



ORTHOPAEDIC
& SPINE CENTER
Open MRI Center



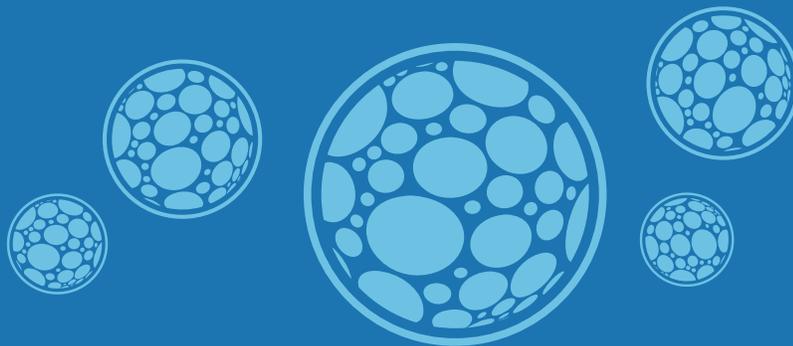
AN INTRODUCTION TO REGENERATIVE MEDICINE

You've undoubtedly come across some discussion of stem cells, likely with regard to stem cell research. But stem cells have a wide variety of uses in the medical field, particularly for athletes, the elderly, and those who suffer from chronic orthopedic pain. **The Orthopaedic & Spine Center, or OSC, is one of the first in Virginia to offer stem cell and regenerative medicine.** This may not be a familiar topic, so read on for more details about this innovative and promising new area of medicine.



What Are Stem Cells?

Stem cells are the body's "master cells" because they make up organ tissues, blood, and the immune system. Doctors first used stem cells, taken from bone marrow, to regenerate blood and immune cells in cancer patients who had received chemotherapy treatments. In the late 1980s, doctors began using cord blood stem cells to treat diseases that they previously used bone marrow stem cells to treat.



OSC does not use cord blood stem cells. Instead, we use amniotic stem cells retrieved from the placentas of scheduled C-sections in accredited hospital donation centers. The parents are reimbursed for the amniotic stem cells. Patients may also make autologous donations of their own bone marrow. OSC does NOT use embryos or embryonic tissue in its stem cell treatments.

Who Should Receive Treatment?

In general, we recommend that patients should be seen for a consultation to discuss whether they have a condition that is appropriate for stem cell therapy. Stem cell injections are appropriate for moderate osteoarthritis in the hip, knee, shoulder, ankle, or thumb, where there is not complete collapse of the joint space and no “bone on bone” changes. In addition, tendonitis, rotator cuff tears, back pain, tennis and golfer’s elbow all respond well to stem cell therapy. Some medical issues, such as lymphoma and leukemia, will prevent you from undergoing a stem cell procedure. Severe, “bone on bone” arthritis sufferers will not see positive results from stem cell injections.

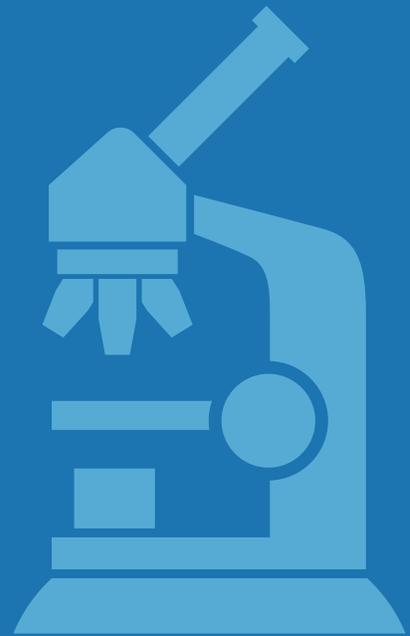
How Does It Work?

Stem cells assist in the creation of new cells in existing healthy tissues and may help repair tissues in damaged or injured parts of the body. Stem cells are the “building blocks” for each of the specific cell types that make up every organ of the body.

When stem cells divide, they create progenitor cells that can turn into other cells with more specialized functions, such as brain cells or red blood cells. Orthopedic surgeons and pain management specialists have recognized and acted upon the ability of progenitor cells to become components of specialized tissue, such as bone or cartilage.

Orthopedic surgeons primarily work with mesenchymal stem cells which are taken from living adult tissue. Bone marrow cells, for example, are mesenchymal stem cells that, under the right conditions, can differentiate into cells that become part of the musculoskeletal system. They can help to form bone, tendon, articular cartilage, ligaments, and part of the bone marrow. Patients can donate their own stem cells or opt to use Amniotic Stem Cells that have been collected, sterilized and frozen, all via ethical procedures.

Doctors are now using stem cell treatments for bone fractures and non-unions. These procedures can regenerate articular cartilage in arthritic joints, heal ligaments and tendons, and even replace degenerative vertebral discs.



Let's Take a Look at How Stem Cells Work in Some of These Cases

Bone Fractures and Non-Unions

Progenitor cells in bones could lead to the creation of osteoblasts, which in turn become mature bone cells, or osteocytes. These are the living cells in mature bone tissue, and stem cells can help promote bone growth and heal injured bones.

Ordinarily, doctors have treated bone fractures with the implantation of solid bone graft material, at the point of the fracture or non-union. But increasingly, they are also using stem cells and progenitor cells to increase the speed of the healing.

Articular Cartilage

Damage to the articular cartilage or the lining of joints, often causes degeneration of the joint and painful arthritis. Current treatment methods include grafting and transplantation of cartilage to fill the defects. Doctors hope that stem cells will stimulate growth of primary hyaline cartilage to restore the normal joint surface.

