

# The role of injections in management of Osteoarthritis

Osteoarthritis (OA) is a progressively debilitating condition that plagues our aging population with pain and functional impairment. Treatment of OA focuses on alleviating pain and preventing functional decline and to control symptoms until the severity of the condition mandates surgical intervention. Pharmacologic therapies are the mainstay of pain management using medications such as paracetamol, non-steroidal anti-inflammatory drugs and opiates, but prolonged use of these medications is associated with adverse effects. There is good evidence for weight loss and exercise in the management of hip and knee OA (1, 2), and unloader braces can be beneficial in knee OA. Injections are an alternative treatment option that can provide short term symptomatic relief. There are different types of injections available including corticosteroid, Platelet Rich Plasma (PRP) and Hyaluronic Acid (HA). They are injected into the affected joint, often under ultrasound guidance, with the goal of reducing pain and improving function. This article explores the different types of injections available and the evidence for their use.

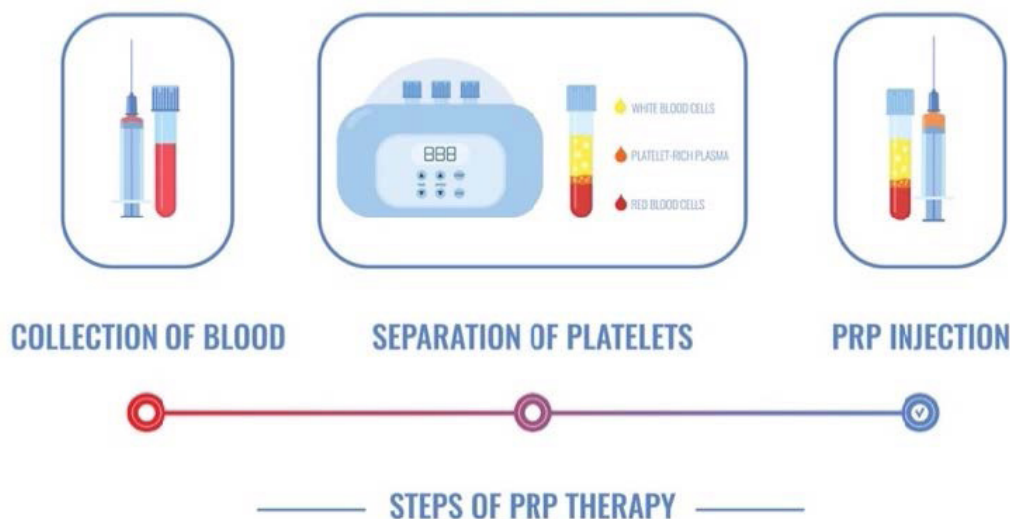
Intra-articular corticosteroid injections have been used for decades in the management of symptomatic OA. The pain relief from a steroid injection is thought to work by reducing inflammation. Corticosteroid injections into the knee have shown to be statistically significant at reducing pain in the short term, with a Cochrane review reporting small to moderate benefits up to 6 weeks, but no evidence of an effect after 13 weeks (3).

A common recommendation is that no more than 3 to 4 steroid injections can be performed within a year, but one concern with repeat injections is chondrotoxicity. Furthermore, multiple injections are often seen to have decreased efficacy in both duration and in reducing pain.

As with any treatment modality, corticosteroid injections are associated with side effects. These are listed in the table below. Amongst orthopaedic surgeons the main concern is the risk of postoperative Prosthetic Joint infection (PJI). Injection into a native joint carries the risk of intraarticular inoculation of pathogens, and therefore a steroid injection performed in the months leading up to surgery may increase the risk of PJI. Multiple studies have investigated this, and the current recommendation is that surgery be delayed after a steroid injection for at least 3 months for knee replacements and 4 months for hip replacements (4, 5).

Adverse effects of steroid injections
Skin pigmentation changes
Fat or skin atrophy
Residual injection site pain
Septic arthritis
Hypothalamic-pituitary-adrenal axis suppression
Increased blood glucose
Facial flushing

## PLATELET-RICH PLASMA



Hyaluronic acid (HA) is one of the main components of normal synovial fluid. In arthritic patients, there is marked reduction in concentration and molecular weight of endogenous HA, which leads to reduced viscoelastic properties of synovial fluid and induction of proinflammatory pathways. Viscosupplementation attempts to restore the biomechanical and biochemical functions of normal synovial fluid through intraarticular injections of HA. HA preparations differ in the method of preparation, molecular weight and half-life. The two of the more commonly used preparations are Synvisc-One and Durolane. Multiple studies have shown that the injections are safe with few adverse effects being reported. A Cochrane review demonstrated benefits in pain and function especially at 5 to 13 weeks post injection into the knee (6), while a more recent meta-analysis demonstrated efficacy out to 26 weeks (7). A recent case-series has also shown short term benefits in the management of hip OA (8). Platelet-rich plasma (PRP) is an autologous concentration of platelets in a small volume of plasma. Because there is an increased concentration of platelets, there is also an increased concentration of the protein growth factors secreted by platelets that can act on diseased chondrocytes to promote tissue healing. The current available evidence suggests that the use of PRP leads to significant improvements in patient outcomes (including improved pain, reduced stiffness and increased participation in exercise), and these improvements were seen starting at 2 months and were maintained for up to 12 months (9, 10). It appears to be safe to use, and 3 injections of PRP separated by a week appears to be more effective than a single injection (10).

While the current evidence for PRP and HA appears to be promising, we are still learning more about their efficacy and side-effect profile. Additionally, there is a cost associated with both treatments as they are not covered by Medicare. The evidence though does suggest that steroid injections are rarely an effective long-term strategy in management of OA. Ultimately, the use of injections should be individualised to each patient based on their level of symptoms and degree of arthritis, as well as the clinicians' experience with their use.

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