**Moraes VY, Lenza M, et al. Platelet-rich therapies [PRT] for musculoskeletal soft tissue injuries (Review). Cochrane Database of Systematic Reviews 2013;Issue 12, Art# CD010071.**

**PMID: 24782334**

**PLUS:**

**Raeissadat SA, Rayegani SM, et al. Is Platelet-rich plasma superior to whole blood in the management of chronic tennis elbow: one year randomized clinical trial. BMC Sports Science, Medicine, and Rehabilitation 2014, 6:12**

**PMID: 24635909**

Design: Meta-analysis of randomized clinical trials

PICOS:

* Patients: people with musculoskeletal soft tissue injuries being treated either surgically or conservatively
  + Injuries were broadly grouped into acute traumatic injuries and tendinopathies (either acute or chronic)
  + Studies of osteoarthritis were excluded
* Interventions: Platelet-rich therapies (PRT), either as the only treatment or as an adjunct to other treatments
* Comparisons: placebo injection, dry needling, whole blood injection
  + Studies with active agent controls such as steroid injection were excluded
* Outcomes: functional evaluation by scales such as questionnaire-based measurements appropriate to the part of the body in which the injection is given (such as the DASH for upper extremity); pain by scales such as the VAS; local and systemic adverse effects
  + Secondary outcomes included recovery time (return to sports or return to daily activities); quality of life, recurrence of the condition, need for surgery, or patient satisfaction with treatment
* Study types: randomized trials and quasi-randomized trials (such as allocation by hospital record number or date of birth)

Study selection:

* Databases included MEDLINE, the Cochrane Register, EMBASE, and other electronic databases through March 2013
  + Reference lists of articles were searched; experts in the field were queried, and conference abstracts of several orthopedic associations were searched
* Two authors independently extracted study data and evaluated articles for inclusion, assessing bias with the Cochrane Risk of Bias tool
* Two subgroup analyses were planned: one grouping studies by condition (rotator cuff tear, Achilles tendon, elbow epicondylitis); one grouping studies by whether they used PRT as the main treatment for tendon disorders or whether PRT was a surgical augmentation procedure

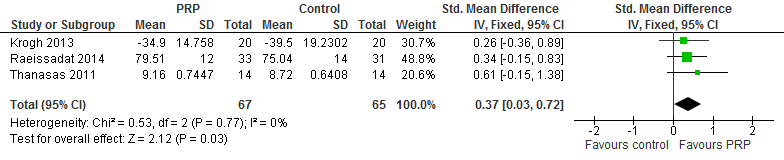
Results:

* Three studies of elbow epicondylitis compared ultrasound-guided PRP injections versus controls, two of which used whole blood as a control and one of which saline
  + One study of PRP versus whole blood found lower pain scores at 6 weeks and at 6 months, but the effect size on the VAS was 0.86 at 6 weeks (95% confidence interval 0.21 to 1.51) and at 6 months was 0.75 (95% CI 1.57 in favor of PRP to 0.07 in favor of whole blood )
  + Pooled data for the function scores did not differ statistically between PRP and control (whole blood or saline)
* The other studies analyzed PRP for conditions elsewhere in the body, such as the knee or shoulder

Authors’ conclusions:

* For individual musculoskeletal conditions including elbow epicondylitis, there is currently insufficient evidence to support PRP
* Preparations of PRP need to be standardized if future randomized trials are to be conducted

Comments:

* The authors report that PRP was better than control in two studies (one using saline and one using whole blood), but the standardized mean difference of 0.40 SD had a 95% confidence interval (-0.08 to 0.89) which included the null value
* This is compatible with the hypothesis that PRP is effective for epicondylitis, but the effect is very uncertain
* There were four studies of elbow epicondylitis identified as “ongoing” when the review was done; two of these are identified at clinicaltrials.gov as “recruiting,” one trial in Europe is identified as “ongoing,” and one trial from Iran (Raeissadat 2014) has been completed and published
  + The three studies used differing functional outcome measures; Krogh 2013 used the function section of the Patient-Rated Tennis Elbow Evaluation (PRTEE); Thanasas 2011 used the Liverpool elbow score, and Raeissadat 2014 used the Mayo score which includes a functional assessment
  + Although Raeissadat did not have three month followup data, Mayo scores were reported for 8 weeks and 6 months, and these scores did not greatly differ
  + Raeissadat had a larger sample size than the other two studies, and the functional data can be added to Analysis 5.5 to estimate a pooled functional effect size from all three studies 
  + This estimate does not change the pooled effect size of 0.40 SD, but the confidence interval for this estimate does exclude the null value, and a SMD of 0.37 is conventionally considered a small to moderate effect size
  + The standard deviations for Thanasas are very small; the original article reported the mean scores with 95% confidence intervals, and the authors appear to have correctly calculated the standard the standard deviations from the 95% CI
* One additional study (Mishra 2013) randomized participants to either PRP injected with a peppering technique (5 penetrations of the tendon from a single skin penetration) or to bupivacaine injected with the same peppering technique
  + The authors reported that PRP and bupivacaine had equal benefits at 12 weeks with respect to function, but that PRP was more beneficial at 24 weeks
  + However, the reporting of the results is not well done because the comparisons are represented in the form of bar graphs and in terms of mean scores, but without standard deviations which would make it possible to combine outcome data with the adequately reported studies above; effect sizes with confidence intervals cannot be ascertained
  + The corresponding author of this study was contacted by e-mail requesting the missing data, but no reply was received
  + In addition, there was another difficulty with the Mishra study; it was registered at clinicaltrials.gov, where a study protocol should have been available; however, when the study identifier was entered at that website, an anomalous entry was seen
    - The clinicaltrials.gov website said that the study was “Trial of a device that is not approved by the US FDA,” and that “under the terms of US Public Law 110-85, Title VIII, Section 801, the details of this study are not available to the public”
  + Therefore, the findings of the Mishra study are compatible with the conclusions of this meta-analysis, but the study probably does not contribute to the evidence base for the effect of PRP on tennis elbow

Assessment: high quality meta-analysis supporting good evidence that in the setting of lateral epicondylitis, PRP may lead to a small to moderate functional benefit in comparison to autologous whole blood or saline at two to three months, but effects on pain are uncertain

References

Krogh TP, Fredberg U, et al. Treatment of lateral epicondylitis with platelet-rich plasma, glucocorticoid, or saline: a randomized, double-blind, placebo-controlled trial. Am J Sports Med 2013;41(3):625–35.

Mishra A, Skrepnik N, Edwards S et al. Efficacy of platelet-rich plasma for chronic tennis elbow: a double-blind, prospective, multicenter, randomized controlled trial of 230 patients. Am J Sports Med. 2014;42(2);463-71. PMID: 23825183

Raeissadat SA, Rayegani SM, et al. Is Platelet-rich plasma superior to whole blood in the management of chronic tennis elbow: one year randomized clinical trial. BMC Sports Science, Medicine, and Rehabilitation 2014, 6:12

Thanasas C, Papadimitriou G, et al. Platelet-rich plasma versus autologous whole blood for the treatment of chronic lateral elbow epicondylitis: a randomized controlled clinical trial. Am J Sports Med 2011;39(10):2130–4.