Journal club: 9 August 2011
Attendees: L Funk, C Ng, C Peach, M Sabo, C Simpson, C Talbot
Wrightington Upper Limb Unit Journal Club
Wrightington Hospital, Hall Lane, Appley Bridge, United Kingdom

Reviewer: M Sabo
Presented Paper:
Impingement syndrome: temporal outcomes of nonoperative treatment.
Cummins CA, Sasso LM, Nicholson D
J Shoulder Elbow Surg 2009;18:172-7.

Summary

1. Purpose
To determine the outcome of treating shoulder impingement syndrome with a subacromial injection and physiotherapy over a two-year period, while attempting to identify factors that could predict failure of non-operative management of this condition.

2. Methods
A consecutive group of 100 shoulders in 94 patients with a clinical diagnosis of impingement syndrome were enrolled in this prospective cohort study. All received an injection of methylprednisolone and lidocaine, followed by a 4-week standardized physiotherapy regime. Data was collected at time 0, 6, 12, 24 weeks, and 1 and 2 years following enrollment. The ASES shoulder assessment form was the validated outcome tool used. Inclusion criteria were >50% reduction in pain 10 minutes after injection (along with history and physical findings), while exclusion criteria included other shoulder diagnoses, cervical spine disease, prior shoulder surgery or injections, and active compensation claims. Failure of non-operative treatment was designated after 3 months of treatment with no improvement.

3. Results
The patient demographics encompassed those most commonly afflicted with this disorder. At time 0, the average pain score was 4.7/10 and the ASES score was 56.4. At final evaluation, 20 of the 94 shoulders had failed and had undergone surgical treatment. No further improvement in any domain was noted after 12 months. Of the successful 74 shoulders, 52 were pain-free, while the others had a pain score of up to 4/10. The ASES score at final follow-up was approximately 90. The only factor positively associated with risk of failure of non-operative treatment was number of subacromial injections given in the study. Pain relief from the injection was also correlated with likelihood of successful non-operative management.

4. Conclusions
The authors concluded that a standardized non-operative treatment protocol can result in substantial improvement in most patients with shoulder impingement syndrome, and this

improvement occurs over the course of 12 months. Residual pain is common even with "successful" non-operative treatment.

Critique

This is a paper that set out to try to determine the ability to successfully treat shoulder impingement with non-operative means, while attempting to define the time scale for clinical improvement. This is an important clinical question of interest to many clinicians.

Strengths

- ✶ Inclusion and exclusion criteria are clearly defined
- ✶ Sample demographics reflect the population affected by this condition
- ✶ Use of a validated clinical instrument to collect outcome data

Methodological Concerns

- ✶ Actual sample size is unclear: 100 shoulders versus 94 patients versus 94 shoulders in the final result
- ✶ No mention of power calculation to rationalize the sample size
- ✶ Not clear in the figures whether the data presented is from the 74 successful patients, or from all 94 patients (also not clear whether data continued to be collected from the surgical patients)
- ✶ Despite the fact that the inclusion criterion was a clinical diagnosis of impingement, a radiographic assessment of bony morphology was undertaken, with no direct link between this and the hypotheses tested.
- ✶ Description of the statistical analysis does not discuss use of tools to compensate for multiple comparisons.
- ✶ This study was conducted without oversight/approval of the local research ethics board.
- ✶ While the paper does attempt to place this work in context with previous work, no insight into the strengths and weaknesses of this study is included
- ✶ The conclusion fails to account for the second hypothesis and dwells only the first.

Because of these issues, the level of evidence cannot really be set at level I, and some caution must be used in interpreting and applying the results presented. However, it seems that selected patients *can* be successfully managed with non-operative therapy leaving them with little or no shoulder pain at 2 years.