was reported as being unsuccessful in three participants (7.9%) in one trial. Very low quality evidence indicates little difference in range of motion (based on elbow extension) between the two groups at six weeks (28 participants, one trial) or 12 months (108 participants, two trials). The report of adverse events was incomplete, but one trial (80 participants) reported the absence of three specific complications: myositis ossificans, joint instability or late displacement of the fracture.

Authors' conclusions

There is insufficient evidence to determine the effectiveness of joint aspiration for the initial treatment of radial head fracture in terms of function, pain and range of motion or to determine the safety of the procedure. An examination of current aspiration use, the prospective collection of adverse events and consultation with patients as to their preferences and values would be helpful in guiding decisions about the future design of a multicentre randomised trial aiming to obtain definitive evidence on the use of aspiration for treating radial head fractures.

PLAIN LANGUAGE SUMMARY

Aspiration of the elbow joint for treating radial head fractures

What is a radial head fracture?

The radial head is the topmost part of the radius, which is one of the two forearm bones. The radial head is part of the elbow joint. Fracture or breaking of the radial head is the most common elbow fracture. This injury usually results from a fall onto an outstretched arm. The symptoms of a radial head fracture are pain, swelling and bruising around the elbow, as well as restricted movement.

What is aspiration?

One treatment for radial head fracture is aspiration. This is a procedure where a sterile needle and syringe are used to drain excess fluid and blood from the elbow joint to relieve pressure and thus, in theory, relieve pain and improve clinical outcome. However, aspiration is an invasive procedure that puts the patient at further risk of complications, such as infection and injury to nerves and vessels. The procedure is typically done in the first few days after injury.

Aim of the review

We aimed to assess the effects (benefits and harms) of aspiration of the elbow joint for treating radial head fracture in adults.

Description of the studies included in the review

We searched the medical literature up to April 2014 and found two relevant studies that reported results for a total of 108 people with radial head fractures. Most participants were adults, aged 30 or over. They generally had less serious fractures and were all treated without surgery. The two studies were small, poorly reported and at high risk of bias. Neither study used reliable measures to assess function or pain. Consequently, we are very unsure of the findings of these trials.

Summary of the evidence

Very low quality evidence showed little difference between those who had joint aspiration and those who did not in being unable to carry heavy loads or having discomfort when carrying loads using their previously injured arm at one year after injury. Very low quality evidence shows that aspiration often provides immediate pain relief and may still provide pain relief at three weeks. Neither trial reported on adverse events from the procedure, but aspiration was reported as being unsuccessful in three participants of one study. Very low quality evidence shows little effect of aspiration on being able to extend the elbow at either six weeks or one year. The reporting of adverse events was incomplete, but one trial reported the absence of three common complications of radial head fractures.

Conclusions

Overall, there is not enough evidence to say whether aspiration gives better short-term or longer-term results than no aspiration in treating radial head fractures or how safe it is. We suggest that further research is needed to examine the use of aspiration for the initial treatment of radial head fractures.