FROZEN SHOULDER: OUTCOME OF INTRA-ARTICULAR STEROID INJECTION IN IDIOPATHIC ADHESIVE CAPSULITIS IN TERMS OF PAIN RELIEF AND RANGE OF MOTION

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ABSTRACT

Objective: To find out the outcomes of intra articular steroid injection in idiopathic adhesive capsulitis, in terms of pain control and functional activity.

Methodology: This Quasi experimental study was conducted in the Department of Orthopedic and Spine, Hayatabad Medical Complex, from February 2019 to February 2020. All patients aged above 18 years of age, both genders, having a diagnosis of idiopathic adhesive capsulitis were included in this study. A total of 200 patients were included in the study. Sample size was calculated by Open-Epi. Their pre injection Shoulder Pain and Disability Index (SPADI) and Visual Analogue Score (VAS) were recorded. All patients received intra-articular corticosteroid injection. SPADI and VAS were recorded after 4 and 12 weeks. The baseline scores and those recorded at follow up after injection were compared. Data was analyzed using SPSS version 23.

Results: Out of 200, 86 (43%) were female and 114 (57%) were male. The average age of our patients was 50.85 (±7.36). Their average pre injection SPADI was 79 (±6.4) while the average VAS was 6.5 (±0.9). Mean evaluation scores at 4th week of intra-articular corticosteroid injections were improved to SPADI 27.32 (±3.14) and VAS was 2.55 (±1.1) with a statistically significant p-value of 0.0001. At 12th week SPADI disability score was still consistent at 27 (±3) but their VAS score worsened to 6.1 (±0.86).

Conclusion: Patients suffering from idiopathic adhesive capsulitis can benefit from intra-articular corticosteroid injection alone. The range of motion and functional ability in their diseased shoulder can get better till 12 weeks. Their pain, on other hand, will get better initially but later on it’ll re-appear and would warrant re-evaluation and change in management plan.

Keywords: Adhesive capsulitis; Intraarticular injections; Visual analog scale; Disability Index.
There are a number of treatment options being offered to patients these days. These include non-steroidal anti-inflammatory drugs (NSAIDs) or other analgesics, physical therapy, manipulation under anesthesia (MUA), dilatation or distension of the capsule, arthroscopic or open capsular release, and injections of sodium hyaluronate or corticosteroids. Although there is no definitive treatment, management strategy depends upon the severity of the symptoms and whether or not the patient is suffering from idiopathic adhesive capsulitis or secondary adhesive capsulitis. In secondary adhesive capsulitis it is recommended to address the primary pathology first to achieve satisfactory results.

One study by Buchbinder et al reports from their systematic review of randomized and pseudo-randomized control trials of injection of corticosteroid for shoulder pain that corticosteroid injection might be helpful. Griesser et al did a systematic review of randomized-controlled trials (RCTs), they came to the conclusion that intra-articular corticosteroid injections leads to greater improvement in pain relief and ROM not only in short term but also in long term, but compared to other treatments the results were similar in the long term. Another systematic review reports that intra-articular steroids may prove beneficial in the terms of reducing pain and disability in the early 6 weeks but beyond 6 weeks, they reported, no significant benefit as compared to physical therapy alone. While a meta-analysis by Wei Wang et al reports that although ROM improves both in short term and long term follow-up butVAS pain score improves initially but in long term follow-up they reported no significant difference comparing with control.

The existing practice of administering the steroid injection(s) is a valid and tested option in management of Idiopathic steroid injection. The current study tests the effects of a single dose of intra-articular steroid injection, in terms of pain control and functional outcome at short-term and long-term follow-up. We wanted to bridge the gap between the existing practice and the actual effects of the injection.

**METHODOLOGY**

After approval from ethical review board, this quasi experimental study conducted in the Department of Orthopedic and Spine, Hayatabad Medical Complex, Peshawar from February 2019 to February 2020 with sample size of 200, calculated through Open-epi. These patients were selected by non-probability consecutive sampling technique. All patients above 18 years of age, having a clinical diagnosis of idiopathic adhesive capsulitis were included in this study. Patients having symptoms in one joint for at least 3 months, but less than 2 years were included in this study. Patients included in this study had limited passive range of motion (PROM) with a limitation of more than 30% of two (out of three) shoulder movements and none of the three movements (Abduction= ABD, External rotation = ER and Internal rotation = IR) were normal. Patients who were diagnosed to have a secondary adhesive capsulitis or had history of intraarticular injection on the same joint previously were excluded from the study.

