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# Safety and efficacy of platelet-rich plasma for the treatment of chronic lateral epicondylitis

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**Background**
Lateral epicondylitis is among the most common elbow pathologies affecting people aged between 40 and 50 years. Although epicondylitis is often a self-limiting condition that improves with conservative treatment, the condition can be difficult to eradicate. The purpose of this study was to compare the effectiveness of platelet-rich plasma (PRP) injections and exercise for the treatment of lateral epicondylitis.

**Methods**
Thirty-five chronic lateral epicondylitis patients nonresponding to conservative care for more than 3 months were evaluated. Twenty-four patients received ultrasound guided 3ml autologous PRP injection and 11 patients received exercise training. An exercise program was recommended to patients in all two groups. Patients were assessed according to Mayo elbow performance score, visual analogue scale (VAS), 5-Likert scale and tendon thickness using US image. The primary outcome was Mayo elbow performance score after 3 months. All patients were questioned regarding adverse effects after therapy. Statistical analysis was performed using SPSS version 24.0 software.

**Results**
After 3 months, 4 patients in the PRP group and 3 patients in the control group failed to follow up and results of 28 patients were analyzed. In baseline analysis of the patients in the two groups, there was no difference in gender, body mass index, duration of symptoms, Mayo elbow performance score, 5 Likert scale and tendon thickness between the two groups. But previous history of steroid injection and VAS were significantly different between the two groups (Table 1). In the primary outcome, the Mayo elbow performance score of the PRP group improved by $8.50 \pm 17.70$ after 3 months, showing a statistically significant improvement (Table 2). In the secondary outcome, the VAS at 3 month, Mayo elbow performance scale and 5 Likert scale at 6 month were significantly improved in the PRP group compared with baseline values. The VAS at 6 month and 5 Likert scale at 3

month were significantly improved in both groups. In the US finding, the thickness of the common extensor tendon was not statistically different compared with baseline value in both groups. There was no serious adverse events in both groups.

**Conclusion**
According to our study, PRP injection is safe and has a short and long term effect for improving pain and function in chronic lateral epicondylitis. PRP injections can be recommended as a treatment option for patients with chronic lateral epicondylitis.

Table 1. Baseline values of PRP and control groups.

| Variables | | Control (n=11) | PRP (n=24) | p-value |
|---|---|---|---|---|
| Age, mean ± SD, year | | 57.73 ± 9.73 | 50.08 ± 7.55 | 0.016 |
| Gender, n (%) | Male | 4 (36.4) | 11 (45.8) | 0.721 |
| Body mass index, mean ± SD | | 23.73 ± 1.96 | 22.39 ± 2.82 | 0.163 |
| Alcohol drinking, n (%) | Yes | 4 (36.4) | 9 (37.5) | 1.000 |
| Current smoking, n (%) | Yes | 2 (18.2) | 6 (25.0) | 0.519 |
| Duration of symptoms, mean ± SD, days | | 209.27 ± 304.61 | 629.96 ± 796.39 | 0.101 |
| Location of symptoms, n (%) | Right | 7 (63.6) | 15 (62.5) | 1.000 |
| Exercise related to the lesion, n (%) | Yes | 5 (45.5) | 7 (29.2) | 0.451 |
| Steroid injection history, n (%) | Yes | 0 (0) | 9 (37.5) | 0.033 |
| Taking pain medication, n (%) | Yes | 4 (36.4) | 14 (58.3) | 0.289 |
| Mayo elbow performance score, mean ± SD | | 72.73 ± 13.48 | 63.33 ± 16.46 | 0.108 |
| VAS, mean ± SD, mm | | 37.36 ± 17.23 | 62.17 ± 20.04 | 0.001 |
| 5 Likert scale (scale = 1-5), mean ± SD | | 3.50 ± 0.53 | 4.00 ± 0.63 | 0.072 |
| Tendon thickness, mean ± SD, cm | | 0.50 ± 0.08 | 0.47 ± 0.07 | 0.225 |

* SD, standard deviation; ROM, range of motion; VAS, visual analogue scale

Table 2. Clinical results of PRP and control groups at 3 months.

| Outcomes | Control (n=8) | | PRP (n=20) | |
|---|---|---|---|---|
| Follow-up time point | MD(SD) | p-value | MD(SD) | p-value |
| Mayo elbow performance score | | | | |
| baseline | 72.50(11.95) | | 63.00(17.65) | |
| Δ baseline - 3mon | 8.75(10.61) | 0.052 | 8.50(17.70) | 0.045 |
| Mayo pain subscale | | | | |
| baseline | 20.63(11.16) | | 14.25(11.39) | |
| Δ baseline - 3mon | 7.50(11.34) | 0.102 | 6.00(15.69) | 0.087 |
| Mayo ROM subscale | | | | |
| baseline | 19.38(1.77) | | 17.00(5.48) | |
| Δ baseline - 3mon | 0.63(1.77) | 0.317 | 2.75(5.50) | 0.038 |
| Mayo stability subscale | | | | |
| baseline | 8.13(2.59) | | 8.50(2.35) | |
| Δ baseline - 3mon | 0.63(4.17) | 0.685 | 0.75(1.83) | 0.083 |
| Mayo function subscale | | | | |
| baseline | 24.38(1.77) | | 23.25(4.94) | |
| Δ baseline - 3mon | 0.00(2.67) | 1.000 | -1.00(2.62) | 0.102 |
| VAS (mm) | | | | |
| baseline | 37.13(16.69) | | 62.30(20.02) | |
| Δ baseline - 3mon | -12.38(20.45) | 0.131 | -21.98(25.91) | 0.001 |
| 5 Likert scale | | | | |
| baseline | 3.43(0.54) | | 3.88(0.62) | |
| Δ baseline - 3mon | -1.00(0.82) | 0.038 | -0.81(0.66) | 0.002 |
| Tendon thickness (cm) | | | | |
| baseline | 0.48(0.06) | | 0.48(0.07) | |
| Δ baseline - 6mon | -0.04(0.12) | 0.465 | 0.00(0.11) | 0.983 |

* SD, standard deviation; ROM, range of motion; VAS, visual analogue scale