



BREAKTHROUGH REVOLUTIONISES MICRO-FAT GRAFTING

LIPOGEMS IS A DISPOSABLE DEVICE FOR PROCESSING AND REINJECTION OF ADIPOSE TISSUE HARVESTED FROM LIPOSUCTION. IT'S SET TO TRANSFORM FAT TRANSFER RESULTS IN AESTHETIC MEDICINE. WORDS BY CAITLIN BISHOP.

IN RECENT YEARS, AN INCREASING LEVEL OF ATTENTION HAS BEEN DIRECTED TOWARDS STEM CELL COMPONENTS THAT ARE CO-TRANSPLANTED WITH FAT GRAFTS

Liposuction and reinjection of adipose tissue is fast gaining traction in the aesthetic arena as a procedure with impressive potential. Lipogems, distributed by Klinik Solutions in Australia, compounds this potential with a streamlined system that causes minimal trauma and generates superior results.

Lipogems is designed to preserve the regenerative capacity of adipose tissue to improve both the quality and longevity of fat transfer results.

It does this by utilising the mesenchymal stem cells (MSCs) naturally found in adipose tissue. The Lipogems harvesting device is designed to keep stromal vascular fraction (SVF) cells intact, which contain pericytes and MSCs.

While fat used as autologous dermal filler is not new, this system reflects the latest in adipocyte transplant research. One report, called "Adipocyte transplantation and stem cells: Plastic surgery meets regenerative medicine"

(2010), explains the evolving field of autologous fat transfer.

"Initially, most investigators concentrated their attention on fat as autologous tissue because of its ideal characteristics as a soft tissue filler, which is also abundant, readily available, inexpensive, host compatible, and can easily and repetitively be harvested," the paper states. "However, in recent years, an increasing level of attention has been directed towards progenitor/stem cell components, such as MSCs that are co-transplanted with the fat grafts."

For the launch of Lipogems in Australia in October 2014, co-author of this study and lead Lipogems researcher Dr Carlo Tremolada – plastic and maxillofacial surgeon from Italy – came to Australia to share his insight.

"I was looking for a better way for fat grafting," he says. "Ten years ago fat became interesting because it is rich in pericytes and adult stem cells," Dr Tremolada says. "Pericytes

are located around all blood vessels in the body, and there is a high concentration in the capillaries of fat tissue."

US biologist and the "father of the mesenchymal stem cell" Professor Arnold Caplan also addressed the launch via Skype. He coined the phrase "mesenchymal stem cells" in the late 1980s, and has no vested interest in the Lipogems product.

"At reinjection, MSCs come out of the lipocytes and work their regenerative magic in the targeted tissue," Professor Caplan explains. "I don't know anyone who wouldn't mind donating a few ounces of fat to improve their health status. Five years from now, this is what medical students will be learning."

Orchestrating an immune response

Pericytes kick into action when a blood vessel is damaged. When they're activated, MSCs detach from the cells and begin to secrete cytokines – cell-signalling proteins.

"Activated MSCs act like a drug store, they can teach tissue to boost healing or generate new tissue," Dr Tremolada says. "Lipogems has nothing to do with fancy stem cell technology – we're simply orchestrating an immune response."

After fat extraction, the Lipogems system cleans and refines the adipose tissue in a six-step reduction process. During this process, the MSCs are activated to encourage the natural regeneration of tissue following reinjection.

"During Lipogems procedure, the fat is taken, the oil and blood are discarded, and pericyte activation is achieved by shaking the device," Dr Tremolada explains. "I've performed more than 3,000 Lipogems cases on various patients – both aesthetic and reconstructive – and every time I am pleasantly surprised by the result."

MSCs' natural environment preserved

Importantly, the MSCs contained in the final Lipogems product are not concentrated. Dr Tremolada explains this helps achieve optimum results in fat transfer.

"Lipogems works well because it triggers a natural response but also because the pericytes are NOT concentrated. The Lipogems product is representative of the natural environment; the milieu is maintained," Dr Tremolada explains. "This is a new concept; Lipogems is gentle with the environment in which it is injected and the cells are kept in tact."

Last year, Tremolada et al. presented the Lipogems system in the journal of *Cell Transplantation*.

"The system uses mild mechanical forces in a completely closed system, avoiding enzymes, additives and other manipulations," the authors state. 'Different from

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unprocessed lipoaspirate, the nonexpanded Lipogems product encompasses a remarkably preserved vascular stroma with slit-like capillaries wedged between adipocytes and stromal stalk containing vascular channels with evident lumina.'

The Lipogems product, rich

FIELDS OF APPLICATION

- Coloproctology
- Gynaecology
- Otolaryngology
- Reconstructive plastic surgery
- Urology
- Vulnology
- Aesthetics

in MSCs, is transforming the capabilities of aesthetic fat transfer. Traditionally, fat transfer has resulted in noticeable facial rejuvenation results, but these results have typically faded along with the reabsorption of the adipose tissue.

"Certainly, the fat is still reabsorbed with Lipogems but the rejuvenation result stays," Dr Tremolada explains. "Significant results can still be seen 24 months on, and this is due to the MSC action within the tissue."

"Fat transfer has huge regenerative properties, and Lipogems has huge, huge, huge regenerative properties. It can be used to treat alopecia, vocal chord paralysis, necrosis and osteoarthritis," he says. "For aesthetics, it is very different to normal fat transfer. It is easy to inject and manage – and can even be used under the eye. About 50 percent of the fat is reabsorbed, but the product remains perfectly even – in two years, the fat has gone but the rejuvenation remains.' AMP

Lipogems is distributed in Australia by Klinik Solutions. Visit www.klinicsolutions.com or call 0414 701 998 for more information.