

The Evaluation and Treatment of Patients Referred for Rotator Cuff Tears-Our Experience

Reuven Lexier* and Sahil Patel

Lexier Medical Management Services Inc., Toronto, Ontario Canada

***Corresponding Author**

Reuven Lexier M.D., C.S.P.Q. F.R.C.S.(C), C-CAT (P), Orthopaedic Surgery, 340 College St. Suite 210 Toronto, Ontario M5T 3A9, Canada.

Submitted: 2023, Jun 06; Accepted: 2023, Jun 29; Published: 2023, July 14

Citation: Lexier, R., Patel, S. (2023). The Evaluation and Treatment of Patients Referred for Rotator Cuff Tears-Our Experience. *Int J Ortho Res*, 6(3), 77-79.

Keywords: Rotator Cuff Tear, Tendinopathy, Shoulder Pain, Bursitis, Tendonitis, Steroid Injection

1. Introduction

Shoulder pain is a common complaint caused by various factors, including injury, overuse, or degenerative conditions [1,2]. One of the most frequent causes of shoulder pain is a rotator cuff injury, which can cause significant pain and weakness in the shoulder [1]. The rotator cuff is a group of four muscles and tendons that surround the shoulder joint and help stabilize and move the shoulder. Rotator cuff tendinopathy is associated with certain risk factors, including age, smoking, and manual labor [3]. Diagnosing a rotator cuff injury requires a thorough physical examination, imaging tests, and evaluation by a specialist [4]. Ultrasound-guided interventional procedures have been found to be effective in treating shoulder pain [5]. Ultrasound imaging can also help tailor treatment for patients with acute shoulder pain in general practice and detect rotator-cuff syndrome [6,7]. Magnetic resonance imaging (MRI) and arthroscopic findings are also used to diagnose supraspinatus tears in patients with shoulder pain [8]. Steroid injections have been proven to be effective and safe for treating shoulder pain [9]. Early diagnosis and treatment are essential to prevent further damage and help patients regain shoulder function [1,10]. Our main objective was to determine the efficacy of the author's double steroid injection technique in patients presenting with symptoms of shoulder pain in the presence of rotator cuff tears/pathology.

2. Methods

This study analyzed data from patients referred to Lexier Medical Management Services Inc. for shoulder pain and rotator cuff tears in the Greater Toronto Area from January 2015 to December 2019. The variables collected from eligible charts included age, sex, clinical impression of shoulder pain, history of injury, rotator cuff strength, imaging methods used for diagnoses, alternative treatments provided/recommended, and cases of recurrence. Patients with shoulder pain who were referred for rotator cuff tear treatment, based on imaging report findings, were included and assigned unique study IDs to ensure confidentiality. Descriptive analysis was used to summarize data, identify trends, and achieve the study objective. Single variable analysis examined distribution (i.e. frequency of males vs. females

affected and recurrence of shoulder pain symptoms), central tendency (i.e. mean, median, and mode), and dispersion (i.e. standard deviation to measure variation). This study provides a representative sample of patients with shoulder pain referred for rotator cuff tear evaluation and treatment in the Greater Toronto Area and can contribute to a better understanding of the management of this condition.

3. Results

In our study, we analyzed a sample of 246 patients referred to Lexier Medical Management Services Inc. with shoulder pain and/or rotator cuff tears between Jan 1st 2015 and Dec 31st 2019. The average age of our cohort was 61.4 (12.8 SD) years, with an equal distribution of shoulder pain observed in females (50.5%) and males (49.5%). Of the 239 cases that included a clinical impression of shoulder pain, the most frequent diagnoses were rotator cuff tendonitis (43.9%), bursitis (39%), bicipital tendonitis (32.1%), and supraspinatus tendonitis (26.8%). Imaging methods used for diagnosing rotator cuff tears were documented in 203 cases, with 70.9% using ultrasound, 47.8% using X-ray, and 23.2% using MRI. There were 186 cases which included imaging findings, and the most common outcomes were full/partial-thickness tears (56.9%), calcification (9.6%), and negative findings (16.1%). Approximately 90 cases provided relevant imaging results such as negative finding (20 cases); full thickness tear (39 cases); partial thickness tears (30 cases); and rotator cuff tear (1 case). It is noteworthy that among the 90 cases with imaging reports indicating full or partial thickness tears, a large number of false positive cases were identified. Specifically, out of the 39 cases with imaging reports indicating a full thickness tear, 38 were found to be false positives (34 via ultrasound and 4 via MRI). Similarly, out of the 30 cases with imaging reports indicating a partial thickness tear, all 30 were identified as false positives (20 via ultrasound, 9 via MRI, and 1 via X-ray).

