PARAGON
ORTHOPEDIC CENTER

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PRP Guidelines and Protocol

What is tendinopathy or tendinitis?

Tendons are strong cords of tissue which connect muscle to bone and transmit the force to generate movement. Muscle and tendon injuries account for a significant percentage of the over 100 million physician visits in the US per year and this number will continue to rise as our population ages and remains active[1]. Previously, tendon injuries and disorders were almost always considered tendonitis. Tendonitis is an inflammatory process, but recent research has shown that most of the more chronic tendon problems do not have any inflammatory cells. The primary problem in these cases appears to be a breakdown of the structural properties of the tendon collagen. Thus the correct terminology for this problem is tendinopathy, as opposed to tendonitis.

Tendinopathy results from overstressing a tendon. This can be from a sudden injury or from repetitive and sustained stresses over many months or even years. It is possible for different areas of the tendon to be in different stages of injury or disorder[2]. Tendinopathy can ultimately lead to chronic degradation of the tendon to the point of tearing or rupture. There are many current treatment options for this condition including, but not limited to, rest, anti-inflammatory medications (e.g., ibuprofen, naproxen), steroid injections, physical therapy, shock wave therapy, dry needling and surgery. Recent advancements in medicine have led to the development of platelet-rich plasma (PRP) injections as a viable treatment for various tendinopathies. Dr Bents began using PRP for select patients and has now performed nearly 1000 PRP injections.

What is platelet-rich plasma (PRP)?

PRP is a concentration of platelets derived from the plasma portion of your own blood. Platelets are usually known for their role in the clotting processes, but their use in treatment of tendon disease was discovered due to their abundance of enzymes and growth factors related to the healing process. Tendons have a poor blood supply, meaning it is difficult for these tissues to receive the nutrients needed to stimulate repair. An injection of PRP to the injured site provides the tendon tissue with healing growth factors that are otherwise difficult for the body to deliver because of the poor blood supply. Similar mechanisms have been theorized for treatment of ligament injuries such as medial collateral ligament sprains of the knee or cartilage deterioration, such as osteoarthritis of the knee. The injection can also restart a healing inflammatory process, which is why patients are often given initial activity restrictions. Subsequent referrals to physical therapy are usually made so you can slowly reload the tissue as within appropriate guidelines. This is in contrast to a steroid injection which can decrease inflammation, usually on a temporary basis. The goal of a PRP injection is tissue healing with long term relief.

What conditions do you treat with PRP?

The most common condition treated is shoulder rotator cuff tendinopathy or partial thickness tears. We also treat tendinopathy of the knee patellar tendon, upper hamstring, Achilles tendon and elbow. We have had excellent success with PRP for arthritis pain in the knee, shoulder and

ankle. We do not usually inject full thickness tendon tears or advanced arthritis. The best result occur with patients who follow the rehabilitation protocol.

What does the PRP procedure involve?

PRP begins by collecting blood from the individual, by using a syringe and needle at the arm, similar to a clinic laboratory blood draw. We draw approximately 10 cc of blood in one syringe. The blood is then placed in the specialized centrifuge where the rapid spinning process separates the blood into 3 components—the plasma portion of the blood, the PRP layer, and the cellular layer containing red and white blood cells. The PRP layer is then separated for injection. After applying a local anesthetic (numbing medicine) to the site of the injection, the PRP is injected into the injured tissue, often with ultrasound guidance to ensure accurate placement of the injection.

Is the injection painful?

A numbing medicine is used on the skin prior to the injection, but it can be painful at the tendon site. This will often feel like a deep pinch or pressure. The injected site can be painful for several days. You can take Tylenol and use ice as need for the discomfort.

Do I need physical therapy after PRP injections?

Yes, typically 10-14 days following the procedure. You can begin therapeutic exercises in the comfort of your own home as noted in the following outline. The first few days after the injection require protection as the platelets activate within the tissue. A sling and/or crutches will be used.

What to expect after your treatment.

You may experience an “achy” soreness at the injection site. This “soreness” may last several days, however, it is a positive sign the healing response has been set in motion**. It is important that anti-inflammatory medication NOT be taken 2 weeks following your PRP treatment.** These medications may block the effects of the healing process. It is acceptable to take Tylenol for any discomfort.

