



2018

# The Effectiveness of Oral Non-Steroidal Anti-Inflammatories versus Steroid Injections in Patients with Shoulder Pain

Darren Scott Pledger  
*University of North Dakota*

Follow this and additional works at: <https://commons.und.edu/pas-grad-posters>



Part of the [Orthopedics Commons](#)

---

## Recommended Citation

Pledger, Darren Scott, "The Effectiveness of Oral Non-Steroidal Anti-Inflammatories versus Steroid Injections in Patients with Shoulder Pain" (2018). *Physician Assistant Scholarly Project Posters*. 20.  
<https://commons.und.edu/pas-grad-posters/20>

This Poster is brought to you for free and open access by the Department of Physician Studies at UND Scholarly Commons. It has been accepted for inclusion in Physician Assistant Scholarly Project Posters by an authorized administrator of UND Scholarly Commons. For more information, please contact [zeinebyousif@library.und.edu](mailto:zeinebyousif@library.und.edu).

# The Effectiveness of Oral Non-Steroidal Anti-Inflammatories Versus Steroid Injections in Patients with Shoulder Pain

Darren Pledger PT, DPT, PA-S

## Statement of the Problem

- The fact that shoulder pain is the third most common musculoskeletal complaint in primary care shows that clinicians must have an arsenal of quality interventions to treat this problem.
- The need for quality research and evidenced based guidelines are necessary to educate clinicians on their treatment options, the efficacy of those treatments, and their safety profiles.

## Research Questions

1. In patients with shoulder pain, is oral non-steroidal anti-inflammatories or corticosteroid injections into the glenohumeral joint more effective in reducing shoulder pain?
2. What are the risks and side effects of oral non-steroidal anti-inflammatories and corticosteroid injections into the glenohumeral joint when used to treat shoulder pain?

## Literature Review

### Theme 1

- Adebajo, Nash, and Hazleman, (1990), found both oral NSAIDs ( $p=0.0268$ ) and triamcinolone injection are superior to placebo with the steroid injection group achieving the greatest results.
- Berry, Fernandes, Bloom, Clark, and Hamilton (1980) found that all groups showed statistically significant improvement in pain and range of motion but no significant difference between groups with no distinct advantage of any treatment.
- Petri, Dobrow, Neiman, Whiting-O'keefe, and Seaman (1987) found that steroid injection ( $p=0.00005$ ) and oral NSAIDs ( $p=0.02$ ) were statistically superior to placebo and that there was no statistical significance of combined treatment compared to steroid injection alone.

## Literature Review

- Ranalletta et al. found that pain was improved at all time points regardless of treatment group. However, relief was achieved faster in the corticosteroid injection group. This was statistically significant up to eight weeks ( $p<.001$ ), but lost significance ( $p=.825$ ) at 12 weeks as pain improved in the oral NSAID group.
- Shin and Lee (2013) found that all patients treated with corticosteroids, regardless of group, demonstrated statistically significant ( $p<.05$ ) faster pain relief and functional recovery up to 16 weeks compared to oral NSAIDs. Although corticosteroids were found to achieve faster results, at 24 weeks there was no statistical difference ( $p=.670$ ) in outcomes for all four groups.
- Sun, Chen, Li, Jiang, and Chen (2015) found that in terms of functional improvement, steroid injections showed superiority to oral NSAIDs (standard mean difference (SMD) 0.61; 95%CI, 0.08–1.14,  $p=0.01$ ) and found no superiority in either treatment in pooled results in regard to pain relief (SMD 0.45; 95%CI, 0.50–1.40,  $p<0.00001$ ).

### Theme 2

- Nissen et al. (2016), Precision Trial, found statistically significant results that there is no greater cardiovascular risk from celecoxib when compared to naproxen or ibuprofen.
- Castellsague et al. (2012), for individual NSAID use, they determined that ibuprofen was in the lowest range of pooled RRs while naproxen was associated with higher RR values depending on certain doses.
- Zhang, Donnan, Bell, and Guthrie (2017) found that taking NSAIDs was associated in a 1.5-fold increase in the odds of developing AKI in the general population in people with (OR 1.63, 95%CI: 1.22–2.19,  $p=0.009$ ) and without CKD (OR 1.73 95%CI: 1.44–2.07,  $p < 0.001$ ).
- Patrono (2016) determined that traditional NSAIDs and coxibs increased the risk of major vascular events by 40% with the exception of naproxen.
- Rostom et al. (2011) found a clear advantage of selective COX-2s over nonselective NSAIDs on gastrointestinal safety with fewer gastroduodenal ulcers (RR 0.26, 95%CI: 0.23-0.30) and fewer complications from ulcers (RR 0.39, 95%CI: 0.31-0.50).

