



Retrospective Evaluation of Patient Outcomes with Ketorolac Shoulder Injections

Alexander Kurth, Nathan Kukowski, Michael Khazzam, MD, Jose Romero, MD
UT Southwestern Medical Center

UT Southwestern
Medical Center

Background

- In the past, corticosteroid injections have been the preferred non-operative treatment option for a variety of painful shoulder pathologies
- Corticosteroids demonstrate certain limitations:
 - spontaneous tendon rupture
 - tendon and ligament atrophy
 - fragmentation of collagen bundles
 - delayed healing
 - articular cartilage changes
 - decreased mechanical properties.
- Hypothesis: Based on other studies and anecdotal findings, Ketorolac (NSAID) injections provide a safer and equally efficacious non-operative treatment option for a variety of painful shoulder pathologies.

Methods

- Longitudinal, Case-series based, retrospective study
- Patients who received glenohumeral or subacromial injections of Ketorolac from 1/1/2014 through 3/30/2015
- Shoulder pathologies considered in this study include:
 - Adhesive capsulitis (Frozen shoulder)
 - Atraumatic Rotator Cuff Tear
 - Arthritis
 - Tendinitis
- Data points monitored and analyzed:
 - Self-Reported Pain Scale
 - Adverse Events (frequency and severity)
 - Comorbidities
 - Duration of physical therapy (pre and post injection)
 - Other shoulder injections received

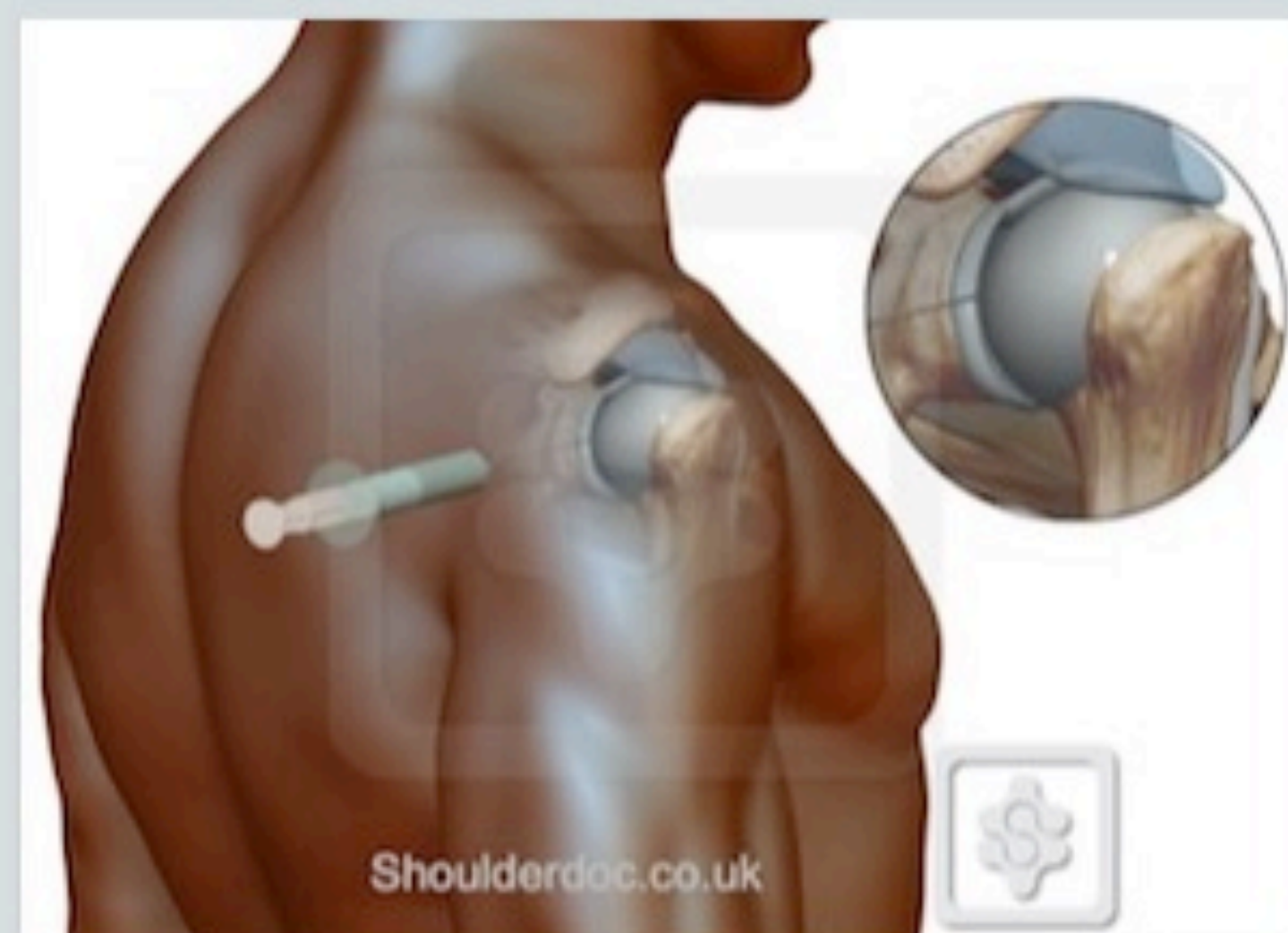
Conclusion: A Ketorolac injection into the glenohumeral joint yielded safe and efficacious results, similar to those seen with injection into the subacromial space. When compared to studies involving the use of corticosteroids for these same shoulder pathologies, Ketorolac appears to have at least equivalent efficacy, without exposing patients to the harmful side effects of corticosteroids.

