

A Prospective, Single-Blind, Randomized, Multi-Center Study Comparing Platelet-Rich Plasma and Corticosteroid for Patients with Glenohumeral Osteoarthritis in the Military and Civilian Population

Harrison Diaz, Jennifer Lauren Smith, Andrew Peter Hurvitz, Monica Noce, Jasmine R Mosavi

INTRODUCTION: Corticosteroid injections (CSI) are commonly used for short-term pain relief in patients with glenohumeral osteoarthritis (GHOA), but they do not modify disease progression and may contribute to tendon degeneration or increase complications associated with future surgery. Platelet-rich plasma (PRP) has emerged as a potential alternative without the deleterious effects of corticosteroid though its efficacy in GHOA remains unclear. This study compares the effectiveness of leukocyte-poor PRP (LP-PRP) and CSI in pain reduction and functional improvement in young, active patients with GHOA.

METHODS: This prospective, randomized, single-blind, multi-center study enrolled 50 patients diagnosed with mild to moderate GHOA. Patients were divided into three treatment groups: (1) LP-PRP only (n=17), (2) CSI only (n=17), and (3) CSI with the option to transition to LP-PRP if no improvement in pain at 6 weeks post injection (n=16, with 6 crossing over). Pain was assessed using the Visual Analog Scale (VAS) at baseline, 3, 6, 12, 26, and 52 weeks. Generalized additive models (GAMs), as well as the plotting of observed pain trends, were used to evaluate pain trajectories over time.

RESULTS: Pain improved most significantly within the first three months in both CSI and PRP groups. CSI-treated patients reached their lowest pain levels at three months, followed by a gradual return toward baseline by 12 months. However, PRP-treated patients experienced a more sustained reduction, reaching their lowest pain levels at six months before returning to near pre-treatment levels by 12 months. Patients who transitioned from CSI to PRP showed the greatest overall pain reduction. While these observed trends suggested potential effects that should be studied further, no statistically significant differences were detected between treatment groups.

DISCUSSION AND CONCLUSION: LP-PRP and CSI provided short-term pain relief in GHOA, though PRP exhibited a possible longer-lasting effect. Sequential treatment with CSI followed by PRP showed the most pronounced improvement, suggesting that cumulative or a series of injections may contribute to improved outcomes. Larger studies are needed to further evaluate the long-term efficacy of these treatments in active populations.