



ORIGINAL ARTICLE

## The use of corticosteroid injection in the treatment of chronic shoulder pain.

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**ABSTRACT... Objective:** To determine the short term outcome of intra-articular corticosteroid injection the treatment of chronic shoulder pain. **Study Design:** Descriptive Study. **Setting:** Mardan Medical Complex, MTI. **Period:** 12<sup>th</sup> August 2023 to 15<sup>th</sup> December 2023. **Methods:** All patients of chronic shoulder pain fulfilling inclusion criteria were administered intra-articular corticosteroid injection. Pre intervention demographic and visual analogue scale (VAS) score and DASH (Disabilities of the Arm, Shoulder and Hand) scores were noted. All patients underwent through intraarticular corticosteroid injection procedure. VAS score and DASH score was calculated again on four week follow up visit. Both scores were compared by paired t test using SPSS version 23. The pre and post injection VAS and DASH scores were compared and p value calculated using paired t test. P value <0.05 was considered significant. **Results:** Total of 50 patients were included in the study. The mean age of patients was 50.08+6.43yrs and mean duration of symptoms was 5.7+1.6 months. 64% (n=32) of the patients were male, while 36% (n=18) were female about a total of 64% (n=32) of the patients were diabetic. Majority (56%, n=28) of patients exhibited left-side involvement, while 44% (22) presented with right-side involvement. The mean pre intervention VAS score was 79.86 + 6.32 and DASH score was 59.98+8.44. The mean post intervention VAS score was 15.7+4.1 and DASH score was 49.78+6.33. After applying paired t-test on pre and post intervention scores, both VAS and DASH score was statistically significant with p value of <0.001. **Conclusion:** Intra-articular corticosteroid injection significantly relieved shoulder pain and improved functional outcome in short term follow up in patients with chronic shoulder pain.

**Key words:** Chronic, Corticosteroid, DASH score, Shoulder Pain, VAS score.

### INTRODUCTION

Though it ranks third in orthopedic practice, shoulder pain is a prominent cause of musculoskeletal discomfort.<sup>1</sup> Shoulder discomfort is a common, functionally crippling condition affecting people of all ages and activity levels, with the main cause being Subacromial Impingement Syndrome (SIS).<sup>2</sup> Adhesive capsulitis, shoulder instability, arthritis, and rotator cuff disorders—which can include tendinopathy, partial tears, and total tears—are some of the illnesses that can cause persistent shoulder discomfort.<sup>3</sup>

Regardless of the underlying source of the pain, corticosteroid (CS) injections are frequently used to treat shoulder discomfort since they have been shown to be effective in improving functional results and encouraging adherence to physical therapy.<sup>4</sup> Approximately 20–24% of patients with

shoulder discomfort undergo CSIs, suggesting that general practitioners (GPs) are increasingly using them. A doubling of GP-administered CSIs from 9.8% in 2000 to 19.7% in 2016 was found in an Australian research on the therapy of shoulder discomfort associated to the rotator cuff.<sup>5,6</sup>

Shoulder injections administered utilizing ultrasound (US) or visual guidance, such as anatomical landmarks.<sup>7</sup> Six weeks after the injection, patients receiving image-guided (ultrasound) injections reported much better shoulder function and pain relief, as well as fewer side effects. Injections of corticosteroids guided by ultrasound are thought to be more advantageous than injections made blindly.<sup>8,9</sup>

For shoulder diseases, the best injection technique has been debated; the groundbreaking

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posterolateral approach is generally accepted as the best. A preference for US-guided injections has emerged, meanwhile, as there is growing conviction that accurate medication administration and needle placement improve clinical recovery. Improvements in shoulder results are shown regardless of where the needle is positioned within the proper structure, according to earlier study.<sup>10,11</sup> Interestingly, within two weeks after treatment, corticosteroid injections have been shown to improve patients' quality of life.<sup>12</sup>

### Objective

To determine the short term outcome of intra-articular corticosteroid injection in chronic shoulder pain by assessing pain relief and functional outcome

### METHODS

After approval from ethical review board (429/BKMC(3/8/23)), a Descriptive study was conducted on 50 patients who presented with chronic shoulder pain to orthopedic department of Mardan Medical Complex, MTI, Mardan from 12<sup>th</sup> august to 15 December. Total of 50 patients were included in the study and 7 patients were excluded due to lost follow up. Patient aged 18 to 60 yrs both gender, presented with chronic shoulder joint pain due for duration of atleast 3 months were included in the study. Patient with acute history of shoulder joint pain less than 3 months of duration, patients with previous history of steroid injection, patients who lost follow ups were excluded from the study. Secondary causes, e.g., acute trauma, fractures, bony deformity, glenohumeral joint pathology, acromioclavicular joint pathology, and rotator cuff disorder and patients with known contraindications for block interventions, e.g., bleeding disorder, acute and chronic local infection of joint were also excluded from the study.

In the included subjects complete history, clinical examination and radiographs (X-ray shoulder AP and lateral view) was taken. All patients were briefed about the procedure and informed consent was taken from patients. Preintervention data included age, duration of symptoms, diabetes status, site involved, Visual analogue scale (VAS)

score and Disabilities of the Arm, Shoulder and Hand (DASH) questionnaire (DASH) score.

