

Specific Question:

Are image-guided injections more clinically effective than palpation-guided injections for acromioclavicular joint (ACJ) pain?

Clinical bottom line

There is limited evidence that steroid injections to the ACJ, administered under ultrasound guidance (US-guidance) are no more effective than those using a palpation-guidance method in terms of reducing pain and increasing function in the short (3 weeks) and medium term (6 months). There is no evidence for long term outcomes (12 months onwards). Further research is needed to justify the additional cost and wait times of US-guided over palpation-guided injections in light of similar clinical outcomes.

Why is this important?

ACJ pain, often as a result of osteoarthritis, is a common clinical presentation in musculoskeletal practice. Intra-articular steroid injections are frequently used as an intervention in the management of ACJ pain. There is variation among clinicians when administering steroid injections with some using palpation-guided techniques and others using image guided techniques such as ultrasound or fluoroscopy. Image-guided techniques can result in a patient having a delay to receiving treatment and incur higher costs. It was not known whether image-guided AC injections had a preferential clinical outcome to palpation-guided methods to justify additional wait times and cost.

Search timeframe (e.g. 2006-2016)

Inclusion Criteria

	Description	Search terms
Population and Setting	Adults with ACJ pain secondary to a musculoskeletal disorder presenting in a primary or secondary care setting.	Acromioclavicular joint pain including Osteoarthritis, Acromioclavicular joint, AC Joint ACJ.
Intervention or Exposure	US or fluoroscopy guided ACJ steroid injection.	Guided intra-articular ACJ steroid injection, Injection, Image-guided ultrasound, Fluoroscop*, Steroid, Corticosteroid, Ostenil, Viscosupplementation.

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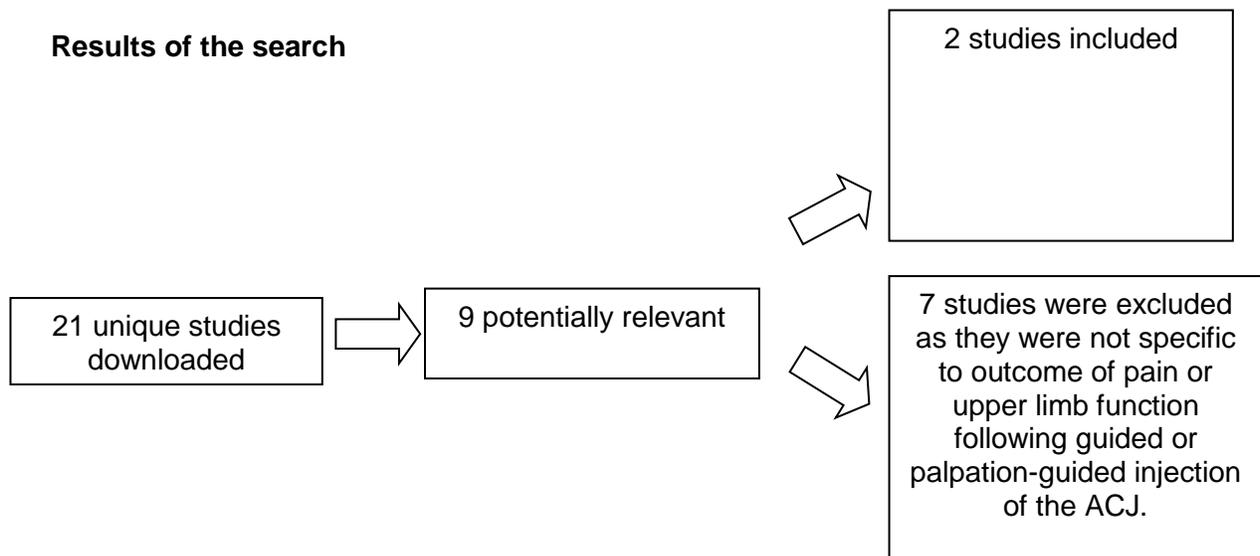
Comparison, if any	Palpation or landmark guided ACJ steroid injection.	Blind intra-articular ACJ steroid injection, Injection, Blind, Corticosteroid, Clinically Guided, Landmarked guided, Anatomically guided, Palpation Guided, Steroid, Corticosteroid, Ostenil, Viscosupplementation.
Outcomes of interest	Reduction in pain, increase in upper limb function.	Pain, Function
Types of studies	Systematic reviews, randomised controlled trials, cohort studies.	

