

Clinical Updates in Platelet Gel

Sports Medicine: Ultrasound-Guided Percutaneous Debridement with Platelet Rich Plasma

Platelet Gel Update



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Specialization in Sports Medicine since 1993

Developed Ultrasound-Guided Percutaneous Debridement with PRP to treat sports-related injuries

History of Innovations in Platelet Therapy for Sports Medicine

- Started seeking alternatives in early 1990s to medication, physical therapy, or manipulation for the 85% of muscle tendon-soft tissue injuries not eligible for surgery.
- Performed studies on growth factors presented at the American College of Sports Medicine and in Clinical Journal of Sports Medicine. Began to investigate autologous sources for platelet concentrate to minimize patient rejection.
- Early success treating Achilles tendon injuries by injecting platelet concentrate at site of injury. Found that higher platelet concentrations had better effect.
- Began using ultrasound to guide injection; improved ability to accurately place PRP at injury site.
- Developed specialized techniques to debride injured tissue through a single needle-sized opening using ultrasound for guidance.
- Currently teaching percutaneous debridement with PRP to fellows.

At Riverside Medical in Ohio, platelet therapy has changed the way orthopedic specialists are treating 80-85% of their sports injury patients. According to Michael Scarpone, D.O., Director of Sports Medicine, the use of ultrasonically guided platelet rich plasma (PRP) injections has provided the first "regenerative" treatment for the majority of muscle, tendon or soft-tissue injuries that don't require surgery, but were merely held "at bay" with medicine or rehabilitation programs.

Dr. Scarpone has been interested in using platelet-derived growth factors to treat such injuries for almost 15 years. He has developed the minimally invasive protocols that he and his colleagues use today to debride damaged tissue and deliver injections of PRP. In the past several years, they've treated more than 500 patients with PRP.

Dr. Scarpone's current protocols leverage advancements in office-based ultrasound technology that have allowed him to accurately deliver PRP to the site of an injury using a needle.

He has also developed the techniques to debride damaged tissue through needle-sized punctures. "We noticed early on in a small number of cases that we didn't see the desired healing effect of the platelet's growth factors unless we could get the PRP to the living tissue," he explains.

Dr. Scarpone provides an overview of PRP use in his practice.

Injuries treated with PRP

Shoulders

- Rotator cuff - partial tears
- Long head of biceps tendinosis
- Chronic glenohumeral ligament sprains

Elbows

- Lateral epicondylitis
- Distal biceps tendon partial tear

Hand

- Chronic thumb UCL sprain

Knee

- Patellar tendinosis
- Meniscal tears
- Vastus lateral obliquous strain (Jumper's knee)

Ankle/foot

- Chronic anterior talofibular (ATF) ligament strain
- Chronic Achilles tendinosis
- Chronic Peroneal tendon tear
- Plantar Fasciitis
- Osteochondral defect (OCD) talus

(Continued)



Dr. Scarpone uses ultrasound to guide the injection of growth factors with platelet rich plasma to treat a rotator cuff injury.

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Noteworthy Applications

Achilles tendon injuries

Dr. Scarpone had early success treating this injury with PRP; his first PRP patient was an avid runner with a partial tear of the tendon. In this case, PRP was successfully provided as an alternative to surgical replacement of the tendon with a graft; the patient was running again in six weeks.

Ulnar-collateral ligament injury

"This is a promising application for PRP therapy," says Dr. Scarpone. "The ligament is frayed, not torn; it doesn't hold the elbow as it should." When the damage to the ligament is extensive, it is surgically reconstructed in a procedure sometimes referred to as the "Tommy John" surgery, named after the former Major League Baseball pitcher. He recently treated an 18-year-old high school pitcher with a partial UCL tear. "He had severe elbow pain and couldn't even throw a baseball," Dr. Scarpone says. "We treated him with PRP and he was back on the mound within a month. That's unheard of with this type of injury."

Rotator cuff injury

Dr. Scarpone is currently conducting a study on the use of PRP for treating partial tears of the tendons in the rotator cuff (see protocol below). He will be assessing pain and function at four and eight weeks post-injection. Patients in the study have injuries that have not improved using conventional non-surgical therapies; the next step would be surgery. Early results indicate statistically significant improvement in pain, strength and endurance in about 60% of patients to-date.

Sample protocol

Protocol used in Dr. Scarpone's study on the use of PRP to treat rotator cuff tears

1. Draw 20 cc of blood from patient. Prepare 3 cc of PRP. (The PRP is not combined with thrombin or calcium.)
2. Find tear using ultrasound guidance.
3. Anesthetize skin and subcutaneous tissue with xylocaine 1% solution.
4. Use ultrasound-guidance to advance a 25-gauge needle into the tendon at the site of the tear (depending on the injury, an 18 or 22 gauge needle can also be used). Deliver approximately 1.5cc of PRP at both edges of tear.

PRP processing requirements

Dr. Scarpone uses the SmartPREP[®]2 Platelet Concentration System to process PRP. He cites the following features as important for his practice:

Concentration. Dr. Scarpone has found that the higher the concentration of platelets, the better the healing effect. He typically targets a concentration of 6x baseline platelet levels.

Consistency. "The system works every time. We don't worry about it breaking down."

Processing speed. After the patient's blood is drawn, the system requires only 17-18 minutes to produce the PRP. This is the ideal amount of time to take the patient to the procedure room and set up the ultrasound machine. The total procedure can be completed in about 25 minutes.

