Facial Lipofilling: A Difference Between Volume Restoration and Tissue Rejuvenation

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We have read with great interest the article of Yang et al entitled "Comparison of Microfat, Nanofat, and Extracellular Matrix/Stromal Vascular Fraction Gel for Skin Rejuvenation: Basic Research and Clinical Application."[1] This article illustrates the rapidly evolving field of regenerative medicine with fat therapeutics and the potential clinical implications for different diseases and disorders. One of the key therapeutic components in adipose tissue is the stromal vascular fraction (SVF) which can be isolated by a variety of procedures.[2] Up until now, no single isolation procedure has been determined to be superior and therefore side-by-side comparative studies such as that of Yang et al are definitely needed.[2]

Yang et al conclude that intradermal injection of microfat provides skin rejuvenation.[1] In this study, 9 patients were treated with microfat and improvements in skin texture, color, softness and wrinkles were observed after a follow-up of 6 to 18 months. However, no objective or validated measurement tools were used in this study to quantify real aspects of skin rejuvenation. A review of the literature indicates that the lack of validated outcome measurements when fat tissue has been used as a therapy for skin rejuvenation seems to be standard rather than an exception.[3] Wrinkling of the skin caused by aging can be compared to an old balloon that looses volume over time after a significant period of overstretching. Once the volume or air disappears from the balloon, the balloon itself starts to wrinkle. When volume or new air is added, the balloon starts to stretch again and subsequently the wrinkles will disappear. As such, wrinkle reduction of the balloon does not mean that the structure of the balloon itself has been improved. The same applies for aged skin: when subcutaneous volume by means of fat or fat components is added underneath aged skin, wrinkles will disappear, but this does not mean that structural histologic improvement of the aged skin has been effected.

Our recently accepted prospective randomized clinical trial[4] studied the effect of mechanically isolated SVF (tissue-SVF)-enriched lipofilling with platelet-rich plasma on facial skin. Instead of only clinical observations of wrinkles, validated outcome measurements (ie, FACE-Q) and Cutometer results were used to measure skin elasticity, which is a real marker and indication of skin health (ie, rejuvenation). Our data did not indicate any significant improvement in skin elasticity after 1 year of follow-up. A reasonable hypothesis is that the injection site (eg, facial skin) requires a certain level of trauma to initiate a regenerative response to SVF. Trauma can be initiated by a pathologic process such as (acne) scarring or additional treatment such as trichloroacetic acid peeling.

The clinical potential, as well as the current use, of adipose tissue or SVF as a therapy for a variety of disorders and diseases is huge (eg, osteoarthritis, wound healing,

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burn wounds, or fibroproliferative diseases). However, for most of these clinical indications, no formal scientific proof of a beneficial effect of the use of adipose tissue as therapy has yet been provided. Therefore, we, as clinicians and scientists in the field of regenerative medicine, should interpret results, such as those presented by Yang et al, with some caution. Validated measurements and measurement tools should definitely become a standard part of studies evaluating the effect of fat and fat tissue components on tissue regeneration such as skin rejuvenation.

Disclosures

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