1. It is suggested that you go home and rest after the procedure. Do not go back to work or run errands.
2. The brace or sling is a MANDATORY part of the healing process and NOT just for comfort. It is to be used at all times, except for showing or dressing. If your right lower extremity is involved, the brace or sling may be removed for driving only and then put back on ASAP.
3. After 3 days, you can **gradually begin** the process back to **light activities**. Full progression to all normal activities is usually over a two week period. (i.e. work, school, driving, errands, etc)
4. Don’t forget about your two week follow up appointment following the procedure.
5. Please review the exercises guide provided by your physician and begin 2 days after your injection

Phase 1 (0 to 3 days after procedure)

Appointments	• No appointments during this time as rehabilitation appointments begin 10-14 days after procedure
Goals	• Protection of the affected tendon • Pain control • Restore range of motion
Precautions	• Immobilization of the affected joint: ◦ Sling for rotator cuff / biceps tendons ◦ Wrist splint for medial / lateral epicondyles ◦ Partial weight bearing with crutches for patellar / quadriceps tendons ◦ Partial weight bearing with crutches and walking boot for Achilles
Suggested Therapeutic Exercises	• Gentle passive range of motion (AROM) exercises out of the sling
Progression Criteria	• 3 days after procedure

Phase 2 (3 to 14 days after procedure)

Appointments	• No appointments during this time as rehabilitation appointments begin 10-14 days after procedure
Goals	• Increase tendon tolerance to daily activities • Discontinue immobilizing device (at 3 days)
Precautions	• Weight bearing as tolerated (3-5 days) • No overstressing of the tendon through exercise, lifting, or impact activity
Suggested Therapeutic Exercises	• Continue with active range of motion exercises out of the device 3 times a day for 5 minutes a session. This will be described for you at your physician clinic visit. • Lower body exercise for upper body procedures and upper body exercise for lower body procedures are allowed. Discuss these parameters with your physician, physical therapist or athletic trainer.
Progression Criteria	• 10-14 days after procedure

Phase 3 (~14 days after procedure to 6-8 weeks after procedure)

Appointments	• Rehabilitation appointments once every 1 to 2 weeks • Physician clinic appointment 6 weeks after procedure
Rehabilitation Goals	• Attain full range of motion • Improve strength and endurance • Improve balance and proprioception
Precautions	• Avoid high velocity / amplitude / intensity exercise such as throwing, running, jumping, plyometrics or heavy weight lifting • Avoid post-activity pain
Suggested Therapeutic Exercises	• Stretching exercises for the affected muscle-tendon unit at least once a day, 3-4 reps, holding for 20-30 seconds • Joint mobilization as needed to restore normal joint mechanics • Strengthening with emphasis on isometric and concentric activities initially and with eccentric progression as symptoms allow: theraband drills for the rotator cuff, dumbbell exercises for the wrist and elbow, single leg press for the knee, heel raises for the ankle—3-4 sets of 6-12 reps at moderate intensity • Balance and proprioception activities: joint reposition drills for the upper extremity; single leg stand and balance board drills for the lower extremity • Core strengthening.
Cardiovascular Exercises	• Non-impact activities with progressive resistance, duration, and intensity: upper body ergometer, elliptical trainer, stationary bike, deep water running
Progression Criteria	• Full range of motion • No pain with activities of daily living • Pain free 5/5 manual muscle testing of affected muscle-tendon unit • Symmetric proprioception of the affected limb

Phase 4 (begin after meeting phase 3 criteria, usually 6-8 weeks after procedure)

Appointments	• Rehabilitation appointments are approximately once every 1 to 3 weeks • Physician clinic appointment 2-3 months after procedure
Rehabilitation Goals	• Good eccentric and concentric multi-plane strength and dynamic neuromuscular control to allow for return to work/sports
Precautions	• Post-activity soreness should resolve within 24 hours

Suggested Therapeutic Exercises	• Continued strengthening of the affected area with increases in resistance, repetition, and / or frequency • For the upper extremity: progressive training in provocative positions and work/sport specific positions—including eccentric, endurance, and velocity specific exercises • For the lower extremity: impact control exercises with progression from single plane to multi-planar landing and agility drills with progressive increase in velocity and amplitude • Sport/work specific balance and proprioceptive drills • Continued core strengthening • Return to sport programs (throwing, running, etc.) with symptom / criteria based progressions
Cardiovascular Exercises	• Replicate sport or work specific energy demands
Progression Criteria	• Return to sport/work criteria • Good dynamic neuromuscular control with multi-plane activities and without pain • Approval from the physician and/or sports rehabilitation provider