LipoGems® Adipose (Fat) Lipospheres with Contained Stem Cell Knee Injections

LipoGems® is a technique that uses stem cells within adipose (fat) tissue. The stem cells reside on the microscopic blood vessels within the fat tissues. Some techniques involve enzymatic digestion and centrifugation of fat to obtain the vascular portion. LipoGems®, on the other hand, involves minimal manipulation of the fat tissue that is gently harvested by “lipoaspiration” from a small amount of one’s own abdominal fat, not requiring formal liposuction.

This process is enzyme-free and does not involve centrifugation of the tissue. Through mechanical emulsification (thorough mixing) of the tissue, the size of the fat clusters is reduced. Sterile saline is employed during processing to wash and rinse the tissue, which reduces inflammatory impurities, such as oil residues and blood. This allows maintenance of the native adipose tissue microenvironment containing the microvasculature with attached stem cells. These small adipose microspheres with their microenvironment can then be injected in a standard manner for the knee.

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OrthoIndy Hospital is physician owned and operated.
Note that Platelet Rich Plasma and ReNu® can be performed the same day and time as your office visit if prior arrangements are made. However, LipoGems® and Bone Marrow Aspirate will require a specific prior arrangement for a morning appointment to verify that these treatments are optimal for you. Once verified, an afternoon procedure time will be available. If you decide the injection is not right for you, the prepayment for the procedure will be refunded while the completed office visit will not be refunded.

With the Stem Cell, Ortho-Biologics and Regenerative Medicine Program, we offer a potential “bridge” between biologic knee restoration and (artificial) total knee replacement. To be clear, most insurance programs, Medicare and Medicaid label these treatments as “experimental/ investigational” and do not pay for these treatments. Consult with your Health Savings Account (HSA) adviser, as prescribed medical treatments may be allowed for payments from your HSA account. Prepayment is necessary depending on the injection.

The available treatments are listed below.

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Ultrasound Optional Guidance for Knee Injections

While experienced knee surgeons and physician assistants can perform accurate knee injections, the option of ultrasound guide is available. This non-invasive technique allows visualization of the injection needle precisely within the joint capsule.

Platelet Rich Plasma (Autologous Conditioned Plasma®) Knee Injection

Platelets are one of the first biologic products to reach an injury. Their first function is to participate in sealing the injury with a clot. During the blood clot formation, they release over 1,000 biologically active proteins, including growth factors and “signaling” factors (that call in adult stem cells to aid in the repair process). Blood can be harvested from a peripheral vein and then centrifuged to separate the blood components to yield a portion high in platelet numbers.

There are many ways to prepare PRP. The type of PRP we use, Autologous Conditioned Plasma®, has been shown in a recent scientific study to diminish symptoms of knee osteoarthritis. It is administered in the same manner as other knee injections with local skin anesthetic.

ReNu® Amniotic Fluid Stem Cells and Membrane Knee Injection

Human amniotic fluid and tissue is typically discarded at birth. However, the fluid and tissue are rich with cells and growth factors that have been used successfully for many years to promote wound healing. The fluid and membrane are donated by healthy mothers at birth. The fluid and membrane are then cryopreserved allowing the cells (including stem cells) to return to function upon thawing.

Although amniotic membrane fluid with cells and amniotic membrane are promoted by several companies in the United States, there is one product that has been scientifically investigated for knee osteoarthritis: ReNu®. OrthoIndy research participated in the original study (published in the Journal of Knee Surgery, 2015) and is leading a multicenter trial of this promising product. The trial enrollment is complete, but ReNu® is available outside of the investigational trial for knee osteoarthritis symptoms.

Bone Marrow Aspirated Mesenchymal Stem Cell Knee Injection

Bone marrow harvesting for stems cells has been performed for many years. The adult stem cells actually make up a very small number compared to the cells obtained during aspiration. In the past, much of what was aspirated from within the bone was actually plain blood. To remove the blood products, the entire aspirate was spun at high speeds in a centrifuge. Unfortunately, when the blood portion was discarded many of the desired stem cells were also thrown out with the blood portion.

OrthoIndy utilizes a new tool for harvesting, which minimizes the amount of blood within the aspirate. This technique is called Marrow Cellutions® and uses a new patented instrument that allows the harvest to contain a high number of stems cells and centrifugation is not necessary. Thus, no unnecessary loss of stem cells. The aspiration from the bone is performed under local anesthetic and allows direct injection into the knee without further handling.