Routine Databases Searched

MEDLINE, EMBASE, Cochrane Systematic Reviews, Cochrane (CENTRAL), Clinical Evidence, DARE/HTA/NHSEED, CINAHL, AMED.

Date of search- March 2016

Results of the search



CAT Lead: Richard Dowell
Email: richard.dowell@burtonft.nhs.uk

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Table 1- Detail of included studies

First Author, year and type of study	Population and setting	Intervention or exposure tested	Outcomes	Study results	Assessment of quality and comments
Sabeti-Aschraf, M., et al. (2009) RCT (pilot)	Austria (n=20). Tender ACJ, positive arm adduction test.	5ml lidocainhydrochloride (no details on dose) 1ml Betamethason (no details on dose) Total volume= 6ml Palpation guided (n=10) Ultra sound guided (n=10).	Visual analog scale (at rest [VASr] and under local pressure [VASlp]), the arm adduction test (AAT) and constant and Murley score CMS were measured before (T0), one hour (T1), one week (T2) and three weeks (T3) post intervention.	Three weeks post intervention: VASr Both groups demonstrated a significant improvement in pain reduction but, no significant between-group difference (p=0.87) VASlp No significant between-group differences (p=0.51) AAT No significant between-differences (p=0.29) CMS No significant between-group differences (p=0.51).	Addresses a clearly focused issue. Mean demographic information available for the entire group but not for individual participants or sub intervention groups. No clear information on post intervention protocols. No clear method of randomisation or blinding. Short study time of three weeks. Small sample size – not powered. Exclusion criteria does not include other shoulder pathology other than glenohumeral osteoarthritis. All injections performed by the same clinician- a lack of generalisability.

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<p>Park, K. D., et al. (2015)</p> <p>Cohort study (Retrospective comparative clinical study)</p>	<p>Korea (n=100).</p> <p>ACJ OA based on subjective history, x-ray findings and pain on palpation.</p>	<p>1ml Lidocaine at 0.5% (5mg)</p> <p>0.5ml triamcinolone at 20mg/ml (10mg)</p> <p>0.5ml of radiographic contrast material.</p> <p>Total volume= 2ml</p> <p>Palpation guided (n=50) US guided (n=50)</p>	<p>Verbal numeric pain scale was used at rest (VNSar), under localised pressure (VNSIp) and during the arm adduction test (VNSaat). Shoulder pain and disability index (SPADI) was also measured.</p>	<p>48 out of 50 US- guided injections were shown to infiltrate the joint compared to 31 out of 50 in the palpation guided group, a significant difference (p= <0.05).</p> <p>Significant improvements in all outcomes for both groups at one month, 3 month and 6 months post intervention (p= <0.05).</p> <p>At 1 month post intervention No between-group differences.</p> <p>At 3 months post intervention VNSaat statistically significant between-group differences favouring the US-guided group (p= <0.05).</p> <p>At 6 months post intervention Statistically significant between-group differences were reported for VNSaat, VNSIp and SPADI, favouring the US-guided group (p= <0.05).</p> <p>Minor harm was reported in the US guided group (n=3) and palpation-guided group (n=1)</p>	<p>The majority of participants 49 (49%) had 'failed injections'. Numbers of failed injections were similar between the two study groups. It is unclear whether data from the 'failed injection' participants were used in the analyses.</p> <p>Although there were statistically significant between-group differences for some of the outcomes, there were no clinically important between-group differences for any of the outcomes.</p> <p>Small cohort size</p> <p>Retrospective study design- possible bias.</p> <p>All injections performed by the same clinician - a lack of generalisability.</p>
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Summary

There is limited evidence that ultra-sound guided injections are not superior to palpation-guided approaches when injecting the ACJ in the short and medium term. There is no evidence for long-term outcomes.

