

## the FACE



# To Each Their Own

An update on platelets, fibroblasts, and fat



Selphyl® treatment

COURTESY OF ANTHONY SCLAFANI, MD, FACS

### By Wendy Lewis

A novel category of facial-rejuvenation procedures that is attracting a lot of attention among dermatologists and plastic surgeons all over the world involves the use of human tissues. For anyone who is averse to the concept of injecting foreign substances, this expanding category includes harvesting fat cells, platelet-rich fibrin matrix (PRFM or PRP) that is fashioned from the patient's own blood, and human fibroblasts from skin cells. Cell regeneration using autologous tissues is paving the way for numerous anti-aging and aesthetic benefits, as well as other areas of medicine, including orthopedics, cardiology, and wound care.

Although demand and interest in this category is increasing dramatically, it has been challenging for physicians to keep up with new advances and substantiate claims.

#### FAT TRANSFER REVISITED

"The use of adipose tissue, which is rich in stem and regenerative cells, has undergone a renaissance in reconstructive and aesthetic surgery. The applications are widespread with potential benefits in breast augmentation, facial aesthetics, breast reconstruction, and contour deformities from a variety of acquired and congenital disorders," says La Jolla Plastic Surgeon Steven R. Cohen, MD, FACS.

This resurgence in the popularity of autologous fat has given birth to new and improved technology designed to make the process faster, more reproducible, and more precise. "PureGraft® from

CytoriTherapeutics Inc, San Diego, has been a game-changer in the world of fat grafting. The system offers high speed and sterile preparation of a viable and functional fat graft that is ready to inject, and takes a third of the time to prepare three times the graft," Cohen says.

According to New York facial plastic surgeon Sam Rizk, MD, FACS, "If the problem is only volume loss, then autologous fat transplantation can be done as a stand-alone procedure. However, very often gravitational skin laxity in the neck and jowl area also needs to be addressed with volume replenishment. Fat grafting and traditional facelifts are complementary procedures, and each addresses different components—ie, volume loss and gravity."

Another fat grafting system that is changing the face of adipose tissue is the Adivive™ Fat Transfer System, marketed in the United States by Palomar Medical, Burlington, Mass. Adivive is

described as an integrated system that uses a unique filtering mechanism and high G-force centrifugation to yield a higher quality of adipose tissue for reinjection. "The amount of fat that survived from fat transfer has traditionally been unpredictable and often discouraging. The innovative Adivive technology filters the fat to its cellular components, and by doing so, it may encourage the fat cells to more reliably perform normal subcellular activities, thus improving chances of their survival and the cosmetic result," says Jacksonville, Fla, plastic surgeon Lewis J. Obi, MD, FACS.

#### THE POWER OF PLATELETS

The next frontier of rejuvenation with autologous tissues may involve a combination approach. In a study published in *Archives of Facial Plastic Surgery* by Anthony P. Sclafani, MD, FACS, director of the division of facial plastic surgery in the department of otolaryngology at the New York Eye and Ear Infirmary in New York City, platelet-rich fibrin matrix was demonstrated to stimulate the development of new blood vessels active fibroblasts with the formation of new collagen and fat cells within the dermal layer. According to Sclafani, "This study supports the use of autologous platelet-rich fibrin matrix for soft-tissue augmentation and, in particular, as an adjunct to autologous fat transfer. We have demonstrated cellular regenerative changes which can lead to visible improvement in as little as a week after treatment."

Physicians can utilize the Selphyl®

#### RECOMMENDED READING

Sclafani A, McCormick S. Induction of dermal collagenesis, angiogenesis, and adipogenesis in human skin by injection of platelet-rich fibrin matrix. *Arch Fac Plast Surg*. 2011 Oct 17. [epub ahead of print]



to be published in the March 2012 issue of *American Journal of Cosmetic Surgery*, and additional studies are ongoing.