For data collection, Shoulder pain and disability index (SPADI) and Visual Analogue Scale (VAS) score was recorded. All patients received intra-articular corticosteroid injection. This injection was made by the researcher himself by mixing 2ml (80mg) of methylprednisolone and 1ml lignocaine 2% (for local pain relief due to intra-articular injection). This injection was administered in a single syringe under aseptic protocol. Patients were sent home after completion of the procedure and advised range of movement exercises. Patients were asked for follow up at 4 weeks (short-term) and at 8-12 weeks (long term follow-up). At both of the follow-ups their SPADI and VAS scores were re-evaluated.

All the data was analyzed with SPSS v.23. Mean and standard deviation was computed for continuous variables like Age and Gender. Frequency and percentage was computed for categorical variables like VAS scoring for pain and SPADI scoring for range of motion and functionality. Within group analysis was done through parametric paired sample
DISCUSSION

Adhesive capsulitis is a very common problem presenting to an orthopedic surgeon’s clinic. These patients usually are in mild to moderate pain with stiffness which hampers their ability to perform their daily life activities. Usually adhesive capsulitis is known to be a self-limiting disease with full recovery of ROM and pain. However, there are many patients who live with this disease for years. In one study they reported that 50% of their patients had symptoms of pain and stiffness in their shoulder for an average of 7 years. This long-term pain and stiffness limits a patient’s daily life and work activities making them dependent on others in severe cases.

This disease has been reported to be more common in women our results indicate more prevalence among males, which is comparable to a study previously done in the same unit. Previous studies indicate that the left shoulder joint is more commonly involved than right but our patients presented more commonly with the pathology in their right shoulder.

The severity of this disease can be judged by our initial SPADI disability index and VAS scores 79 (±6.4) and 6.5 (±0.9), respectively. These baseline scores are comparable to scores reported by Buchbinder et al. baseline SPADI score 64.7 (14.1) and VAS score 7.4 (1.4). Similarly, Siraj M et al. reported their baseline SPADI disability index scores to be 79.5 (±7.6), showing the severity of the disease at presentation. This indicates that these patients are in much pain at initial presentation and their problems can only to get worse if they are not properly diagnosed and managed. This disease can usually be treated with conservative management and a person can reach up to full range of motion with rehabilitation, thus surgery is seldom needed. The option of treating a patient of adhesive capsulitis with intra-articular corticosteroid injection has already proven benefits in short term follow-up but we wanted to see the effects of it in long term follow up.

After initial intervention we have seen marked improvement in our patients pertaining to their range of motion and pain at short term follow up (4 weeks), their scores remain the same even at their second long term follow-up (12 weeks) TABLE. Although their VAS scores improved initially significantly, the intra-articular steroid injection could not sustain the pain relief at the last long-term follow-up TABLE. These results are comparable with studies published before. Clinical significance: We would like to show our readers, using these results, that even a single steroid injection can benefit patient. They’ll have good functional activity even at long-term follow-up but their pain control would’ve have re-appeared by then and they’ll need to be prescribed accordingly for the pain management.

The limitations in our study were that there was no control group and the patients were not randomized. Secondly, the intra-articular steroid injection was inserted without ultrasound guidance and that increases the chance of human error. We hope that future studies can conduct a double-blinded RCT to limit bias as much as possible and include a radiologist’s help to administer an ultrasound...
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CONCLUSION

Our research concludes that the patients suffering from idiopathic adhesive capsulitis can benefit from intra-articular corticosteroid injection alone. Their range of motion can get better and allows the patient to regain functional ability in their diseased shoulder till 12 weeks. Their pain, on other hand, will get better initially but later on it'll re-appear and would warrant re-evaluation and change in management plan.

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Author’s Contribution

WK designed the study, did the data acquisition, drafted the manuscript and critically reviewed the manuscript. MI, SU, IK and ZK helped in data acquisition, drafting and critically reviewed the manuscript. MAK supervised the study and critically reviewed the manuscript. Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Conflict of Interest

Authors declared no conflict of interest

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None

Data Sharing Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.