Acknowledgements: Those conducting this study want to acknowledge the guidance of Dr. Michael Khazzam and Dr. Joey Romero, as well as Amy Browning for coordinating the summer research program during which this study was conducted. We would also like to thank the faculty and staff of the Parkland Memorial Hospital Orthopaedic Surgery Department for their support during the data collection phase of this study.

Injection Comparison

Glenohumeral Joint

- Adhesive Capsulitis (Frozen Shoulder)
- Osteo and Rheumatoid Arthritis



Subacromial Space

- Rotator Cuff Tendinitis
- Atraumatic Rotator Cuff Tear



Results

- At first follow up, patients in both treatment arms reported decreased pain and increased tolerance of physical therapy following the injection of Ketorolac.
- No serious side effects were reported, despite many patients presenting with various, significant comorbidities.
- Glenohumeral Injections:
 - 71.4% described a reduction in pain compared to their initial visit
 - Self-reported pain decreased from 4.28 to 3.83.
- Subacromial Injections:
 - 83.3% described a reduction in pain compared to their initial visit
 - Self-reported pain decreased from 6.77 to 2.17.
- Abstract submitted to the Mid-Atlantic Orthopaedic Association Journal – pending review.

References

- Alvarez, C.M., et al., *A Prospective, Double-Blind, Randomized Clinical Trial Comparing Subacromial Injection of Betamethasone and Xylocaine to Xylocaine Alone in Chronic Rotator Cuff Tendinosis*. Am J Sports Med, 2005; p. 255-262.
- Karthikeyan, S., et al., *A Double-Blind Randomised Controlled Study Comparing Subacromial Injection of Tenoxicam or Methylprednisolone in Patients with Subacromial Impingement*. J Bone Joint Surg (Br), 2010. 92: p. 77-82.
- Koester, M., et al., *The Efficacy of Subacromial Corticosteroid Injection in the Treatment of Rotator Cuff Disease: A Systematic Review*. J Am Acad Orthop Surg, 2007; p. 3-11.
- Marder, R., et al., *Injection of the Subacromial Bursa in Patients with Rotator Cuff Syndrome: A Prospective, Randomized Study Comparing the Effectiveness of Different Routes*. J Bone Joint Surg (Am) 2012; p. 1442-1447.
- Min, K.S., et al., *A Double-Blind Randomized Controlled Trial Comparing the Effects of Subacromial Injection with Corticosteroid versus NSAID in Patients with Shoulder Impingement Syndrome*. J Shoulder Elbow Surg, 2013; p. 595-601.