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. JBJS Am 2011;93:1953-60.

Design: Randomized clinical trial

Study question: In the setting of arthroscopic repair of reparable full-thickness rotator cuff tears, does acromioplasty lead to better functional outcomes than no acromioplasty?

Population/sample size/setting:

- 86 patients (56 men, 30 women, mean age 57) treated for full-thickness rotator cuff tears in university orthopedics departments in Winnipeg and Ottawa
- Eligibility criteria were age over 18 with a full-thickness tear diagnosed by clinical and imaging (either ultrasound or MRI), with tear size <= 4cm, with pain and disability for at least 6 months during which time conservative treatment had failed
- Exclusion criteria were infection, osteonecrosis, glenohumeral instability, osteoarthritis or articular cartilage pathology, labral tears, previous shoulder surgery on the affected side, evidence of major joint trauma, partial-thickness tears of the cuff, Workers' compensation claims, and major medical condition affecting the quality of life

Main outcome measures:

- All patients had rotator cuff repair by one of two fellowship-trained surgeons, with debridement of bursal and frayed tissue in the region of the glenohumeral joint
- Randomization was to either acromioplasty (n=41) or rotator cuff repair alone (n=45)
    - Acromioplasty included release of the coracoacromial ligament and excision of the anteroinferior surface of the acromion until flat
    - The distribution of acromial morphology was about equal between groups; the numbers of type 1, 2 and 3 acromions in the acromioplasty group were 6, 26, and 8; in the cuff repair alone group the numbers were 6,24, and 12
- Followup evaluations were done at 3, 6, 12, 18, and 24 months after surgery, with the main assessment at 24 months
- Postoperative care was the same in both groups, with passive or active-assisted ROM exercises beginning one week after surgery
- Main outcome was the Western Ontario Rotator Cuff Index (WORC) and the American Shoulder and Elbow Surgery (ASES) score
    - A secondary outcome was the frequency of subsequent surgery during the 24 month followup

    - At the 24 month followup, there were 32 patients (78%) of the original acromioplasty group and 36 (80%) of the cuff repair group remaining in the study
- The WORC and ASES scores improved in both groups during followup, and at no time point was there a significant difference between groups on these patient-reported scores
    - For the acromioplasty group, the WORC improved from 36.8 to 87.5; for the cuff repair group, the scores were 34.5 and 80.7
    - For the acromioplasty group, the ASES improved from 45.2 to 90.5; for the cuff repair group, the scores were 44.0 and 85.6
- There were no reoperations in the acromioplasty group, but there were 4 reoperations in the cuff repair group
    - All four had substantial ongoing pain, one had decreased ROM, and two reported loss of strength; two reoperated patients had a recurrent rotator cuff tear

Authors' conclusions:

- In patients undergoing arthroscopic repair of full-thickness tears, the patient-reported outcomes with and without acromioplasty are similar
- However, the number of reoperations in the group without acromioplasty was greater than for the acromioplasty group
    - The decision to reoperate was based on patient symptoms and not on imaging studies
- There were some limitations to the study
    - There may have been some variation in surgical technique between the two surgeons
    - Loss to followup was greater than originally anticipated
    - There was no confirmation of the status of the rotator cuff repair
    - The assessment of acromial morphology was subjective based on preoperative x-rays

Comments:

- Most of the criteria for a high quality study are met
- The decision to reoperate was probably not done with blinding to the treatment group, but this is not a serious source of bias, and it may point to aspects of the effect of acromioplasty not captured by the patient-reported scores which were the primary outcome
- Although there is some attrition at the time of the 24 month final analysis, it is approximately 20%, which is still acceptable

Assessment: high quality study supporting good evidence that in the setting of arthroscopic repair of full-thickness rotator cuff tears, two-year patient-reported outcomes are similar with and without acromioplasty, but there is a possibility that acromioplasty reduces the rate of reoperation in the first two years after surgery