



Aging Face: The Role of Stromal Enriched Lipograft™ in Facial Rejuvenation

Aris Sterodimas*

Department of Plastic & Reconstructive Surgery, Metropolitan General Hospital, Greece

Clinical Image

Facial aging presents a challenging problem for plastic and aesthetic surgeons; it is a multifactorial, multistep process that involves structural and volumetric changes in the skin, muscles, skeleton, and adipose tissue. Facial tissue descent is caused not only by gravity, but also by the reabsorption and repositioning of the facial adipose system. Facial rejuvenation with autologous fat has the advantage of replacing or augmenting tissue with like tissue. Autologous fat transplantation to the face can correct cosmetic defects that are caused by loss of subcutaneous tissue, such as atrophy of the face due to significant weight loss, wrinkles and facial involution due to aging. Clinical use of autologous fat grafts for facial soft-tissue augmentation has grown in popularity in the plastic surgery community in the past 10 years [1]. Regenerative cell-based strategies such as those encompassing the use of stem cells have shown that autologous Adipose-Derived Stem Cells (ADSCs) offer the possibility of finally fulfilling the key principle of replacing like with like as an aesthetic filler. ADSCs are multipotent mesenchymal stem cells that display regenerative capacity by the paracrine release of growth & differentiation factors. ADSCs are responsible for the rejuvenation capabilities of fat grafts, and their use has shown lower reabsorption rate due to improved angiogenesis and reduced inflammatory response. In Stromal Enriched Lipograft (SEL™), ADSCs are used in combination with lipoinjection [2]. A Stromal Vascular Fraction (SVF) containing ADSCs is freshly isolated from the

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*Correspondence:

Aris Sterodimas, Department of Plastic & Reconstructive Surgery, Metropolitan General Hospital, 264 Mesogeion Av, Athens, Greece,

E-mail: aris@sterodimas.com

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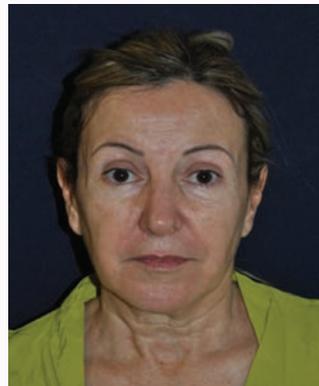


Figure 1: Pre-operative front view of a 64 year old woman seeking facial rejuvenation.



Figure 2: Post-operative front view 2 years after SEL™ for panfacial rejuvenation.



Figure 3: Pre-operative front view of a 72 year old woman seeking facial rejuvenation.



Figure 4: Post-operative front view 1 year after SEL™ for panfacial rejuvenation.

aspirated fat and recombined with the adipose scaffold. This process converts relatively ADSC-poor aspirated fat to ADSC-rich fat [3]. Adipose-derived stem cells remain the most widely used by cosmetic surgeons as they have the potential and capability to differentiate into mesenchymal, ectodermal, and endodermal lineages and are easily accessible to harvest. The regenerative effects of ADSCs on facial aesthetics have been shown at the histologic and cellular level [4]. Regeneration of elastin and collagen fibers as well as improvement in capillary density and reduction of inflammation have been reported.

Understanding of the facial anatomy lends greater precision to our ability to rejuvenate the aging face. The diminished volume of a specific facial fat compartment leads to an excess skin envelope and

the illusion of a more prominent facial fold. SEL™ technique can be applied to the lateral two-thirds of the brow, the nasojugal fold, the malar and buccal fat pads, the nasolabial fold, the lips and the perioral region [5].

Augmentation of fat compartments by SEL™ technique has the following effects: it increases the anterior projection; it diminishes the ptotic fold pseudo projection; and a youthful facial contour and harmony is recreated. A typical example of a patient who is ideal for SEL™ is shown in Figure 1. She was treated by a total facial fat grafting in the lateral two-thirds of the brow, the nasojugal fold, the malar and buccal fat pads, the nasolabial fold, the lips and the perioral region by a total of 27 ml. The postoperative result is shown 2 years after the procedure (Figure 2).

A 72 year old female patient was referred to our department for face rejuvenation (Figure 3). She underwent SEL™ facial treatment in the lateral two-thirds of the brow, the nasojugal fold, the malar and buccal fat pads, the nasolabial fold, the lips and the perioral region by a total of 43 ml. Two year postoperative result is shown in Figure 4.

The ideal substance for soft-tissue augmentation still eludes physicians, but fat grafting through a blunt cannula seems to be the safest of all of the fillers used; in the hands of an experienced surgeon, it can provide long-lasting, natural-appearing structural changes. Stromal Enriched Lipograft™ restores the three-dimensional projection and overall shape of the face to more youthful contours and eliminates shadowing and muscle to skin interactions. SEL™ is an effective and novel anti-aging therapeutic agent in cosmetic surgery.

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