These findings suggest that caution should be exercised when interpreting imaging results for rotator cuff tears, and that further evaluation may be necessary to confirm the presence of an actual tear. It should be noted that in 20 cases where the imaging re-

ports showed negative findings, these were later confirmed to be true negative cases for rotator cuff tears. One case where the imaging report finding specified a full thickness tear was confirmed to be true positive. Similarly, another case where the imaging finding indicated simply a rotator cuff tear was also confirmed to be true positive. We found relevant comorbidities in 84 cases, including osteoarthritis (78.5%), usually of the acromioclavicular (AC) joint, and diabetes mellitus (26.2%). A history of injury/trauma was present in 52 (21.1%) cases. Rotator cuff strength was recorded in 154 (62.6%) cases but evaluated in all patients. In our cohort, 236 (95.9%) cases were treated with the author's double steroid injection technique, while 10 (4.1%) cases were directed towards alternative options such as physiotherapy or surgical intervention. The double injection technique developed by the author involves two injections, each consisting of 1 ml of 80 mg Depo-Medrol (Methylprednisolone acetate) in 4 mls of 1% Xylocaine without epinephrine, administered first posteriorly to the subacromial space and then anteriorly to the bicipital tendon sheath at the same sitting. After injection treatment, only 18 (7.6%) patients returned with recurring symptoms and were either reinjected or referred for surgical intervention.

4. Discussion

The results of our study provide important insights into the clinical characteristics and management of rotator cuff tears in a sample of patients referred to an Orthopaedic Surgeon in the Greater Toronto Area [1]. Our findings indicate that rotator cuff tendonitis, bursitis, and bicipital tendonitis were the most frequently diagnosed conditions in patients with shoulder pain. Imaging methods, such as ultrasound and X-ray, were commonly used for diagnosing rotator cuff tears, with a high number of false positives identified in the imaging reports. Our study also revealed the presence of comorbidities, such as osteoarthritis and diabetes mellitus, in a significant proportion of patients. The majority of patients were treated with the author's double steroid injection technique, with a low rate of recurrence obviating the need for surgical intervention. These results have important implications for the diagnosis and management of rotator cuff tears, highlighting the need for cautious interpretation of imaging results and the potential benefits of steroid injection therapy in managing symptoms.

There is no gold standard management strategy for shoulder pain, as the appropriate treatment approach depends on the underlying cause of the pain [1]. For instance, the management strategy for shoulder pain due to Rotator Cuff Tears would differ from that of shoulder pain resulting from Frozen Shoulder or Shoulder Impingement Syndrome [9]. That being said, a diagnostic approach to identify the underlying cause of the shoulder pain is critical to developing an effective management strategy. The diagnostic approach used by the author aligns moderately with the existing literature. Specifically, the diagnostic tests employed, including measurements of shoulder flexion, abduction, internal and external rotation, as well as the ability to put the arm behind the back and grading rotator cuff strength, are consistent with tests reported in previous studies [2]. These tests have been found to produce reliable and valid results in assessing shoulder pain and in the author's experience, confirming rotator cuff tear [7].

An accurate diagnosis is also essential for appropriate management. Medical imaging, particularly ultrasound and magnetic resonance imaging (MRI), plays a crucial role in the diagnosis of rotator cuff tears. Ultrasound-guided interventional procedures around the shoulder can also aid in the management of rotator cuff injuries [5]. In a systematic review and meta-analysis of risk factors for rotator cuff tendinopathy, researchers found that MRI was the most accurate imaging modality for the diagnosis of rotator cuff tears [9]. Similarly, another study compared shoulder maneuvers to MRI and arthroscopic findings in patients with supraspinatus tears and found MRI to be the most accurate diagnostic tool [8]. According to a previous study, ultrasound imaging has been demonstrated as an effective tool in diagnosing rotator cuff syndrome [7]. However, our study yielded different findings, as 34 out of 38 false-positive cases were attributed to ultrasound reports. While medical imaging, including ultrasound, can be useful in diagnosing and managing rotator cuff tears, it is important to avoid relying too heavily on imaging technology.

