

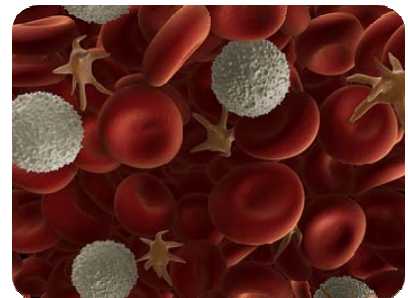
WHAT ARE AUTOLOGOUS BLOOD INJECTIONS (ABI) AND PLATELET RICH PLASMA INJECTIONS (PRP)?

Autologous Blood Injection (ABI) is a procedure that involves the injection of a patient's own (*autologous*) blood into an area of the body to promote healing.

It is most commonly used to treat degeneration of tendons (*tendonitis, tendinosis, or tendinopathy*), which frequently occur in association with small tendon tears. It has also been used to treat disease of fasciae, ligaments, and joints. The procedure is performed under ultrasound guidance by a radiologist so that tendon disease and tears may be accurately targeted.

Mechanism and results

In addition to red and white blood cells, blood contains **platelets**, which are **rich in substances called growth factors**. The growth factors promote normal healing in soft tissues, particularly by facilitating the deposition of new fibrous tissue. In tendons and ligaments, the fibrous tissue may then transform or remodel into collagen, restoring the architecture and strength of the damaged tissue. The amount of growth factor deposited into tendons by ABI is thought to be considerably higher than that brought to the tissues by the body's normal attempts at healing.



A variation of this technique is Platelet Rich Plasma (PRP) injection, which is where a patient's blood is spun in a centrifuge at high speed, resulting in separation of the blood into layers containing red cells, white cells, and plasma. Platelets are present in higher concentrations in the plasma (PRP) when compared to whole blood, and this fluid can be collected and injected into damaged tissues to promote a theoretically more potent healing response.

There is an increasing body of information on the efficacy of ABI and PRP injection, although this mainly involves studies with small population groups at present; the results of larger studies on these procedures are due in the near future. Both techniques are in wide use throughout the world and currently there is no literature demonstrating that PRP injection is superior to ABI, or vice versa. It is generally accepted that there is a **significant response rate to ABI/PRP of approximately 70-80%** in certain regions of the body (*elbow and knee*), although other areas where these injections are performed have not been as rigorously validated.

The procedure is frequently performed as a series of 2 or more injections to achieve results similar to that described in current literature, although your doctor may wish to observe response to a single injection. If there is little or no change following one injection, a second injection may still result in significant improvement. Factors that may influence response to injection include a patient's platelet levels, age, and general health, as well as adherence to a rehabilitation programme and overuse post-injection. The use of **non-steroidal anti-inflammatory medications** may also significantly affect platelet function and healing, and it is strongly advised that these medications **be ceased 10 days before and after your ABI/PRP injection**.

At the end of this document a reference list of publications on ABI and PRP have been included. The abstracts for these articles can be seen online via the PubMed website (www.ncbi.nlm.nih.gov/pubmed). The United Kingdom's National Institute of Clinical Excellence (NICE) has also published a helpful position statement on this procedure in January 2009 and the website address can be found below. More information on PRP injection can be seen at www.prpinjection.com.au.

When ABI should not be performed

ABI cannot be performed on patients with **bleeding disorders** or those taking **anti-coagulants** (eg. Warfarin, Clopidogrel). It should not be performed in other **blood disorders**, such as leukaemia, where tumour cells may be present in the blood, or where platelet levels are low. ABI is also not recommended in **certain cases of tendon tearing**, where surgery may be more appropriate (however, the degree of tearing may not be appreciable on diagnostic ultrasound and may only be detected during the injection itself).

Complications and side effects

Pain and stiffness following ABI is common and of variable intensity and length. It may be mild and respond to simple analgesics (eg. Paracetamol) or be more severe and require strong painkillers (eg. Codeine). Typically it lasts 1-2 days and may limit ability to work or use the affected area; light duties or complete rest may be required for a short period of time. Occasionally the pain may be very severe (“pain crisis”) or last for several weeks. It is frequently seen in those with severe tendon problems or those with occupational injuries, and may be part of the normal healing response to ABI/PRP.

Bruising is usually minor and may be related to the injection itself or the presence of injected blood in the soft tissues.

Infection is very rare as sterile equipment and handling techniques are employed. The presence of white blood cells in autologous blood may further reduce the likelihood of this complication.

Tendon rupture is also a very uncommon but significant complication of ABI, and may be due to symptom improvement following injection (and subsequent overuse), or progression of tendon disease despite treatment.

Non-response to injection may occur in 20% of patients (or more) based on the current data.

Technique

An assessment of the affected region will be made by the radiologist prior to the injection. Using sterile equipment, approximately 2-5mls of blood is first taken from veins around the elbow for ABI, and around 10mls for PRP injection. If PRP injection is being performed the blood will be transferred to a specialised tube to be centrifuged, which will take around 15 minutes. Ultrasound is then used to guide injection of the sterile blood throughout the tendon substance.

Post-injection

Non-steroidal anti-inflammatory medications should be **ceased for 10** days after your ABI or PRP injection. For the first two days (or until the injection pain subsides), **rest** of the affected region is advised. For the remainder of the first week routine daily activities may be undertaken. In general, if comfortable, light training or work activity may commence after the first week, along with a rehabilitation programme which should be supervised by your referring doctor or physiotherapist. In the 2nd or 3rd week, increasing activity, whilst avoiding heaving loading or significant repetitive use of the relevant area, can be undertaken. A second injection may be performed routinely. Variations to this protocol may be made depending on the patient and extent of tendon disease.

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