



# The Journal of Bone & Joint Surgery

**Journal Club:** 22 May 2012

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Wrightington Upper Limb Unit Journal Club

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**Bursectomy compared with acromioplasty in the management of subacromial impingement syndrome:  
A prospective randomised study.**

Henkus HE, de Witte PB, Nelissen RGHH, Brand R, van Arkel ERA.

J Bone Joint Surg [Br] 2009;91-B:504-10.

## Summary

### Purpose

To compare the results of debridement of the subacromial bursa (bursectomy) without acromioplasty with those of acromioplasty. In patients with impingement who have no rotator cuff tear and have failed a course of conservative management.

### Methods

The study design was a prospective randomised trial. Patients were recruited into the study following primary care referral. Diagnosis of impingement was made following history taking, clinical examination (positive impingement tests), plain XR, diagnostic lidocaine test and MR arthrography. Exclusion criteria were the presence of: Rheumatoid arthritis, AC joint of GH joint arthritis, rotator cuff tear, labral pathology, biceps tendonitis, stiffness, radicular pattern pain and calcifying tendonitis. All patients underwent a period of standardised conservative management with physiotherapy and injection therapy. A single surgeon performed all the operations. A standard diagnostic arthroscopy was performed followed by randomisation to either a bursectomy alone or a bursectomy with acromioplasty. All patients then received a standard rehabilitation protocol, and were blind to the treatment they had received. Outcome measures collected pre and post operatively at 3 monthly intervals by a blinded assessor were: The Constant-Murley score, the simple shoulder test and VAS scores for pain and function. Statistical analysis was using a student T-test, and a multivariate analysis.

### Results

80 consecutive patients were studied, but following MR arthrography and surgery 23 were excluded because of the findings of other pathology as listed above. 1 further patient was lost to follow up due to the diagnosis of a serious illness. This left 56 patients for analysis. 26 had a bursectomy alone, and 30 underwent acromioplasty. Mean follow up was 2.5 years (1 to 5). 5 patients required further surgery for deteriorating condition at one year. 2 patients from the bursectomy group went on to have an acromioplasty and 3 from the acromioplasty group went on to further surgery which was a revision

acromioplasty in one case and an ACJ resection in the two other cases. The data from these five patients was however included in the analysis up to the point of their further surgery.

All patients showed improvement in all of the scores at final follow up. Constant score improved by 13.9 and 18.5 points in the bursectomy only and acromioplasty groups respectively. There was no statistically significant difference between either group with regards to outcome, although there was a tendency towards a better result with acromioplasty. Further multivariate analysis attempted to account for differences in the un-even distribution of confounding factors in the subgroups. This looked at the influence of baseline score, treatment received, acromion type, gender and age at surgery on the final outcome scores. The baseline score and the acromial type did show statistical significance in this analysis, with a type 3 acromion predicting a worse outcome, although there was no difference in the outcome of those patients whether they had a bursectomy alone or an acromioplasty.

### Conclusion

The authors conclude that based on this study both bursectomy and acromioplasty give good clinical results in patients with primary subacromial impingement who fail conservative treatment. There was a small (non-significant) difference in favour of acromioplasty. The type of acromion and the severity of symptoms have a greater influence on the final outcome, than the type of treatment. Patients with a more hooked acromion have a worse prognosis, and the results suggest that this may not be solved by an acromioplasty.

### Critique

The purpose of this study was to ascertain whether there was a difference in bursectomy alone vs bursectomy and acromioplasty, in those patients with primary impingement. This relates to the question of the aetiology of impingement and whether or not an extrinsic compressive theory or an intrinsic degenerative theory is to be believed. Previous literature supports both theories but the clinical difference between these treatments is not known.

### Strengths

- Design
  - Randomised
  - Consecutive
  - Blinded patients and blinded independent assessor
- Patients
  - Comprehensive inclusion / exclusion criteria, including diagnostic tests and Radiology
  - standardised previous conservative management
- Surgery
  - Single surgeon
  - Standard technique
- Outcome measures
  - Objective and patient reported
- Follow up
  - Comprehensive f/u, only 1 drop out.
  - Adequate length
  - Included re-operations

### Methodological concerns

- Sample
  - Small
  - No power calculation

- Not matched for confounders
- No control group
- Statistical analysis
  - Multivariate analysis was used to account for uneven distribution of confounders on very small numbers in each subgroup
  - Broad ranging confidence intervals as a result
  - No analysis of outcome measures with time.
- Outcome measure
  - simple shoulder test: the authors cite previous work to suggest that this test may not be appropriate for detecting differences between the treatment groups owing to the dichotomous nature of the test and the limited number of questions

Overall, this study was nicely designed with many strengths. However the sample size was too small and the study not powered adequately to be able to take a meaningful message from. It is reassuring to see that the majority of the patients showed some improvement post intervention and perhaps this study could be used as a pilot to aid in power calculations for a larger trial. We cannot however draw the conclusion that there is no difference between the two groups from this trial.