Sabeti-Aschraf et al. (2009) reported no significant difference in outcome between US guidance and palpation-guidance for injecting the ACJ. However this study was a pilot study and used a small sample size with a follow up of just three weeks. The intervention was not blinded to the patients who were the primary outcome assessors, potentially increasing bias. The author acknowledged that masking participants in this study design was a limitation.

Park et al. (2015) used a much larger sample size but collected the data retrospectively. The authors reported a statistically significant improvement in pain and functional outcome using US guidance over palpation guidance at six month follow up. However, it is important to note that at six month follow up 49 (49%) of the patients had dropped out of the study due to failed injections. Although the differences in outcomes were statistically significant they failed to meet the minimal clinical important difference (MCID) of outcome measures on SPADI, which have been reported to require a change of 8 points (Paul et al., 2004) and 1.4 for VAS (Tashjian et al., 2009). Change scores for SPADI in Park et al. (2015) were reported as 3.1. Although both groups met the MCID between baseline and six month follow up for VAS the difference between the two groups did not meet the MCID.

Both papers critiqued in this critically appraised topic reported that both US guided and palpation-guided injections resulted in statistically significant improvements in pain and function in the short-term (3 week Post injection) (Sabeti-Aschraf et al. 2009) and medium term (6 months post injection) (Park et al. 2015) follow-up. There is limited evidence that the US-guided approach is not superior to palpation-guided methods.

There is a belief that improved accuracy may lead to better clinical outcomes. In the study by Park et al. (2015) whilst improved accuracy was achieved using US-guided methods, there was no clinically meaningful improvement in clinical outcomes compared to palpation guided methods.

Implications for Practice/research

This information has been shared with local clinical teams to encourage a more uniform approach to providing ACJ injections. It is anticipated that a stepped approach to using AC injections will be adopted: Patients will initially be offered palpation-guided approaches and, in the event of this being ineffective, to be offered US-guided methods. If not all patients require US-guided methods, potentially cost and waiting times for treatment will be reduced without affecting clinical outcomes. Further research is needed to justify the additional cost of providing AC injections using image-guided methods and

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to identify which patients are more likely to benefit from US-guided compared to palpation-guided approaches.

What would you tweet? (140 characters)

Ltd evidence that US-guided methods are not superior to palpation-guided ACJ injections for clinical outcomes in #shoulderpain @theCSP

References

Park, K,D., Kim, T,K., Lee, J., Lee, W,Y., Ahn, J,K., Park, Y.(2015) Palpation Versus US-Guided ACJ Intra-articular Corticosteroid Injections: A Retrospective Comparative Clinical Study. Pain Physician. 18:333-341.

Paul, A., Lewis, M., Shadforth, M,F., Croft, P,R., van der Windt, D,A,W,M., Hay, E,M.(2004) A comparison of four shoulder-specific questionnaires in primary care. Ann Rheum Dis. 63:1293-1299.

Sadeti-Aschraf, M., Ochsner, A., Schueller-Weidekamm, C., Schmidt, M., Funovics, Ph,T., Skrbensky, G,v., Goll, A., Schatz, K,D.(2009) The infiltration of the AC joint performed by one specialist: US versus palpation a prospective randomized pilot study. European Journal of Radiology. 75:37-40.

Tashjian, R, Z., Deloach, J., Porucznik, C, A., Powell, A, P.(2009) Minimal clinically important differences (MCID) and patient acceptable symptomatic state (PASS) for visual analog scales (VAS) measuring pain in patients treated for rotator cuff disease. Journal of Shoulder and Elbow Surgery. 18:927-932.