PRP for the Management of Osteoarthritis of the Hip and Knee

What is Platelet Rich Plasma (PRP)?

Blood is primarily composed of red blood cells, white blood cells and platelets carried by a liquid called plasma. The primary responsibility of platelets is to help blood to clot. Platelets also contain several important proteins including growth factors which can help to promote tissue healing and cytokines which signal different cellular functions.

Platelet rich plasma (PRP) is made by taking a sample of the patient's blood and spinning it in a centrifuge. This separates the platelets from other blood cells. When combined with plasma, the PRP mixture that results has a five to ten-fold increased concentration of platelets. The process can be done in the office setting and takes approximately 10-15 minutes. The PRP can then be injected back into the body at various sites. The theory is that this high concentration of growth factors and other chemicals can contribute to tissue healing and subsequent pain relief.

What conditions can PRP treat?

Scientists and clinicians are still learning what conditions PRP can be used to treat. At this time, there have been mixed results. Some studies show that PRP is helpful, and others demonstrate no improvement when compared with placebo. Even though studies are inconclusive, there is a growing market and interest in using PRP injections to treat muscle, tendon, and joint pain.

Some of the successful applications of PRP injections have been in treating damage to tendons such as lateral epicondylitis (tennis elbow), plantar fasciitis, and Achilles tendinosis. There have been some studies examining the use of PRP for the treatment of osteoarthritis of the knee.

What have studies shown?

A 2021 paper combined the results of 18 prior studies where PRP was used for the treatment of osteoarthritis of the knee[1]. The study involved over 800 patients who were included in prospective, randomized trials. Compared with injections of hyaluronic acid (HA – a commonly given injection for arthritis), patients injected with PRP experienced better pain relief and functional improvement up to nearly 1 year following the injection.

In another randomized study, scientists compared injections of PRP, HA or the combination of PRP and HA[2]. The findings showed that the patients who received the combination of PRP and HA had better pain relief and functional improvements. These results were measured and found to be significant from one to three months after the injection.

However, another randomized study3, compared 3 PRP knee injections to 3 placebo knee injections for knee arthritis over a 1-year period. Their findings did not support the use of PRP for the treatment of symptomatic knee osteoarthritis.

The American Academy of Orthopaedic Surgeons4 has published a review of the literature relating to PRP for knee arthritis. It can be found here.

It is important to emphasize that these studies primarily focused on patients with mild to moderate osteoarthritis of the knee, and that there is no data suggesting that the injections slowed the progression of the arthritis or helped to grow new cartilage.

What are the downsides to PRP injections?

There appear to be few complications from injections of PRP. Like all injections, patients may experience injection site pain and a low risk of infection. While there is some concern for injecting high concentrations of any chemical – including growth factors and cytokines – PRP injections appear to be reasonably well tolerated. Perhaps the biggest downside to PRP injections is the cost. Most of these injections are not covered by insurance, and the cost of a single injection can be up to $1,000. With the inconsistent results that have been demonstrated to date, most surgeons and medical societies have not recommended PRP as part of the routine care for osteoarthritis.

Conclusion

The results of using PRP injections to treat osteoarthritis are mixed; yet it remains a viable treatment option. Many questions remain that will hopefully be answered in future studies. Patients should recognize the current unknowns about PRP treatment and focus on the first line treatments for osteoarthritis such as weight loss, exercise and anti-inflammatory medications as recommended by their doctors.

References

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2. Lana JF, Weglein A, Sampson SE, Vicente EF, Huber SC, Souza CV, Ambach MA, Vincent H, Urban-Paffaro A, Onodera CM, Annichino-Bizzacchi JM, Santana MH, Belangero WD: Randomized controlled trial comparing hyaluronic acid, platelet-rich plasma and the combination of both in the treatment of mild and moderate osteoarthritis of the knee. J Stem Cells Regen Med. 2016 Nov 29;12(2):69-78.

3. Bennell KL, Paterson KL, Metcalf BR, et al. Effect of Intra-articular Platelet-Rich Plasma vs Placebo Injection on Pain and Medial Tibial Cartilage Volume in Patients With Knee Osteoarthritis: The RESTORE Randomized Clinical Trial. JAMA. 2021;326(20):2021-2030.

4. https://www.aaos.org/quality/biologics/technology-overviews/

If you are interested in alternative ways to treat your joint pain, please refer to our article, “Caring for Your Hips and Knees Without Surgery,” and consult with your orthopaedic surgeon on the best treatment path for you.

This article was revised by Dave Deckey, MD in collaboration with the AAHKS Patient and Public Relations Committee and peer reviewed by the AAHKS Evidence Based Medicine Committee. Links to these pages or content used from the articles must be given proper citation to the American Association of Hip and Knee Surgeons.

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