

**Chahal J, Mall N, et al The Role of Subacromial Decompression in Patients Undergoing Arthroscopic Repair of Full-Thickness Tears of the Rotator Cuff: A Systematic Review and Meta-analysis. Arthroscopy 2012;28(5):720-727.**

Design: meta-analysis of clinical trials

Study question: does acromioplasty improve the outcomes of arthroscopic repair of full thickness rotator cuff tears?

PICOS:

- Patient population: patients older than 18 with full thickness tears of at least one rotator cuff tendon
- Intervention: acromioplasty during the repair of full thickness tears
- Comparison: no acromioplasty during full thickness repair
- Outcomes: primary outcome was disease-specific quality of life on the Western Ontario Rotator Cuff (WORC) index
  - o When available, secondary outcomes included scores on questionnaires such as DASH, UCLA, and American Shoulder and Elbow Society (ASES); the Constant score, shoulder ROM, and rate of reoperation were also used
- Study types: randomized or quasi-randomized controlled trials comparing acromioplasty versus no acromioplasty with a minimum of one year of followup
  - o Any study which had been published in abstract form but not published in a peer-reviewed journal for the subsequent ten years was excluded

Study selection:

- Databases included MEDLINE, EMBASE, CINAHL, LILACS, and the Cochrane Central Register of Controlled Trials through September 2011, as well as meeting archives of orthopedic and sports medicine conferences
- Two authors independently assessed studies for inclusion and methodological quality for trials of non-pharmacological treatments
  - o Risk of bias criteria included those common to most quality criteria for randomized trials (random sequence generation, allocation concealment, complete followup, and intention to treat analysis)
- Additional consideration is given to the experience of the treating clinician for interventions requiring skill and degree of patient compliance with treatment; in addition, modifications are made for blinding in circumstances in which patients and providers cannot be blinded

Results:

- 41 records were screened for inclusion; 4 studies with 373 patients were included in the analysis
  - o 3 of the trials have been published in journals; one was presented at the American Orthopedic Society of Sports Medicine in 2011
- The mean followup across the four trials ranged from 12 to 24 months
  - o Complete followup was reported in only 217 of the 373 patients, an overall followup of 58.2%
- Only one study (Macdonald 2011) reported outcomes on the WORC; the ASES score was reported in three trials and the Constant score was reported in 2 trials
- Inclusion criteria varied among the included studies, but all studies did a repair of at least one full thickness tear
  - o One study enrolled patients only if they had an isolated supraspinatus tear and a Type II acromion
  - o The other studies enrolled patients if they had a tear of 1 to 4 tendons
  - o One study enrolled patients with a Type II or Type III acromion
  - o Two studies enrolled patients with Type I, II, or III acromion
  - o Workers' Compensation patients were excluded from three trials; the only study to include WC patients was the one presented at a conference and not published in a journal
- Only one study had clear blinding of outcome assessment (Macdonald 2011), but randomization and allocation concealment were adequately reported in all trials
  - o Skill and experience of the surgeons were reported in 2 trials
  - o Patient compliance was not assessed quantitatively in any of the trials
- Macdonald 2011 reported no differences on the WORC between patients with and without acromioplasty at the time of repair
- From the 2 trials which reported Constant scores, a meta-analysis showed no difference in patients with and without acromioplasty
- Similarly, meta-analysis of the 3 studies which used ASES as the outcome measure showed no difference in outcome with and without acromioplasty
- Although a meta-analysis could not be done, 2 of the 4 studies reported that the type of acromion did not influence the WORC, ASES, or Constant scores
- Only one study (not published in a journal) reported on postoperative ROM at one year; the only measured group difference was in external rotation where the group without acromioplasty actually had greater ROM (67°) than the group with acromioplasty (56°)
  - o This same study was the only study to include WC patients
  - o At the time of the meta-analysis, patient followup was still ongoing; this accounts for the followup rate of only 28%
  - o As of February 2014, this study has not been published in a journal

- From two trials which reported on reoperation, meta-analysis showed no difference in reoperation rates in patients with and without acromioplasty
  - o However, the rates of reoperation were small (200 patients, 10 reoperations)
  - o Of the 10 reoperations, 5 had a Type III acromion

Authors' conclusions:

- Based on current evidence, there is no difference in patient-reported outcomes of full thickness rotator cuff repair between patients who do and do not undergo acromioplasty at the time of operation
- Rotator cuff tears are likely to arise from intrinsic mechanisms and not from mechanisms in which extrinsic factors such as acromial impingement
- Acromioplasty may have some disadvantages, such as weakening of the deltoid origin, anterosuperior instability, and the formations of adhesions between bone and tendon
- The contribution of acromial morphology, especially when a Type III acromion is present, remains to be clarified; however, factors other than acromial morphology, such as tendon fibrosis and reinjury, cannot be excluded as sources of ongoing pain

Comments:

- In the included studies, there were some variations in the operations done in the randomized groups, but in none of these studies was the acromion operated on in the non-acromioplasty groups
  - o In Milano 2007, it was clear that the subacromial decompression group had acromioplasty, coracoid ligament release, and subacromial bursectomy with the rotator cuff repair; the control group had subacromial bursectomy
  - o In Gartsman 2004, the details of the subacromial decompression were not stated; neither was it stated what procedures were done in the control group
  - o In Macdonald 2011, the acromioplasty group had coracoacromial ligament release, smoothing of the acromial undersurface with a burr, and removal of scar tissue between the supraspinatus tendon and the acromion or deltoid fascia; the control group had nothing done to the acromion
  - o The fourth study, Tetteh 2013, has been published, but only as a one-page report with the form of an abstract without details about the operations in the groups with and without acromioplasty
- Because of insufficient data to do subgroup analyses based on acromial morphology, a categorical statement against acromioplasty would be premature
  - o However, the data from the four studies is sufficient to provide good evidence that routine acromioplasty does not lead to better outcomes from repair of full thickness tears of the rotator cuff

- When it was available, the definition of acromioplasty involved a fairly extensive operation; the effect of lesser degrees of acromial surgery (such as simple shaving of prominent osteophytes) cannot be estimated from these studies

Assessment: Adequate for good evidence that in the setting of surgical repair of full thickness rotator cuff tears, routine acromioplasty does not improve the outcome of surgery compared to cuff repair alone

#### References:

Gartsman GM, O'Connor DP. Arthroscopic rotator cuff repair with and without arthroscopic subacromial decompression: A prospective, randomized study of one-year outcomes. *J Shoulder Elbow Surg* 2004;13:424-6.

MacDonald P, McRae S, et al Arthroscopic rotator cuff repair with and without acromioplasty in the treatment of full-thickness rotator cuff tears: A multicenter, randomized controlled trial. *J Bone Joint Surg Am* 2011;93:1953-1960.

Milano G, Grasso A, Salvatore M et al. Arthroscopic Rotator Cuff Repair With and Without Subacromial Decompression: A Prospective Randomized Study. *Arthroscopy* 2007;23:81-88.

Tetteh E, Hussey KE. A Prospective Randomized Trial of Functional Outcomes Following Rotator Cuff Repair With and Without Acromioplasty: Minimum 2-Year Follow-up. *Orthopaedic Journal of Sports Medicine* 2013 1:DOI: 10.1177/2325967113S00101.