Ligaments and Tendons

Mesenchymal stem cells can also develop into connective tissue cells. This would promote faster healing of ligament and tendon injuries, such as quadriceps or Achilles tendon ruptures. In these cases, doctors would use stem cells in the repair process.

The Procedure

The procedure is different if you are donating your own stem cells or simply receiving amniotic stem cells. Below is a guide through each procedure.

Procedure for Donors

1

OSC staff will take you to an exam room, where you will change into a gown. The nurse will accompany you to a procedure room, ask you to lie down on a table, and ensure you are comfortable. Your OSC physician will decide whether to extract the stem cells from the Iliac Crest (hipbone) from either the front or the back of the body. The chosen area will be cleaned with an antibacterial solution and draped before the procedure.

2

Your OSC physician will then inject an anesthetic agent, such as Lidocaine, into your hip area to numb it. This injection will sting, but the sensation should subside after a few seconds. Once you are completely numb, your physician will insert a needle into your hipbone and extract the necessary amount of bone marrow. You may feel some discomfort, but it should only last a short time. Your physician will then place a bandage on the spot from which he or she extracted the stem cells. During the next few days, you may experience some redness, bruising, and soreness at this location, but this is completely normal and should be minimal. Applying ice to the area for 15-minute intervals every other hour may be helpful for the first twelve hours.

3

As soon as the bone marrow extraction is complete, the OSC nursing staff will immediately begin the process of spinning it into its various components needed for the stem cell injection. They will carefully handle the materials, and all surfaces that touch the blood and bone marrow are treated with non-clotting agents. This process takes approximately twenty minutes.

(Procedure for Donors Cont.)

4

Once the stem cell materials are ready for injection, your OSC Physician may inject a local anesthetic agent into the area that will receive the stem cells. This may sting briefly, but should quickly subside. Once you are numb, your physician will begin the stem cell injection. He may use ultrasound for injection guidance or a machine called a C-arm, which takes x-rays. You may feel some pressure as the stem cell material is injected, but this is normal. As with all injections, you may experience some redness, bruising or soreness, at the injection site for several days.

5

The injection site will be covered with a bandage and you will be released to go home with non-clotting agents. This process takes approximately twenty minutes.

Procedure for Receivers (Using Donated Stem Cells)

1

OSC staff will take you to an exam room, where you will change into a gown. The nurse will accompany you to a procedure room, ask you to lie down on a table, and ensure you are comfortable. The area into which your OSC physician will inject the stem cells will be cleaned with an antibacterial solution and draped before the procedure.

2

The donated amniotic stem cell material will have been unfrozen and readied for your procedure by an OSC nurse.

3

Your OSC Physician may inject a local anesthetic agent into the area that will receive the stem cells. This may sting briefly, but should quickly subside. Once you are numb, your physician will commence the stem cell injection. He will use ultrasound for injection guidance or a machine called a C-arm, which takes live x-rays. You may feel some pressure as the stem cell material is injected, but this is normal. As with all injections, you may experience some redness, bruising or soreness, at the injection site for several days.

4

The injection site will be covered with a bandage and you will be released to go home.

Physician Training

Each of the physicians who perform Regenerative Medicine at OSC are Board-certified and have Fellowships in their area of specialty. To learn about Stem Cell Therapy specifically, they trained and observed surgeries with experienced Orthopaedic and Interventional Pain Management physicians in Beverly Hills, California.



Recovery

As with all medical procedures and surgeries, recovery time will vary depending on the individual patient. Factors such as age, general health, and the severity of the condition will all contribute to the recovery time. Stem cell therapy is not a surgery and does not require anesthesia, so recovery times should be relatively short.

Regardless, your OSC physician may recommend rest, physical therapy, and reduced activity for several days or weeks after the procedure to maximize the treatment's effects. As mentioned earlier, you may experience some soreness and other mild symptoms for several days after the stem cell retrieval and injection procedures.

The Regenerative Medicine Physicians will follow up with all stem cell therapy patients at regular intervals, as they do with all other patients, to track progress and efficacy of treatment.

Patients with mild to moderate conditions may soon experience healing and repair fully and may never feel pain or dysfunction again in the treated area. In other cases, the patient may feel partial relief and need further treatments down the road. Those with moderate to severe issues may experience pain relief and return of function, but symptoms could return in time, which would require further treatment. As with all medical treatments, each patient will recover differently and have different requirements for future therapy.

Success Rate

As with all surgeries or treatments, there are no definitive numbers on the success rates for stem cell therapy. Some patients feel great relief, some experience partial reduction in symptoms, and some will not experience any pain or symptom reduction.

Stem Cell Controversy

As we said at the beginning of the article, you may have heard about stem cells because of the past controversy associated with their retrieval from embryos for research purposes.

OSC does NOT use stem cells taken from embryos or embryonic tissue. Instead, we use amniotic stem cells taken from placentas from scheduled C-sections in which the parents are reimbursed for the tissue, as well as autologous donations from the patient's own bone marrow.

Contact OSC at 844-GET-STEM for a consultation.

About Orthopaedic & Spine Center

Orthopaedic & Spine Center, located in Newport News, Virginia, is a full-service orthopedic practice with 32 patient exam rooms, three x-ray suites, a Lunar DPX Bone Densitometer Room, an Open 1.2 Tesla Magnetic Resonance Imaging (MRI) Center, and a Physical Therapy Center on campus. OSC physicians have full staff privileges at Mary Immaculate Hospital and Riverside Regional Medical Center and active clinical staff privileges at Peninsula Surgery Center. Between 8% and 12% of OSC patients have surgery per year while the rest are treated with conservative approaches. To learn more, visit www.osc-ortho.com.



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