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AUTOLOGOUS REGENERATIVE THERAPY IN YOUR HANDS

Clinical studies have demonstrated the efficacy of therapies based on the autologous grafting of autologous adult mesenchymal stem cells to accelerate the healing and regeneration processes of the skin and mesenchymal tissues, as well as finding application in the treatment of autoimmune diseases for their immunomodulatory abilities.

Adipocyte-derived mesenchymal stem cells (ADSCs) are pluripotent adult progenitor cells derived from embryonic connective tissue. ADSCs are able to differentiate in an adipogenic, osteogenic, chondrogenic, myogenic cells, but also towards non-mesodermal cell lines (neuronal, endothelial, epithelial, etc.). They are also able to secrete a series of growth factors, such as VEGF (Vascular Endothelial Growth Factor), HGF (Hepatocyte Growth Factor), FGF-2 (Fibroblast Growth Factor-2) and IGF-1 (Insulin-like Growth Factor-1) which give them a regenerative and angiogenetic power.

One of the richest tissues in adult mesenchymal stem cells is adipose tissue. Adult mesenchymal stem cells of adipose origin (Adipose Derived Stem Cells - ADSCs) are today among the most widely used cells in Regenerative Medicine due to their characteristics and ease of availability. Adult mesenchymal stem cells of adipose origin (ADSCs) exert their regenerative and immunomodulatory capacity thanks to the paracrine effects through trophic factors that exhibit antifibrotic, antiapoptotic and pro-angiogenic activity. Furthermore, mesenchymal stem cells exert their regenerative capacity also thanks to their intrinsic ability to transform into mesenchymal and endothelial cells, promoting tissue repair.

ADSCs have the ability to modulate a wide range of immune system cells, such as B and T lymphocytes, neutrophils and natural killer cells. This immunomodulatory and anti-inflammatory capacity is being recently investigated in the field of allografts. Studies have shown that the association with ADSCs favors the engraftment of allografts.

Numerous studies have recognized adipose tissue as one with the highest concentration of adult mesenchymal stem cells (ADSCs), and in particular in its stromal component (SVF Stromal Vascular Fraction). Studies have shown a higher concentration of mesenchymal stem cells in adipose tissue (ADSCs) than in bone marrow (Marrow Stem Cells- MSCs). Comparing bone marrow mesenchymal stem cells (MSCs) with ADSCs, it was found that the latter have a higher concentration in the same volume of harvested tissue, are collected in a much less traumatic method and their concentration seems less influenced by the age of the patient.

The proven regenerative capacities of mesenchymal stem cells (ADSCs) are exploited in numerous medical specialties such as: reconstructive and aesthetic surgery, maxillofacial surgery, vulnology, orthopedics, vascular surgery, orthopedics, cardiology, urology, otolaryngology, proctology and dermatology and lately also the GYNECOLOGICAL field.

AUTOLOGOUS REGENERATIVE MEDICINE IN GYNECOLOGY

At the genital level, as in all other tissues, aging causes a reduction in collagen, with aging of the tissues and thinning of the mucosa, which are further damaged by the lack of

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estrogens. The resulting atrophy leads to a series of extremely disabling symptoms, called genitourinary syndrome, such as vaginal dryness, burning, dyspareunia, recurrent cystitis, vaginal infections, incompatible with a good quality of life.

Autologous mesenchymal stem cells (ADSCs) have the ability to differentiate according to the characteristics of the tissue in which they are implanted and, at the level of the vaginal mucosa, cause an increase in elastin and fibroblasts with consequent restoration of tissue turgor, elasticity and spontaneous lubrication. In addition, vascular growth factors (VEGF) improve microcirculation by improving skin and mucous trophism.

The possibility of grafting micro-fragmented adipose tissue rich in SVF cells and ADSCs at the level of the fourchette, where the mucosa is particularly thin and inelastic and where abrasions and bleeding during sexual intercourse are more frequent, creates the conditions for a significant improvement in life quality.

Autologous mesenchymal stem cells (ADSCs) can also be used in the treatment of perineal scars, outcomes of episiorraphy, removal of Bartholin's gland cysts, incision of abscesses and in all situations in which patients report situations of dryness resistant to common local therapies even in childbearing age.

They can also be used to increase the tone and thickness of the vaginal mucosa in wide vagina syndrome (vaginal laxity due to close deliveries, precipitous labor), which, contrary to vaginal atrophy, does not create pain on penetration, but less sensitivity during intercourse.

Women can be truly treated in the gynecology with their own mesenchymal cells at 360 degrees, to achieve a satisfying quality of life at all ages.

