## Comparison of MRI Findings Between Baseball Players with Elbow UCL Tear Treated with PRP or Untreated

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## INTRODUCTION:

Platelet-rich plasma (PRP) therapy is effective for treating ulnar collateral ligament (UCL) tears of the elbow in overheadthrowing athletes. Magnetic resonance imaging (MRI) is the gold-standard diagnostic tool for UCL tears. However, to the best of our knowledge, no study has evaluated changes in the UCL after PRP therapy using MRI. The aim of this study was to evaluate the effectiveness of PRP therapy in elbow UCL tears among baseball players and investigate the impact of PRP therapy on MRI findings.

## METHODS:

This retrospective case-control study included 94 baseball players diagnosed with UCL injuries between December 2013 and March 2023. The treatment group included 61 patients treated with PRP therapy, while the control group consisted of 33 untreated patients with confirmed UCL tears. The mean ( $\pm$  standard deviation) age of the entire cohort was 21.6 ( $\pm$ 3.6) years. In the treatment group, the mean age was 20.5 ( $\pm$ 3.9) years, and in the control group, the mean age was 23.6 ( $\pm$ 3.9) years. The mean follow-up duration, defined as the period from the initial MRI to the follow-up MRI, was 9.2 ( $\pm$ 4.5) months overall, with the treatment group having a mean follow-up duration of 7.8 ( $\pm$ 3.9) months and the control group having a mean follow-up duration of 11.8 ( $\pm$ 4.4) months (Table1). Pre- and post-treatment magnetic resonance images were retrospectively analyzed by musculoskeletal radiologists, and classified into Grades 0 ("Intact"), I ("swelling"), II ("partial tear"), or III ("complete tear") (Fig1). Further, changes in MRI grades after treatment were categorized into three groups: "improvement," "no change," and "deterioration" and were compared between the treatment and control groups. For both groups, comparisons were made before and after PRP therapy, as well as between groups. Multivariable proportional odds ordinal logistic regression was performed to evaluate the efficacy of PRP therapy after adjusting for baseline patient characteristics.

## RESULTS:

In the treatment group, pretreatment MRI Grades 0, I, II, and III were observed in 0, 28 (45.9%), 24 (39.3%), and 9 (14.8%) patients, respectively. Post-treatment changes in MRI grades showed "improvement," "no change," and "deterioration" in 31 (50.8%), 26 (42.6%), and 4 (6.6%) patients, respectively. In the control group, pretreatment MRI Grades 0, I, II, and III were observed in 0, 31 (93.9%), 2 (6.1%), and 0 patients, respectively. After treatment, "improvement," "no change," and "deterioration" were observed in 2 (6.1%), 19 (57.6%), and 12 (36.4%) patients, respectively (Table2). The PRP-treated group demonstrated significant improvement (adjusted odds ratio [A1] = 29; 95% confidence interval, 5.7–[A2] 147; P <[A3] .0001) compared to the untreated group, after adjusting for treatment duration, treatment site (proximal, distal), and intensity level (Table3).

**DISCUSSION AND CONCLUSION:** 

Our results are consistent with previous research indicating the efficacy of PRP in soft tissue healing, but we are the first to provide MRI-based evidence on its effectiveness in UCL tears. PRP's mechanism of action involves growth factors that promote tissue repair, potentially offering a faster and more effective recovery pathway compared to traditional rest and rehabilitation. However, this study's retrospective nature and relatively small sample size necessitate cautious interpretation of the results. Further investigation with larger cohorts and randomized controlled trials is crucial to validate our findings. Additionally, exploring the long-term outcomes of PRP therapy and its application across different sports will be valuable. Clinicians should consider incorporating PRP therapy into treatment regimens for UCL injuries, using MRI to monitor patient progress and adjust treatment as needed.