Bone Marrow Aspirate Concentrate (BMAC)

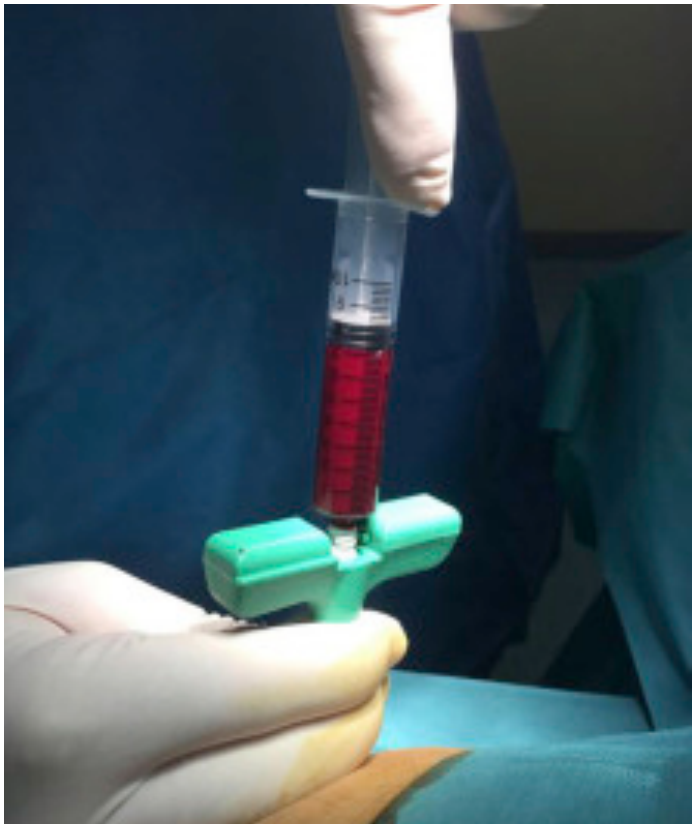
What BMAC Is
Bone Marrow Aspirate Concentrate (BMAC) is a component of your bone marrow that contains cells known as pluripotential, multipotential, or (mesenchymal) stem cells; growth factors; and anti-inflammatory proteins which have been shown to promote bone and soft tissue healing as well as reduce pain related to injuries, tendinitis and arthritis.

Stem cells can be found in many tissues throughout the body, but one of the richest sources is in bone marrow. Unlike other cells of the body, bone marrow cells are undifferentiated, which means they have the ability to replicate themselves into a variety of tissue types. When injury occurs, the usual number of regenerative cells needed for tissue regeneration is often inadequate. With BMAC, regenerative cells are concentrated and provide a more robust healing of damaged tissue. This aids in

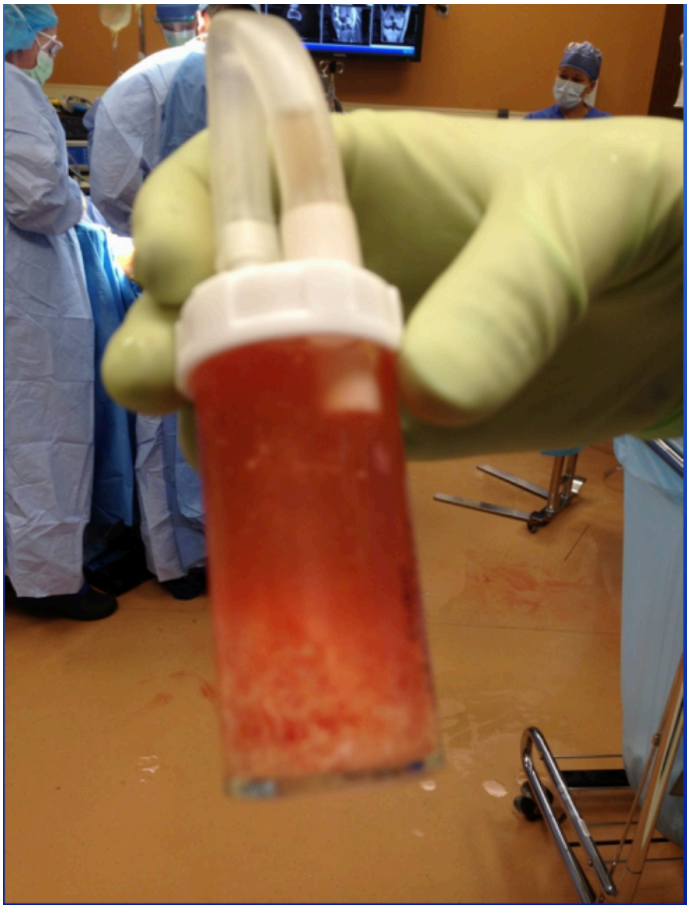
growth and repair by accelerating the body's natural healing mechanism. While the full benefits of BMC are still unknown, it has been shown to reduce swelling, relieve pain, and enhance healing.