Finally, clinical studies demonstrate the effectiveness of homologous stem cells grafting in menopausal scleroatrophic lichen, a chronic inflammatory disease of the vulva that leads to scar tissue sclerosis.

The implantation of autologous stem cells stimulates fibroblasts, precursors of collagen and elastic fibers, resulting in tissue repair and resolution of the clinical picture and symptoms.

IMPIANTO TISSUTALE SEFFI e microSEFFI (Superficial Enhanced Fluid Fat Injection)

Since 2015 Gennai et al. have published several studies (see bibliographical references) on new tissue grafting techniques SEFFI and MicroSEFFI.
These techniques aim to graft the autologous adipose tissue, including the stromal fraction (SVF) and the adipose tissue derived stem cells (ADSC) contained in it, in order to obtain a trophic improvement of the tissues and a restoration of the lost volumes. The authors demonstrated that the adipose tissue can be harvested through special cannulas with very small side ports, in order to select small cell clusters, therefore it is not necessary to carry out manipulations to fluidify the tissue.

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SEFFI and MicroSEFFI are now among the most used techniques for tissue regeneration and volume restoration for the rejuvenation of the face and other areas of the body. These techniques are considered minimally invasive surgical procedures, so they require surgical experience, particularly in liposuction, and adequate facilities.

In light of these evidences, Autologous Regenerative Therapy has always been only in the hands of plastic surgeons and has not been open to aesthetic doctors, gynecologists or dermatologists.

Dr. Gennai firmly believes that Autologous Regenerative Therapy must also be performed by doctors without specific training in liposuction surgery. For this reason he has developed, standardized and patented * a special guide, that is a device designed for harvesting fat tissue in a safe, easy, effective way, even without any surgical liposuction skills.

From this original idea, SEFFILINE has developed SEFFIGYN®, a medical device where all the components necessary for the treatment to be found in the box and for single use, to allow doctors to perform regenerative autologous treatments in their offices in a safely, easily and effectively.

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*Brevetto italiano

WHY SEFFIGYN®

In order to perform a correct Regenerative Therapy, the need arises to have a SAFE, SIMPLE, RAPID, EFFECTIVE and STANDARDIZED method to harvest the naturally micro-fragmented adipose tissue containing the stromal component (SVF) and adult mesenchymal stem cells (ADSCs).

This method must have the following characteristics:

- the least traumatic tissue harvesting both for the tissue and the patient.
- Harvesting the adipose tissue in the most superficial plane possible, to obtain a tissue richer in mesenchymal stem cells (ADSCs). This procedure must be standardized also in the hands of colleagues without specific experience in collecting superficial adipose tissue.
- Collecting cell clusters containing adipocytes, stromal tissue (SVF) and mesenchymal stem cells (ADSCs) of reduced size, to favor their engraftment in the recipient site.
- Minimal manipulation of the harvested tissue, to maintain the highest cellular vitality and without using tissue fragmentation devices, to make the method faster and less expensive.
- Being as little traumatic as possible for the patient and minimizing the complications of blood sampling such as hematomas, seromas, infections and skin irregularities.
- The tissue to be implanted must be sufficiently fluid to be grafted with thin needles or cannulas to cause as little trauma as possible to the vulvo-vaginal region.

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- The procedure must be able to be performed by doctors even without specific experience in liposuction procedures.
- The method should be performable by doctors without a specific experience in liposuction procedures.

SEFFIGYN® meets all these needs:

1. It is the only guided medical device. Its guide (Italian patent) allows doctors without specific experience in superficial liposuction to perform tissue harvesting in a standardized, simple, safe and effective way.
2. It is the only medical device containing all the components needed for the entire procedure, from harvesting to grafting. This is why the procedure can be carried out on an outpatient basis in a simple, standardized, safe and effective way.
3. The device is sterile and disposable, to make the procedure safe for the patient and the physician.
4. The micro harvesting cannula allows to collect micro fragmented adipose tissue as it makes the tissue fluid. This method follows the philosophy of the SEFFI technique (Superficial Enhanced Fluid Fat Injection described above), which involves taking cellular micro clusters that do not require subsequent substantial manipulations before grafting, while maintaining the biological characteristics of the harvested tissue. This makes the method not only simple and standardized, but also quick and effective.

The SEFFIGYN® device is designed for use in public and private hospitals in an outpatient setting for the following indications in the gynecological field:

- Genitourinary Syndrome,
- Outcomes of episiorraphy and perineal surgical scars,
- Wide vagina syndrome (postpartum vaginal laxity),
- Lichen sclerosus.

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