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Is Allogeneic PRP superior to a corticosteroid injection for the treatment of rotator cuff disease?

Severin Ruoss
University of California San Diego

Severin Ruoss, PhD[1], Anshuman Singh, MD[1,2], John G. Lane, MD[1,3], Samuel R. Ward, PT, PhD[1,4,5]
[1]Department of Orthopaedic Surgery, UC San Diego, La Jolla CA, USA
[2]Southern California Kaiser Permanente, San Diego, CA, USA
[3]Musculoskeletal and Joint Research Foundation, San Diego, CA, USA
[4]Department of Bioengineering, UC San Diego, La Jolla CA, USA
[5]Department of Radiology, UC San Diego, La Jolla CA, USA

Corresponding author:
Samuel R. Ward, PT, PhD
Professor and Vice Chair of Research
Departments of Orthopaedic Surgery, Radiology, and Bioengineering
UC San Diego
9500 Gilman Drive (0863)
La Jolla, CA 92093-0863
Tel: +1 858 534 4918; Fax: +1 858 822 3807; E-mail: s1ward@health.ucsd.edu

The recent randomized study by Jo and colleagues compares allogeneic platelet-rich plasma (PRP) with a standard corticosteroid injection for the treatment of rotator cuff tears (1). We applaud the authors for their continued impactful work in this area; in this case a randomized controlled clinical trial (RCT). However, we found the conclusion statement “PRP slowly but steadily reduced pain and improved function in the shoulder until 6 months, whereas corticosteroid did not” (1), difficult to reconcile with the data presented in the study. The Constant score, along with safety, were defined as the primary outcome measures of the study in the publication and on clinicaltrials.gov (NCT02019537). The Constant score did not differ between groups at 6 months, while the corticosteroid injection was superior to PRP at 1 week and 1 month. In a small number of secondary outcome measures, PRP was significantly better at 6 months, but with such a robust set of measurements presented by the authors, the only statistical conclusions that should be made were that both groups improved over time, and that the corticosteroid group did

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significantly better than PRP at early time points. However, the final conclusion favored PRP based on group differences in the DASH score, a questionnaire-based overall function score, and external rotation range of motion (ROM), only at the 6 month timepoint. These findings were heavily contrasted by no differences at the 6 month time point in the Constant, SPADI, ASES, UCLA, and SST scores, pain at rest, at motion, and at night, mean pain, worst pain, and forward flexion, abduction, and internal rotation ROMs, and strength measurements. Perhaps most importantly, there were no group differences in work impairments and overall satisfaction (1)

The conclusion (1) was amplified by the commentary-noting (2) that the clinical results demonstrated favorable improvements in pain and function in the PRP group (2). The commentary goes on to state that the findings of similar or slightly improved clinical efficacy and likely reduced adverse effects make allogeneic PRP an attractive option (2). As mentioned above, there was no superior clinical efficacy of PRP vs. corticosteroid because, to our knowledge, there is no scientific justification to assign higher weight to the DASH score at 6 months compared with other validated measures, or DASH time points. Furthermore, the original study did not demonstrate that adverse outcomes in PRP are more rare compared with corticosteroid (1). In addition, the highest and safest dose of PRP remains to be established before the field moves towards phase II trials. This is scientifically challenging because the mechanism-of-action and active ingredients in PRP are still largely unknown and unreported. Lastly, the commentary stated that several studies demonstrated safety and variable efficacy, albeit with increased cost compared with corticosteroids (2), citing a study by Hurley and colleagues (3). Hurley et al. demonstrated; 1) no effect of PRP in the short term, 2) PRP and corticosteroid injections do not differ at 6 months, and 3) that exercise therapy appears to be equally beneficial compared with PRP (3).
In summary, we believe that the RCT (1) was technically well-executed and an extremely valuable addition to the field, but the conclusions of the paper and ensuing published commentary (2) are speculative in the face of the data.

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References

1. Jo CH, Lee SY, Yoon KS, Oh S, Shin S. Allogeneic Platelet-Rich Plasma Versus Corticosteroid Injection for the Treatment of Rotator Cuff Disease: A Randomized Controlled Trial. J Bone Joint Surg Am. 2020 Dec 16;102(24):2129-37. Epub 2020/10/13.
2. Werner BC. Allogeneic PRP for Rotator Cuff Disease: A Step Closer to an “Off-the-Shelf” Biologic Treatment?: Commentary on an article by Chris Hyunchul Jo, MD, et al.: “Allogeneic Platelet-Rich Plasma Versus Corticosteroid Injection for the Treatment of Rotator Cuff Disease. A Randomized Controlled Trial”. J Bone Joint Surg Am. 2020 Dec 16;102(24):e138. Epub 2020/12/22.
3. Hurley ET, Hannon CP, Pauzenberger L, Fat DL, Moran CJ, Mullett H. Nonoperative Treatment of Rotator Cuff Disease With Platelet-

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Rich Plasma: A Systematic Review of Randomized Controlled Trials. Arthroscopy. 2019 May;35(5):1584-91. Epub 2019/04/20.

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