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Bone Marrow Aspiration (BMA)

Bone marrow is the soft spongy tissue that is found in the center of your bones. In adults, marrow in the large bones are the producing center of your red blood cells, white blood cells and plasma components. Since this is the location of production, immature forms of these cells, called mesenchymal signaling cells ("stem cells"), will be found here. Bone Marrow Concentrate (BMC), also known as Bone Marrow Aspirate Concentrate (BMAC) Therapy, is done to concentrate the cells so that improved healing occurs. There is sufficient scientific data that has shown that concentration of the bone marrow is necessary to affect bone, cartilage and tendon healing, which is the primary reason why this is performed in our practice.

The physician removes a small amount of the patient's bone marrow and spins it in a centrifuge in order to generate a powerful concentrate that is mixed with bone graft (for bony healing), cartilage graft for cartilage restoration (osteochondral defects) or in isolation (tendon healing). Given the limitation of insurance approval, the procedure in the operating room is done primarily for bony fusions or complex osteotomies (bone breaks) or cartilage restoration in order to improve the rate of healing. In some cases for the Achilles tendon or revision tendon work, we will advocate for this technique, however, insurance approval may not be possible in some cases.

While there is some slight discomfort, most patients tolerate the procedure very well and with minimal pain. Additionally, this is done in the operating room under sedation and with local anesthetic at the time of the surgery for the foot and ankle. Post-injection soreness at the injection site is sometimes present because of an inflammatory response caused by BMC therapy. This soreness usually resolves on its own within a few days after the injection.

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 BMC, the concentrate of regenerative cells provides a more robust healing of the damaged tissue and 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 of articular cartilage and bone.

We have significant experience with this technique and our data is currently under review given our very promising outcomes in most patients for both complex bony fusions and cartilage restoration