

Specific Biomarker Level and Function Outcome Changes in Treatment of Patients with Frozen Shoulder Using Dextrose Prolotherapy Injection

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Abstract : The most case in the shoulder in the the adult is the frozen shoulder. It make an uncomfortable sensation which disturbance daily activity. The studies of frozen shoulder are still limited. This study used a true experimental pre and post test design with a group design. The participant underwent dextrose prolotherapy injection in the rotator cuff, intraarticular glenohumeral joint, long head tendon biceps, and acromioclavicular joint injections with 15% dextrose, respectively, at week 2, week 4, and week 6. Participants were followed for 12 weeks. The specific biomarker MMP and TIMP, ROM, DASH score were measured at baseline, at week 6, and week 12. The data were analyzed by multivariate analysis (repeated measurement ANOVA, Paired T-Test, and Wilcoxon) to determine the effect of the intervention. The result showed a significant decrease in The Disability of the Arm, Shoulder, and Hand (DASH) score in prolo injection patients in each measurement week ($p < 0.05$). While the measurement of Range of Motion (ROM), each direction of shoulder motion showed a significant difference in average each week, from week 0 to week 6 ($p < 0.05$). Dextrose prolotherapy injection results give a significant improvement in functional outcome of the shoulder joint, and ROM and did not show significant results in assessing the specific biomarker, MMP-1, and TIMP-1 in tissue repair. This study suggestion an alternative to the use of injection prolotherapy in Frozen shoulder patients, which has fewer side effects and better effectiveness than the use of corticosteroid injections.

Keywords : frozen shoulder, ROM, DASH score, prolotherapy, MMP-1, TIMP-1

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