How safe and effective are platelet-rich plasma injections for decreasing pain in patients with tendinopathy?

Evidence-Based Answer
Platelet-rich plasma (PRP) injections do not result in an increase in infections, hematomas, or tendon ruptures, and are considered safe. (SOR: B, based on 3 prospective trials with 62 total patients.) However, evidence is currently insufficient to recommend PRP injections for patients with tendinopathy pain. (SOR: B, based on a single RCT and 2 cohort studies.)

The term “tendinopathy” describes a chronic tendon overuse injury in the absence of a pathologic diagnosis.\(^1\) Histologic studies have shown that tendinopathy is associated with fibrin deposition, neovascularization, and increased collagen breakdown. This “failed healing response” is thought to be caused by poor blood supply.\(^2\) PRP injections, which contain growth factors and may affect the healing of damaged tissue, have been suggested as a treatment option.

A 2009 stratified, block-randomized, double-blind, placebo-controlled trial evaluated 54 patients with chronic (≥2 months) Achilles tendinopathy. Each patient received either a PRP or saline injection with the aid of ultrasound guidance. All patients completed a detailed rehabilitative program involving a 12-week daily eccentric exercise program. Each patient completed a Victorian Institute of Sports Assessment Achilles (VISA-A) questionnaire at 6, 12, and 24 weeks to quantify pain and activity level. The VISA-A score ranged from 0 to 100. A score of 0 correlates with maximum pain and no activity, while a score of 100 correlates with no pain and maximal activity.\(^3\)

The mean VISA-A score improved significantly after 24 weeks in both the PRP group (+22 points; 95% CI, 13–31) and the placebo group (+21 points; 95% CI, 12–29). No significant difference was noted between the groups in improvement of the VISA-A score. No infections, hematomas, or tendon ruptures occurred.\(^3\)

A 2006 cohort study evaluated patients with chronic elbow tendinosis who failed nonoperative treatment. The study included 20 patients; a single PRP injection was given to 15 patients and a single dose of bupivacaine was given to the other 5. Proper randomization was not followed, no blinding was performed, and 3 of the 5 bupivacaine patients were lost to follow-up. Eight weeks after treatment the PRP group had 60% improvement in a visual analog pain scores versus 16% improvement in the 2 remaining control patients (\(P=.001\)).\(^4\)

A 2008 case series evaluated PRP as treatment for patellar tendinosis. Twenty patients with >3 months of exercise-associated pain were given 3 sets of PRP injections 15 days apart. The primary outcome was change on a 100-point scale of health status at 6 months.\(^5\)

The group’s mean scores improved from about 57 to 82 (\(P<.001\)). Evaluation of functional recovery results showed 6 participants with complete recovery, 8 with marked improvement, 2 with mild improvement, and 4 with no improvement. No infections, hematomas, or tendon ruptures were observed.\(^5\)


### Growth Factors and Actions of Platelets Reported in Platelet-Rich Plasma

- **Platelets**
- **Fibroblast growth factor-2 (FGF-2)**
- **Epidermal growth factor (EGF)**
- **Insulin-like growth factor (IGF)**
- **Vascular endothelial growth factor (VEGF)**
- **Platelet-derived growth factor (PDGF)**
- **Transforming growth factor beta (TGF-β)**

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