



1. Medical Condition

Musculotendinous and articular injuries

Musculoskeletal problems include muscle contusions and strains, ligament sprains, tendinopathies, osteochondral lesions, arthritis and other arthropathies. Together with the operative repair of ligament, cartilage, meniscus, muscle and tendon these represent typical conditions for which the use of platelet rich plasma (PRP) or other platelet-derived preparations derived from the centrifugation of autologous whole blood may be considered.

PRP describes the supernatant liquid or gel from centrifuged whole blood with a high concentration of platelets and growth factors. Multiple techniques and commercial kits are available for the preparation of the platelet rich concentrate, producing products with differing characteristics collectively referred to as PRP. These include pure platelet rich plasma, leukocyte-platelet rich plasma, platelet rich fibrin and leukocyte-platelet rich fibrin. (1)

PRP use in animal studies has provided evidence of accelerated healing in acute muscle strains and contusions but no change in the final outcome (2, 3, 4) plus a suggested benefit in the treatment of overuse injury (4). Positive results have also been reported following the use of PRP to treat osteochondral lesions in rabbits (5). In human studies, the treatment of "lateral epicondylitis" (6) and the intraoperative use of platelet-leukocyte gel in ACL repairs show some promise (7). In the treatment of Achilles tendinopathy, the benefit of PRP injections is less conclusive and this research is ongoing (8,9)

An optimal treatment regime for muscle injuries has not been established and reported studies describe 1 – 5 treatments over 1 -10 days of PRP product injected into the injured muscle (2, 3, 4).

For 2010, the WADA Prohibited List requires a declaration of use for the peritendinous, intratendinous and intrarticular routes of administration of PRP. However the intramuscular use of PRP is prohibited and requires a TUE to permit its local use at the site of injury.

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Platelet Rich Plasma (PRP)*

Existing evidence would suggest that the maximal therapeutic value of PRP is obtained when PRP therapy is administered early following acute injury. Therefore most TUE applications will be “retroactive” due to the emergent use of the treatment rather than the severity of the problem.

2. Diagnosis

a) History and physical exam

History must clearly state the injured area, the mechanism of injury and the physical exam findings that support the diagnosis.

b) Diagnostic imaging

Diagnosis must be confirmed with MRI or ultrasound and reports of testing must be included.

3. Medical best practice treatment

Platelet concentrate process

A description of the process used to prepare the platelet concentrate should be submitted, and include as much detail as possible: the type of platelet concentrate that is used (plasma, gel, activated/not activated, platelets only, or platelets and leukocytes, etc) and the brand name of the commercial kit that is used in the preparation (if applicable).

Method of delivery

The injection of the PRP into the injured muscle must be guided by imaging (ultrasound) and this procedure should be noted in the application.

Frequency and duration of treatment

Treatment schedule with preparation, storage, dosage and frequency of PRP injections must be submitted with TUE application. In general, a TUE will be granted for a single injection or a short course of treatment following a specific injury.

Other therapeutic modalities

The use of PRP in acute injuries should be applied concomitantly with other therapeutic modalities. While it is not necessary to demonstrate a failure of non-prohibited treatments, the athlete should document all attempts to use non-prohibited substances and methods, and should submit a treatment plan that includes the use of non-prohibited substances and methods to manage the injury where appropriate.

Medical Information to Support the Decisions of TUECs
Platelet Rich Plasma (PRP)

4. Adverse effects

There are theoretical problems which could occur with PRP treatment but there have been no reported adverse effects to date.

5. Consequences to health if no treatment is given

The consequence to the health of the athlete would be to possibly delay the healing process and prolong recovery from muscular injury. It is recognized that a muscular injury may be a significant impairment to the competitive health of an athlete

6. Treatment monitoring

Treatment can be monitored using functional testing or other clinical criteria with or without imaging such as serial ultrasounds or MRI.

7. Duration of therapy and recommended review process

The optimal treatment protocol has not yet been established. For muscular injuries common treatment protocols are 1-5 treatments over 1-10 days. The duration of treatment is based on diagnosis and this treatment protocol must be submitted at the time of TUE application.

8. Appropriate cautionary matters

The use of PRP in the treatment of musculoskeletal injuries remains a promising therapeutic modality with further research and clinical trials needed to prove efficacy and establish indications and treatment protocols.

9. References

1. Dohan Ehrenfest, D.M., L. Rasmussen and T. Albrektsson, *Classification of platelet concentrates: from pure platelet-rich plasma (P-PRP) to leucocyte- and platelet-rich fibrin (L-PRF)*. Trends Biotechnol, 2009. 27(3): p 158-167.

*Medical Information to Support the Decisions of TUECs
Platelet Rich Plasma (PRP)*

2. Carpenter, T, et al., *Treatment of muscle injuries by local administration of autologous conditioned serum: animal experiments using a muscle contusion model*. Int J Sports Med, 2004. 25: p 1-6.
3. Carpenter, T et al. *Treatment of muscle injuries by local administration of autologous conditioned serum: a pilot study on sportsmen with muscle strains*. Int J Sports Med, 2004. 25: p 589-594.
4. Hammond, JW et al., *Use of autologous platelet-rich plasma to treat muscle strain injuries*. Amer J Sp Med, 2009. 37 (6): p 1135-1142.
5. Sun, Y et al., *The regenerative effect of platelet-rich plasma on healing in large osteochondral defects*. Int Orth, 2010. 34: p 589-597.
6. Peerbooms, JC et al., *Positive effect of an autologous platelet concentrate in lateral epicondylitis in a double blind randomized controlled trial. Platelet-rich plasma versus corticosteroid injection with 1 year follow-up*. Amer J Sp Med 2010. 38 (2): p 255-262.
7. Vogrin, M et al., *The effect of platelet-derived growth factors on knee stability after anterior cruciate ligament reconstruction: a prospective randomized clinical study*. Wien Klin Wochenschr 2010. 122 (Suppl 2): p 91–95
8. deVos, Robert J. ; *Platelet-Rich Plasma Injection for Chronic Achilles Tendinopathy*. JAMA 2010, Jan, 13, 2010-06-16
9. Gaweda K, *Treatment of Achilles Tendinopathy with Platelet Rich Plasma*; INT. J. Sports Med; 2010 June 09