

Comparing Two New Blood Treatments for Tennis Elbow

Blood as a healing agent was first used in the 1990s for facial and plastic surgery and has since expanded in its application. Now it is used with a variety of orthopedic treatments as well. One of those procedures is as an injection into the elbow to help heal chronic tennis elbow.

Tennis elbow (also known as lateral epicondylitis) doesn't always occur in tennis players. Anyone can develop tennis elbow. It is usually the result of overuse of the elbow. Not everyone who plays tennis or who engages the elbow in repetitive motions develops tennis elbow. There is evidence that abnormal healing responses combined with mechanical overload may be part of the problem.

Platelet-rich plasma (PRP) is one use of blood for healing. PRP is the plasma (clear) portion of the blood with eight times the number of platelets as regular whole blood. Platelets contain special growth factors that are normally released during a healing or tendon reparative process. Depending on how the platelet-rich plasma is prepared, there can be up to 25 times the normal number of growth factors available.

The use of autologous whole blood is another form of blood injection that has been tried in the healing of tendons. Autologous tells us that the patient's own blood was used in the procedure. Both types of blood treatment have been shown to increase the number of cells needed to stimulate collagen production but without creating scar tissue. Collagen is the basic building material of tendons.

In this study, a group of 28 patients with chronic tennis elbow were involved. Everyone had symptoms of tennis elbow lasting more than three months. The patients were randomly divided into two equal groups and treated with blood injection. The groups were matched for age, hand dominance, occupation, sex (male versus female) and duration of symptoms.

The first group received a single injection of platelet-rich plasma. The second group received a similar single injection but of autologous whole blood. In both groups, the injection was placed where the wrist extensor tendons attach or insert into the bone along the lateral (outside aspect) of the elbow.

Ultrasound imaging helped guide the surgeon while using a peppering technique deep into the tendon. Peppering means the needle was only inserted in one place but the blood was delivered in tiny doses to multiple areas at that site. When the platelets make contact with the collagen tissue, activation of the growth factors occurs.

Everyone was treated with the same post-procedure program. They were told not to use the arm for any heavy lifting or repetitive motions for one full week. Then they were given an exercise program consisting of stretches and eccentric loading. Eccentric exercises place the wrist extensor muscles in full contraction with motion to slowly allow the muscle to lengthen.

The goal of this study was to compare the results and see if one method worked better than the other. They used pain as a primary measure but also examined range-of-motion, nerve function, and function as measurable outcomes. Everyone was re-evaluated six weeks after the injection and again after three months and six months.

They found that the platelet-rich plasma (PRP) group (with the higher concentration of growth factors) had better results at first (during the first six weeks). But after that, the results were about the same between the two groups. So PRP treatment gives earlier pain relief but no greater function in the end. Pain relief is still welcomed by anyone with chronic elbow pain.

In conclusion, platelet-rich plasma (PRP) injection is superior to autologous whole blood in the treatment of chronic tennis elbow. The study was small with its 28 patients so further testing and study are recommended. The authors suggest that the influence of white blood cells with and without platelets should also be investigated more closely.

The authors also point out that the group receiving the whole blood injection may have reported more pain after their injection because of the white blood cells that probably signaled a more intense inflammatory response. They also commented that previous studies have shown the importance of an eccentric exercise program so this is recommended no matter what other treatment is used.

Reference: Christos Thanasas, MD, et al. Platelet-Rich Plasma Versus Autologous Whole Blood for the Treatment of Chronic Lateral Elbow Epicondylitis. In *The American Journal of Sports Medicine*. October 2011. Vol. 39. No. 10. Pp. 2130-2134.