BMAC Procedure

Bone marrow can be harvested from several bones in the body and is relatively easy to access. Bone marrow most commonly is aspirated from the iliac crest (of the pelvis) and placed in a centrifuge, which concentrates the stem cells, platelets and growth factors. The concentrate is collected into a sterile syringe and injected into the area being treated.



BONE MARROW ASPIRATION FROM THE PELVIS



BMAC differs from Cortisone and PRP

Cortisone injections mask symptoms and have been shown to damage tissue resulting in degeneration of tendon, ligament or cartilage. BMAC targets the root of the problem and attempts to heal tissue.

While similar to Platelet Rich Plasma (PRP) in its ability to harness the body's ability to heal itself through the aid of growth factors, BMAC also utilizes stem cells contained within bone marrow. In general, PRP may be more appropriate for mild to moderate osteoarthritis or injuries. BMAC may be reserved for

more challenging cases when more potent effects are desired with the addition of stem cells.

When BMAC may be recommended

BMAC may be recommended for patients who have failed other conservative therapies including physical therapy, medications, rest, and other injections. It is also a good option for those that are not candidates for surgery or prefer to avoid elective surgery. Conditions that may be treated include: osteoarthritis; rotator cuff tears; ligament tears including tears of the UCL in the elbow of throwing athletes; shoulder or hip labral tears; articular cartilage injuries; tendonitis or tendon injuries; and muscle strains or tears.

Expectations after BMAC Injection

Patients may experience soreness at the aspiration and injection sites for a few days following the procedure. It is important that anti-inflammatory medications such as Ibuprofen (Advil), Naproxen (Aleve) and Aspirin be avoided following treatments because these medicines may block the inflammatory phase of healing. It is acceptable to use pain medication such as Tylenol, and in some cases a prescribed pain reliever which does not have anti-inflammatory properties, to control discomfort as needed. Most patients will begin to see improvement approximately 1 to 2 months after treatment. Increased stability and strength are typically reported along with a decrease in pain. Recovery time and outcome is dependent on the anatomic structure treated and how chronic the problem is.

Risks of BMAC

The risks of BMAC are extremely low, but as with any procedure, there are possible risks and complications. Although very unlikely,

any injection can potentially cause bleeding, increased pain, infection or nerve damage. Because your own cells are being used, there is no risk of tissue rejection. BMAC injections are performed under ultrasound guidance to assure they are precisely placed into the involved anatomic area.
As with most medical interventions, BMAC is not always effective for every condition or patient.

Insurance Coverage/FDA Approval
BMAC is an evolving and often effective treatment option. Although BMAC is not 'FDA-approved,' it can be legally used 'off label' for musculoskeletal conditions. This procedure is considered experimental, investigational, non-covered, or not medically necessary by insurance companies. Patients are financially responsible for the cost of this procedure.