There were several limitations identified in our study, primarily related to its retrospective design. It is possible that certain risk factors were not identified due to the lack of data collected specifically for research purposes. This may have impacted our ability to record variables that could have improved our analysis, such as occupation, physical activity, and smoking status. Additionally, the absence of a mandated recall system at a single clinic site may have resulted in patients not returning for further treatment after injection, particularly those who still experienced symptoms. This differential loss to follow-up could potentially bias our study findings and reduce the power of our efficacy data. Finally, the study was conducted at a single site in a major city, which may limit the generalizability of our results to other settings.

Our findings support the results of a meta-analysis of randomized controlled trials and found that steroid injections were effective in reducing pain and improving function in the short term [9]. However, the long-term efficacy of these injections still remains to be uncertain as there is limited literature available that address this issue. For example, in one retrospective observational study, findings showed that patients who received steroid injections had a higher risk of requiring surgery for rotator cuff tears in the long term [10]. While some patients returned for follow-up in our study cohort, it is possible that others may have experienced recurring symptoms potentially leading to surgical intervention. It is important to weigh the short-term benefits against the potential long-term risks of steroid injections when considering this treatment option for rotator cuff tears.

5. Conclusion

The vast majority of patients in this study responded well to double steroid injection treatment, obviating the need for surgical intervention. To be more precise, surgical intervention was deemed necessary for only four cases, which accounts for less than 1% of the total number of patients. Patients can be assured before initiating treatment that from a substantial accumulated past experience the double injection technique can be expected

ed to eliminate 95% of their pain, in 95% of cases, within two weeks, with full benefit accruing by six weeks from the date of injection [11].

References

1. Garving, C., Jakob, S., Bauer, I., Nadjari, R., & Brunner, U. H. (2017). Impingement syndrome of the shoulder. *Deutsches Ärzteblatt International*, 114(45), 765.
2. Woodward, T. W., & Best, T. M. (2000). The painful shoulder: part I. Clinical evaluation. *American family physician*, 61(10), 3079-3088.
3. Leong, H. T., Fu, S. C., He, X., Oh, J. H., Yamamoto, N., & Yung, S. H. P. (2019). Risk factors for rotator cuff tendinopathy: a systematic review and meta-analysis. *Journal of rehabilitation medicine*, 51(9), 627-637.
4. Singh, J. P. (2012). Shoulder ultrasound: what you need to know. *Indian Journal of Radiology and Imaging*, 22(04), 284-292.
5. Messina, C., Banfi, G., Orlandi, D., Lacelli, F., Serafini, G., Mauri, G., ... & Sconfienza, L. M. (2016). Ultrasound-guided interventional procedures around the shoulder. *The British journal of radiology*, 89(1057), 20150372.
6. Ottenheijm, R. P., Cals, J. W., Weijers, R., Vanderdood, K., de Bie, R. A., & Dinant, G. J. (2015). Ultrasound imaging for tailored treatment of patients with acute shoulder pain. *The Annals of Family Medicine*, 13(1), 53-55.
7. Zheng, F., Wang, H., Gong, H., Fan, H., Zhang, K., & Du, L. (2019). Role of ultrasound in the detection of rotator-cuff syndrome: an observational study. *Medical science monitor: international medical journal of experimental and clinical research*, 25, 5856
8. Nicolao, F. A., Junior, J. A. Y., Matsunaga, F. T., Netto, N. A., Belloti, J. C., & Tamaoki, M. J. S. (2022). Comparing shoulder maneuvers to magnetic resonance imaging and arthroscopic findings in patients with supraspinatus tears. *World Journal of Orthopedics*, 13(1), 102.
9. Gaujoux-Viala, C., Dougados, M., & Gossec, L. (2009). Efficacy and safety of steroid injections for shoulder and elbow tendonitis: a meta-analysis of randomised controlled trials. *Annals of the rheumatic diseases*, 68(12), 1843-1849.
10. Ottenheijm, R. P., van't Klooster, I. G., Starmans, L. M., Vanderdood, K., de Bie, R. A., Dinant, G. J., & Cals, J. W. (2014). Ultrasound-diagnosed disorders in shoulder patients in daily general practice: a retrospective observational study. *BMC family practice*, 15(1), 1-6.
11. Gumina, S., Carbone, S., Albino, P., Gurzi, M., & Postacchini, F. (2013). Arm Squeeze Test: a new clinical test to distinguish neck from shoulder pain. *European Spine Journal*, 22, 1558-1563.

Copyright: ©2023 Reuven Lexier , et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.