



## LIPOGEMS®

**WHAT?** Fat is bursting with mesenchymal signaling cells (MSCs). These are adult signaling cells (ASCs) that are capable of differentiating into fat, cartilage and bone cells. ASCs differ from embryonic signaling cells (ESCs) in several ways. ESCs harness the ability to differentiate into most any cell and can be indefinitely replicated, an ability that is given in part due to its high content of telomerase, an anti-aging protein. Telomerase is the same protein that gives an immortality-like feature to cancer cells. ESC-derived cells also carry the risk of rejection due to their “foreign donor tissue” character. All ESCs carry identical genetic material from the original egg from which they were derived. Therefore, they may involve the risk of host rejection. In this event, the patient may require immuno-suppressive therapy, which can subsequently lead to infectious disease. ASCs lack this “immortality-like” feature due to their maturity and lack of high content of telomerase. This means that adult stem cells are less likely to cause tumors, are limited in which cells they can differentiate into, and can be taken from the patient him or herself, thus lessening the chance of immune rejection.

**WHEN? WHO? AM I A CANDIDATE?** You may be a candidate for Lipogems if you have arthritis, tendon or ligament injuries, muscle tears or cartilage injuries. In order to undergo this procedure, you must make your physician aware of all serious medical problems.

**WHERE?** This procedure is performed in a sterile environment in the office. Please arrive 15 minutes early to sign consent forms. The fat harvest and subsequent injection are performed under local anesthesia. Please plan for an hour and a half for your appointment time. If you will be having this procedure in conjunction with surgery, your procedure will be performed in the operating room under general anesthesia.

**HOW?** The Lipogems® system is a sterile medical device intended for the closed loop processing of your own fat tissue. It is a simple system designed to harvest, process, concentrate and re-size adipose for use as an alternative and/or adjunct to surgery, for filling soft tissue defects and promoting healing in orthopedics, plastic surgery, and other surgical specialties. The Lipogems® system preserves the stromal vascular structure of adipose tissue; adipose tissue is rich not only in MSCs, but also in growth factors, supportive cells called pericytes and healing proteins called cytokines. The body needs these supporting proteins and cells in order for the MSCs to do the work. Accessing this support network is impossible with intact fat, and dissolving fat to access these cells with enzymes is prohibited by the FDA. The Lipogems® system allows us to re-size the fat clusters and eliminate the oils and other residues without chemicals, at point of care, allowing the body to access the powerhouse of the fat. Lipogems® may or may not be appropriate for all patients. Individual results vary. Not all patients will have the same post procedure recovery and activity level.



Your skin will be numbed using a small amount of Lidocaine on either side of your belly. We will then make a small nick in your skin that will allow us to insert a blunt-tip cannula into the fat layer of your abdomen. Following this nick, you will be sterilely prepped and draped.



A thin, blunt-tip cannula will be inserted through the two small incisions, and your belly will be permeated with a mixture of saline and epinephrine. You will sit with this mixture in your belly for around 20 minutes to allow this anesthesia mixture to soak in. After 20 minutes, the fat-harvest process will begin! We will re-insert the same blunt-tip cannula, attached to a syringe with suction. We will extract enough tissue to inject an adequate amount into the area. This will not be enough to make a cosmetic difference.

Once an adequate amount of adipose has been harvested, we will utilize the Lipogems® device to process the aspirate down. The harvested material is inserted into a closed-loop, saline-filled capsule that includes metal beads. We rinse the aspirate and agitate it several times to ensure that the resulting material is small enough to be injected back into your joint. This process takes around 20 minutes and is done while you wait. Once we have prepared an adequate amount of fat to inject, we will do so. A waterproof dressing will be applied to the incision sites and a compression wrap will be applied to your trunk. Please maintain use of the waterproof dressings and compression wrap for 2-3 days following the procedure.





## Lipogems FAQs

- What is Lipogems?
  - Lipogems is a device that is used to collect, process, and concentrate fat tissue for injection into the treatment site. It micro-fragments the adipose tissue in order for it to be injected. Adipose tissue is comprised of a high concentration of reparative cells and mesenchymal signaling cells. Some of these include perivascular cells, adipocytes, erythrocytes, fibroblasts, etc. It helps to cushion and support the treatment site.
- What types of patients would Lipogems help?
  - Suffer from an injury or ailment that limits their normal daily functioning
  - Painful joints with limited range of motion in the knees, ankles, shoulders, spine, and elbows
  - Have soft tissue defects in the tendons, ligaments, or muscles.
- Where and how long is the procedure?
  - The procedure is done in clinic or in the operating room and takes an hour to an hour and a half.
- What is the procedure?
  - Using a local anesthesia, your physician will make two tiny punctures in the abdomen and collect a small amount of fat from the midsection, “love handles”, or buttock area.
  - The fat is then processed and concentrated in the Lipogems device using a sterile saline solution.
    - This will purify the fat from any oils, blood, or other residues in the fat while also re-sizing the tissue.
  - Your physician will then inject the micro-fragmented tissue into the treatment site.
- Is there anything the patient needs to do to prepare for the procedure?
  - Ideally, avoid NSAIDs (including supplements) 1 week prior to procedure. This helps prevent abdominal bruising.
  - It is medically recommended to have a driver for your procedure.
  - Arrive 15 minutes prior to procedure in order to complete a baseline questionnaire and consent form.
  - Wear comfortable and loose-fitting clothing.
  - There are no dietary restrictions leading up to the date of the procedure.
- What is the down time after the procedure and what should the patient avoid?
  - Refrain from strenuous activity for 2 weeks following the procedure. Avoid NSAIDs for 2 weeks after the procedure.
- When will the patient start to feel the effects from the procedure?
  - It could take up to 3-4 months for the patient to feel the effects