The DASH score ranges from 0 to 100, with a higher score indicating the worst function and symptoms.<sup>13</sup> The VAS is a 100-mm ratings with of 0 to 4 mm can be considered no pain; 5 to 44 mm, mild pain; 45 to 74 mm, moderate pain; and 75 to 100 mm, severe pain.<sup>13</sup>

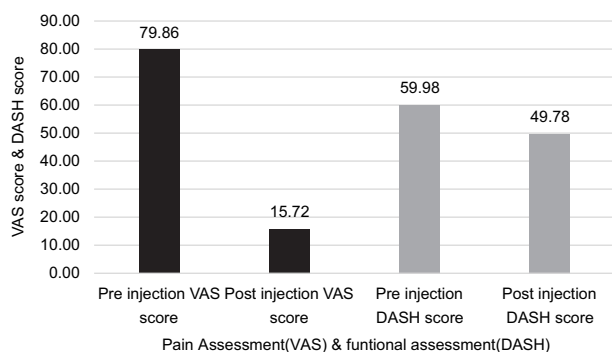
Every patient in the study had an intra-articular corticosteroid injection, in which administration of a combination consisting of one milliliter (of 2% lignocaine) and two milliliters (of 80 mg) of methylprednisolone using a single syringe was done. The goal of including lignocaine was to reduce local pain during the intra-articular injection. As part of their post-injection care, patients were instructed to conduct range-of-motion exercises after the treatment was completed and were then released. All participants were advised to follow up for four weeks, during which time the DASH and Shoulder Pain scores were noted to evaluate pertinent variables. All the data was analysed with SPSS version 27. Quantative variables were represented as mean and standard deviation while qualitative as frequencies and percentages. The pre and post injection VAS and DASH scores were compared and p value calculated using paired t test. P value <0.05 was considered significant. Data presented in graph where necessary.

### RESULTS

Total of 50 patients were included in the study. The mean age of patients was 50.08+6.43yrs and mean duration of symptoms was 5.7+1.6 months. 64% (n=32) of the patients are male, while 36% (n=18) were female 64%(n=32) of the patients were diabetic. 56%(28) of patients exhibited left-side involvement, while 44%(22) presented with right-side involvement.

The mean pre intervention VAS score was 79.86 + 6.32 and DASH score was 59.98+8.44. The mean post intervention VAS score was 15.7+4.1 and DASH score was 49.78+6.3. As shown in Figure-1. After applying paired t-test on pre and post intervention scores, both VAS and DASH

score was statistically significant with p value of  $<0.001$ .



**Figure-1. The pre injection and post injection VAS & DASH Score of our study participants**

## DISCUSSION

Achieving painless range of motion (ROM) in the afflicted joint is the main goal of treating frozen shoulder. To accomplish this, a range of therapies are used, including as conservative therapy, arthroscopic loosening, injections into the joint, hydration, injections guided by ultrasound, injections of platelet-rich plasma (PRP), and manipulation. Many research comparing the efficacy of different treatments have been sparked by the controversy about which one is better.<sup>6-14</sup>

In our study the mean age of patients was  $50.08 \pm 6.43$  yrs. Crashaw PD<sup>14</sup> reported mean age was 56 (range 40-78), Hajivandi S et al.<sup>15</sup>, reported mean age of  $52.37 \pm 6.61$ , and Siraj M et al.<sup>16</sup> reported  $49 \pm 9.3$  years of mean age in patients with chronic shoulder pain.

Majority of patients in our study were female  $n=32(64\%)$  compared to male  $n=18(36\%)$ . Crashaw PD, Hajivandi S et al. and van Door et al., reported the same dominance of women gender in their studies.<sup>14,15,17</sup> While Siraj M et al. reported male predominance.<sup>16</sup>

The mean duration of pain in our study population was  $5.7 \pm 1.6$  months. Same findings are reported by Crashaw PD which reported average duration onset of symptoms  $4.5 \pm 1.6$  months with a range of 3–12 months.<sup>14</sup>

In our study the left sided shoulder was most effected side which is opposite to the findings of

Crashaw PD, who reported the 53% right shoulder was affected while in 33 (47%) the left-sided shoulder was affected. While Siraj M reported left sided shoulder involvement in 58% in his study population.<sup>16</sup>

In our study there was statistically significant difference between pre intervention and post intervention VAS score in participant. Intra articular steroid injection was effective in reducing pain after four week on follow up visit i.e from mean pain score of  $79.86 \pm 6.32$  to  $15.7 \pm 4.1$  on follow up visits. These findings are supported by multiple studies with significant decrease in pain after intra articular steroid injection.<sup>14-20</sup>

In our study the DASH score was statistically significant (p value  $<0.001$ ) after apply paired t test on pre intervention and post intervention DASH score of patients. The mean DASH score was  $59.98 \pm 8.44$  pre steroid injection and it was  $49.78 \pm 6.33$  on follow up. Same findings are reported by Hajivandi S et al., with mean pre intervention score of  $57.29 \pm 3.60$  and post intervention score of  $47.83 \pm 3.52$  (p value  $<0.001$ ). This shows steroid injection also lead to significant improvement the disability in chronic shoulder pain.<sup>15</sup>

Our study has some limitation that is worth noting. Firstly, it was a descriptive study and randomized control trial would have been a better option to draw conclusion between other type of intervention too. Secondly, the sample size was small and it was non probability convenient sampling. Thirdly, we didn't take accounts of other co morbidities. Fourthly, the follow time was short.

Despite these limitation, our study highlights short term effectiveness of steroid injection in the treatment of chronic shoulder pain.

## CONCLUSION

Intra-articular corticosteroid injection significantly relieved shoulder pain and improved functional outcome in short term follow up in patients with chronic shoulder pain.

## CONFLICT OF INTEREST

The authors declare no conflict of interest.

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This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.






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### AUTHORSHIP AND CONTRIBUTION DECLARATION

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3	Aiman Zia	Data Collection, Proof Reading, Critical Analysis, Final Drafting.	
4	Zahir Khan	Data Collection, Proof Reading, Critical Analysis.	
5	Maria Ahmad	Data Collection, Proof Reading, Critical Analysis.	
6	Shafqat Ullah Khan	Data Collection, Proof Reading, Critical Analysis.	