Platelet rich plasma injections for meniscus tears

Ross Hauser, MD

Platelet-rich plasma injections for meniscus tears

In this article, we will explore research on Platelet Rich Plasma therapy for meniscus injury. This article is for people exploring the possibility of:

- Meniscus arthroscopic surgery.
- Meniscus arthroscopic surgery with PRP augmentation.
- PRP injection treatment for meniscus tears as a non-surgical option.
- Post-surgical treatment help.

Patients will contact our office with questions about their meniscus injury and ask what our recommendations are for treatment. Of course, the best recommendations are made after we perform a physical examination and check for a range of motion, popping and clicking sounds, and catching and other issues of knee instability where the meniscus may be considered a culprit.

The patient may already have an MRI showing a meniscus tear, a recommendation for arthroscopic meniscus surgery, or a history of physical therapy and other <u>conservative care treatments including anti-inflammatories</u> and/or a recommendation from a surgeon that they really need to wait until their knee is worse before an operation can be performed.

One of the treatment options the patient may have researched is platelet-rich plasma therapy or commonly referred to as PRP. <u>PRP is an injection treatment</u> that re-introduces your own concentrated blood platelets into areas of chronic joint deterioration.

Discussion points covered in this article:

- Can PRP address the problems of a "White Zone Tear"
- Menisci red zone and white zone. Meniscus tears are characterized by their placement within these two zones.
- A brief explanation of PRP treatment.
- "I am just doing my research on PRP for meniscus tears."
- Ross Hauser, MD explains how one injection of PRP will likely not work.
- Why do we give multiple PRP injections and not a single shot?
- PRP treatment addresses the ligament instability of a loose knee.
- The impact of knee instability on squeezing the meniscus out of the knee joint.
- PRP for meniscus repair, best during surgery or in-office injection?
- Meniscus arthroscopic surgery with PRP augmentation.
- Medical reviews of PRP meniscus injections without surgery.
- Ten patients with degenerative meniscal tears.
- Five Platelet Rich Plasma Prolotherapy meniscus treatment cases are presented in the medical literature.

"Patients treated with PRP injections demonstrated an improving knee function and symptoms over the duration of the study."

In March 2022 (13) researchers at the University of Genoa and University of Salerno in Italy teamed with doctors at Queen Mary University of London and the Keele University of School of Medicine in the United

Kingdom to discuss the use of Platelet-rich plasma (PRP) injections as a biologic (non-surgical) option to provide symptomatic relief and possibly delay the need for surgery in patients with degenerative joint disease of osteoarthritis. In this study the researchers wanted to know if PRP injections could help meniscus tears. Going into the study the researchers did speculate that patients with symptomatic degenerative meniscal lesions without osteoarthritis undergoing autologous PRP injections would experience a significant clinical improvement at 12 months. Their research was published in the medical journal *Sports Health*.

In this study a total of 69 patients with symptomatic degenerative meniscal lesions without knee osteoarthritis received 4 autologous (their own blood) PRP injections once a week. Patients were evaluated before the injection and then at 1, 3, 6, and 12 months.

Results: "Patients treated with PRP injections demonstrated an improving knee function and symptoms over the duration of the study. A significant improvement from baseline to 12 months was observed in all the outcome measures, and no patients experienced failure or required surgery during the follow-up."

Specifically: "Patients younger than 50 years (old) reported lower subjective level of pain and higher Tegner activity scale (less disability) at baseline and had significantly better Lysholm knee scoring scale (looking for improvements in pain, instability, locking, swelling, limp, stair climbing, squatting and need for support.) They also displayed better range of motion at 3, 6, and 12 months.

- Thirty-three (47.8%) patients were very satisfied,
- twenty-six (37.7%) satisfied,
- eight (11.6%) partially satisfied, and
- two (2.9 %) not satisfied,
- with 62 (89.8%) patients willing to repeat the same treatment.

Conclusion: "PRP injections provide short-term benefits in symptomatic degenerative meniscal lesions. Although promising results were evident at 12 months, this is a preliminary study and no definitive recommendation can be made based, for example, on longer follow-up." In other words, results after 12 months were not studied.

Can PRP address the problems of a "White Zone Tear"

Many people will email our office and will make a clear distinction about the type of tear they have by using the designation "red zone tear," or "white zone tear." More people will say they have a "white zone tear." Why? Because they have been given the explanation that white zone tears are very difficult to treat and that these tears usually require surgery to cut out the damaged area of the meniscus.

Emails of this nature go something like this:

- I have a ruptured medial meniscus. It is all in the white zone. MRI says horizontal-diagonal complex tear. Currently getting physical therapy and doing the recommended exercising every day. I still have a lot of knee pain. My orthopedist said, that it is not possible to repair or regenerate (with PRP injections see below) the white part of the meniscus.) We will answer this below.
- I have a lot of problems with my knee, I have a Baker's Cyst that comes and goes that causes a lot of problems. I also have a torn meniscus that I did not know I had. My doctor says my meniscus problem is not good because it is in the white zone and I should have surgery. At this point, the surgery is knee replacement and I can get cortisone injections until I can get a knee replacement.
- I have a white zone meniscus tear. I have to use a knee brace to get around. I have difficulty with stairs. Cortisone and hyaluronic acid treatments are no longer effective. I have been researching PRP injections online. I noticed you talk about a more comprehensive strategy. The doctors I have reached out to seem to suggest a single visit or single treatment method and if that does not work, then I should just move on to surgery.