## Discussion

- Many of the studies comparing corticosteroids to oral NSAIDs yielded similar results (Berry et al., 1980; Deghan et al., 2013; Petri et al., 1987; Ranalleta et al., 2016; Sun et al., 2015).
- Two studies found that corticosteroids and oral NSAIDs are both superior to placebo in treating shoulder pain (Adebajo et al., 1990; Petri et al., 1987).
- Three studies found with statistical significance, that corticosteroids accelerate pain relief when compared to oral NSAIDs but long-term pain relief was equivocal (Degghan et al., 2013; Ranalleta et al., 2016; Shin & Lee, 2013).
- Many of the studies in theme one had very small sample sizes.
- There is a small amount of literature directly comparing oral NSAIDs to corticosteroid injection.
- A wide range of shoulder conditions were studied in theme one lacking consistency.
- Many studies in theme one were dated.
- There is a risk for upper gastrointestinal complications (Castellsague et al., 2012; Chang et al., 2011; Garcia Rodriguez & Barreales Tolosa, 2007; Rostom et al., 2011; Nissen et al., 2016).
- Non-selective oral NSAIDs pose the greatest risk followed by selective oral NSAIDs. Although selective oral NSAIDs were found to decrease the risk of upper gastrointestinal complications, they found that taking aspirin with selective NSAIDs virtually cancels out their gastroprotective effect (Garcia Rodriguez & Barreales Tolosa, 2007)
- The studies showed an increase in cardiovascular risk to a varying degree of all NSAIDs (Chang et al., 2011; Nissen et al., 2016; Patrono, 2016).
- All NSAIDs pose a risk to the kidney and AKI is possible in healthy populations as well as the elderly (Chou et al., 2016; Zhang et al., 2017).

## Conclusion

- Both oral NSAIDs and corticosteroid injection are effective in reducing shoulder pain.
- Both treatments can treat a wide range of conditions.
- Both are superior to placebo while neither is superior to the other, thus the decision on what treatment to use should be based on an individuals comorbidities and risk factors.
- There are side effects associated with both treatments.

## References

- Adebajo, A. O., Nash, P., & Hazleman, B. L. (1990). A prospective double-blind dummy placebo controlled study comparing triamcinolone hexacetonide injection with oral diclofenac 50 mg TDS in patients with rotator cuff tendinitis. *The Journal of Rheumatology*, 17(9), 1207-1210. Available from <http://www.jrheum.org/>
- Berry, H., Fernandes, L., Bloom, B., Clark, R. J., & Hamilton, E. B. D. (1980). Clinical study comparing acupuncture, physiotherapy, injection and oral anti-inflammatory therapy in shoulder-cuff lesions. *Current Medical Research and Opinion*, 7(2), 121-126. <http://doi.org/10.1185/03007998009112038>
- Petri, M., Dobrow, R., Neiman, R., Whiting-O'keefe, Q., & Seaman, W. E. (1987). Randomized, double-blind, placebo-controlled study of the treatment of the painful shoulder. *Arthritis & Rheumatology*, 30, 1040–1045. <http://doi.org/10.1002/art.1780300911>
- Ranalletta, M., Rossi, L. A., Bongiovanni, S. L., Tanoira, I., Elizondo, C. M., & Maignon, G. D. (2016). Corticosteroid injections accelerate pain relief and recovery of function compared with oral NSAIDs in patients with adhesive capsulitis. *The American Journal of Sports Medicine*, 44(2), 474–481. <http://doi.org/10.1177/0363546515616238>
- Shin, S., & Lee, S. (2013). Efficacies of corticosteroid injection at different sites of the shoulder for the treatment of adhesive capsulitis. *Journal of Shoulder and Elbow Surgery*, 22(4), 521-527. <http://doi.org/10.1016/j.jse.2012.06.015>
- Sun, Y., Chen, J., Li, H., Jiang, J., & Chen, S. (2015). Steroid injection and nonsteroidal anti-inflammatory agents for shoulder pain: A PRISMA systematic review and meta-analysis of randomized controlled trials. *Medicine*, 94(50), 1-8. <http://doi.org/10.1097/MD.0000000000002216>
- Nissen, S., Yeomans, N., Solomon, D., Luscher, T., Libby, P., Husni, M., & Lincoff, M. for the PRECISION Trial Investigators. (2016). Cardiovascular safety of celecoxib, naproxen, or ibuprofen for arthritis. *The New England Journal of Medicine*, 375(26), 2519-2529. <http://doi.org/10.1056/NEJMoa1611593>
- Castellsague, J., Riera-Guardia, N., Calingaert, B., Varas-Lorenzo, C., Fourrier-Reglat, A., Nicotra, F., . . . & Perez-Gutthann, S. (2012). Individual NSAIDs and upper gastrointestinal complication: A systematic review and meta-analysis of observational studies (the SOS Project). *Drug Safety*, 35(12), 1127-1146. <https://doi.org/10.1007/BF03261999>
- Zhang, X., Donnan, P. T., Bell, S., & Guthrie, B. (2017). Non-steroidal anti-inflammatory drug induced acute kidney injury in the community dwelling general population and people with chronic kidney disease: Systematic review and meta-analysis. *BMC Nephrology*, 18, 256. <http://doi.org/10.1186/s12882-017-0673-8>
- Patrono, C. (2016) Cardiovascular effects of nonsteroidal anti-inflammatories. *Current Cardiology Reports*, 18(25), 1-8. <https://doi.org/10.1007/s11886-016-0702-4>
- Rostom, A., Muir, K., Dube, C., Jolicoeur, E., Boucher, M., Joyce, J., & Wells, G. (2011). Gastrointestinal safety of cyclooxygenase-2 inhibitors: A Cochrane collaboration systematic review. *Clinical Gastroenterology and Hepatology*, 5(7), 818-828. <http://doi.org/10.1016/j.cgh.2007.03.011>