## Lipogems Instructions

### Pre-Procedure

- Ideally, avoid NSAIDs (including supplements) 1 week prior to procedure. This helps prevent abdominal bruising.
- It is medically recommended to have a driver for your procedure.
- Arrive 15 minutes prior to procedure to complete a baseline questionnaire and consent.
- Wear comfortable loose-fitting clothing.
- There are no dietary restrictions leading up to the date of the procedure.
- If tolerated, take 1000mg of Tylenol (acetaminophen) one hour prior to procedure.

### Post-Injection

- Significant discomfort is not expected following the Lipogems procedure.
  - Use of Tylenol (acetaminophen) is acceptable if abdominal or joint discomfort is experienced.
  - Avoid NSAIDS for **2 weeks** following the procedure in order to prevent excessive bruising of the abdomen.
- You may experience an inflammatory response following the injection which may include complaints of stiffness and/or swelling at the injection site.
- You may experience abdominal swelling, bruising, and/or soreness
  - Continue with routine use of the abdominal binder and ice packs for 48 hours following the procedure.
- Waterproof dressings will be applied to the abdomen at the sites of the fat harvest.
  - Showering is acceptable following the procedure. Please avoid the use of pools or bathtubs for 48 hours.
  - Abdominal dressings may be removed 48 hours following the procedure.
- Please refrain from strenuous activity for 2 weeks following the Lipogems procedure.
  - After 2 weeks, gradually return to activity as tolerated.
- Physical therapy can be a beneficial treatment following administration of Lipogems. Inquire with your physician to see if physical therapy is appropriate for your diagnosis and treatment plan.



### **Lipogems Contraindications**

- Anti-inflammatories – stop taking 7 days before the procedure and 2 weeks following the procedure.
  - Aspirin
  - Motrin
  - Advil/ Ibuprofen
  - Aleve
  - Naprosyn
  - Naproxen.
  - Diclofenac (ex: Voltaren gel)
  - Meloxicam/ Mobic
  - Celebrex
  - Daypro
  - Feldene
  - Lodine (Etodolac)
  - Orudis
  - Indomethacin (Tivorbex)
  - Semaglutide (ex: Ozempic, Wegovy)
  - Natural remedies (ex: turmeric, Boswellia extract, fish oil)
- Blood Thinners/ Anticoagulant
  - Xarelto
  - Warfarin
  - Eliquis
  - Pradaxa
  - Heparin
- Oral Steroid: need to be off Steroids **7 days before and 2 weeks after** procedure
- No restrictions on Semaglutides/GLP1
- Wait at least one month after Cortisone (steroid) Injection!
- No restrictions on antibiotics, but preferably not on antibiotics during the procedure.
- History of Metastatic Conditions like cancer or disease. Discuss with your physician and please get clearance from Oncologist.
- History of severe liver disease
- Septic arthritis
- History of Autoimmune disease. Discuss with your physician and discuss with Rheumatologist.
  - Certain medications prescribed for autoimmune conditions may reduce the effectiveness of treatment.



## Post Lipogems Procedure Instructions

- o You may experience an inflammatory response following your injection. This can include stiffness, increased pain, swelling, and/or swelling.
- o Swelling, bruising, and/or soreness around your abdomen is normal.
  - o Continue to wear your abdominal binder and ice packs to help with your symptoms for 2-3 days after the procedure.
- o Waterproof dressing will be applied to your abdomen. Keep the dressing on 2-3 days after the procedure.
  - o You may shower or get your dressing wet, but avoid taking a bath, getting in a pool, or submerging your dressing.
- o Do not use any prescription or over the counter anti-inflammatory medicines (NSAIDS) for **2 weeks after injection** such as: Aspirin, Motrin, Advil, Ibuprofen, Aleve, Naprosyn, Naproxen, Voltaren, Diclofenac, Meloxicam, Mobic, Celebrex, Daypro, Feldene, Lodine, Orudis and Ansaid. This includes supplements such as: Omega-3, Ginger, Turmeric, Spirulina, Vitamin A, Bromelain, and Capsaicin.
- o You may use Tylenol (Acetaminophen) as needed for discomfort. 1,000mg every 8 hours as needed for pain. Do NOT exceed 3,000mg daily. If Tylenol does not help with the pain, please call your physician as they may be able to prescribe you different medications.
- o Refrain from strenuous activity for 2 weeks following Lipogems procedure.
  - o Slowly ease back into activity as tolerated after 2 weeks.
  - o Physical Therapy can be beneficial in this process. Discuss with your provider if you would benefit from PT.
- o Call the physician if you develop drainage from the injection site or harvest site, bleeding, redness, or fever. You may experience some localized swelling and bruising at the injection site that will take 3-7 days to resolve.