

Stem Cells for Knee Osteoarthritis

A recent Mayo Clinic study published in the January 2017 edition of the *American Journal of Sports Medicine*, demonstrates the effectiveness of bone marrow derived stem cells for knee osteoarthritis (OA) in the active patient. This study enrolled 25 patients with OA in both knees. Researchers injected one knee with normal saline and the other with bone marrow derived stem cells.

The bone marrow was aspirated from the iliac crests and concentrated in an automated centrifuge. (The same technique we use here at The ROM clinic)

The bone marrow concentrate (rich in stem cells) was injected into the arthritic knee and was compared with a saline injection into the other knee, thereby utilizing each patient as his or her own control.

Early results show that bone marrow derived stem cell injections are a safe to use and is a reliable and viable cellular product. Interestingly, pain scores in both knees decreased significantly from baseline at 1 week, 3 months, and 6 months. Pain relief, although dramatic, did not differ significantly between treated knees in the early stages.¹

Recently a paper out of Augusta University in Georgia also explained stem cell therapy for osteoarthritis, specifically bone marrow stem cells. In their paper the Georgia doctors highlighted the comparisons between bone marrow derived stem cells and adipose or fat derived stem cells.

- Bone marrow-derived stem cells have a higher chondrogenic capability (the ability to make cartilage) than fat derived stem cells.
- Bone marrow-derived stem cells have been more thoroughly studied than fat stem cells and findings suggest that bone marrow-derived stem cells can be safely implemented in treatment strategies for treatment-resistant osteoarthritis patients with minimal side effects.
- Bone marrow-derived stem cells can undergo high rates of proliferation; have immunosuppressive actions, anti-inflammatory effects, and pro-regenerative properties.² Important to note is that the stem cells are acting as an anti-inflammatory and pro-regenerative agent at the same time.

1 Shapiro SA, Kazmerchak SE, Heckman MG, Zubair AC, O'Connor MI, A Prospective, Single-Blind, Placebo-Controlled Trial of Bone Marrow Aspirate Concentrate for Knee Osteoarthritis. *Am J Sports Med*. 2017 Jan;45(1):82-90. doi: 10.1177/0363546516662455. Epub 2016 Sep 30.

2 Burke J, Hunter M, Kolhe R, Isales C, Hamrick M, Fulzele S. Therapeutic potential of mesenchymal stem cell based therapy for osteoarthritis. *Clinical and Translational Medicine*. 2016;5:27. doi:10.1186/s40169-016-0112-7. 2