

Research Article

Evaluation of Efficacy of Intra-Articular Corticosteroid in Treatment of Early Stages of Adhesive Capsulitis of Shoulder Joint

Singh AK^{1*}, Narsaria N² and Gupta RK³¹Department of Orthopedics, Government Medical College, Banda, India²Department of Orthopaedics, Mayo Institute of Medical Sciences, Barabanki, India***Corresponding author:** Ashutosh Kumar Singh, Department of Orthopedics, Government Medical College, Banda, India**Received:** April 26, 2017; **Accepted:** June 14, 2017;**Published:** June 21, 2017**Abstract****Background:** This study was conducted to evaluate clinical outcomes of intra-articular injection of corticosteroid in patients with idiopathic adhesive capsulitis.**Material and Methods:** In our study, 100 patients with idiopathic adhesive capsulitis were injected 5 ml of 1% lidocaine and 80 mg methylprednisolone acetate through posterior approach in glenohumeral joint. Range of motion (ROM) and pain (visual analogue scale) was assessed at pre-injection, post-injection, and at follow-up visits (2 and 12 week). Functional outcome was assessed using Constant score.**Results:** Average time from onset of symptom to treatment was 6.2 months (range, 2–11 months). VAS pain score got improved at 2 week follow up visit and 12 week follow-up visit. Constant score also improved at 2 week and 12 week follows up visit. Forward flexion and external rotation increased at 2 week and 12 week follow-up. 23 patients did not meet the criteria for recovery, and of those, 8 patients underwent arthroscopic capsular release due to non resolution of symptoms after average time of 20 weeks after injection.**Conclusion:** Patients treated with intra-articular corticosteroid for idiopathic adhesive capsulitis showed significant improvement in clinical outcomes and range of motion.**Keywords:** Capsulitis; Corticosteroid**Introduction**

The treatment for idiopathic adhesive capsulitis of the shoulder is controversial. Treatment options include supervised physical rehabilitation, nonsteroidal anti-inflammatory medications oral corticosteroid intra-articular corticosteroid injection closed manipulation and surgical release (open or arthroscopic capsular release) [1-5]. Corticosteroid injection is one of the most commonly used treatments for adhesive capsulitis. It reduce synovial inflammation to decrease capsular fibrosis and allow improvement of motion with pain alleviation but it is also associated with complications like fat atrophy, skin pigment changes, septic arthritis, post-injection symptom flare/synovitis, facial flushing, anaphylaxis and steroid arthropathy [6,7].

The goal of this study was to evaluate outcomes and complications of intra-articular injection corticosteroid in patients with idiopathic adhesive capsulitis.

Material and Methods

100 patients with idiopathic adhesive capsulitis (stage 1 and stage 2) were included in our study from june 2014 to may 2016. Inclusion criteria were insidious onset of shoulder pain with limitation of both active and passive range of motion (forward flexion <100°, external rotation at the side of 0°–20°, and internal rotation below the thoracic

vertebral level) [8] excluding other causes of pain with loss of motion at shoulder (Rotator cuff tendinopathy, Glenohumeral osteoarthritis, trauma). All these cases were diagnosed as a case of adhesive capsulitis shoulder based on history, clinical examination and radiographic evaluation (anteroposterior and axillary views). Institutional review board approval was granted and informed consent was obtained for all patients.

The glenohumeral joint was injected via a posterior approach. The solution injected contained 5 ml of 1% lidocaine and 80 mg methylprednisolone acetate (Depo-Medrol 2 ml; Pfizer). All patients received only one injection. All the cases were allowed to do simple pendulum exercises and reexamined after 15 minutes of injection to evaluate pain, range of motion at shoulder and stage of adhesive capsulitis. Oral anti-inflammatory medications and stretching exercises at home were continued.

ROM and pain (visual analogue scale) was assessed at preinjection, postinjection, and at follow-up visits. Functional outcome was assessed using Constant score [9] which consists of pain (15 points), activities of daily living (20 points), active and painless range of motion (40 points), and strength (25 points). All the patients who had regained motion to within 15° of the contralateral side in both forward flexion and external rotation as well as internal rotation on contralateral side were considered recovered.

Results

The average age was 52.8 years (range; 24 to 84). 72 patients were female and 28 were male. The right shoulder was involved in 60 patients (60%), and the dominant side was involved in 65 patients (65%). Average follow-up period was 12 weeks (range; 8- 24 weeks). Average time from onset of symptom to treatment was 6.2 months (range, 2–11 months). Nine patients were lost to follow up in this study. Assessment of 93 patients was done in this study.

At preinjection time, VAS pain score was 7.6 (± 2.6) which got improved to 4.2 (± 1.6) at 2 week follow up visit and to 3.2 (± 1.8) at 12 week follow-up visit. Constant score improved from 29.5 (± 14.8) at preinjection time to 44.8 (± 12.9) at 2 week follow up visit and 56.8 (± 16.2) at 12 week follow up visit. Forward flexion increased from 92.4 (± 8.2) to 110.2 (± 15.8) at 2 week follow up visit and 124.8 (± 14.8) at 12 week follow-up. External rotation increased from 11.6 (± 5.2) to 18.4 (± 10.4) at 2 week follow up visit and 22.4 (± 14.6) at 12 week follow-up. Internal rotation also increased from L3-L4 (15.1 ± 4.1) at baseline to T12-L1 (12.9 ± 3.6) at 2 week follow up visit ($P=0.006$) and was maintained at T12-L1 (12.4 ± 4.2) at 12 week follow-up visit 23 patients did not meet the criteria for recovery, and of those, 8 patients underwent arthroscopic capsular release due to non resolution of symptoms after average time of 20 weeks after injection.

Six patients reported brief postinjection flare and two cases had local pruritus that resolved within short span of time.

Discussion and Conclusion

The primary goal of this study was to evaluate the efficacy of intra-articular corticosteroid injection in patients with idiopathic adhesive capsulitis. Various treatment options are reported in literature for patients with adhesive capsulitis with variable result [10-13]. The pathology involved in adhesive capsulitis is synovial hyperplasia and capsular fibroplasia with fibrosis and dense capsular scar formation [14,15]. Rodeo et al. reported role of cytokines and other inflammatory mediators in patients with adhesive capsulitis and Intra-articular corticosteroid decreases synovitis limits development of fibrosis [16,17].

Hazleman [18] reported success of treatment with intra-articular corticosteroid to be dependent on the duration of symptoms. Van der Windt et al. compared intra-articular corticosteroid to 6 weeks of physical therapy for patients with painful stiff shoulders and reported significant improvements in pain, disability, and motion in the injection group [19]. Gam et al. [20] treated patients with adhesive capsulitis with either steroid injection or steroid injection and distension with 19 cm³ of Lidocaine. They found that the distension with steroid group (12 patients) used fewer analgesics and had improved motion compared to the steroid-only group (eight patients). Bulgen et al. [21] in their study treated patients to with steroid, physical therapy, ice, or supervised neglect. They reported that initial response in steroid group was most significant but no significant difference in final long-term outcome was reported when treatment groups were compared.

Many disadvantages of corticosteroid injection have been reported including periarticular calcification, cutaneous atrophy, cutaneous depigmentation, tendon rupture, avascular necrosis, and

joint infection [7,22] but in our study no significant adverse effect was reported. Weakness of this study was that there was no control group.

In conclusion, corticosteroid injection in the early stages of adhesive capsulitis leads to significant improvement in range of motion and pain.

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