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Comparison Between Multiple Site Injection and Single Site Injection in Adhesive Capsulitis, Meta-analysis

Hye Chan Ahn, M.D.[1], Jang Hyuk Cho, M.D.[1], Soyoung Lee, M.D.[1], Yongmin Choi, M.D.[1], Kyoung Tae Kim, M.D.[1]

[1]*Department of Rehabilitation Medicine, Keimyung University Dongsan Hospital, Keimyung University School of Medicine, Daegu, Republic of Korea*

Introduction

- Adhesive capsulitis is a common shoulder pathology accompanied by pain followed by a gradual decrease in the range of motion and loss of function.
- Steroid injection has been considered gold standard treatment.
- Intra-articular (IA) injection is known to be more superior to subacromial (SA) injection and multiple site injection may have a better effect than single site injection.
- Optimal site and combination of steroid injection in the treatment of adhesive capsulitis has not been well established.

Purpose

- The purpose of this meta-analysis was to compare the efficacy between multiple site steroid injections and single site steroid injection in adhesive capsulitis.

Methods

- The *PubMed, EMBASE, Cochrane Library* were searched for randomized controlled trials (RCTs) comparing multiple site steroid injection with single site steroid injection for adhesive capsulitis.
- Outcome measures
  - Pain
    : Visual analog scale (VAS)
  - ROM
    : passive forward flexion, abduction, external rotation, internal rotation
  - functional scores.
    : ASES, SPADI, constant score
- Time intervals
  - 4 to 6 weeks (T1), 12 to 14 weeks (T2), 24 to 26 weeks (T3) postintervention

Results

- Four out of 9277 articles were included.
- Meta analysis showed that multiple site injection demonstrated significantly lower **pain** score compared with single site injection at T1, but was not statistically different at T2 and T3 (Figure 1).
- Multiple site injection revealed significantly higher improvement of **forward flexion, abduction, external rotation, internal rotation** and **functional scores** at each follow up;

Pain relief

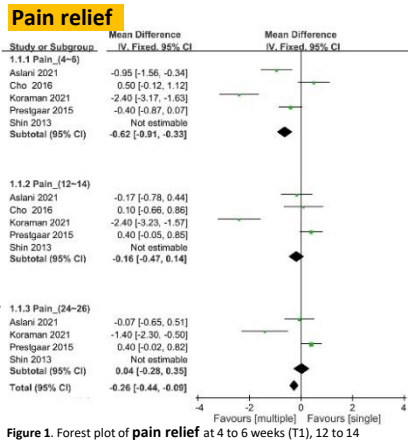


Figure 1. Forest plot of **pain relief** at 4 to 6 weeks (T1), 12 to 14 weeks (T2), and 24 to 26 weeks (T3) postintervention.

Functional improvement

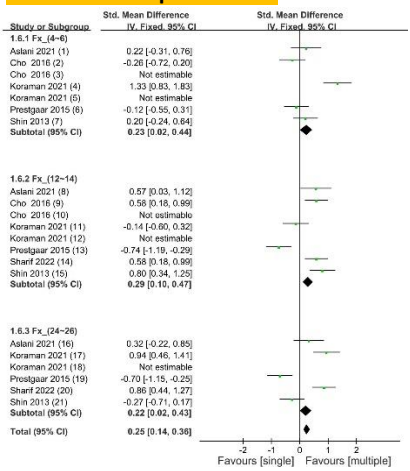
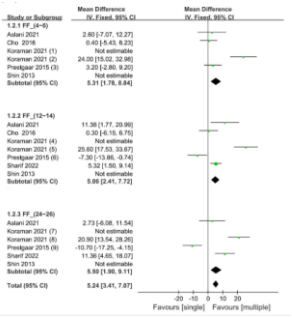
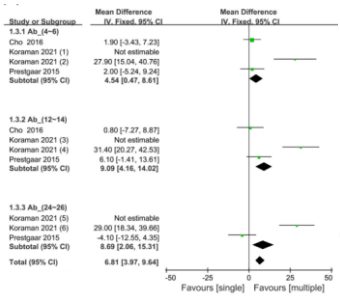


Figure 3. Forest plot of **functional improvement** at 4 to 6 weeks (T1), 12 to 14 weeks (T2), and 24 to 26 weeks (T3) postintervention.

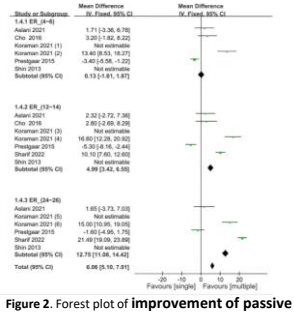
(A) Forward flexion



(B) Abduction



(C) External rotation



(D) Internal rotation

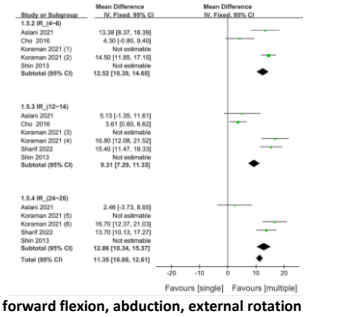


Figure 2. Forest plot of **improvement of passive forward flexion, abduction, external rotation and internal rotation** at 4 to 6 weeks (T1), 12 to 14 weeks (T2), and 24 to 26 weeks (T3) postintervention.

Conclusion

- **Multiple site steroid injection** is superior to a **single site steroid injection** in the improvement **of range of motion and functional performance**.
- The effects are significant at **4 to 6 and 12 to 14 weeks** and may last as long as **24 to 26 weeks.**

Patients who received multiple site injections had **pain resolved rapidly**, but the **long-term effect was not different.**