

# ACC Review:

A DISTILLATION OF BEST PRACTICE REFLECTING ACC'S CURRENT POSITION

## Corticosteroid Injections in Shoulders Risks and benefits

- At present, treatment practice with corticosteroid injections is largely empirical
- Provided injections are not repeated more than three or four times per annum at the same joint, the incidence of side effects is generally low
- Sub-acromial injection for rotator cuff syndrome is effective in the short term, but may be no more effective than NSAIDs
- Further, well-designed research is required to determine the effectiveness of intra-articular corticosteroid injections in rotator cuff syndrome and adhesive capsulitis

## Background

Corticosteroid injections are commonly used in injury-related conditions as adjunctive therapy if there is no improvement after a reasonable trial of non-steroidal anti-inflammatory drugs (NSAIDs) or physical therapy. However, their use is not without risk and little is known about their effectiveness. In 2003, ACC commissioned a systematic literature review to investigate the effectiveness of corticosteroids in common injuries. The findings from this and other reviews that have investigated the effectiveness in shoulders are considered.

### Injectable corticosteroids

Injectable corticosteroids differ primarily in potency and solubility. Few studies have compared the preparations in terms of efficacy and safety. The duration of action is thought to correlate inversely with the solubility of the preparation.<sup>1,2</sup> Despite common use there is little agreement on appropriate applications and techniques.<sup>1,2</sup> Furthermore, in the absence of radiological guidance the accuracy of injection placement has been questioned.<sup>3,4</sup>

### Contraindications & complications

A strict aseptic technique is required to reduce the risk of iatrogenic infection, which is a rare but serious complication (1 in 17,000-50,000 injections).<sup>1,5</sup> Corticosteroids should not be considered in skin sepsis or suspicion of infection.<sup>1,2,5</sup> Atrophy of subcutaneous tissue, skin depigmentation and post injection flare has been reported. To avoid possible tendon rupture direct tendon injection should be avoided. Soft tissue side effects are thought to be less likely with short-acting preparations.<sup>2,5</sup> It is unclear if injection leads to steroid arthropathy, but no more than three or four should be administered in the same joint per annum.<sup>2,5</sup>

The likelihood of adrenal suppression and the many and varied systemic side effects of corticosteroids are thought to increase with simultaneous injection of multiple joints and the solubility of the steroid used. Therefore, longer-acting insoluble preparations are preferred.<sup>1,2,5</sup> Although rare, after a single injection, symptomatic hyperglycaemia may occur in diabetics.<sup>2</sup> Other unwanted effects include local bleeding, and hypersensitivity reactions such as facial flushing (1 in 20).<sup>5</sup>

Failure to respond to initial injection should be considered a contraindication. If work or sport repeatedly aggravates the injury, injections should cease.<sup>1,2,5</sup>

### Effectiveness in shoulder injuries

In addition to the commissioned ACC<sup>6</sup> review, four others have been conducted with varying conclusions.<sup>7-10</sup> To some extent this can be explained by differences in methods (meta-analysis<sup>6,10,11</sup> vs descriptive studies<sup>8,9</sup>), outcome measurements (i.e. complete remission<sup>6,8</sup> vs range of motion and pain<sup>7,9,10</sup>) and the data pooled in meta-analysis. However, it is generally agreed<sup>6-10</sup> that overall assessment of the evidence is limited as a result of heterogeneity amongst randomised controlled trials (RCTs) in diagnostic criteria, methodological quality, the interventions and comparisons studied, inadequate reporting of results, and small sample sizes.

### Sub-acromial injections in rotator cuff syndrome

The commissioned meta-analysis<sup>6</sup> of complete remission rates from seven RCTs found sub-acromial injections to be effective in

avoiding the likelihood of 'no improvement', with an estimated 1 in every 1.4-1.6 patients treated getting better.<sup>6</sup> A Cochrane meta-analysis<sup>10</sup> found a small benefit over placebo at four weeks in: pain with an estimated 1 in 3 (CI 95%: 2-6) patients treated improving, function with an estimated 1 in 4 (CI 95%: 3-11) improving, and range of movement with an estimated 1 in 3 (CI 95%: 2-6) improving. Improvement in the range of abduction was initially reported in an earlier Cochrane meta-analysis.<sup>7</sup> Although the same five RCTs in the commissioned review were identified by the Cochrane group,<sup>7,10</sup> only two (assessed as high methodological quality) were pooled by the Cochrane group due to heterogeneity. In a comparison with NSAIDs the pooled results from these RCTs and one other found no difference in outcomes. The authors concluded that the benefit might be short and no more effective than NSAIDs.<sup>10</sup>

Two descriptive reviews have been conducted.<sup>8,9</sup> One concluded that injections are more effective than placebo or NSAIDs,<sup>9</sup> while the other<sup>8</sup> based upon an assessment of RCT methodological quality, concluded that the evidence is inconclusive due to the poor quality of many RCTs.

### Intra-articular injection in rotator cuff syndrome & adhesive capsulitis

Both the commissioned<sup>6</sup> and Cochrane review<sup>10</sup> found one RCT for rotator cuff syndrome that showed no benefit of intra-articular injection over placebo. Two RCTs for adhesive capsulitis compared injection over placebo, but the results were unable to be pooled.<sup>6,10</sup> One of these studies found no difference whereas the other found a significant benefit.<sup>10</sup>

### In Summary

At present, treatment is largely empirical. Few studies have compared the safety and efficacy of the corticosteroid preparations. Provided injection is not repeated at the same site too often, it is generally accepted that the incidence of side effects is low. Sub-acromial injection for rotator cuff tendinitis is effective, but may be no more so than NSAIDs. There is insufficient data to assess effectiveness in rotator cuff syndrome or adhesive capsulitis.

### References

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