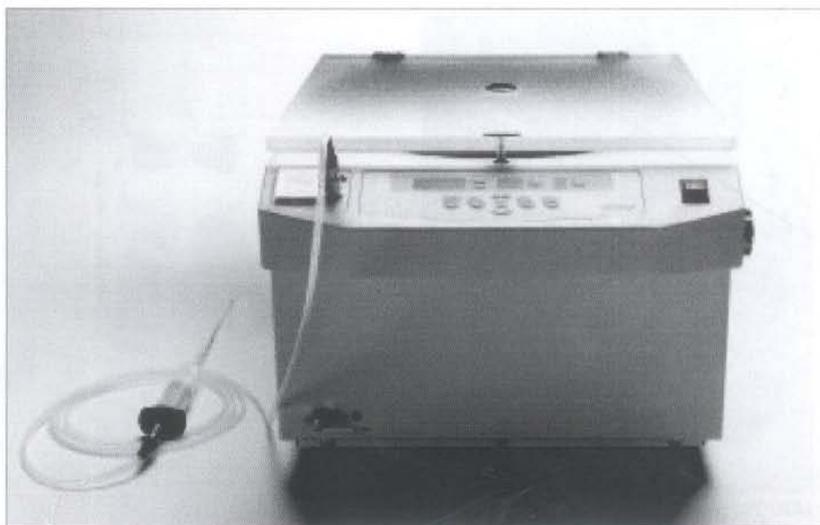
According to North Atlanta plastic surgeon Miles Graivier, MD, FACS, "As we all know, blood flow is the key. In laboratory studies, the platelet-derived growth factors appear to stimulate angiogenesis in fat grafts. Platelet-rich plasma may be useful in treating acne scars and for post laser patients, both as an injection into the dermis and as a topical application. These unique prospects for PRFM technology include skin quality improvement, use in the tear trough, in acne scarring, as an adjunct to laser resurfacing, and probable fat transfer enhancement. Clinical and laboratory studies are under way. I am very excited about the potential applications for some of these products."

#### THE SCIENCE OF FIBROBLASTS

Formerly marketed as Isolagen®, the LAVIV™ (azficel-T) technology received FDA clearance in 2011. Fibrocell Sciences Inc, Exton, Pa, makes LAVIV by first removing a small tissue sample from behind a patient's ear. The skin sample is then sent to Fibrocell's manufacturing facility, where fibroblasts are isolated and grown in a lab for approximately 90 days. Once prepared and shipped back to the physician, the fibroblast-containing cell therapy is reinjected into the patient's face. According to Fibrocell, the final LAVIV product that gets injected is at least 98% pure fibroblasts. The remaining cells are then cryopreserved and kept in storage to be thawed for future treatment sessions.

According to Girish Munavalli, MD, an assistant professor of dermatology at Wake Forest University School of Medicine in Winston-Salem, NC, "We recommend three LAVIV treatments, spaced at least 3 weeks apart, to achieve the desired results. Patients can also come back for additional treatments as needed." Although the FDA approval is specifically for the nasolabial folds, many physicians are using LAVIV to treat all facial regions, chest, hands, and acne scars.

It may take several months to see the gradual effects on skin texture and signs of aging, and individual results will vary based on the patient's skin condition, age, degree of damage, as well as the injection technique used and number of fibroblasts injected. Fibroblasts have the ability to improve skin texture and can play a role in wound healing and



Advive™ fat transfer system



Autologous fat transfer using Advive™

COURTESY OF MARK BERMAN, MD, FACS

tissue repair, so this technology may have wider applications in the future.

#### THE FUTURE OF AUTOLOGOUS THERAPIES

The main appeal of autologous therapies to consumers is that it is essentially their own tissues that are being injected, so there is no chance of allergy or foreign body reaction. This category of rejuvenation treatments hits home with a new segment of consumers who gravitate to the idea of a natural product that replaces what has been lost over time.

According to Rizk, "In the future, good science and clinical data will bring clarity to this emerging arena of treatments that stimulate new collagen, enhance skin rejuvenation, and prevent further aging." ■

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#### RESOURCES

- [Selphyl.com](http://Selphyl.com)
- [Palomarmedical.com](http://Palomarmedical.com)
- [Cytori.com](http://Cytori.com)
- [Mylaviv.com](http://Mylaviv.com)