We discuss below why PRP is not a "one-shot wonder treatment," and should not be thought of in this way. This helps prevent an over-expectation of what one treatment can do and presents a more realistic treatment path to the patient.

Menisci have two zones. The red zone is outside and the white zone is inside. Meniscus tears are characterized by their placement within these two zones.

A red zone tear lies within the blood-rich portion of the meniscus. Where there is a blood supply there is healing as blood brings the healing and growth factors needed for wound repair.

- The white zone meniscal tear is thought to be non-healing because there is no direct blood supply.
- Many doctors do not believe the white zone meniscus tear can be repaired because of this.
- This is typically the part of the meniscus removed in meniscus surgery.

Superior aspect of left knee showing red and white zones. The meniscus has a poor healing ability if injured or torn because approximately 70% of it has no blood supply and thus appears white on inspection.



If you have a red zone tear, there is a chance arthroscopic surgery can go in and sew it up. If you have a white zone tear, it is most likely that your meniscus will be removed. All or some of it. The great majority of meniscus arthroscopic surgeries are to REMOVE meniscus tissue.

In the research below we will show that when you address the problems of the whole knee, Baker's cysts, ligament laxity and damage, cartilage deterioration, patella problems, nephropathy, you can address problems of the white zone meniscus tear without surgery.

In an animal study published in the journal *Orthopaedic Surgery* (1) researchers investigated the role of autologous (blood taken from the same animal, in this case, a dog, platelet-rich plasma (PRP) on the repair of meniscal white-white zone injury through promoting the proliferation of canine bone marrow-derived mesenchymal stem cells (BMSCs).

What was the point of this study and what were the researchers trying to demonstrate? There were 24 beagles who had a white-white zone injury in both knee joints. The dogs were divided into four groups: control, bone marrow-derived mesenchymal stem cells, PRP, and PRP + bone marrow-derived mesenchymal stem cells. Then the researchers measured for the expression of osteopontin (a protein involved in inflammation) in the synovial fluid of the knee joint, the expression of type I collagen (the collagen of bones and skin), and type II collagen (the collagen of cartilage), the healing of meniscus injury, and the damage degree of lateral femoral condyle cartilage.

What the researchers found was that compared to a control group (no treatment), the expressions of type I and type II collagens were enhanced in the PRP group and the PRP + bone marrow-derived mesenchymal stem cells group. The application of PRP alone or in combination with bone marrow-derived mesenchymal stem cells could promote the clinical healing rate of meniscal white-white zone injury.

For more of a discussion on bone marrow-derived mesenchymal stem cells, please see our article <u>Does stem</u> cell therapy for knee meniscus tears and post-meniscectomy work?

In human beings, researchers writing in the journal *Cartilage* ($\underline{2}$) in December 2021 demonstrated the effectiveness of the growth factors found in blood platelets and platelet-rich plasma therapy. Here are some of the learning points of their research:

- "When symptomatic, (meniscus injury) represents a challenge since arthroscopic surgery provides unpredictable results: recent evidence has shown that partial meniscectomy is not better than conservative management up to 2 years of follow-up, and the removal of meniscal tissue may accelerate osteoarthritis progression toward osteoarthritis.
- Intra-articular injection of corticosteroids or hyaluronic acid may help in providing temporary symptomatic relief, but no influence should be expected on the quality of the meniscal tissue.
- Preclinical studies have documented that platelet-derived growth factors may play a beneficial role in stimulating meniscal repair and regeneration by triggering anabolic pathways and stimulating local mesenchymal stem cells from synovium."

A brief explanation of PRP treatment by Danielle R. Steilen-Matias, MMS, PA-C

- One of the most common medical conditions we see at Caring Medical is Meniscal tears.
- We treat patients with Prolotherapy and PRP injections.
- We inject the PRP into the meniscus tears with ultrasound guidance and then use the dextrose Prolotherapy to treat and strengthen the supportive ligaments of the knee to provide the knee with improved stability. We find that our meniscus tear treatment success rate is greatly helped by focusing on and treating the MCL ligament. Using ultrasound we will examine the integrity of the MCL.
- Typically a meniscus tear would require 4 6 treatments depending on the tear and activity or work demands of the patient.

"I am just doing my research on PRP for meniscus tears"

When we talk to patients with a meniscus injury, they have already been well conditioned that surgery is their ultimate fate. Why?

- Lack of improvement after many physical therapy sessions
- Continued pain left the person with "no options."

Now if you are reading this article, we understand that you are doing your research. You are looking for other options. Why?

- You do not want a surgery
- You are concerned about recovery time
- You are concerned about the rapid advancement of osteoarthritis and ultimately a need for knee replacement if your meniscus is removed. You are not the only one with this concern, please see our article **Should I have knee surgery for a meniscus tear?** for research shared by surgeons with their concerns.

How we utilize PRP to repair your knee. The difference between INJECTION vs. INJECTIONS

Before we get into the research of PRP for Meniscus injury we want to demonstrate, in the videos below how we offer PRP injections. You will notice that the treatment is injections, not AN injection.