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MAYO CLINIC HEALTH LETTER

Tools for Healthier Lives

Tendon trouble

New treatment uses enhanced plasma

Struggling with ongoing pain in a frequently used joint due to tendon trouble — generally referred to as tendinopathy — can be frustrating.

Often, a combination of physical therapy, medications, activity modifications and the use of a brace can help turn things around. But even with these standard treatment approaches, the discomfort and pain associated with tendinopathies involving joints such as the elbow and knee can drag on for months.

Now, researchers are approaching treatment from a different direction, one that doesn't focus on reducing inflammation. It's hoped there's a way to directly stimulate healing of tendon tissue. One possibility that's drawing a lot of attention is injecting a blood-derived liquid — platelet-rich plasma (PRP) — directly into ailing tendon tissue.

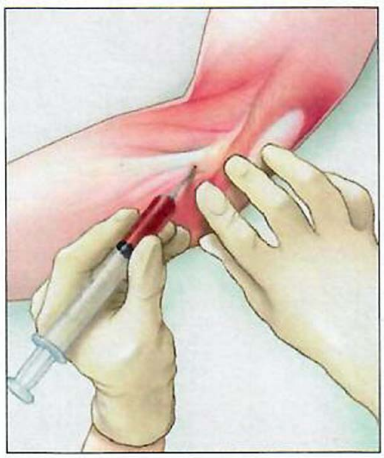
A rich player

Plasma is the liquid portion of your blood that transports red and white blood cells, platelets and other substances through your blood vessels. PRP is autologous, which means it's derived from a small quantity of your own blood.

The process involves spinning a blood sample at high speed until it separates into several components. One of those components is plasma, which contains a high concentration of colorless blood cells called platelets — hence the name, platelet-rich plasma.

Normally, platelets repair injured tissue by gathering at the site of an injury to form a clot. After that, the platelets release growth factors and proteins that stimulate healing.

With those biological facts in mind, doctors are increasingly using concentrated platelets — in the form of platelet-rich plasma — to treat painful tendinopathies.



A needle breaks up degenerative tendon tissue before the actual platelet-rich injection is given into a tendon.

Reality check

The term "tendinitis" is often used to describe a painful joint tendon. Medical terms ending in "-itis" — such as "tendinitis," "appendicitis" and "dermatitis" — describe inflammation. However, in the case of painful tendons, studies of microscopic changes in these tendons have instead shown degenerative changes — deterioration — rather than inflammation.

The early research suggests that platelet-rich plasma injections may promote tissue regeneration in painful degenerative tendon conditions through a number of mechanisms. Some of these include:

- Attracting healing cells to tendon tissue that's deteriorated
- Stimulating new growth (reproduction) of tendon cells
- Stimulating production of tendon collagen — the building block that gives tendons their strength

Uses may vary from one medical center to another. Tendons that may be treated include:

- Tendons that allow you to extend or flex your forearm, commonly referred to as tennis elbow or golfer's elbow
- Hamstring tendons in your upper leg
- The knee's patellar tendon
- The Achilles tendon
- The plantar fascia — which is similar to a tendon — on the bottom of the foot

At Mayo Clinic, the use of platelet-rich plasma is considered if a tendon problem, such as tennis elbow, has been present for over three months and hasn't responded to all standard nonsurgical treatments.

Magnetic resonance imaging (MRI) or diagnostic ultrasound studies are of use to detect abnormalities, which then may be treated by platelet-rich plasma therapy. However, not everyone is a candidate for the therapy, and certain conditions — such as a bleeding disorder, a platelet disorder or an infection — may prohibit its use. At Mayo, one injection is usually given.

A local anesthetic is used to numb the tendon. A needle is then used to break up the degenerative tendon tissue (percutaneous needle tenotomy) before the platelet-rich injection is given into the tendon.

Ultrasound guidance is used to visualize the needle and the affected tendon. After the procedure, use of the tendon is significantly limited for about two weeks before a rehabilitation program is started.

How does it rate?

Mayo Clinic doctors are optimistic about platelet-rich plasma therapy. While recognizing it's still an experimental procedure, they've found that about 70 percent of those receiving it have had improvement.

Although platelet-rich plasma therapy is being used increasingly, questions remain. More information is needed to determine specifics, such as the best platelet concentrations and whether to give a single injection or a series of injections. ❐